



The 2nd

INTERNATIONAL SEMINAR ON
EDUCATION TECHNOLOGY

ISET

Wednesday, May 25th 2016

ISBN 978-602-74564-1-9

The 2nd INTERNATIONAL SEMINAR ON
EDUCATION TECHNOLOGY ISET



THE 2ND INTERNATIONAL SEMINAR ON EDUCATIONAL TECHNOLOGY 2016

Conservation Education in the Era of Innovation and Technology

Auditorium Unnes, Sekaran, Gunungpati, Semarang, Indonesia
25th May 2016

Organized by:
Postgraduate Program
Semarang State University

In Collaboration with:
University of Muhammadiyah Semarang
Sultan Agung Islamic University

ISBN 978-602-74564-1-9

ISET © 2016 Post-Graduate Program, Semarang State University
<http://app.pps.unnes.ac.id/iset>

Foreword

Technology advancements provide great benefits to the lives and living. Everything becomes easier and practical, while works could be more efficient from the aspect of time, money and manpower. On the other hand, unresponsible technologies could also cause damages to the environment, neglection of the genuine social and cultural values, and even could affect human character. Therefore, conservation ideas and efforts are very urgent to safeguard the impact of destructive technology.

The 2nd International Seminar on Educational Technology (ISET) is an international seminar and a scientific collaborative forum organized by the Postgraduate Program of Semarang State University in order to celebrate the 51th Dies-natalis of Semarang State University and the 19th Anniversary of Postgraduate Program. ISET invites researchers, practitioners of industrial sector, public and private stakeholders, educators from various fields come from different countries to exchange and share knowledge. More specifically, 2nd ISET is expected to provide acceleration of technology and innovation, progression of industry and economic growth, solve multidimensional crisis, and enhance education reformation.

Theme

Conservation Education in the Era of Innovation and Technology

Topics of interest for submission include but are not limited to:

1. Development of new and environmental friendly technology and engineering, bio and nano technology, bioenergy
2. Impact of technology emergence to environment and public health, medical technology, pharmaceuticals, health and safety
3. The role of education in internalization of conservation values/insight, including: education management, administration, education technology, curriculum, teaching and learning approach, evaluation and assessment method.
4. Conservation of arts and culture, include: traditional ornamentation and crafts, performing arts, fine arts and sculpture
5. Creative economy based on local potential and wisdom in efforts to increase competitiveness in the era of Asean Economic Community (AEC)
6. Development of human resources and capital, vocational and career education, entrepreneurship, technopreneurship, and cyberpreneurship
7. Information and communication technology, language studies, oral tradition
8. Natural Science, Social Science and Humanity

Welcome from the Rector of Semarang State University

I take great pleasure in welcoming you to 2nd International Seminar on Education Technology (ISET) in Semarang. The seminar is conducted in the context to 51th years Semarang State University and 19th Postgraduate Program anniversary.

Seminar is the right place to enhance our academic quality and awareness on issues related to “conservation” as one of our vision. It will be privilege for me to open this seminar today, where all researcher, expert, and academics sit together for knowledge sharing and discussion. The issues of the seminar is in line with the vision of Semarang State University as a conservation university, not only for environment issues, but also in character building.

Conservation values can be proliferated by the awareness to the cultural heritage, and in turn, can be developed by embarking from conservation and local values. Therefore, this seminar will give a great contribution to our effort to proliferate the cultural preservation as an integral and significant part of our national identity.

I extend my gratitude to all the key speakers for attending, and the ISET committee for their efforts to organize this prestigious event. I wish all the speakers and participants of this International Seminar could get the best benefit of this special event.

Prof. Dr. Fathur Rokhman, M.Hum.
Rector of Semarang State University

Welcome from the Director of the Postgraduate Program

Postgraduate Program of Semarang State University is intends to enhance the academic atmosfeer through seminars. At least 5 seminars national and international are conducted every year. The 2nd International Seminar on Education Technology is a special seminar organized to celebrate the 51th anniversary of Semarang State University and . I am very pleased to provide some introductory remarks for the Program Book of the seminar.

I wish to thank the invited speakers for their great attention in sharing their knowledge, and also to the participants for attending the seminar. I would also like to congratulate the committee for the hard work, thoughts, and time dedicated to this seminar.

With more than 800 participants, the seminar examines issues concerning the education in the era of technology., there will be a stronger bond amongst academics, professionals, teacher, students especially those with the interest in education. Postgraduate Program of Semarang State University will always play its significant role in mediating this important task.

I wish you all a wonderful seminar.

Prof. Dr. Achmad Slamet, M. Si.
Director of Postgraduate Pogram
Semarang State University

Welcome from the Chair of Organizing Committee

The year 2016 is declared by Unnes as the Year of Innovation Acceleration, indicate commitment to technology advancement. However, as the university of conservation, Unnes is also concern about embedding the conservation values.

After the great success ISET in October 2014, we are coming back with the 2nd ISET 2016, with the theme Conservation Education in the Era of Innovation and Technology. More specifically, 2nd ISET is expected to provide acceleration of technology and innovation, progression of industry and economic growth, solve multidimensional crisis, and enhance education reformation.

The 2nd International Seminar on Educational Technology (ISET) is a scientific forum organized by the Postgraduate Program of Semarang State University in order to celebrate the 51th Dies-natalis of Semarang State University and the 19th Anniversary of Postgraduate Program.

It is a pride for us, that this seminar is organized in collaboration with two major universities in Semarang, the University of Muhammadiyah Semarang (Unimus) and Sultan Agung Islamic University (Unisula), integrated by utilizing two-way teleconference technology.

On behalf of the Organizing Committee, I would also like to express my gratitude to our invited speakers Prof. Dr. Abdul Latif Ahmad from Universiti Sains Malaysia, Associate Prof. Atchara Purakom, Ph.D from Kasetsart University, and Gregor J. Sahler from Sparkassentiftung für Internationale Kooperation, for their attendance to share their knowledge. I would also like to welcome all of participants of ISET. And last but not least, for all the committee members, thank you for your best efforts and hard work.

Dr. Ir. Rodia Syamwil, M. Pd.
Chair of the Commitee

Invited Speakers

Prof. Dr. Abdul Latif Ahmad

School of Chemical Engineering, Universiti Sains of Malaysia



Prof. Dr. Abdul Latif was the Dean of School of Chemical Engineering, USM for almost 6 years (2005-2010) which later promoted to be the Research Dean, Science Fundamental Platform for 3 years (2010-2012). He obtained his BEng, MSc and PhD from the University of Wales, Swansea, UK. When he was promoted to his professorship, he was then the youngest professor being promoted. He has a wide experience in administration and research. He has put the School of Chemical Engineering, USM on the global map as top 100 Faculty in the world according to QS ranking. He involves actively at Ministry level in many committees and different Task Force related to research policy and research grant evaluation. Numerous local

universities invited him to share his experience as a mentor to junior lecturers. Being a Chartered Engineer and a Fellow to The Institution of Chemical Engineers (IChemE), UK, he is frequently being appointed by IChemE to accredit Chemical Engineering Program in Europe, Australia, New Zealand, Sri Lanka, Singapore and Malaysia. He is an internationally renowned researcher and an internationally acclaimed award winning researcher in membrane science and technology. Due to that, the King Saud University has appointed him to hold the Geoscience Chair to help King Saud University's researchers to lift up their research visibility internationally. His enthusiasm and dedication towards his research works have been reflected in his achievements in winning numerous scientific invention awards. To-date, a total of 50 personal achievement awards and 69 research product awards have been won. Recently, he was awarded by The Ministry of Higher Education Malaysia as the recipient of The Malaysia's Rising Star Award 2015. He was listed by the Thomson Reuters New York as The World Most Influential Scientific Minds 2014 and the country has selected him to be one of the recipients of Merdeka Award 2014. Due to his outstanding achievement in research, the Korea Invention News has awarded him with the World Inventor Award for two years in a row (2013 – 2014). In fact, Prof. Latif was bestowed the TWAS Prize in Engineering Sciences 2012 by The Academy of Sciences for the Developing World (based in Italy) and he was appointed as the Fellow of the Academy Sciences of Malaysia. In the same year, he was also received the Rotary Research Gold Medal Award, presented by the Rotary Club of Kuala Lumpur Di Raja. On top of that, the Academy of Science Malaysia has recognized him as one of the recipient of the Top Research Scientist of Malaysia (TRSM) for the year 2012. He was the sole Asian recipient of the Saudi Arabia Prince Sultan Bin Abdulaziz International Prize for Water in year 2006, besides being awarded the 20th Khwarizmi International Award from Iran. His active participation in scientific research has also been exhibited by being the recipient of multiple research grants in various disciplines sponsored by government and non-government bodies, with a cumulative value of more than RM 29.9 million. His capability in carrying out quality research work of international standard has been further supported by publication of more than 314 articles in high impact factor international refereed journals, with current cumulative citation number of 8394 and h-index of 44. As a tenacious educator, he showed dedication towards the supervision of postgraduate students, by successfully graduating 30 PhD and 60 master students. With his persevering attitude, he is veritably a source of inspiration to hundreds of his former students spread throughout the globe.

Associate Professor Atchara Purakom, Ph.D.

Kasetsart University Thailand



Curriculum Vitae

Assoc.Prof. Dr.Atchara Purakom

Address : Department of Physical education and sports,
Faculty of Education and Development Sciences, Kasetsart
university, Kamphaeng-sane campus Thailand, 73140

Telephone number:+66-3435-1898 ext. 504

Fax : +66-**342-820-40**

Mobile Phone : +66-890-731-329

E-mail-address: feduacrp@ku.ac.th

Webpage: <http://www.pe.edu.kps.ku.ac.th/pes2016/>

Education Background

2014 Post-doc research in Physical activity and Health in
aging

University of Porto, Portugal

2010 Ph.D. in Human and Social Development

Naresuan University, Thailand

1998 Master degree in Education (Health Promotion)
Chiang Mai University, Thailand

1991 Certificate in Tourism
Sukhothai Thamathiraj University, Thailand

1990 Bachelor science in Nursing
Budhachinnaraj Boromrajonani nursing college, Thailand

Professional experience

2006-now Professor in health education and health promotion

2009-2015 Deputy of head department of physical education and sports

2010-2015 Director of M.Ed. (Health promotion)

2010-2011 Project Manager in health promotion evaluation in National housing Authority project

2014-2015 Project Manager in Thailand active aging project supported by Thaihealth promotion
foundation

2015 Head researcher of report card project in western region, Thailand
(Physical activity for kid)

Research and publication

1. Atchara Purakom, Ajchareeya Kaisiyapat, Kasem Nakornkhet. 2015. Association between sedentary behavior and cardio-metabolic risk in Thai active older adults. Proceeding of ACPES 2015. Semarang University, Indonesia.
2. Purakom, A. 2014. Community-based Physical Activity Interventions to Promote Thai Older Adult's Health : A Systemic Review. Asian Confernece for Physical Education ans Sports Science 2014. 6-9July, Singapore.
3. Purakom, A., Nakornkhet, K, Tanoomsuk, T., Pupanead, S., Seabra, A. Carvalho, M.J. 2014.

6. Association between physical activity , functional fitness and mental fitness among Thai older adults, Nakornpathum, Thailand. AJESS, August 11(21).
7. Purakom, A., Carvalho, M.J., Tanoomsuk, T., Pupanead, S., Carrapatoso,S. 2013. Comparative
8. Study on Physical Activity in Ageing Population among Thai and Portugal Context. The 21st IUHPE
9. World Conference on Health Promotion, 25-29 August Pattaya, Thailand.
10. Purakom, A., Nakornkhet, K, Tanoomsuk, T., Pupanead, S., Carvalho, M.J. 2013. Association of
11. physical activity , functional fitness and mental fitness among older adults in Nakornpathum,
12. Thailand : A Pilot study, ISBNPA. May 22-25th, Ghent, Belgium.
13. Purakom, A. and Mahingsa, Y. 2012. Health promotion behavior in Bachelor students , Ksetsart University, Kamphaeng sane campus, , 10th annual conference in agricultural kamphaeng-sane. Nakornpathum.
14. Purakom, A. 2011. Capital Budgeting in sports and exercise for health promotion. Journal of Sports science and Health.. 13(3). September-December.
15. Purakom, A. 2010. Knowledge sharing network in youth in summer camp. Kasetsart Journal (Social science):30(1). January-April.

Personal Interests

1. Physical activity in older adults
2. School health Programe
3. Health Promotion in community
4. Tourism

Training and Comitee

1. Role of Education Assurance , Kasetsart University (2015-2016)
2. Measurement of Physical activity , early network career Webinar , ISPAH, 2016 (2016)
3. Committee of Asian Council of Physical Education and Sport (2015-2016)
4. Committee of National Physical activity conference (2015)

Gregor J. Sahler

International Business Administration Senior Advisor
Sparkassenstiftung für Internationale Kooperation, Germany



Work Experience

Since 12/2014 Saving Banks Foundation for International Cooperation (SBFIC)
Senior Advisor in Indonesia □ Advising ASBANDA, Bank Jateng and several other
BPDs on Micro Finance and Financial Literacy

09/2013 – 11/2014 German Development Institute (DIE), Bonn Professional
research project □ Research-based consultancy on the on-going fiscal
decentralization of property taxes in Indonesia as a mean of development finance

02/2012 – 08/2013 ProCredit Holding AG & Co. KGaA, Frankfurt am Main Employee in the
department Supervision & Capital Planning □ MSME financing in South America, Sub-Sahara Africa and
Eastern Europe □ Project implementation of Basel III regulations on group level, in Ghana and Romania

06/2011 – 09/2011 Fraport Saudi Arabia, Jeddah, Saudi Arabia Business Development King Abdulaziz
International Airport □ Consulting in the field of business development

06/2010 – 02/2011 NORDCAPITAL Portfolio Management GmbH & Cie. KG, Hamburg Portfolio
Management □ Analyzing and valuation of shipping investments that are traded on the secondary
market

07/2009 – 10/2009, Fraport AG, Frankfurt am Main 10/2008 – 02/2009 International Human
Resource Development □ Design and conducting of training in the field of intercultural competence

Education

10/2009 – 11/2011 Master of Arts – International Business Administration University of Hamburg Core
studies: International management, Finance Grade: Excellent (1.4)

10/2005 – 09/2008 Bachelor of Arts – International Cultural and Business Studies University of Passau
Core studies: Business administration, South-East Asian studies Grade: Very good (1.8)

08/2007 – 04/2008 Darmasiswa scholarship of the Indonesian government University of Indonesia,
Jakarta Core studies: Language and culture of Indonesia Month-long study excursion in Indonesia

08/2003 – 06/2005 Abitur – Georg-Christoph-Lichtenberg-Oberstufen-Gymnasium Bruchköbel Grade:
Excellent (1.4)

08/2002 – 06/2003 CETUSA scholarship Foothill High School, Henderson, NV, USA Grade: Excellent (1.0)

Personal Skills

Languages German – native speaker

English – fluent (written and spoken)
Indonesian – very good command (written and spoken)
Spanish – good command (written and spoken)

Computer skills

Excel – excellent skills
PowerPoint – excellent skills
Word – strong skills
Atlas TI – strong skills
Stata – basic skills

Recent soft skills trainings

Presentation and facilitation (3 days)
Team building and conflict management (2 days)
Professional writing (2 weeks)

Table of Contents

Foreword.....	iii
Welcome from the Rector of Semarang State University.....	iv
Welcome from the Director of the Postgraduate Program.....	v
Welcome from the Chair of Organizing Committee.....	vi
Invited Speakers.....	vii
Table of Contents.....	xii
Facilitating Students’ Autonomous Learning through the Use of Videotaped Project: A Classroom Practice in ESP Course.....	19
Ni Putu Era Marsakawati.....	19
Implementing Values in Writing Class.....	22
Devina Christine Wijaya ^{a)} and Emilia Ninik Aйдawati ^{b)}	22
Evaluating Writing and Literacy Using Extended Writing Project (EWP).....	27
Rani.....	27
Language Laboratory Development and Listening Instruction: A Literature Review.....	33
Refi Ranto Rozak ^{1, 2}	33
Teaching and Assessing Writing in A Literacy Based Program through Peer Review.....	39
Emilia Ninik Aйдawati.....	39
Lecturers’ and Students’ Perceptions on Motivational Teaching Strategies Applied in the English Department of Semarang State University.....	44
Arif Widagdo.....	44
Technology-based learning in the classroom.....	53
Ahmad Sofwan.....	53
Computer-Mediated Corrective Feedback on Writing: Principles and Practices.....	56
Iis Sujarwati.....	56
<i>Gambang Semarang: The Spirituality of Simple Accustomed Belief in Seemingly Far-fetched Culture</i>	62
Nadya Natalia & Angelika Riyandari.....	62
Development of Technopreneurship Learning Model In Vocational High School Machinery Program.....	68
Edy Ismail ¹⁾ , Samsudi ²⁾ , Dwi Widjanarko ³⁾	68
Enhancing Student’s Problem Solving Ability: A Qualitative Study of Brain-Based Learning Implementation in Mathematics Classroom.....	77

Taulia Damayanti ^{a)} and Masrukan ^{b)}	77
The ICT Development for the Young Learners as Media Education	85
Muammad Nafi Annury	85
Differences in the Concept of Authentic Assessment and Authentic Assessment on the <i>Kurikulum 2013</i>	93
Sari Yustiana	93
The Use of Computer Media on Dysgraphia Children in Learning Writing.....	96
Oktarina Puspita Wardani ^{a)} and Meilan Arsanti ^{b)}	96
Reasoning Ability Students in Mathematics Problems Solving Viewed from Cognitive Style	99
Mochamad Abdul Basir, Hevy Risqi Maharani.....	99
The Development of Multimedia Interactive Science Learning Material at Students 5 th	103
Jupriyanto	103
The Role of Islamic Culture of Academic Achievement Students in Mathematics Education Program	107
Mohamad Aminudin	107
Structural Study by A.J. Greimas The People's Princess Stories Kumala	111
Evi Chamalah.....	111
Improving Religious Character and Achievement Based Learning Through Islamic Culture of Social Science Subject Class V SDN 02 Temulus.....	115
Yulina Ismiyanti	115
Science and Character in The Form of Children's Literature	120
Erna Noviyanti.....	120
Cooperative Learning Type Group Investigation with Scientific Approach to Improve Problem Solving Ability In Elementary School	124
Nuhyal Ulia	124
Surrealism Text Drama Indonesia in Kapai Kapai	129
Turahmat.....	129
Side-Effects of Technology for Children's Development	135
Andarini Permata C	135
Utilization CD Learning to Improve Communication Skills Through Student Learning Mathematical Osborn.....	140
Nila Ubaidah.....	140

The Application of Role Play Method with Islamic Cultural Values in Civic Education Learning for the Fourth Grade Students at Karang Asem 01 Elementary School	146
Muhamad Afandi ^{1 a)} and Sri Wahyuningsih ^{2 b)}	146
Natural Science Concept Learning Through SETS Model for Developing Science Literacy	152
Arrofa Acesta	152
Strengthening Strategies Language Learning and Insightful Indonesian Literature Budai Assisted Android	157
Leli Nisfi Setiana ^{a)} and Aida Azizah ^{b)}	157
Problematika Penggunaan Estetika Bahasa Pada Model Publikasi Wacana Iklan Politik Pilkada	160
Fahrudin Eko Hardiyanto	160
Improvement Students PGSD of Scientific Attitude Through Applying Model in Learning Inquiry Laboratory.....	163
Mahmud Alpusari ^{1 a)} and Riki Apriyandi Putra ^{2 b)}	163
Improving Education Services for Supporting National Education Idex Improvement:Perspective Leadership and Entrepreneurship	169
Rida Fironika Kusumadewi	169
Improving Learning Participation of the Students of PGSD UMP on Civics Education Using Value Clarification Technique Through Charity	174
Aji Heru Muslim	174
Building Student's Character Through Students Development Manajement Based on Islamic Academic Culture	183
Nuridin	183
The Role of Mathematical Representation and Disposition in Improving Students' Mathematical Power	190
Imam Kusmaryono ¹ , Hardi Suyitno ² and Dwijanto ³	190
Development of Instructional Materials Comic Science To Increase Achievement Student in grade IV Elementary School	199
Yunita Sari	199
Material Selection Overlay Road To Climate Change Resilient	204
Abdul Rohman ^{1,a)}	204
Influential Correlation Factor Of The Iva Test Result Towards The Woman Prisoners Of Ii A Class In Semarang	208
Agustin Rahmawati ^{1,a)} , and Lia Mulyanti ^{2,b)}	208

Control of Lipid Profile on Diabetes Mellitus Animal Models With Watercress and Black Rice Bran ..	213
Agustin Syamsianah ^{1,a)} , Herlisa Anggraini ^{2,b)}	213
The function of Extract Curcuma (<i>Curcuma xanthorrhiza</i> Roxb) In Restoring Hemoglobin, erythrocyte and hematocrit On Soccer Athlete	219
Ali Rosidi ^{1,a)}	219
Rice Leaf Extract for Kidney Damage Prevention in Plumbum-Exposed Rats	226
Budi Santosa ¹ , Henna Ria Sunoko ² , Andri Sukeksi ³	226
Introducing Indonesian Traditional Dance To Teach Indonesian Language For Foreign Speakers (Bipa) In Thailand.....	231
Dian Candra Prasetyanti ^{1,a)}	231
Effect of Fiber Volume Fraction Of Tensile Strength and Impact Strength biocomposite of Bacterial cellulose-Shellac.....	234
Dini Cahyandari ¹⁾	234
Developing English for Nursing Materials Integrated With Task-Based Language Teaching (TBLT) and Soft-Skills.....	240
Dodi Mulyadi ^{1 a)} , Dian Candra Prasetyanti ^{2 b)}	240
The Effectiveness Of Cooperative Learning Type Team Assisted Individualization Based On Constructivism Toward Ability To Think Mathematically Creative Of Student.....	244
Dwi Sulistyaningsih ^{1,a)} , Venissa Dian Mawarsari ²⁾	244
Support from Family , Health Worker and Elderly Hypertension Health Care Access In Controlling health	249
Edy Susanto ^{1,a)}	249
Implementation Of Learning Model "Local Tourism" Based Potential Of District Rembang	253
Eny Winaryati ^{1,a)} , Akhmad Fathurohman ^{2,b)} , Setia Iriyanto ^{3,c)} , Sri Haryani ⁴⁾	253
The Description of II Class Women Prisoners' Cervix in Semarang	258
Erna Kusumawati ^{1,a)} , Novita Nining Anggraini ^{2,b)}	258
The Pursuance And Implementation Of Informed Consent Law Towards Vaccination Service Based On 1464/Menkes/Per/X/2010 About Permission And Implementation Of Midwife Practice In Self-Proclaimed Midwives In Semarang.....	262
Fitriani Nur Damayanti ^{1,a)} , Siti Nurjanah ^{2,b)} , Dewi Puspitaningrum ^{3,c)}	262
The Effect of Giving Rice Bran to Blood Glucose at Mice which Given Alloxan.....	266
Hapsari Sulistya Kusuma ^{1,a)} , JB Suparyatmo ²⁾ , Bambang Suprpto ³⁾	266
The Risk Factors occurrence of contact dermatitis: a cross sectional study	271

Cynthia ayuningtias ^{1,a)} , Eko Krisnarto ^{2,b)} , Kanti Ratnaningrum ^{3,c)}	271
Enhancing Student Character Based on Conservation Values (Case Study at Semarang State University).....	275
Masrukhi ^{1,a)}	275
Surface Degradation Analysis of Vacuum Composite Epoxy Resin Insulation Material Using Coastal Sand and Filler Containning Much Calsium	279
Moh Toni Prasetyo ^{1, a)}	279
Human Development Index	286
Moh. Yamin Darsyah ^{1a)} , Rochdi Wasono ²	286
The Influence Of Learning Method And Gender On The Learning Outcomes Of Students At 'Aisiyiah Bustanul Athfal Kindergarten In Semarang City	290
Mufnaetty ^{1,a)}	290
Fostering Intrinsic Motivation through Self Assessment; an Alternative in Improving Learning Quality	293
Muhimatul Ifadah, ^{1,a)} Siti Aimah, ^{2,b)}	293
The effect of cyanoacrylate infiltration on microstructure of hydroxyapatite/chitosan composite....	296
Purnomo ^{1,a)} , Endang Tri Wahyuni Maharani ^{2) b)}	296
Serum Transferrin Receptors of Iron Deficiency Anemic Rats That Feeding Tempe Fortification Combination Iron and Vitamin A	300
Rahayu Astuti ^{1,a)} , Hertanto Wahyu Subagyo ^{2,b)} , Siti Fatimah Muis ³⁾ , Budi Widianarko ⁴⁾	300
The Implementation of Peer Assessment and Students' Responses in <i>Language Teaching Method</i> Class	306
Riana Eka Budiastuti ^{1,a)} , Muhimatul Ifadah ^{2, b)} , Siti Aimah ^{3, c)}	306
Molecular Surveilance of Pyrethroid Resistance of Dengue Vector [<i>Aedesaegypti</i>] and its Implication To Public Health	309
Sayono ^{1,a)} , Ulfa Nurullita ^{2,b)} , Irfanul Chakim ^{3,c)}	309
Effective Use of Lesson Plan to Trigger Students' Autonomy.....	315
Siti Aimah ^{1,a)} Muhimatul Ifadah ^{2,b)} Dwi Anggani Linggar Bharati ^{3,c)}	315
Performance Description Of Counselor Family Planning In The Implementation Family Planning Program In Demak District.....	319
Siti Istiana ¹⁾ Siti Nurjanah ²⁾	319
Characterization of Hydroxyapatite Material from Bovine for Making 3D Printer Filament Method Fused Deposition Modelling for Implants Scaffolds Mandibular Reconstruction	324

Solechan ^{1, a)} , Saifudin Ali Anwar ²	324
Molecular Characterization And Hemagglutination Activities of Flagellin Protein of <i>Salmonella typhi</i>	330
Sri Darmawati ^{1, a)} , Budi Santosa ² , Muhammad Evy Prastiyanto ³ , Ragil Saptaningtyas ⁴	330
Counter-Pressure Practice Method by Spuse's for Reducing Pain of Mother's In First Stage Labour .	336
Sri Rejeki ^{1, a)}	336
TheEffeckt of Giving Furfures Soybean Tempeh NuggetTowardReducing Cholesterol Levelof White RatBlood(<i>RattusNorvegicus</i>) Hypercholesterolemia	341
Sufiati Bintanah ^{1, a)} , Erma Handarsari ²	341
Study of mechanical properties of prototype optical phase conductor for tropical climate conditions in Indonesia.....	347
Syamsudin Raharjo ^{1, a)} , Solechan ²⁾ , Rubijanto JP ³⁾	347
Family Roles in Parenting of International Migrant Workers	351
Tri Nurhidayati ¹ , Desy Ariyana Rahayu ² , M Fatkul Mubin ³	351
(LessThan Six Month) Infantsin Semarang.....	355
Yuliana Noor Setiawati Ulvie ^{1a)} , Erna Kusumawati ²	355
Internalizing Conservation Values in <i>Conversation of Conservation (COC)</i> English Club of Sport Science Faculty towards 'I am Poem'	358
Betari Irma Ghasani ^{1a)} , Bagus Dwi Pambudi ²	358
Classroom Management in Learning (Objectives, Functions, Principles and Approaches).....	361
Abdul Hamid ^{1a)}	361
Developing Autonomous Learning Using Web 2.0 in a Digital Age: Building Language Learners' Content Knowledge and Improving Writing Skills	366
Djoko Sutrisno ^{1a)}	366
Applying Character Learning Strategy for Teaching Mathematics, A Case Study of Secondary School Students	371
Masrukan ^{1, a)} and Muhammad 'Azmi Nuha ^{2, b)}	371
Applying Character Learning Strategy for Teaching Mathematics, A Case Study of Secondary School Students	375
Septian Aji Permana ^a , Dewi Liesnoor Setyowati, Achmad Slamet, Juhadi	375
The Transformation Management of Catholic Educational Institution-Based on Solidarity, Subsidiarity, Success Together Management (3SM) Guarantee The Existence, Quality, Quantity and Continuity.....	383

Fransiskus Janu Hamu ^{a)} & Fransiskus Dheidae	383
Internationalization of Indonesian Local Culture Values.....	390
Pardi Suratno	390
Natural Science, Social Science And Humanity.....	397
Suyahmo	397
Implementation of Scientific Approach Through Learning Art Dance Model Management at Elementry School.....	403
Wahira.....	403
Teaching and Evaluating Writing in Literacy-Based Program	409
Debora Tri Ragawanti.....	409
The Effectiveness of Discovery Learning Model by Recitation Toward Critical Thinking Abilities of Seventh Grade Students	413
Eny Sulistiani	413
Bernard Lonergan’s Learning Model for Higher Education	420
Aloysius Rusmadji	420
Utilizing Mobile Phone Video in Teaching Sepak Takraw Gunting Spike.....	428
I Ketut Semarayasa	428
The Role of Beauty Care Education in Developing Beauty Creative Industry.....	433
Marwiyah	433
Contribution of Educational Technology in the Development Constructivistic Learning Model Culture Based and Character	440
R. Mursid.....	440

Facilitating Students' Autonomous Learning through the Use of Videotaped Project: A Classroom Practice in ESP Course

Ni Putu Era Marsakawati

Universitas Pendidikan Ganesha, Singaraja, Bali, Indonesia

Corresponding author: marsakawati era@gmail.com

Abstract. Becoming independent learners are one of characteristics of the 21 century students. This requires students to be able to learn independently, and, later on, are expected to develop their critical thinking ability. One strategy which the teacher can apply to help the students to achieve this is by assigning videotaped project. Indeed, through this project, the teachers are not only required to practice their skills, but they are also trained to be become independent learners. This article presents how teachers using videotaped project to facilitate learners' autonomy, particularly in ESP course.

INTRODUCTION

In this era, a rapid growing of technological advances has affected our aspects of life, including education. Technology has been entered to classroom and being used by both teachers and students as tools to mediate learning. It is one of classroom innovation which the teachers may create, in which previously technology has never been used in such classroom.

The use of technology in the classroom is basically a prerequisite for nowadays' learning to meet the needs of the real world demand. It is undoubted to mention that the environments are affected by the new invention of technologies which indirectly affect the students. Almost all students are digital natives who are very familiar with technologies. Many students have their technology in their own hand.

This real phenomenon should be taken into account by the teachers. To suit the characteristics of the digital natives' students, the teachers also should be able to use technology in their teaching. It is indeed becomes one of teachers' competency that must be mastered by the teachers. Teachers should be flexible enough to adapt with the world' changes. Hence, every teacher should have skills and ideas of using technologies in their classrooms.

As noted by Palmer (2015), there are fifteen characteristics which must be possessed by teachers in nowadays era (21 century). The characteristics are a) teachers should be able to provide learners centered classroom and personalized instruction. Teachers should be able to accommodate all students' attributes and provide differentiated learning instruction which can cover all learners' need and specialties. b) students as producers. In this era, students are very knowledgeable with many applications in their gadgets. This strength should be used by the teachers to ask the students to produce learning outcomes using the known application. c) learn new technologies. Teachers should be able to use technology in the classroom. When they cannot, they have to learn it. d) go global. By using technology in the classroom, both the students and teachers can go beyond classroom and even can learn from abroad. e) be smart and use smartphones. In responding to 21 century students, teachers should be smart and are familiar with using smartphones especially to gain information for them. f) blog. Teacher should use blog in their teaching. They can write information or learning material used by students in their blog. g) go digital. In oppose to paper tasks, the teachers may use digital tasks. This is to enrich paperless learning environment, as well as to boost the digital discussions. h) collaborate. Teachers and students can make a collaboration in using technology in the classroom, such as making tutorial videos etc. i) Use twitter chat. This is one media social that the teacher can use when discussing in virtual mode with their students. j) connect. Teachers must connect the activities with every student even outside the class. k) project based learning. Teachers should assign the students to create a project to maximize their learning outcomes using technology. l) build positive digital footprint. It might sound obvious, but

it is for today's teachers to model how to appropriately use social media, how to produce and publish valuable content, and how to create sharable resources. m) code. It is one of digital literacy competency which must be possessed by teacher. n) innovate. By employing technology in the classrooms, teachers have change the climate in the classrooms, and invent a new way to teach the students. and o) keep learning. It is very important to note by the teachers, that they should always improve themselves by learning new things, including the application of technology or applications media in the classrooms.

However, using technology in the classroom is not always easy to be implemented. Even, many teachers are not skillful in performing technology in their classroom. It is understandable, since there are a lot of consideration which must be taken into account when employing technology in the classroom, such as the use of technology should be matched with the characteristics of the students, the characteristics of the lesson, and the aim of the lesson. In addition, it is proven that the teachers do not have any ideas about how to implement technology in their classroom. While, the application of technology in the classroom really give many benefits for the students. One of the benefits is promoting autonomous learning which help students to become more independent learners.

This article aims at provide the readers insight about a classroom practice using technology which the teachers can apply in their classroom to promote autonomous learning.

DISCUSSION

Autonomous Learning

For a definition of autonomy, we might quote Holec (1981: 3, cited in Benson & Voller, 1997: 1) who describes it as 'the ability to take charge of one's learning'. On a general note, the term autonomy has come to be used in at least five ways (see Benson & Voller, 1997: 2) in Thanasoulas (2000).

- for situations in which learners study entirely on their own;
- for a set of skills which can be learned and applied in self-directed learning;
- for an inborn capacity which is suppressed by institutional education;
- for the exercise of learners' responsibility for their own learning;
- for the right of learners to determine the direction of their own learning.

From the above definition, it can be said that autonomous learners are expected to assume greater responsibility for, and take charge of, their own learning. However, learner autonomy does not mean that the teacher becomes redundant; abdicating his/her control over what is transpiring in the language learning process.

Videotaped Project

As mentioned by Palmer (2015), teachers should help the students to become producers. The phenomena lately occurred were many students are far from producing any digital content. In many classes, in the traditional way of teaching, the teachers often unaware about the fact that the students can make use of their gadget to gain information or even to produce digital content related to their learning. When given a chance, students can produce beautiful and creative blogs, movies, or digital stories that they feel proud of and share with others.

There are many activities which the teachers can set to achieve this. One of them is by assigning the students to make a videotaped project. In implementing this strategy, I follow task based learning technique (Marsakawati, 2015). In order to implement task-based learning technique, there are three steps that must be followed (Nunan, 1993); they are: a) pre-task. Pre task is the head of the activity. The topic and task are introduced here. At this step, teacher is the guide. He or she gives the key note and goal of the task, b) Task cycle. Task cycle can be considered as the time for learners to perform, produce whatever they know in the target language. Learners work in pairs or groups. At this stage, teacher becomes a motivator for students to use the target language and becomes a helper as well; and c) Language Focus. Language focus is the outcome of the activity. In this case, teacher sometimes get students to find a word or a phrase, read, underline, and pay attention to the language focus learned on that day. At this stage, teacher is the conductor of the classroom because he or she makes learners start and continue on their own. At that time, of course, he or she answers all questions that students have. At the end, he/ or she sums the activity up and helps learners see what they have learnt.

The Implementation of Videotaped Project To Promote Autonomous Learning

As I mentioned previously that one type of task-based learning technique which can be performed in ESP course is videotaped simulation. In this case, I used this strategy to teach 25 students taking English for Front Office. Below are the steps of using the strategy following the stages proposed by Nunan (1993): **a) Pre task.** In this stage, I gave an instruction to the students to do a videotaped simulation on handling all guests' needs at the front office department, starting from handling reservation, guest check in, handling telephone, handling guest complaints, escorting guest to their room, handling, giving information to the guest, and handling check out. I mentioned the guidelines and the requirements of an excellent performance to them. I distributed the rubric which they used as their guidelines to self assessing their work; **b) Task cyle.** In this stage, students begin to work in a group doing their task. They might consult with me when they found problems or difficulties during the accomplishment of their work. I facilitated them and always motivated to do their best achievement; **c) Language focus.** In my class, both students and me, watched their videotaped performance together using LCD. Having watched the performance, they were asked to present their comments on their own performance and their friend's one based on the rubric given. At last, I provided the last comments on either strengths and weaknesses, and gave them feedback to improve their performance in the future (Marsakawati, 2015).

The use of videotaped project indeed can help them to become more autonomous learners. They are trained to be responsible for their own decision. They started to create the script by themselves, chose the setting and properties by themselves, practiced the conversation by themselves by audiorecording again and again their pronunciation, assessed their performances, and made self report about their making process video. Thanasoulas (2000) states that in order to facilitate the students to become autonomous learners, teachers should use learning strategies which can help the students to practice becoming independent learners. The strategies are asking the students to make self report and write diary about their learning. These strategies are indeed included in making videotaped project.

Besides bridging the students to become autonomous learners, the use of videotaped project in the classroom also prepare the students to become 21st century students who are able to work collaboratively with others, are having good critical thinking skills, are able to work in digital environment, and are able to take control of their own experience (Liong, 2013).

CONCLUSION AND SUGGESTION

Videotaped project is a strategy which can be implemented by the teachers in order to boost the students become independent learners. By doing so, the students are able to take risk of their own learning, are able to know themselves better by assessing their own performance, and are responsible for their own learning. This will give bonus for the intended learning outcome which merely aims at enabling the students to achieve the intended cognitive competency per se. Hence, it is suggested for teachers to apply this technique in their classroom.

REFERENCES

1. Liong, G. (2013). *What's Different for the 21st Century Learner?* Retrieved from www.dreambox.com.
2. Marsakawati, Era Ni Putu. 2015. *Task-Based Learning Technique: A Strategy to Enhance Students' Speaking Skills at ESP Context.* Proceeding of International Conference on Teacher Training and Education. Surakarta: FKIP UNS.
3. Nunan, D. (1993). *Designing Task for the Communicative Classroom.* Melbourne: Press Syndicate of the University of Cambridge.
4. Palmer, T. (2015). *15 Characteristic of A 21st Century Teachers.* Retrieved from www.edutopia.org.
5. Thanasoulas, D. (2000). *What is Learner Autonomy and How Can It Be Fostered.* Retrieved from <http://iteslj.org/Articles/Thanasoulas-Autonomy.html>

Implementing Values in Writing Class

Devina Christine Wijaya^{a)} and Emilia Ninik Aйдawati^{b)}

Faculty of Language and Arts, UNIKA Soegijapranata Semarang

^{a)} Corresponding author: devinachristine1@gmail.com

^{b)} emilianinik@gmail.com

Abstract. Education is the process of acquiring general knowledge and preparing oneself intellectually for mature life. General knowledge refers to not only subjects learned but also values implemented by the teachers who prepare students intellectually. It will lead to the success of reaching the goal. The role of education has been emphasized as a character development. Teaching and learning processes occur in every education process. Teacher as the educator party leads the students achieving the goals of education. This article discusses whether students consider that in teaching writing, the teachers implement values. A questionnaire was distributed to 50 university students to collect the data on their perception of the way the teachers implement values. It explores whether interaction between teachers and students in writing class plays a very significant role to the values such as self-discipline, commitment, dedication, and unity which is internalized through an appropriate teaching approach done by the teachers.

INTRODUCTION

Values are terms which come in people's mind while discussing things about society, family, norms, and nations. They appear as compulsory ideas. Values lead people to what they do. When people define their personal values, they discover what's truly important to them. This can be reached through education. It is a process to understand what values they have to develop. Through the knowledge they get. They may also learn values. Values may include self-discipline, commitment, dedication and unity. These values can be internalized through appropriate teaching approaches.

In teaching writing, teachers may integrate the values so that the students may develop them. This paper will analyze whether interaction between teachers and students in writing class plays a very significant role to the values.

Values and Education

Indonesia is a multilingual, multicultural, and multi religious country. These things make Indonesia a country which relies on the action of values of its people in everyday life.

Values regulate and guide human behavior and action in our day to daily life. Values are embedded in every word we select and speak, what we wear, ways in which we interact, our perceptions and interpretation of others reactions in what we are say and so on. Values are formed on the basis of interests, choices, needs, desires and preferences. (Gangola, 2015)

The description above states how significant is the role of values in people's life. They are attached to every single thing and activity people do. The main idea of people's activity is placed on the values they have. One of people's activities in life is having education as the lead for their life. Social perspectives aim education to prepare the learner to give contribution to the nation and world. Gangola (2015) adds education is

... necessarily a process of inculcating values to equip the learner lead a life – a kind of life that is satisfying to the individual in accordance with the cherished values and ideals of the society.

It has been emphasized clearly that not only subjects and knowledge, but also values are internalized through having education. To have education is to learn and apply values in the learner's life. Values and education are related to each other; values exist as a manual of life, while education exist as a way to deliver values. Hence it is clear that internalization of values should happen in the process of education.

What is written by Gangola (2015), "Values involve the processes of thinking, knowing/understanding feelings and action... People's action often gives us clues as to what they value" views that only good and proper

values should be taught as people will see how good the educators are whether they can apply good values in their life. That is a measurement of how successful the education is.

Teacher's Role on Value Acquisition

People learn values as they learn habits in the process of growing up (Gulati & Pant) and so do students. They spend most of their time, about eight hours a day, at school to get education. That one-third of the students' time is calculated as learning habits and growing up process. The parties they meet at school i.e. teachers and friends may influence their values as they do their habitual activities at school. Will the teachers or friends influence the most?

Teachers play a significant role as educators. They are the party who make the students learn habits, whether good or bad habits. Habits the students are learning then acknowledge the values they will apply. Students learn which behaviors are approved and which ones are not from their educator, the one whom they rely on and believe in. Teachers are responsible for the success of education by making sure the success of values internalization towards the students. Gangola added that becoming a teacher more like becoming a gardener. One must know one's plants, as well as the soil and climate. That knowing the proper approach to the proper student will achieve the main idea of education in internalizing values and character development. Teachers are builders of the nation. Students are icons of the future (Gangola, 2015).

Writing as a Mean to Implement Values

Writing is a medium for learning to think. It is a subject required to be passed. It is included in the curriculum of almost every school and college. However this multi-stage project seems to be a burden for students, the indolent expressions come then when the command "Start writing!" is in the air.

The decision that curriculum places writing as one of the compulsory subject should have been made due to benefits the students will get by doing writing project. Writing class provides proper values which are considered as ideals for the society. The values internalized are self-discipline, commitment and dedication, and unity.

METHODS

Participants

The participants of this study included 50 undergraduate-student volunteers, 40 of whom are females while 10 are males. They are students in a university in Semarang. The respondents' range of age is 18 to 22 years old, the normal age of under-graduate students. They are joining and have taken some writing classes such as paragraph and expository writing, expository writing and academic writing.

Data Collection

The writer collected data by distributing 50 questionnaires to 50 undergraduate students. The questionnaire consists of two part questions: they are background questions and main questions.

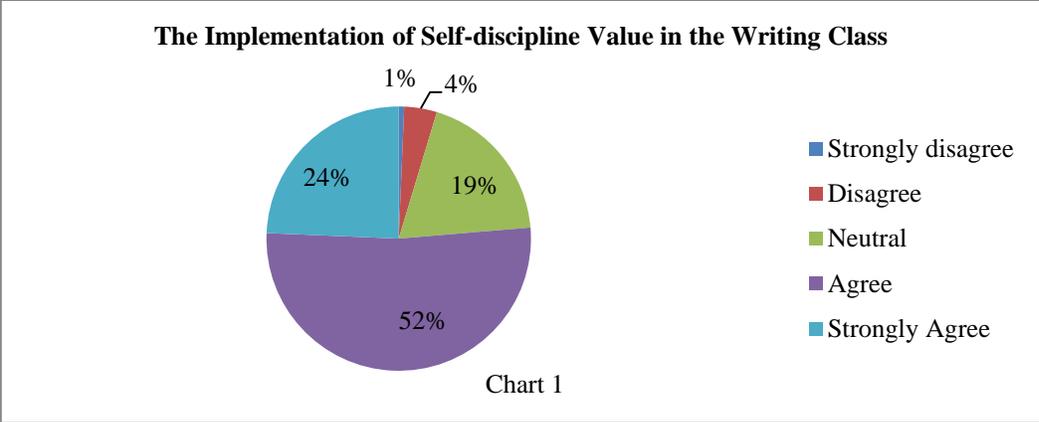
In the background questions, respondents should state their sex, age, and writing classes that they are taking or they have taken. There are three compulsory writing classes written, they value four credit hours meaning writing is not a simple subject to be taught. The classes are *Paragraph and Expository Writing*, *Comprehensive Writing*, and *Academic Writing*.

The main questions ask the respondents to give their opinion whether they strongly disagree, disagree, neutral, agree, or strongly disagree with some statements provided. The statements contain values which are internalized through writing classes. In the end, the respondents were asked to give their additional opinion regarding their awareness of the implemented values.

The randomly chosen respondents answered the questionnaire voluntary.

Findings

The results are delivered via these pie charts. Chart 1, 2, and 3 indicate data whether respondents strongly disagree, disagree, neutral, agree, or strongly disagree with the implementation of values in the writing class.



The data on the main questions on part 3.1., Chart 1 shows that most of the students agreed and realized that self-discipline value is being implemented in the writing class, followed by those who agreed. 19% of the students gave neutral opinion toward the value's implementation, while only few students disagreed and strongly disagreed.

The value of self-discipline covers these statements:

1. The teacher always tells me to be an active reader for the sake of complete comprehension.
2. The teacher always tells me to use the APA format so I always apply APA.
3. I discipline myself working on my writing in order to catch the deadline.
4. I realize that I have responsibility to finish the writing project I'm working on.
5. I am aware of my strengths and weaknesses when working on the writing assignment.
6. I realize that I need to have a good time management to finish the writing.

Another statement added by the respondents is that they do become more disciplined as they have the deadline of submission. It catches them up to work on their writing. They are then demanded to rebuild their best time management in order to accomplish the writing project. The respondent internalized habit of reading automatically as they need materials and sources for composing their writing. Materials will not be there effortlessly if the respondents do not seek for them by reading. Four out of fifty respondents did not get the improvement of self-discipline value; however this phenomenon still views how successful the implementation of self-discipline value.

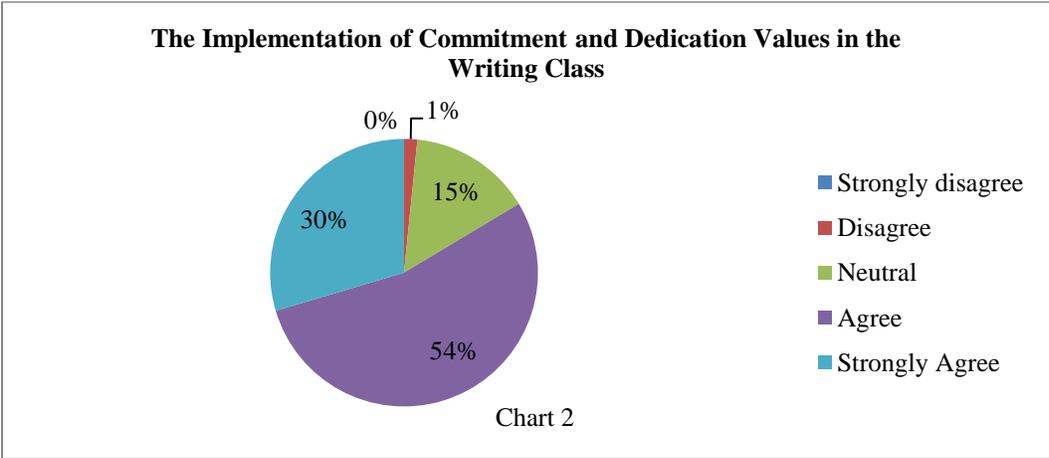


Chart 2 shows how commitment and dedication values implemented while doing writing project. Only four voices stated writing class does not teach the students to commit and dedicate themselves, even no one strongly disagreed with the statement. The 15%, includes 37 voices positioned as neutrals. The chart results 84% voices both agree and strongly disagree that working on a writing class gave the value of commitment and dedication.

The values of commitment and dedication cover these statements:

1. The teacher warns me to avoid plagiarism by doing citation and giving references as the sources of my writing.

2. To avoid giving citation, I will paraphrase the information from the sources.
3. The teacher make me realize that writing consists of multistage processes like making a draft, doing peer editing, doing revision.
4. The multistage processes require my commitment and dedication toward my writing project.
5. I need to struggle to get the accomplishment; finishing the writing project with all my responsibility.

Respondents gave more emphasize of the commitment and dedication values on the opinion part at the end of the questionnaire. While 10% of them gave “No” for the commitment and dedication values, most of them recognized the consistency and responsibility are the means to a successful writing. Since writing is simply a multi-stage process, it sues to give them all, all out, to give their best efforts.

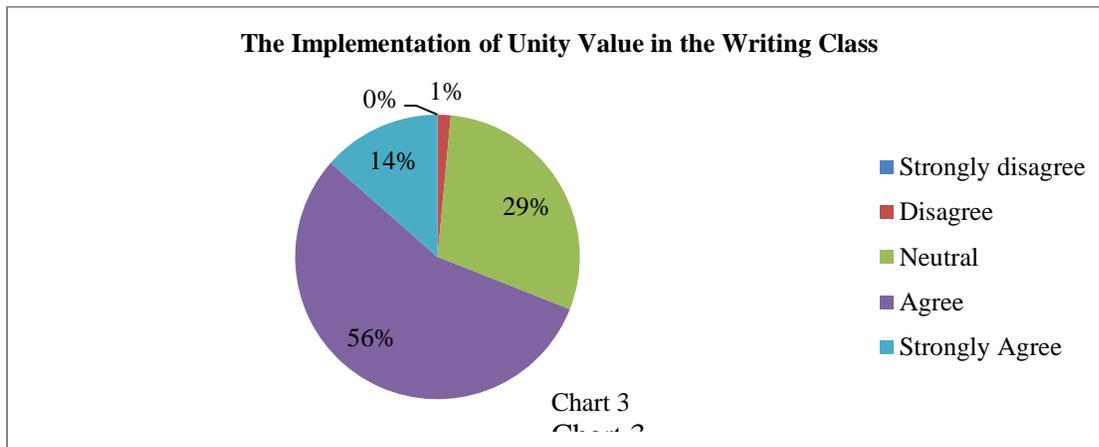


Chart 3 shows a clearer result that the main voice agreed with the implementation of unity value in the writing class. The main voice covers 70%, only 1% gave negative voice; the rest was neutral voice (29%).

The value of unity covers these statements:

1. Peer review makes me share my ideas and knowledge with my partner.
2. My partner of peer editing gives comments, feedbacks of my work to better my writing
3. My partner and I communicate and interact better through peer review activities.
4. My partner and I share ideas and knowledge while discussing for the betterment of our team works.

The respondents then added that peer review activity gives them chance to share ideas and suggestion to each other. Team work is being strongly built. From this point, they started to learn to be open-minded people who can accept comments and revisions. This sacred value would certainly train them to behave in the real work world and society.

A Proper Teacher’s Role Gives a Better Result

Three parties are contributing in the writing class; they act as a subject, indirect object, and direct object. Students act as indirect object, while the sacred values: self-discipline, commitment and dedication, unity act as the direct object. Object is something affected by the action of subject doing a verb. Seeing the passive character of object, the object should have subject as the motor. Who is the subject party? It is no one but the teacher. With a proper teaching approach, the values internalization can be successfully achieved. The best teaching approach applied in writing class are:

5. Giving chance
6. Dictation and dictator are no longer adjustable to the writing class environment. An old-fashioned teacher whose detailed command should be obliged completely will for sure give burden to the writing class students. Instead of feeling happy that they are automatically directed, they do feel no freedom. They need to be given a chance to decide their choices freely and responsibly. Simple task such as freely choosing the more specific topic will motivate them to write freely and expressively. The chance given directs the students to have responsibility.
7. Giving responsibility

8. Teacher should state clearly that the students are responsible for their whole writing project. Firstly, the teacher explains the detailed task, together with how far the responsibility they have to hold. By giving this trust, the students will automatically build up their self-esteem that they can manage to hold the responsibility accomplishing the writing task.
9. Emphasizing the importance of process
10. The specialty in writing is placed on its multi-stage process. It is not just a click of finger, not a one-night-stand project. The process of idea finding, researching, drafting, peer reviewing, and revision must have been emphasized to give the awareness of how significant the multi-stage process is. The students might value time, efforts, and hard work through the valuable process.
11. Fresh and up-to-date strategy
12. Tips and tricks are parts of strategy which everyone seeks for. The newest and applicable strategy can be shared to students to rebuild their motivation whenever they are stuck in an unbeneficial situation. The strategy may be a dim but constant light for them. They will be very thankful of it.
13. Team work project contribution
14. Internalizing the unity value is categorized as the difficult one. It deals not only with one person but involves people. The bigger the challenge, the better the result teachers can achieve. Consistently applying the peer review activity helps so much in gaining the balanced contribution in students' team work.
15. Keep reminding and motivating
16. Here is the last peak. Teachers are playing their best roles in this approach. It is as simple as the reminder and motivation run the implementation of the three sacred values.

CONCLUSION

In conclusion, the results of this study provide the succeed of the implementation of values in writing class. Values and education relate to each other, therefore education which acts to lead students' life should equip them with values. Values learned in education should be internalized and implemented clearly. Through writing class, the writer managed to reveal the success of the values implementation. Three main values which had been questioned – self-discipline, commitment and dedication, unity – showed their existence through data from questionnaire which were accumulated. Most of Faculty of Language and Arts students acting as respondents were aware and felt the success of the values implementation. The awareness of students towards the value will not be complete without teacher considering their roles as educators – the values source. The writer finishes the conclusion by quoting Gangola, “Teachers are builders of the nation. Students are icons of the future.”

REFERENCES

1. Gangola, N. s. (2015). Value education and role of Educators. *International Research Journal of Interdisciplinary & Multidisciplinary Studies (IRJIMS)* , 25-32.
2. Graves, D. (2004). What I've Learned from Teacher of Writing. *Language Arts* , 8 (2), 90.
3. Gulati, S., & Pant, D. *Education for Values in Schools – A Framework* . New Delhi.

Evaluating Writing and Literacy Using Extended Writing Project (EWP)

Rani

Semarang State University

Corresponding author: rhanydirga@gmail.com

Abstract. Literacy is taught in a formal way in schools, and particularly in primary schools. Adult literacy teaching does not start with a curriculum but with what the learner wants to learn, and is therefore a more learner-centered and unsystematic approach. People develop their own literacy practices in order to communicate through listening, speaking, reading and writing. Models of good writing in the subject area, and feedback are critical to students' growth as writers. This paper discusses the importance of Extended Writing Project (EWP) and the steps in teaching writing using EW, strength and Weakness in using EWP

INTRODUCTION

Literacy is taught in a formal way in schools, and particularly in primary schools. The program is systematic and curriculum-centered and the children are not usually consulted about what or how they learn. The comprehensive curriculum moves in a series of graduated stages, from introducing the nature of print, through developing sight vocabulary, explaining the alphabetic code, developing decoding and encoding skills, giving techniques for word study, building vocabulary, attending to punctuation, focusing on meaning and comprehension and addressing issues of style. Adult literacy teaching does not start with a curriculum but with what the learner wants to learn, and is therefore a more learner-centered and unsystematic approach.. People develop their own literacy practices in order to communicate through listening, speaking, reading and writing

Focus on literacy in writing it is recognize that learning to write involves developing skills, knowledge and understanding at all stages of schooling. Students learn to write by writing. They need regular opportunities at school to write in all subjects. A consistent approach to the writing process in all subject areas and explicit instruction on the writing process by the subject teacher help students become better writers. Models of good writing in the subject area, and feedback that is constructive and formative, are critical to students' growth as writers.

Extended Writing Project (EWP) is not short piece of writing that a student is taught to do, they must show that not only has he acquired knowledge of the topic but also that he has fully understood the topic and issues raised by it. Extended writing helps the learner to progressively develop skills in research, analyzing different forms of source material, using different kinds of evidence, and writing strong critical and clear arguments. Using sources as evidence in extended writing does not mean to copy sources as they are and put them in different paragraphs as your answer. It means you must extract evidence from the sources provided and use it as facts and opinions for your extended writing. Mere copying of sources is a clear indication that the learner does not understand the question or does not know enough about the topic asked.

LITERATURE REVIEW

1. Teaching Writing

The aim of teaching writing is to ensure that students learn to write effectively in community and academic contexts. To develop the skills, knowledge and understanding required, students need to learn about writing and learn through writing. There are three components in teaching writing: component of texts, processes of texts, presentation of texts.

a. Composition of texts

Teaching writing involves teaching students how to take into account the purpose and context of a task. It follows that tasks set in class should have authentic purposes and contexts. Teaching students to write involves teaching them to reflect on written language, how it works and what makes it effective. It also involves evaluating the effectiveness of the writing in achieving the task. Writing should be examined at all levels, including the whole text as well as its smaller components. Explicit teaching of writing includes teaching about :

- The composition of whole texts, i.e. purpose, text structure and cohesion
- Sentences and words, i.e. syntax, grammar, vocabulary and spelling
- Surface features, i.e. punctuation and layout.

Students should be taught to reflect on how writing changes in different situations and differs from one culture to another. Students should also be taught how writing changes over time and is affected by technological change. Above all, students should be taught to consider the impact of their own writing on the intended reader.

b. The processes of writing

Teaching students about the processes of writing equips them to produce accurate texts. For most academic purposes, the processes of writing consist of drafting, revising, conferencing, editing, proofreading and publishing (John, 1999).

- *Drafting* involves making notes of ideas, planning the text and writing the text down initially
- *Revising* involves reworking a text to improve ideas or amend the content. Revising might involve editing, because it often requires reorganizing the text or changing sentence structures
- *Conferencing* involves discussing drafts with others to engage in critical reflection and clarification of meaning. Revising and editing might occur during, or be the result of, such discussions.
- *Editing* involves changing the drafts of developing texts in order to improve the text, for example, by improving cohesion, syntax, grammar and vocabulary. Editing leads to changes which will be incorporated into the next draft of the text.
- *Proofreading* involves preparing the final text for presentation, including reading the text to locate and fix any inaccuracies in grammar, spelling, punctuation or layout
- *Publishing* involves presenting the text to its intended audience. At school, this is often the teacher, although it is good to give students the experience of writing for other audiences where appropriate

c. The presentation of written texts

How to present texts for publication needs to be taught in each subject. When publishing written texts which are to be read by others, writers should pay attention to legibility, spelling, grammar and punctuation. These features should be taught explicitly and systematically, as students learn to write texts for different community and academic purposes (John, 1999).

(a) Technologies

- **Handwriting** serves writing when students can produce legible handwriting fluently with a minimum of conscious effort. All students need to be taught how to write fluently in letters of appropriate size and spacing, using appropriate pressure and correct grip, while maintaining a comfortable posture. At all stages of learning and in all subjects, teachers should help students to ensure that their handwriting has style, fluency and legibility. Some students with disabilities or learning difficulties might need to use alternative methods of producing written texts, such as using a tape recorder, scribe or computer. Students also need to be taught how layout can help them achieve their purpose and how to enhance writing, where appropriate, using different technologies.

- **Computer-based technologies** can motivate and ease the way for many writers. Word processing programs enable students to make revisions to drafts easily and make layout tasks more manageable. All students need to develop confidence, accuracy and speed in keyboard skills. Students also need to be taught to conceptualize and write in different forms, such as hypertext links, which require a non-linear form. Students using the Internet need to understand that anyone can publish on the Internet and that there are no quality control or selection procedures, unlike a library, for example, where the selection of resources is undertaken by trained staff. Students also need to be taught about ownership of information and copyright concepts to support them when using the Internet

(b) Spelling

Students should be encouraged to use correct spelling automatically in first drafts. Students therefore need explicit teaching about the four forms of spelling knowledge:

- phonological knowledge, which focuses on how sounds correspond to letters
- visual knowledge, which focuses on how words look
- morphemic knowledge, which focuses on the meaning of words and how spelling changes when the words take on different grammatical forms
- etymological knowledge, which focuses on the origins of words and their meanings.

(c) Punctuation

Students should also be encouraged to use correct punctuation automatically in first drafts. They therefore need explicit teaching about punctuation conventions and how punctuation affects meaning and supports the reader. Some punctuation marks are more frequently used and relatively simple to apply. Sentence punctuation is used in most forms of writing and is generally the first to be taught. It is expected that other forms of simple punctuation will also be taught in the earlier years of primary school. Simple punctuation includes capital letters, full stops, question marks, the correct use of capitals for proper nouns, the use of commas to separate words in a list, and apostrophes of contraction. Complex punctuation includes speech marks, semi-colons, colons, hyphens, commas separating clauses and phrases and apostrophes of possession.

2. The Extended Writing Project (EWP)

Based on the Research Report of SQA (2009: 9) states that the EWP is extremely useful to the write as a means of clarifying and communicating our thinking, and to those who read it as means of assessing and responding to the relevance and validity of what the writers have written. So, there are several aims that we can reach through implementing of EWP.

Walker and Riu (2008) explain that the EWP has three main aims:

- 1) To resolve the incoherence between a process approach to the teaching, and through conventional method;
- 2) To create a mechanism which will allow us to assess the process as well as the product of the learners' writing; and
- 3) To facilitate our students' independence by improving their awareness both of their writing techniques, and of their standard of their language:

a. There are some various of extended writing, namely;

Walker and Riu (2008: 17) that there are eight types of the EWP:

1) Project

Extended writing is when the students **are given a set amount of time to produce a piece of writing independently**. Extended writing is sometimes referred to as the big writing which that process are choosing topic, drafting, editing and revising.

2) Essay

An essay writing in history provides learners with an opportunity to explore a particular issue or theme in more depth. It should simply not be a list of facts, nor should it be a description of your opinions; but a clear line of

argument substantiated by accurate and well explained factual evidence gathered from the sources provided and your own knowledge.

3) Paragraph

An extended paragraph is just a long paragraph. It is usually a more formal kind of paragraph than the ones you normally write - you will need to have a strong topic sentence, supporting facts, and a concluding sentence for this type of paragraph.

4) Articles (specialist journal/newspaper/magazines)

A journal article is essentially the same as an essay as it is written for a specialist reader. Newspaper and magazine articles are written for the general non-specialist reader. One therefore cannot assume any prior knowledge. The opening paragraph is very important as the reader needs to be hooked into the article.

5) Editorials/ opinion piece

Although these are written for the general reader, they are usually based on some highly topical issue. The readers are therefore likely to be fairly well-informed on the topic, making it unnecessary to give basic factual information. To a large extent they resemble an essay in both form and function. However, they do provide the opportunity for learners to explore historical events from different perspectives.

6) Memos and reports

On the recommendations of the writers. Reports usually have a much wider audience, which might include the public in general. The key features of a memo: Use a clear subject line, state the purpose in the first paragraph, summarize any potential objections, keep the paragraphs short, use subheads between paragraph groups, use bulleted and numbered lists and request action.

7) Political Oratory — Speeches

Another opportunity for learners to write from a particular perspective, great speeches have a sense of occasion, the language and images must be powerful and accessible to a mass audience. Speeches often use repetition as an important way of hammering home an idea.

8) Diaries and Personal Letters

The tone is highly personal; the language is almost always informal, diaries in particular may well be written in a telegraph form in other words full sentences are seldom used; opinions are likely to be expressed very openly and honestly as these documents are not intended for public scrutiny. In this way they can be very valuable to a historian, from the learners' point of view; important skills they can demonstrate are empathy and a sense of period (historical imagination).

TEACHING WRITING USING EXTENDED WRITING PROJECT

There were some steps in teaching writing using EWP:

17. a. Giving motivation and apperceptions to the students before begin the material.
18. b. The researcher explained the material and gave examples about writing and EWP
19. c. The researcher asked the students to write the narrative text using EWP.
20. d. The researcher Instructed to write a good paragraph of narrative text.
21. e. The researcher asked to the students to make a list of term which has relation to the topic to develop it based on the topic.
22. f. The students explore the topics and ideas they find meaningful (prewriting).
23. g. The researcher asked to the students to compose a first draft (drafting)
24. h. The researcher asked to the students to extend and rework selected writing (revising)
25. i. The researcher asked to the students to edit and proofread their work (editing)

Strength and Weakness in using EWP

1) Strength of EWP

26. (a) Extended writing helps the learner to progressively develop skills in research, analyzing different forms of source material, using different kinds of evidence, and writing strong critical and clear arguments.
27. (b) Through EWP helps the students find the Help the students to work independently.
28. (c) EWP could make the students find the information by their self
29. (d) EWP takes personal responsibility for students writing
30. (e) EWP makes sure the students can explain their ideas to other.

2) Weakness of EWP

31. (a) The relative freedom of choice afforded to candidates may result in such a range of responses that it is difficult for assessment guidelines to cover all possibilities.
32. (b) Opportunities to demonstrate higher order cognitive skills may be constrained if candidates don't have appropriate levels of communicative competence.
33. (c) The assessment of essays and other forms of extended writing is notoriously unreliable — consistency of individual markers is an issue, as is standardization of the assessments of groups of markers

EVALUATING WRITING

Students should be assessed on their knowledge and understanding about writing, their skill in composing a range of texts, their understanding about and use of the processes of writing and their skills in presenting texts for publication. Samples of students' writing, carefully selected over time, provide evidence of progress. For this evidence to be useful in teaching, students' writing should be assessed against specific criteria. These criteria must be shared with students when assessment tasks are set. Teachers need to make sure that students are clear about what is required of the set task, how achievement of it will be assessed and how this links to the achievement of syllabus outcomes (John, 1999).

a. Assessing composition of texts:

- Criteria for assessing writing need to cover the whole text, and the sentence-level and word-level aspects of a text. Students who demonstrate control of these features produce more effective texts.
- Text-level criteria apply to features of the text as a whole or features across the text. The purpose or theme of the text, the tense used, the text structure, the types of sentences and the cohesive elements, such as conjunctions and pronoun reference, are examples of aspects that can be considered across a text.
- Sentence-level criteria cover adequate construction of clauses, subject and verb agreement, use of articles, prepositions and punctuation.
- Word-level criteria focus assessment on spelling and subject-specific vocabulary. When teachers are selecting criteria for assessing writing, it is important to remember that some assessments will consider all levels but at times, where the learning focus has been more specific, the assessment might be more focused.

b. Assessing for processes and presentation texts

- Drafting, revising, conferencing, editing, proofreading and publishing can also provide useful information about students' achievements. Many of these processes can be assessed together. Editing could provide information about knowledge of text-level, sentence-level or word-level features that have been demonstrated or are still developing
- Much of this evidence would need to be collected by observing students' behaviours and interacting with them during these processes, in order to confirm that they have developed knowledge about writing and that they understand what they are doing. Successive drafts, from first draft to publication, may also provide written evidence of knowledge, skills and understanding

CONCLUSION

In related to the written language, writing is a means of communicating ideas and information which are related to the thinking process and expression of ideas in written form. It is important for the students to express their ideas and opinions. Writing is a complex activity. There are several process, mental and physical being carrier at the same time. In order to provide effective ways in teaching writing process based on the research finding and pertinent ideas have found many ways. As we know, writing is not easy to do, but through writing we have an opportunity and learn something we did not know.

Meanwhile, EWP is extremely useful to the write as a means of clarifying and communicating our thinking, and to those who read it as means of assessing and responding to the relevance and validity of what the writers have

written, the students also were required to write an extended text in four consecutive sections, each of which is read and assessed by their tutor or teacher. Therefore, through the EWP, students get the chance to draft, revise, and correct a text. So the students can built their idea and it can make the students easy to organize their idea. EWP will be an interesting way to stimulate the idea of the students and motivate them to make a good composition. In addition, the English teacher can apply this method in writing process to make her/his students always open-minded.

REFERENCES

1. [Http://www.thutong.doe.gov.za/ExtendedWriting/tabid/4238/Default.aspx](http://www.thutong.doe.gov.za/ExtendedWriting/tabid/4238/Default.aspx).Retrieved May 4th 2016
2. John, A. (1999). *Focus on Literacy: Writing*. Sydney: Waiver
3. Kern, R.G. 2000. *Literacy and Language Teaching*. NEW YORK: Oxford University Press
4. Research Report SQA. 2010. Retrieved from http://www.sqa.org.uk/sqafiles_cccPNP_ResearchReport12_ExtendedWritingTasks.pdf on May 4th 2016
5. Walker, Robin. And Carmen perez Riu. 2008. Coherence Assessment of Writing Skill. *ELT Journal* 18-27.

Language Laboratory Development and Listening Instruction: A Literature Review

Refi Ranto Rozak^{1,2}

¹*Doctoral Degree of English Language Teaching, Post Graduate Program of Semarang State Univesity (UNNES)
Bendan Ngisor, Semarang 50233*

Central Java, Indonesia

²*English Education Department, IKIP PGRI Bojonegoro*

Jalan Panglima Polim No. 46 Bojonegoro

East Java, Indonesia

Corresponding author: Refi.Ranto@ikipgribojonegoro.ac.id

Abstract. The use of language laboratory has been expected to build teachers and students knowledge and skills for using technological assistance to improve listening comprehension teaching. However, many teachers and students still find it is difficult to get the benefits of using the language laboratory. This paper discusses the language laboratory development and listening instruction in Indonesian context. Departing from an overview of language laboratory, the drawbacks of teaching listening in language laboratory are identified. Following this, teaching listening in language laboratory is put forth to highlight two types of listening. Finally, language laboratory-based listening instruction improvement is given to broaden the knowledge of teachers and students in determining the innovative listening comprehension teaching.

AN OVERVIEW OF LANGUAGE LABORATORY

Language laboratory is defined as an instructional technology tool consisting of a source unit that can disseminate audio materials to any number of students at individual seats or carrels (LeeAnn, 1991: 2). The Language lab modules have some features. *First*, Students can choose an English teaching program they are interested in and learn on their pace of learning. *Second*, students can take advantage from language lab by doing extra mechanical and significant practice of language which can take place in the laboratory where there is an ideal and accurate model and immediate comparison of the students' production with the model (Nadjah, 2012: 21). *Third*, language laboratory offers teachers more powerful teaching tools with the aid of modern computer technology (Satish, 2011: 86). Thus, when used properly, language laboratory can greatly increase the effectiveness of good teachers and students, whether or not they are native speakers of the target language or not.

In the implementation of computer-assisted language learning (CALL) in language laboratory, in particular, students are required to build their knowledge and skills for using various technological assistance to improve their linguistic competency. Nunan (cited in Brenes, 2006: 8) indicates that the notion of information communication technology (ICT) is becoming ubiquitous these days, with numerous education departments requiring students to demonstrate a degree of technological literacy. Some studies explore how technology, specifically computer-mediated communication (CMC), is employed as a regular component in their language teacher education program (Slaouti & Motteram, 2006; Tochon & Black, 2007; Lord & Lomicka, 2007). Specifically, language laboratory employs an integrated technological system which helps both teachers and students in teaching and learning foreign language. With the development of technology, many studies have been conducted to investigate the effect of the use of computers in language learning, and many findings and evidence provide positive evaluation in this field (see Warschauer and Healey, 1998, Chapelle 2001, 2003 and Hegelheimer and Tower, 2004). Furthermore, several studies carried out at universities illustrate that computer programs have been used in university language centres to support students in developing their language skills including listening and speaking both for academic and general purposes (e.g. Gilmour, 2004 and Watson and Wright, 2005).

The Drawbacks of Teaching Listening in Language Laboratory

The drawbacks of teaching foreign language listening in language laboratory is occurred for five main reasons. *First*, certain teachers consider their absolute role as the center of learning activities. As Rivers (2000) pointed out that teacher-centered mode of language laboratory could not be interactive instruction. This audiolingualism basis cannot help learners with the real life situations where they intend to use the language with the meanings coming from their own needs and intentions (Arkoç, 2008: 1). *Second*, teachers and students are lack of information, communication, and technology (ICT) literacy as a primary tool in teaching language through theoretical explorations of electronic literacy and hands-on practical training in using those technologies.

Many teachers and students report feeling inadequately trained and ill-prepared to meet the challenges of integrating computer technologies into their pedagogies (Schrum, 1999; Sprague, Kopfman, & Dorsey, 1998), and, additionally, teachers may feel isolated if the pre- or in-service technology experience is limited (Brownell, 1997; Orrill, 2001). *Third*, certain teachers who used the lab failed to implement appropriate activities especially designed for language lab sessions (Brenes, 2006: 2). Furthermore, the initial impact is weakened by the rather old-fashioned drill-based learning which it promoted. *Fourth*, many teachers rely on their restricted materials in teaching listening and most of them are not authentic. Consequently, the listening materials used are eventually appeared out of date (Dias & Strong, 2010: 21). Whereas, learners feel better with authentic materials helping them involve in the 'real' language as long as teacher educators provide them with pedagogical support (Kilickaya, 2004: 2).

Teaching Listening in Indonesian Context

In Indonesia, the teaching of EFL listening can be seen from various aspects. The first is how EFL listening is included as part of the curriculum of educational institutions. This, in particular, refers to the teaching of EFL listening either as a discrete or integrated language skill. The second is how listening activities are designed to improve students listening ability. This concerns the development of various teaching and listening techniques that have been applied in English classrooms or in English language laboratories. The third is what types of language teaching media are used to teach EFL listening. The types of media may vary from the use of tape or CD players in the classroom to the use of multi-media language laboratory. In terms of its status as a curricular component, EFL listening can be taught discretely as a particular course, especially, in English departments of universities and it has certain course names such as *Listening* or *Listening Comprehension*. Listening is provided as discrete courses due to the students needs to listen to various types of English discourses intensively as part of their curricular activities.

For instance, EFL listening comprehension in language laboratory of English education department IKIP PGRI Bojonegoro (teacher training college of education) is used to teach listening programs for pre-service English language teachers. It is a pivotal place to practise their English language proficiency. Particularly, in the teaching of listening, there are three required courses offered: Intensive Listening (basic listening), Intermediate Listening, and Extensive Listening (advance listening). In Intensive Listening, student teachers are trained how to learn listening intensively, which adopt a comprehension approach. Sometimes, they are taught to notice pronunciation features. In Intermediate Listening, this course remains to focus on language exercises. They are also trained how to understand different speech acts in spoken texts. In Extensive Listening, student teachers are exposed to extended spoken texts taken from such internationally standardized language tests as TOEFL and IELTS as well as authentic materials prescribed by teacher educators.

EFL Listening can also be taught in an integrated way along with other language skills, namely speaking, reading, and writing. The integrated way of teaching listening usually takes place in intensive courses, either in English departments or in specialized programs prepared by some private courses and in the secondary schools as demanded by the 2006 School- Based Curriculum. The 2004 English curriculum requires the teaching of language skills as integrated skills within two cycles: the oracy (listening and speaking) and literacy (reading and writing). Moreover, the 2006 Standard of Content shows that the four language skills are given equal emphasis in the teaching of English (Depdiknas, 2006). With this policy, listening is no longer neglected in the teaching of English in Indonesia. Regardless of the equal status, compared to materials for other language skills, listening materials are still limited, in the sense that there is no material that can be used readily to teach English based on the 2006 Standard of Content.

At the secondary level of education, the Standard of Content enables all stakeholders such as teachers, principals, and material developers to develop English teaching materials, should they wish to do so. At the tertiary level, there has been no standard that can be used to develop such materials. In his account on the establishment of standard for the teaching of listening, Sutrisno (2003) argues that each university should develop their own standards by accommodating two important factors: the language ability of the students and their needs for learning as demanded

by the development in the era of globalization. With these considerations, Sutrisno states that listening materials should be able to help learners understand transactional and interactional types of texts as used by native speakers of English or presented through foreign electronic broadcasting media such as British Broadcasting Company (BBC), Voice of America (VOA), or Central News Network (CNN).

Teaching Listening in Language Laboratory

The success of listening instruction is determined by a number of factors, one of which is the types of listening activities. Harmer (2007) classifies listening activities into two types: extensive and intensive listening. Extensive listening is carried out outside the classroom. Therefore, any material available outside the classroom (e.g., radio, TV, personal computer, the Internet) can be used for extensive listening. The activities conducted in extensive listening should integrate some principles as it is proposed by Day and Bramford (2012). These principles include (1) The listening material is easy; it should fall within the remit of learners' language capacity; (2) a variety of listening material on a wide range of topics must be available; language learners should have access to listening material outside the classroom; (3) learners should choose what to listen: they should be given autonomy to pick spoken texts at their own convenience; (4) learners should listen to spoken texts as much as possible; they need to do sustained listening; (5) the purpose of listening is usually related to pleasure, information, and general understanding; (6) listening is its own reward; language learners should spend time doing EL as part of their lived experience; (7) listening is meaning making activity; learners focus on the gist of spoken texts; (8) listening is personal; learners listen to spoken texts at their own pace and convenience; (9) teachers play roles as scaffolders who always support learners' learning to listen and listening to learn; (10) teachers are role models of listeners; they should demonstrate how to do and sustain EL. These principles indicate that EL involves the zone of proximal development (the remit of learner capacity), autonomy, variety, personalization, quality and quantity, meaning making, scaffolding or support, and sustained engagement. Meanwhile, some of the advantages of extensive listening materials are that students can use them based on their preference and they can use the materials as many times they want (Harmer, 2007: 303).

Meanwhile, intensive listening materials (e.g., those stored in tapes, CD, or hard disk) are already available in the classroom or language laboratory. This type of materials can contain various types of texts (e.g., stories, news, and academic texts) and modes of presentation (e.g., unscripted or natural discourses and scripted or prepared materials). In intensive listening, the students usually listen to the materials at the same time and, if the students do not wear headsets, the voice quality might not be the same for all of the students. It deals with specific items of language, sound or factual details within the meaning framework already established. The focus of intensive listening is on language form. The aim of intensive listening is to raise the learners' awareness of how differences in sound, structure, and lexical choice can affect meaning. Because this kind of listening involves an appreciation of how form affects meaning, intensive listening activities must be contextualized – placed in a real or easily imagined situation. In this way, all students – even beginners can practice intensive listening in a context of language use, from which it is most likely to transfer to “real life” listening situations.

Language Laboratory-based Listening Instruction Improvement

Language laboratory should be viewed as a comfort place to mediate listening comprehension. Teachers should create an innovative and enjoyable learning environment in language laboratory. Dealing with foreign language acquisition, constructivism and socio-cultural approaches can be integrated into listening instruction in language laboratory. Designing tasks has become one of the most accepted modes of instruction in the last few decades due to its suitability to both communicative and constructivist approaches to learning. The reasons for selecting tasks may be complex and one of the reasons, according to Willis (1996, in Swan, 2005: 378), that it offers the possibility of combining ‘the best insights from communicative language teaching with an organized focus on language form’ and thus avoiding the drawbacks of more narrowly form-centred or communication-centred approaches.

Tasks hold a central place both in current second language acquisition research and in language pedagogy (Ellis, 2003). According to Littlewood (2004: 320), definitions of task range along a continuum according to the extent to which they insist on communicative purpose as an essential criterion. A language laboratory is a teaching tool requiring the implementation of well-constructed tasks on the students' needs. By this way, listening programs in language laboratory are not placed anymore on listening comprehension without any interaction and teacher educators choose listening materials without doing learners' learning needs analysis. But rather, language laboratory can indeed serve to support communicative approaches to language instruction.

LeeAn (1991: 3-4) states that there are three main criteria for tasks language laboratory activities. First, they have a goal or purpose that requires the use of the target language, but is not itself centered on that language. The second criterion involves making use of the unique features of a language lab to create a learning environment that cannot be recreated in the regular classroom. The third characteristic of a task activity is that it involves the students in a way that intrinsically motivates, lowers the affective filter, and creates a desire to excel. Meanwhile, the role of task-based activities in language laboratory is to provide learners with opportunities to use the target language contextually and to explore the target language through situational activities. In this way, the language lab can serve as an invaluable tool in the language learning and teaching process, for it provides opportunities for learning that cannot be duplicated in the classroom.

In practice, the effective listening exercises in language laboratory can be constructed using tasks. For instance, the teacher can give listening comprehension questions by taking notes, taking dictation, and expressing agreement or disagreement. This is in line with (Dunkel, 1986, p. 104; Ur, 1984, p. 25) that students should be required to do something in response to what they hear that will demonstrate their understanding. In this way, teachers can implement discrete approach in which listening instruction is taught partly from other skills such as reading, writing, and speaking. Different kinds of tasks are offered in discrete listening instruction. One is a transferring exercise that involves “receiving information in one form and transferring the information or parts of it into another form” (Richards, 1983: 235), such as drawing a picture or a diagram corresponding to the information given (Dirven & Oakeshott-Taylor, 1985). Another kind of listening task is a matching exercise that involves selecting a response from alternatives, such as pictures and objects, that correspond with what was heard (Lund, 1990; Richards, 1983). Samples of this type of exercise are selecting a picture to match a situation and placing pictures in a sequence, which matches a story or set of events (Richards, 1983). The other type of listening task involves physical movement (Dunkel, 1986; Lund, 1990; Ur, 1984); that is, the students have to respond physically to oral directions.

CONCLUSION AND RECOMMENDATIONS

In the implementation of language laboratory, in particular, students are required to build their knowledge and skills for using various technological assistance to improve their linguistic competency. Nunan (cited in Brenes, 2006: 8) indicates that the notion of information communication technology (ICT) is becoming ubiquitous these days, with numerous schools requiring students to demonstrate a degree of technological literacy. Specifically, language laboratory employs an integrated technological system which helps both teachers and students in teaching and learning foreign language.

However, instead of the advantages of using integrated technology in language laboratory for teaching – learning a foreign language, teachers in Indonesia still find it is difficult to get the benefits of using the language laboratory. These teachers fail to create a lively atmosphere in the language lab. It often happens that students only get monotonous activities such as listening to the tapes or CDs, repeating the sounds they hear or just answering some listening comprehension questions which they cannot do since they do not understand what they have heard. Students might feel bored and reluctant to do their activities in the language lab so that they neither improve their performance nor their competence. In addition, the multi functions of technology embed on digital language laboratory is not maximally used by both teachers and students.

To see the language laboratory as a tool in this light is the first step in the re-evaluation process. The next step is to glean ideas from CALL, as well as from other areas, that can be adapted to more appropriate uses in the language lab. Using tasks activities area means of integrating interactive learning through use of the language lab. These activities look at the language laboratory in the same way that CALL looks at the computer: as a tool that requires teacher direction in creating situations in which the students utilize the target language to attain some non-language-related objective. The distinction between task-based language lab activities and programmed instruction is essentially the same as that between CALL and CAI: one focuses on communicative fluency, the other on linguistic accuracy.

In task-based language laboratory, students have a goal or purpose that requires the use of the target language, but is not itself centered on that language. For example, each student writes and tape records a story about an invented vacation. Students then listen to the stories and evaluate them in terms of which vacation they would most like to take themselves. The students’ goal is to tell a story that interests and excites their peers. The focus is on the story rather than on the language itself; however, the means to the end is through effective communication in the target language.

Moreover, task-based language laboratory also provides learners with opportunities to use the target language contextually, and to explore the target language through situational activities. In this way, the language lab can serve as an invaluable tool in the language learning and teaching process, for it provides opportunities for learning that cannot be duplicated in the classroom. A tool, however, is only as effective as its implementor, and thus the role of the teacher is central to the success of task-based activities. The aim of patterned lab drills was to provide a mechanical means to free the teacher for other instructional activities. Task-based activities bring the teacher back into the lab using communicative approach which finally generate the students' comprehension.

ACKNOWLEDGMENTS

The author would like to thank the two anonymous reviewers for their insightful comments on this article. They have provided constructive feedback on the earlier version of this manuscript.

REFERENCES

1. Arkoç, Esra Şirin. (2008). *The impact of learner autonomy on the success of listening comprehension*. (Unpublished master thesis). Department of English Language Teaching in Accordance with the Regulations of the Institute of the Social Sciences Trakya University.
2. Brenes, César A. Navas. (2006). The laboratory and the EFL course. *Revista Electrónica "Actualidades Investigativas en Educación"*, 6(2), pp. 1-25.
3. Brownell, K. (1997). Technology in teacher education: Where are we and where do we go from here. *Journal of Technology and Teacher Education*, 5(2/3), pp. 117-138.
4. Chapelle, A. C. (2001). *Computer applications in second language acquisition: foundations for teaching, testing and research*. Cambridge University Press, Cambridge.
5. Chapelle, A. C. (2003). *English Language Learning and Technology*. John Benjamins Publishing Company, Amsterdam.
6. Day, R., & Bamford, J. (2002). Top ten principles for teaching extensive reading. *Reading in a Foreign Language*, 14(2). From <http://nflrc.hawaii.edu/rfl/october2002/day/day.html>
7. Depdiknas. (2006). *Standar Isi dan Standar Kompetensi Lulusan Tingkat SMP dan MTs [The Standard of Content and Competence Standard of Junior High School and Islamic Junior High School Graduates]*. Binatama Raya, Jakarta.
8. Dias, J. V., & Strong, G. B. (2011). Blended learning in a listening course: Seeking best practices. In A. Stewart (Ed.), *JALT 2010 Conference Proceedings* (JALT: Tokyo).
9. Dirven, R., & Oakeshott-Taylor, J. (1985). Listening comprehension. *Language Teaching* 18, 2-20.
10. Dunkel, P. (1986). Developing listening fluency in L2: theoretical principles and pedagogical considerations. *The Modern Language Journal*, 70, 99-106.
11. Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press, Oxford.
12. Gilmour, B. (2004). *Summary report of college English pilot*. University of Newcastle Upon Tyne, Newcastle.
13. Harmer, J. (2007). *The Practice of English Language Teaching*. (4th edition). Pearson Education, Essex, UK.
14. Hegelheimer, V. and Tower, D. (2004). Using CALL in the classroom: Analyzing student interactions in an authentic classroom. *System*, 32(2), pp. 185-205.
15. Kilickaya, F. (2004). Authentic materials and cultural context in EFL classrooms. *The Internet TESL Journal*, 10(7). Retrieved online from: <http://iteslj.org>
16. LeeAnn, Stone. (1991). Task-based activities: making the language laboratory interactive. In *Eric Digests*. ED343407.
17. Littlewood, W. (2004). The task-based approach: some questions and suggestions. *ELT Journal*, 58(4), pp. 319-326.
18. Lord, G., & Lomicka, L. (2007). Foreign language teacher preparation and asynchronous CMC: Promoting reflective teaching. *Journal of Technology and Teacher Education*, 15(4), pp. 513-532.

19. Lund, R. J. (1990). A taxonomy for teaching second language listening. *Foreign Language Annals*, 23, 105-115.
20. Nadjah, Benmadani. (2012). *Improving students' listening skill through the language laboratory*. (Unpublished doctoral dissertation). Faculty of Letters and Foreign Languages Mohamed Kheider University.
21. Orrill, C. H. (2001). Building technology-based, learner-centered classrooms: The evolution of a professional development framework. *Educational Technology Research and Development*, 49(1), pp. 15-34.
22. Richards, J. C. (1983). Listening comprehension: approach, design, procedure. *TESOL Quarterly*, 17, 219-240.
23. Rivers, W. M. (2000). *Interactive language teaching*. Cambridge University Press, Cambridge.
24. Satish, Talwar Mini. (2011). Research in the language laboratory: efficacy of language laboratory on teaching vocabulary building in English. *International Journal of Education and Allied Sciences*, 3(2): 83-90.
25. Schrum, L. (1999). Technology professional development for teachers. *Educational Technology Research and Development*, 47(4), pp. 83-90.
26. Slaouti, D., & Motteram, G. (2006). Reconstructing practice: Language teacher education and ICT. In P. Hubbard & M. Levy (Eds.), *Teacher education in CALL*, pp. 81-97.
27. Sprague, D., Kopfman, K., & Dorsey, S. (1998). Faculty development in the integration of technology in teacher education courses. *Journal of Computing in Teacher Education*, 14(2), pp. 24-28.
28. Sutrisno, A. (2003). *Establishing Standard for the Teaching of Listening Comprehension*. Paper presented at the 51st TEFLIN International Conference, Bandung, 21-13 October 2003.
29. Swan, M. (2005). Legislation by hypothesis: the case of task-based instruction, *Applied Linguistics*, 26(3), pp. 376-401.
30. Tochon, F.V., & Black, N.J. (2007). Narrative analysis of electronic portfolios. In M.A. Kassen, R.Z. Lavine, K. Murphy-Judy, & M. Peters (Eds.), *Preparing and developing technology-proficient L-2 teachers*. CALICO, San Marcos, TX.
31. Ur, P. (1984). *Teaching listening comprehension*. New York: Cambridge University Press.
32. Warschauer, M. and Healey, D. (1998). Computers and language learning: an overview. *Language Teaching*, 31, 57-71.
33. Watson, J. and Wright, V. (2005). *Re-usable online learning materials: pipe-dream or reality?*. Paper presented at BALEAP Conference, April, 15-17, 2005, Edinburgh, UK.

Teaching and Assessing Writing in A Literacy Based Program through Peer Review

Emilia Ninik Aydawati

Unika Soegijapranata, Semarang

Corresponding author: emilianinik@gmail.com

Abstract. Students' writing skills are one of English teachers' primary concerns and the complexity of writing has given challenges to numbers of students while writing is an important form of communication. It is a useful tool for discovering and thinking. This paper clarifies the three approaches: product, process and genre-based approaches and the challenges in implementing of peer review to evaluate writing. In applying peer review, there are problems and challenges. Among the problems and challenges the biggest one is how to give students effective feedback considering the workload and class size. Peer feedback seems to be a useful and promising way to solve the problem. However, there are two main issues in implementing peer review: the size of the peer feedback group and the form of training, which is a prerequisite for successful use of this strategy.

INTRODUCTION

Children start to learn language from the day they are born. They learn to use language to express their feelings and communicate with others. During early speech and language development, children learn skills that are important to the development of **literacy**. Literacy is a person's ability to read and write. Reading and writing are important to help function in school, on the job, and in society. In terms of learning English as second or even foreign language, students start to develop their writing literacy when they start learning writing. However, their writing literacy seems to be troubles for them especially for English learners who start learning writing.

Students' writing skills are one of English teachers' primary concerns. They are worried of the students' writing literacy as they may find that their students are not able to write appropriately. A project done in 2003 by Gibson (2006) suggested that many English departments lack a systematic approach to literacy and writing skills. Teachers need to ground their courses in the texts that students will need to write in occupational, academic, or social contexts, they help guide learners to participate effectively in the world outside the ESL classroom(Matsuda, 2003)as cited in Hyland (2007).

The complexity of writing has given challenges to numbers of students. Before writing, they need to identify and analyse text features preparing by teachers for second language writing instruction. By making explicit what is to be learnt, providing a coherent framework for studying both language and contexts, ensuring that course objectives are derived from students' needs, and creating the resources for students to understand and challenge valued discourses, genre approaches may provide an effective writing learning. Writing teachers may hope to prepare students to participate in academic, professional, and public contexts. This paper discusses the literacy in writing and how to evaluate it using peer review activities.

Literacy

What is meant by literacy is common sense is the ability to read and write. It can also refer to the knowledge of reading and writing (Holme, 1988). Further, he explained that the term literacy refers to meanings that are similar to its original sense in some basic ways but different in others. This term of literacy is used to refer some extension like historical literacy, emotional literacy, citizenship literacy, artistic literacy, scientific literacy, emotional literacy.

According to Hartman (2000, pp. 16-17) there are seven principles of literacy. Literacy involves interpretation, collaboration, conventions, cultural knowledge, problem solving, reflection and self-reflection and language use. Based on these principles, he summarizes it into macro principle that is literacy involves communication and it has

implication in language teaching. By practicing literacy in a non- native language like in Indonesia, students learn not only vocabulary and grammar but about and the process of creating the discourse.

Further, Hartman (2000, p. 25) also mentions that literacy has to do with people's use of written language. It involves the ability to recognize and produce graphic representation of words and morphemes, and knowledge of the conventions that determine how these elements can be combined and ordered to make sentences. In brief, literacy combines a focus on language use in social contexts with an additional component of active reflection on how meanings are constructed and negotiated in particular acts of communication. Thus, being literate in writing needs ever-developing process of using reading and writing as tools for thinking and learning.

Literacy is formed from the word literate which is used to people who are well read in a given literacy culture. People who can read are all literate people while those who cannot are called illiterate. According to Derrida, 1997, Foucault 1974, Petterson 1996, as cited by in Holme (1988) explained that there is an argumentation that the need for language to recognize itself to fit a different system of representation was one of the very effects of literacy.

When a message of a community can be carried into another, then there is a need for it to be understood. When a writing can deliver message and it can reach the purpose of writing, it can be said that writing

Writing

Writing is an important form of communication. It is a useful tool for discovering and thinking. Apparently, writing is the vital connection on which education, culture, and commerce in our society depend. Moreover, writing helps learners gain independence, comprehensibility, fluency and creativity in writing. However, writers need specific abilities to put their thoughts into words in a meaningful form and to interact with the message mentally as what Elbow (1973, pp. 14-16) explains on the concept of writing as a two-step transaction of meaning-into-language.

Writing is a developmental process in which we start writing at the very beginning-before we know our meaning at all-and encourage our words gradually to change and evolve. Only at the end will we know what we want to say or the words we want to say it with. we should expect ourself to end up some-where different from where we started. Thus, writing is a process of conveying meaning to the readers. Meaning is not what we start out with but what we end with. Control, coherence, and knowing our mind are not what we start out with but what we end up with. Think of writing, then, not as a way to transmit a message but as a way to grow and cook a message. Writing is, in fact, a transaction with words whereby we free ourselves from what we presently think, feel and perceive. This explains that writing is delivering meaning to the readers. Therefore, at the end of writing process writers have to present meaningful article with appropriate grammar besides that the writer should consider the purpose of writing.

Besides that handwriting, spellings and punctuation –mechanics of writing – play vital role in writing. In situations where writers need to present their work in handwritten form, handwriting is an effective means to impress the readers, and poor handwriting can negatively influence reading experience (Harmer, 1991, p. 324) Although correctness in writing words is important, it is not enough in producing a paragraph; the writer must select words (word choice) appropriately and weave them in proper sentence structures.

According to Lodge (2000) writing is essential to academic language learning. Learners will be able to think explicitly about how to organize and express their thoughts, feelings, and ideas in ways compatible with readers' expectation, to provide time for learners, to process meaning to go beyond purely functional communication, making it possible and to create imagined worlds of their own design.

Lodge (2000, p. 184) summarizes product, process and genre-based orientations to writing instruction. The instructional techniques in product include and imitation of models, grammar study, sentence combining, paragraph structure analysis. While in the process approaches, the instructional techniques include prewriting activities, writing of repeated drafts, peer editing, journal, free writing. In genre approach, the instructional techniques include analysis of obligatory and optional rhetorical moves in various genres; creating new texts in a given genre

Further, he explains . the need to coordinate these three approaches. When teaching writing in foreign language programs like in Indonesia, product oriented should be gradually incorporated with the features of process- based teaching.

Teaching Writing

In teaching writing, there are three orientations: product, process and genre-based approaches (Lodge, 2000, p. 180). Product approaches focus on the inner core of design: the interaction between texts and the structural resources needed to create them. When teaching writing using product approach which is the first approach to teach writing,

teachers should consider using a model as learning to write means imitating good models, adhering to prescriptive norms. And the instructional goals are formal accuracy, syntactic complexity, adherence to canonical organizational patterns. It means that when teaching writing, teachers should focus on the accuracy.

Another approach is process. The process approach is aimed to build on the knowledge, skills and understanding about writing that students brought with them to school. It encourages teachers to set up classrooms rich in written language. The emphasis is on initiating writing activity without having to wait for formal lessons in letter formation or spelling. Students are free to choose the kind of writing they want to write.

The process writing classroom is learner-centred. The teacher is a facilitator and supporter of the students' writing, while the students themselves are encouraged by the teacher to take ultimate responsibility for their own writing. The teacher intervenes and provides support through a technique known as conferencing, in which students, either individually or in groups, are assisted to draft, edit, proofread and publish their work. It trans students to go through a series of steps in order to produce a final writing.

The instructional goals are individual-creativity, fluency of expression, development of authentic voice, improvement through revision, learning through writing, self reliance in the writing process (Lodge, 2000). Students have to go through a series of steps in order to refine and correct their writing, rather than rely on a one-shot draft. In this way the process writing approach drew students' attention to the drafting, editing, proofreading and publication process from which a written text emerges. The conventions of writing should be taught at the point of need. The whole language movement included process writing as part of its methodology and is based on a view of natural learning. Whole language classrooms aimed to create an environment conducive to learning. These conditions replicate conditions under which children learnt oral language at home.

The third approach is genre based approach. The dominant theoretical framework is social constructionism as writing is a social act. The central focus is audience needs and expectations. Learning to write means apprenticing in a new discourse community; learning to communicate with new discourse expectations and norms. The instructional goals are awareness of the conventional parameters of expectations for particular text types within particular discourse communities and the ability to conform to those conventions. Understanding these conventions in terms of social and psychological context (Lodge, 2000).

Teachers may find that the writing of many students is not always developing beyond one or two basic kinds of texts, in which the language used is similar to that used in everyday spoken interactions. It becomes apparent that many students need more knowledge about the kinds of writing they would need in order to be successful at school. They also needed explicit teaching about written language in order to expand the repertoire of language choices available to them as they draft texts. They have to know how to write genre based texts as descriptive, argumentative texts. Some educators seek, from within the academic discipline of linguistics, a model of language which would make it possible to talk to students explicitly about language and its use. This approach to the teaching of writing became known as the genre approach. Genres are descriptions of text structures and language features which are typically used to achieve different social purposes.

Learning these genres, or text types, provided students with a writing repertoire which laid the foundation for successful writing in the more specialised contexts of the secondary school.

The processes of writing consist of drafting, revising, conferencing, editing, proofreading and publishing (John, 1999).

- Drafting involves making notes of ideas, planning the text and writing the text down initially
- Revising involves reworking a text to improve ideas or amend the content. Revising might involve editing, because it often requires reorganizing the text or changing sentence structures
- Conferencing involves discussing drafts with others to engage in critical reflection and clarification of meaning. Revising and editing might occur during, or be the result of, such discussions.
- Editing involves changing the drafts of developing texts in order to improve the text, for example, by improving cohesion, syntax, grammar and vocabulary. Editing leads to changes which will be incorporated into the next draft of the text.
- Proofreading involves preparing the final text for presentation, including reading the text to locate and fix any inaccuracies in grammar, spelling, punctuation or layout
- Publishing involves presenting the text to its intended audience. At school, this is often the teacher, although it is good to give students the experience of writing for other audiences where appropriate.

Implementing Peer Review to Evaluate writing

There are two kinds of review in writing processes: teacher review or teacher feedback and peer review. Feedback is indispensable to the multiple-drafts process, because it is “what pushes the writer through the various drafts and on to the eventual end-product” (Keh, 1990, p. 294 as cited in (Su, 2011)). Peer feedback is one of the various types of feedback. It is also referred to as peer review, peer response, peer critiquing or peer evaluation in some other articles or references. . It is “a collaborative activity involving students reading, critiquing and providing feedback on each other’s writing, both to secure immediate textual improvement and to develop, over time, stronger writing competence via mutual scaffolding” (HU, 2005, pp. 321-322 as cited by (Su, 2011)).

Peer feedback is a relatively new approach for the writer; however, it is a research issue that has already captured researchers’ and teachers’ attention and a substantial amount of research has been done both in L1 (first language) and L2 (second language). The studies focus on how to train students to use peer feedback, how to form groups to work effectively, the types of activities to conduct and the methods to be used can benefit in facilitating effective language learning and enhancing the acquisition of L2 writing competence.

According to Su (2011) peer feedback is a “new” approach for the following two aspects. One is that compared with the traditional teacher feedback, peer feedback puts emphasis on the important role of students. It transforms students from passive receivers to active reviewers, which can develop their abilities to solve problems on their own and ultimately lead to more learner autonomy, just as what Yang et al. (2006) as cited by Su (2011) found in their study. The other reason is that peer feedback is likely to create a friendly and supportive atmosphere, which can have an effect on students’ use of feedback. And this point can be also derived from students’ attitudes towards teacher and peer feedback in the research article. In this environment, peer feedback is less threatening and less authoritative than teachers’ comments. Therefore, instead of using teacher feedback out of deference of authority, students tend to reflect peer comments critically, negotiate with each other freely, show their doubts about the comments, and decide the aspects to revise.

Challenges in applying Peer Review

In applying peer review there are problems and challenges. Among the problems and challenges she has come across in her process-oriented writing instruction, the biggest one is how to give students effective feedback considering her workload and class size. Peer feedback seems to be a useful and promising way to solve the problem.

There appear to be two main issues in implementing peer review: the size of the peer feedback group and the form of training, which Berg (1999) identifies as a prerequisite for successful use of this strategy. There is considerable variation in the size of the groups in peer feedback research. Zhu (2001), for example, worked with groups of three or four with native and non- native speakers of English and noted that group dynamics had a strong impact on how the feedback group functions. Similar group sizes are used in several other studies (Allaei & Connor, 1990; Nelson & Carson, 1998; Rollinson, 2005). Min however says that “the use of paired peer review is preferred by most EFL students” (2005, p. 296) as cited in (Miaoa & Richard Badge, 2006)

Hu (2005) (cited by (Miaoa & Richard Badge, 2006), explain that working with a group which is similar in age and culture to our own students, suggests that, initially at least, this issue is best addressed by limiting group size to two participants. Pairs were also adopted by Villamil and De Guerrero (1998), working with what they term ESL students in Puerto Rico. Pairs are also possibly less likely to lead to the kinds of issues raised in Carson, Murphy, and Nelson’s work cited above.

DISCUSSION

Having students give feedback to one another on their papers can have many advantages: the students get opportunities to develop their ability to give constructive feedback, they receive advice on their drafts, they have a broader audience for their work than just a single instructor, and they see different approaches other students have taken in responding to an assignment.

However, peer review has to be carefully managed in order for students to take the process seriously. The following are the steps that can be applied to conduct peer review to evaluate literacy based approach.

First Students have to know the goals of peer review activities. They need to know the importance of doing peer review. By doing peer review the students will be able to improve their writing skills in terms of accuracy (product based approach). There are some objectives that teachers can consider such as: to develop their own analytical skills, to become better proofreaders, to learn how to decide which advice to take as writers, to become more comfortable

with the kinds of editorial processes they might encounter in their academic or professional futures. Being explicit about the goals can help them see how the peer review process fits into the larger context of their writing.

Secondly, the students must be trained to do the peer review. The train should be conducted again and again so that the result will be than enough. This training should include the training on the sociocultural, As different region has different culture, it can be the cause of successfulness of peer review activities.

Thirdly, schedule the peer review that students can benefit from peer review at any stage of the writing process. To decide when to schedule peer review for your students, think about how to help each other with the formation of thesis statements or thinking about how to structure their papers, a peer review session early on would be most useful. If you want students to work on helping one another develop their points or polish their prose, scheduling peer review, including the training for conducting peer review in the process is probably best.

The fourth is the different speed among the students. Some students can do it faster than some others, while some others may find that it takes time and energy to do the peer review. Letting those groups leave as soon as they have finished can create an incentive for everyone to rush through the peer review process in order to leave early.

CONCLUSION

Literacy based program in writing needs three approaches that should be combined: product, process and genre based approaches. Applying these approaches will help students be illiterate in writing. In addition, in the process of teaching writing, teachers can apply peer review as through peer review activities, students will be more aware on the process of writing that needs accuracy in terms of grammar, syntax and also the kind of genres. The important thing in writing is the final product.

How to give effective feedback is a central question in the process-oriented writing instruction for decades. Peer feedback may be a useful and promising adjunct to teacher feedback. I believe that peer feedback is suitable in writing classes starting from the product based approach. It must be done one by one as it needs processes, but it should be implemented with great caution. It should relate with the process of writing and the goals of peer review should be stated clearly. Product-based, process-based and genre based approaches of writing must be integrated. However, it must be planned carefully as sometimes students who conduct peer review may consider that writing is about rules or grammar , spelling rules, outlining, and organizational writing.

REFERENCES

1. Cisco, M. (n.d.). ALL Students Need to be Writers. Sesa.
2. Elbow, P. (1973). *Writing Without Teachers*. Oxford: OUP.
3. Gibson, J. (2006). Literacy & Writing skills. Retrieved from <http://www.english.heacademy.ac.uk/explore/resources/literacy/index.php>
4. Harmer, J. (1991). *The Practice of English Language Teaching*. New York: Longman.
5. Hartman, G. H. (2000). Notions of Literacy. In R. Kern, *Literacy and language Teaching* (pp. 13-42). Oxford: OUP.
6. Holme, R. (1988). *Literacy an introduction*. Edinburgh: Edinburgh University Press.
7. Hyland, k. (2007). Genre pedagogy: Language, literacy and. *Journal of second language Writing* , 148-164.
8. John, A. (1999). *Focus on Literacy: Writing*. sydney: waiver.
9. Lodge, d. (2000). Writing as Design. In R. Kern, *Literacy and Language Teaching* (pp. 171-190). Oxford: OUP.
10. Miaoa, Y., & Richard Badge, Y. Z. (2006). A comparative study of peer and teacher feedback in a Chinese EFL writing class. *Journal of Second Language Teaching* , 179-2000.
11. Richard, K. (2000). *Literacy and language Teaching*. Oxford: OUP.
12. Su, Z. (2011). Peer Feedback: A New Approach to English Writing Instruction in a Chinese College Setting. *Sino-US English teaching* .

Lecturers' and Students' Perceptions on Motivational Teaching Strategies Applied in the English Department of Semarang State University

Arif Widagdo

Faculty of Education, Semarang State University

Corresponding author: arifwidagdo28@gmail.com

ABSTRACT. Students' motivation in learning English as a Foreign Language (EFL) is affected by their perceptions of the teaching strategies used. This study aims to explore students' and lecturers' perceptions of teaching strategies that have impact on students' motivation in learning EFL in the English Department of Semarang State University (UNNES). This study used a qualitative research methodology. The case was composed of the sixth semester students and EFL lecturers in the English Department of UNNES. The data were collected from individual interviews, observation and questionnaire. Both the lecturers and the students agreed that creating and maintaining relationships was an effective strategy to motivate students. However, the findings also showed that the two groups of participants have different views on the teaching strategies applied in the EFL classroom. Then the data were analyzed qualitatively by describing the results of the research in the way of presenting summary report. The study also found that some lecturers were not aware of how some of the strategies that they used in teaching English impacted on their learners' motivation. By being more aware of how students view specific teaching strategies in the EFL classroom, lecturers can enhance students' motivation, by creating and maintaining initial motivation.

INTRODUCTION

In the field of foreign language learning, motivation is one of the most influential factors of all individual differences in language learning (compared to learning style, aptitude and age) when learning outcomes are considered (Dornyei, 2001a). A large number of studies in language learning have shown that motivation is a prominent factor in learning (Den Brok, Levy, Brekelmans & Wubbels, 2006; Dornyei, 2001a; Oxford, 1994; Oxford & Shearin, 1994). Dornyei (2001b) also points out that regardless of learners' ability, aptitude and intelligence, with a strong motivation to learn a language, students will be able to learn effectively.

From the 1990s, research on motivation for foreign language (EFL) learning has evolved from focusing and describing the composition of students' motivation to a detailed list of practical suggestions in assisting teachers to boost their students' motivation (for instance, Cheng & Dornyei, 2007; Dornyei & Csizer, 1998; Dornyei, 2001b; Williams & Burden, 1997). Even so, the amount of research on how to motivate students through the use of specific strategies or the application of theoretical knowledge centered in the real classroom has been relatively small in specific situations (Dornyei & Otto, 1998). EFL teachers/lecturers, however, must be aware of the context of any research of motivation since the findings and the proposed motivational teaching strategies may not be suitable for all EFL teaching and learning situations. A strategy that is highly effective in one context of teaching and learning may not work at all in another context and vice versa. As Nakata (2006) implies, motivating students is not as easy in practice as in theory. Since human behaviours are complex, these strategies are not applicable to every individual and in every context of learning. Lecturers/teachers should select the most suitable strategies to be employed in their own classrooms. With this in mind, this study aims to investigate how lecturers in a specific study site, through their teaching strategies, build and maintain their students' motivation. It will be beneficial for lecturers in this particular university to explore the motivational strategies that are most suitable for their own classroom since many researchers' suggestions are only general guidelines generated from literature or different contexts (in terms of geographic location, socio-economic condition and culture) of teaching and learning. Furthermore, some of the teaching strategies proposed in the literature are derived from second language learning and arise specifically from

research in a western cultural context. It means that language is learnt in a location where that language is typically used as the main tool of everyday communication for most people.

This study draws on students and their lecturers at the English department of Semarang State University (UNNES) as its participants. This is different from studies investigating students from either secondary or high schools (for example Gorham & Christophel, 1992; Guilloteaux & Dornyei, 2008). As a result, this study will be useful to these lecturers who work as English teachers as well as university students (students) who can reflect on their own teaching practices. This study builds on and expands EFL lecturers' awareness of the importance of students' motivation and motivational teaching strategies in this foreign language learning context.

Teaching English in Indonesian schools and colleges has been less than satisfactory in the last few decades (Kirkpatrick, 2007). Despite continual efforts by the Indonesian government to improve the situation, such as revising the curriculum and providing teachers with scholarships to upgrade their skills, students are leaving high schools and even universities with English skills below the expectations of the government (Huda as cited in Bradford, 2007). University students graduate without sufficient skills in English to compete internationally. Kirkpatrick (2007) listed several factors as the main reason for this failure; including large class sizes, low proficiency in English on the part of teachers, the low salary of teachers and cultural barriers. In a similar vein, Bradford (2007) states that "the failure of English teaching in Indonesia lies less with the curriculum, and more in such matters as teacher qualifications and welfare, classroom size and students' motivation" (2007, p. 304).

The primary purpose of this research is to describe what goes on in EFL subject classes by focusing on the patterns of teaching strategies applied by the lecturers in the classroom, and the students' perceptions on the teaching strategies will be drawn to get an overview which effective and interesting teaching strategies applied by the lecturers.

In short, I would like to focus on the impacts of lecturers' teaching strategies to the students in learning English. Teaching strategies have deep impacts to students' motivation in learning EFL. As Dornyei says that motivational strategies refer to those motivational influences that are consciously exerted to achieve some systematic and enduring positive effects (2001).

Motivation is an important aspect in learning EFL. It can be appeared both from internal and external factors. Lecturers' interesting teaching strategies can take a role as the main external factor for students' motivation.

Teaching strategies link with motivational learning strategies. I would like to emphasize the need for EFL lecturers to improve students' motivational learning strategies in English. The motivation will impact deeply on the students' competency in English, not only understand English, but also be able to understand how to teach English. This study offers a chance to gain a deeper knowledge of how lecturers should manage the class by applying the appropriate teaching strategies. By considering the complex reality of the EFL classroom, I hope that this study will be able to help EFL lecturers in a more positive manner of how to apply appropriate and interesting teaching strategies in the classroom in order to enhance students' motivation of learning English.

The study attempts to answer a main question related to motivational strategies used by the university teachers, as follows: What are lecturers' and students' perceptions on motivational teaching strategies conducted by the lecturers during teaching and learning process of English as EFL in the classroom in the English Department of the Faculty of Languages and Arts of Semarang State University?

The objectives of this study are as follows: (a) to describe the lecturers' and students' perceptions on motivational teaching strategies conducted by the lecturers during teaching and learning process of English as EFL in the classroom in the English Department of the Faculty of Languages and Arts of Semarang State University, and (b) further objective is to find out what kind of lecturers' teaching strategies are appropriate and interesting for students.

The significance of this study can be classified into two parts, for the lecturers and the students. For the lecturers, by reading the result of this study they can find and apply some interesting motivational teaching strategies in teaching English in the classroom, so that the students will be more interested in learning English. For the students, by reading the result of this study they can be highly motivated in improving their mastery of English and in the future they can learn more about teaching strategies from their lecturers to be applied in reality when they become real teachers someday.

Definition of Motivation

Simply expressed, motivation is a factor determining the extent of people's desire to do an activity. The term motivation is used quite broadly in the field of education. Because motivation is considered to be one of the most influential factors in learning and academic achievement, a number of researchers from diverse field of education

studies have tried to define, analyze and conceptualise this term (Brophy, 2010; Dornyei, 2001b). Brown defines it as “an inner drive, impulse, emotion or desire that moves one toward a particular action” (1987, p.117). Maehr and Meyer as cited in Brophy state that motivation is an abstract and theoretical construct specifically to refer to “the initiation, direction, intensity, persistence and quality of behaviour, especially goal-directed behaviour” (2010, p.3). Keller as cited in Ziahosseini and Salehi (2008) concludes that motivation consists of the choices that people make as to what experiences or goals they will approach or avoid and the degree of effort they exert in that respect.

The relationship of teaching strategies, learners’ motivation, and learners’ academic performance

Since motivation is acknowledged as a key factor in determining success in foreign or second language learning academic attainment, strategies that maintain language learners’ motivation are of interest to educators. A number of studies have been conducted by educational researchers in order to gain a better understanding of how language learners’ motivation can be positively affected during the language learning process (Bernaus & Gardner, 2008; Dornyei & Csizer, 1998). Nakata (2006) states that unlike aptitude, which cannot be changed since it is innate, motivation can fluctuate factor over time. Nakata (2006), Brophy (2010) and Dornyei (2001a) contend that the fluctuation of motivation, academic achievement and the amount of the effort exerted may be affected by two main factors; internal and external factors (teachers, parents, peers, and community). This means motivation of students is something a teacher can influence.

This study concluded that the teachers’ motivational teaching practice was directly related to the students’ immediate response in the classroom and their approach to classroom learning. Though the teachers participating in this research implemented a limited range of motivational strategies in their practices due to the lack of knowledge and training, the researchers found there was a positive connection between the motivational language teaching strategies used by teachers and student’ motivation in the context of study.

Learners lacking motivation tend to attribute their failure to their teacher. Gan et al., (2004) conducted a qualitative study concerning unsuccessful and successful college students’ learning experiences in learning English in one Chinese university. Other studies agree that unsuccessful language learners mostly attribute their lack of success to factors outside themselves; in Gan and colleagues’ study students blamed their language teachers, saying that the teachers were not supportive of them and their teaching style was boring. In conclusion, students always located inadequacies in their learning environment, particularly their teachers.

Based on the previous illustrated studies it is clear that teachers influence their students’ level of motivation to engage in classroom activities. Enhancing students’ motivation is an ongoing process as motivation to learn fluctuates. It requires hard work by teachers and persistence in creating suitable and effective strategies in teaching the second/foreign language in their classrooms. Teachers do not have complete control over their students’ motivation; nonetheless they can significantly initiate and maintain it by providing a supportive language learning atmosphere in the classroom through their motivational teaching strategies. Teachers have the primary responsibility to shape better learning environments for their foreign language learners (Hedge, 2000; Nakata, 2006). By taking the findings of his study as the reference, in which 11 year old students were asked to give reasons for enjoying or not enjoying any previous foreign language learning experiences that they had been through, Chambers (1998), just like Nakata (2006), argues that teachers and their use of teaching strategies affect a student’s attitude toward an academic subject, and that teachers carry a large responsibility to motivate their students. What teachers do is therefore the key determinant for motivating language learners. Dornyei maintains that “teachers’ skills in motivating learners should be seen as central to teaching effectiveness” (2001b, p.116). Teachers have the responsibility to provide opportunities for learning and to encourage language learners to realize their potential and maximize their progress. The class environment is an important factor in the development of interest in and enjoyment for studying a second/foreign language (Song, 2005). It is important for language teachers to realize that providing a safe and non-face threatening learning environment is crucial for strengthening and preserving students’ motivation. In stressing the role of teachers in a second/foreign language classroom, Lightbown and Spada (2006) assert that:

If teachers can make their classroom places where students enjoy coming because the content is interesting and relevant to their age and level of ability, where the learning goals are challenging yet manageable and clear, and where the atmosphere is supportive and non-threatening, we can make a positive contribution to students’ motivation to learn. (p.57).

Teachers have control over the learning environment, which plays a crucial role in students’ motivation to learn.

METHODS OF INVESTIGATION

Case study methods are used in this research. A case study method is a suitable strategy to answer the research questions, which aim for “a better and deep understanding of the real-life events” (Yin, 2009, p.5). Case study is a strategy used to answer “how” and “why” questions (Yin, 2009) or “research that provides a detailed account and analysis of one or more cases” (Johnson & Christensen, 2008, p.406). Case study research is primarily a process of meaning-making. It allows a researcher to investigate not just the “*what*- the content of respondent’s answer but the *how*” (Holsten & Gubrium, 1997, p.114).

Case study approach recognizes the socially constructed nature of knowledge (Lichtman, 2010). Data produced through this method is authentic and reflects the subject’s “social world” (Yin, 2009). For example, in this case, a student or lecturer’s experience, value and knowledge of the learning process and the class, were dependent upon and contained within a specific context. This context includes the obvious limits of time and space, as well as an individual’s own social and cultural background (Creswell, 2005).

The most defining characteristic of case study research is the delimitation of the object of study, the case (Merriam, 2009). As Yin states (2009) a case may be an issue, process or concern but it is a bounded system such as a class comprising the students and their lecturers. In this project, the case is one cohort of students and EFL lecturers who taught this specific cohort of students in Semarang State University, meeting Yin’s criterion that a case is bounded by time and activity. In addition, in conducting such studies, it is important to choose cases with potential for fruitful results and accessible to researcher (Denzin & Lincoln, 2005; Lichtman, 2010).

SUBJECT OF THE STUDY

Population of the study

Population of this study was all the students of semester six, of the English department of Semarang State University. Sixth semester students consisted of six classes, and each class consists of 25 students. So, total subject/population of this study was about 150 students. All the classes were homogenous ones, and they had the same capability at average in English.

Sample of the study

In this study I used purposive random sampling to obtain one class as the sample of this study. I wrote six small pieces of paper and wrote down on them the name of each class. Then I folded each paper and put them into a glass. Without seeing the folded papers, I shook the folded papers in the glass and took one folded paper out, and it was the sample of this study.

Procedure and method of data collection

This data gathering took place in Semarang, particularly in Semarang State University over two-four weeks in 2013. The fieldwork commenced by obtaining ethics approval from the English department and permission to conduct the study from the head of the chosen department. I consulted with the Head of the English department and gave her the letter of information two weeks prior to the commencement of the data collection. Furthermore, prior to the period of data collection, I explained the aim and the procedure of the study to the participants (and EFL lecturers) by talking to them directly.

Data were collected from observation, questionnaire and individual interviews of EFL lecturers, as the instruments of the research. Interviews were an appropriate method when a researcher wanted to access in-depth information around the topic of investigation (Glesne & Peshkin, 1992). Hence, I employed semi-structured interviews to gather the beliefs, experiences and perspectives of the participants related to their own learning and teaching experiences in this study site. I asked the six questions regarding their perceptions of motivational strategies used by the EFL lecturers in teaching at this particular teaching faculty to both the EFL lecturers and the students-teachers. In the semi structured interviews, I used an interview guide to open up and guide the discussion with the interviewees and this could enable me to “follow all leads that emerge during the discussion” (Johnson & Christensen, 2008, p. 208). Moreover, since a good case study used as many sources as possible, both individual interviews and observation were used (Yin, 2009). The following sections addressed each of these.

Data analysis

Data analysis in a qualitative study is a dynamic, intuitive and creative process of thinking and theorizing (Basil, 2003). When the data analysis was completed, the coded transcripts to be included in the findings chapter were then translated into English. Once the data was coded, it was further analysed by looking for the themes. Analysis at this stage of the study drew on the theoretical framework for motivational teaching strategies for language learning devised by Dornyei (2001b). Dornyei's framework defines four macro strategies for motivational language teaching: creating the basic motivational condition, encouraging positive retrospective self-evaluation, generating initial motivation and, finally, maintaining and protecting motivation.

Qualitative content presented itself in the form of utterances or sentences as part of the interview transcripts. Unlike quantitative research, where the findings were summarized in terms of representative numbers, qualitative research in the form of interviews reports the findings by way of quotations from those participants in individual interviews and focus groups. For this study, then, the findings were reported by using illustrative quotes from both individual interviews and focus-group discussions.

FINDINGS

This session will explore the observation findings. Observation was conducted three times for three different lecturers, as samples. The summary result of the observation can be presented in the form of the following table:

No	Aspects observed	Lecturer 1	Lecturer 2	Lecturer 3
1	Language	More English than Indonesian (about 70% English, 30% Indonesian)	More English than Indonesian (about 80% English, 20% Indonesian)	More English than Indonesian (about 80% English, 20% Indonesian)
2	Greeting	Islamic and English greetings	English greeting	Islamic and English greetings
3	Giving explanation	Gave explanation before discussion	Gave explanation before discussion	Gave explanation almost all time during the class
4	Learning method	Collaborative method (discussion)	Collaborative method (discussion)	One way teaching method
5	Discussion in the classroom	There was active discussion	There was active discussion	There was no discussion
6	Students' response	Students looked interested in discussion	Students looked interested in discussion	Students looked bored
7	Students' activity	Students looked active following the class	Students looked active following the class	Students just listened to the lecturers' explanation, and sometimes they asked a question
8	Students' impact	Students spoke more English during the class. This way could improve their English quality	Students spoke more English during the class. This way could improve their English quality	Students spoke English, but only a little. They listened to the lecturer more than spoke up.
9	Performance more as a lecturer or facilitator	More as a facilitator	More as a facilitator	More as a lecturer

10	Learning media	Used learning media (power point presentation)	Used learning media (power point presentation)	No media. He only used books and whiteboard
11	Giving explanation, reinforcement and feedback	Gave explanation. And many reinforcement and feedback	Gave explanation. And many reinforcement and feedback	Gave too many explanation all time during the class.
12	Applying 8 teaching basic skills	Applied 6-7 teaching basic skills	Applied 6-7 teaching basic skills	Applied 3-4 teaching basic skills

Questionnaire Findings

This session will explore the questionnaire findings. Questionnaire was given once for 30 students, as samples. The summary result of the students' answers can be presented in the form of the following table:

No	Questions	Summary of Students' Answer
1	Tell me about the strategies your lecturers use when teaching English.	Most lecturers applied cooperative learning and group discussion.
2	What effects do you think these strategies have on your motivation to learn English?	Most students preferred cooperative learning and group discussion to other teaching strategies. These two strategies could improve their motivation in learning English.
3	How do you respond to teaching strategies that your lecturers use in the classroom?	Most students responded positively to the teaching strategies that their lecturers used in the classroom. When the lecturers used interesting teaching strategies (like cooperative learning and group discussion), the students got high motivation in following the learning process. They could be more active and speak more English when cooperative learning and group discussion were applied.
4	How are these strategies effective in motivating you to learn?	Most lecturers' teaching strategies were effective enough for the students. Only few of the lecturers applied boring teaching strategies (one way teaching), they only explained the material all time during the class, and students only listened to him/her.
5	In your opinion, how are teaching strategies and students' motivation related?	Most students assumed that teaching strategies has close relation to students' motivation. If the lecturers applied interesting teaching strategies, surely the students' motivation would increase.
6	In your opinion, how are teaching strategies and students' achievement related?	Most students are sure that teaching strategies also has very close relation to students' achievement.
7	Tell me about the strategies your lecturers use in the classroom for each	In general, most lecturers used cooperative/collaborative method and group

	subject.	discussion, only few of them used one way teaching method.
8	Is there anything you want to add (related to teaching strategies your lecturers use in the classroom, including your hopes and suggestions)?	Most students hoped that all lecturers could improve their quality of teaching, and apply various and interesting teaching strategies, in order to improve the quality of students' output (motivation, achievement, etc). They also suggested that all lecturers used interesting learning media in teaching in the classroom to make teaching and learning process more vivid.

Interview Findings

Interview findings can be classified into several categories, as follows: (a) teaching Strategies influence relationships between students and EFL lecturers, (b) giving advice and encouragement, (c) displaying approachable behaviours, (d) showing appreciation and praising students' work, (e) correcting an error or mistake, (f) teaching methods and strategies that students and EFL lecturers regarded as motivating (active learning or working in a small-group/in pairs, emphasis on speaking in English, lecturers as models, practicing, Varying the teaching materials and teaching methods, Giving timely and informative feedback) (g) the students' perceptions of motivational strategies used by their EFL lecturers (giving challenging tasks, Integrating fun activities, giving chances to perform, pmploying a structured and well-planned teaching process), (h) the EFL lecturers' perceptions of motivational strategies in teaching English (encouraging grammar mastery, knowing the students' prior knowledge, memorizing, process-oriented teaching), (i) challenges and problems related to the motivational teaching strategies faced by the EFL lecturers (the EFL lecturers' commitment to their permanent workplace, flexibility of each teaching strategy and method, students' differences, supporting media and facilities).

DISCUSSION

This session has presented both sides' perceptions, the lecturers' and the students', of motivational teaching strategies in teaching English in the English Department of Semarang State University. In addition to the shared perceptions that the lecturers and students had over some strategies used in teaching English as a foreign language, students and lecturers also held some differences of opinion. In terms of strategies that maintain a good relationship between students and lecturers, the students and the lecturers shared very similar perceptions. However, different perceptions were revealed when the general teaching strategies employed by the EFL lecturers in their classroom were discussed. Nonetheless, the students and lecturers' opinions of issues and challenges faced by the lecturers in employing motivational strategies in teaching English in this study context were quite similar to each other. The lecturers' commitment to other workplaces was found to be one of the significant challenges faced by the lecturers.

This session also examined the perceptions of the students and the EFL lecturers regarding motivational teaching strategies used in one of many classes in the English Department of Unnes. Dornyei's framework of motivational strategies (2001b) was adapted with his permission (Z. Dornyei, personal communication, February 18, 2011) to provide a rigorous structure for this session.

To conclude, there was significant agreement between the students and the lecturers regarding the strategies used by lecturers in EFL class, but there were some significant differences in the relative importance given to various teaching strategies. In addition, the value placed on different teaching strategies appeared to differ.

For the first stage of motivational teaching strategies framework, creating basic motivational conditions, when asked about the strategies used by the EFL lecturers that the students and the lecturers found motivating, both groups of participants' opinions concurred about the way lecturers maintained a positive relationship with their students-teachers. The EFL lecturers and their students agreed that attention should be paid to creating and developing a positive relationship in order to stimulate a sense of belonging and engagement in the classroom. The participants agreed that the positive classroom atmosphere had a significant influence on students' engagement in classroom activities.

Strategies such as giving advice and encouragement, displaying approachable behaviours, showing appreciation and praising, and paying attention to the way correction is delivered to students were the four major aspects considered both beneficial in maintaining students and teachers relationship and also useful strategies to motivate students to keep striving toward their effort to master the foreign language. Students and lecturers had both differences and similarities of opinions starting from the second until the third stage of the teaching strategies framework by Dornyei (2001b). In the last stage of this framework, encouraging positive retrospective self-evaluation, students and lecturers agreed about the use of feedback from lecturers as a strategy that was motivating for students to learn the target language. Dornyei's framework of motivational teaching practices is a cycle of motivation in ESL/EFL learning, in which each stage builds on the previous one. This model of motivation suggests that an awareness of motivational teaching strategies by EFL lecturers is very powerful as a tool for promoting students' motivation and achievement.

This discussion leads to some significant implications for lecturers to create, sustain and build on motivation for their students in this context. These implications and suggestions will be discussed further in the next session.

REFERENCES

1. Bernaus, M., & Gardner, R. C. (2008). Teacher motivation strategies, students perceptions, student motivation, and English achievement. *The Modern Language Journal*, 08, 387-401.
2. Bradford, A. (2007). Motivational orientation in under-researched FLL contexts: Findings from Indonesia. *RELC*, 38, 302-322.
3. Brophy, J. (2010). *Motivating students to learn*. New York: Routledge
4. Chambers, G. (1998). Pupils' perceptions of the foreign language learning experience. *Language Teaching Research*, 2(3), 231.
5. Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. New Jersey: Pearson Education Inc.
6. Den Brok, P., Levy, J., Brekelmans, M., & Wubbels, T. (2006). The effect of teacher interpersonal behaviour on students' subject-specific motivation. Retrieved 09 December 2010 from http://tue.academia.edu/PerrydenBrok/Papers/170367/The_effect_of_teacher_interpersonal_behaviour_on_students_subject-specific_motivation
7. Dornyei, Z. (1998). Motivation in second and foreign language learning. *Language Teaching*, 31, 117-135.
8. Dornyei, Z. (2001a). *Teaching and researching motivation*. Harlow: Pearson Education Limited.
9. Dornyei, Z. (2001b). *Motivational strategies in the language classroom*. Cambridge: Cambridge University Press.
10. Gan, Z., Humphreys, G., & Hamp-Lyons, L. (2004). Understanding successful and unsuccessful EFL students in Chinese University. *Modern Language Journal*, 88(2), 229-244.
11. Glesne, C., & Peshkin, A. (1992). *Becoming qualitative researchers: An introduction*. London: Longman Group, Ltd.
12. Gorham, J., & Christopel, D. M. (1992). Students' perception of teacher behaviors as motivating and demotivating factors in college classes. *Communication Quarterly*, 40, 239-252.
13. Guilloteaux, M. J., & Dornyei, Z. (2008). Motivating language learners: A classroom-oriented investigation of the effect of motivational strategies on student motivation. *TESOL Quarterly*, 42(1), 55-77.
14. Hedge, T. (2000). *Teaching and learning in the language classroom*. New York: Oxford University Press.
15. Holsten, J. A., & Gubrium, J. F. (1997). Active interviewing. In D. Silverman (Ed). *Qualitative research: Theory, method and practice* (pp.113-129). London: Sage.
16. Johnson, B., & Christensen, L. (2008). *Educational Research: Quantitative, qualitative and mixed approaches*. London: Sage Publications, Inc.
17. Kirkpatrick, A. (2007). Teaching English across cultures: What do English language teachers need to know to know how to teach English. Retrieved 20 September 2010, from http://www.englishaustralia.com.au/index.cgi?E=hcatfuncs&PT=sl&X=getdoc&Lev1=pub_jour_23_&Lev2=EAJ_23_2_kir
18. Lichtman, M. (2010). *Qualitative research in education: A user's guide*. London: Sage Publications, Inc.
19. Lightbown, P. M., & Spada, N. (2006). *How languages are learned*. Oxford: Oxford University Press.
20. Merriam, S. B. (2009). *Qualitative research; A guide to design and implementation*. San Fransisco: Jossey Bass.

21. Nakata, Y. (2006). *Motivation and experience in foreign language learning*. Oxford: Peter Lang AG.
22. Nakata, Y. (2006). *Motivation and experience in foreign language learning*. Oxford: Peter Lang AG.
23. Yin, R. K. (2009). *Case study research: Design and methods*. California: Sage Publication Inc.
24. Ziahosseini, S. M., & Salehi, M. (2008). An investigation of the relationship between motivation and language learning strategies. *Special Issue English*, 41, 85-107

Technology-based learning in the classroom

Ahmad Sofwan

Semarang State University

Corresponding author: sofwan1589@yahoo.com

Abstract. The advance of technology has made changes on the way teaching and learning is conducted in the classroom. All types of technology are now available for use and the introduction of information and communication technology has greatly influenced the atmosphere and environment of the classroom. Both teachers and students can access internet-based materials easily for all subjects. Teachers can encourage their students to use them not only for enrichment but also for main teaching materials. Online materials help students learn without being limited by the time constraints during face-to-face interaction with their teachers. Teachers can also share their lesson plans, teaching materials, teaching media, and assessment with each other through various ways of communication. In this way, both teachers and students obtain benefits from using the technology in the classroom,

INTRODUCTION

Various development in the technology influence the way people think and behave in many aspects of life, including education. There have been some changes in education as a result of the introduction of technology. The curriculum should be adjusted to include skills in information and computer technology because the students are now exposed to the virtual world through the internet. Educational resources should be equipped with digital books or electronic books, as well as access to the world wide web in which all information is available online and can be accessed around the clock. Teachers now have to adjust they way they teach to keep up with the advance of ethnology if they want to be able to work with their children's new way of thinking. Teaching methods and strategies are also now viewed not as only presenting materials to the students but also as a way to facilitate their learning both with presence and absence of the teaching staff in the classroom. Students are now more independent and child-centered learning would be more appropriate for them to learn cooperatively with other students inside and outside the classroom. In this way, face-to-face interaction is no longer dominant and it should be combined with independent and collaborative learning by maximizing the use of information and communication technology.

There are stages of the integration of technology in the classroom. Puentedura (in CIE, 2015) developed the SAMR (Substitution, Augmentation, Modification, Redefinition) model to illustrate the evolution of how teachers adopt the technology in their teaching and learning process. In the substitution stage, the teachers use the technology as a direct tool substitute, with no functional change in which students prepare the reports or other exercises by using a word processor. In the Augmentation stage, the teachers use the technology as a direct tool substitute, with function improvement in which teacher adds comments electronically then emails the report back to learner. In the Modification stage, the teachers use the technology for significant task redesign in which the students loads report onto a blog. Other learners view and add comments. In the Redefinition stage, the teachers use the technology for the creation of new tasks, previously inconceivable Instead of written report, the students produce online response including images, audio and video.

This paper addresses the introduction of technology in the classroom, types of technology for teaching and learning activities, the benefits of technology and its impacts in the teaching and learning process, and some barriers in the implementation of technology in the classroom.

BENEFITS OF USING TECHNOLOGY

There are a lot of benefits of technology for education. First, the use of technology facilitate flexible learning time. In addition to learning at schools at scheduled time with the teachers, the students can spend more time on learning independently. After school and at weekend time, for example, they can make use of their time to enrich what they have learned at school, or to connect to other students or with their teachers online to discuss their

learning problems and find solution to the problems, or to review and practice on other subjects (Cleaver, 2014; Ranasinghe, 2009).

Second, with the help of technology, teachers can track and assess student progress (Cleaver, 2014). They can identify the problems of their students and quickly take action to help the students deal with their problems. For example, if one student consistently makes a mistake in spelling certain words, the teacher can immediately make correction and further facilitate that student to develop skills in using the feature of spell-check in the word processor to deal with problems in spelling.

Third, the use of technology in the classroom can accommodate students with diverse learning styles (Wainwright, 2010). Students may be visual, audio, and kinesthetic learners and they need to learn differently. Technology offers various forms of teaching materials, including texts, images, audios, videos, and combination of them. Therefore, students can choose one or two different modes of materials based on their individual needs.

Fourth, with the technology, students become more responsible for their learning. Technology helps students control the pace of their own learning. They learn how to make their own decisions and actually think for themselves. They might still the help of their teachers, but gradually they learn to be more independent in their learning and for their future life (Wainwright, 2010).

Finally, technology makes it possible for the teachers and student to have access to digital textbooks that are continuously updated and often a lot cheaper than those old heavy books (Wainwright, 2010). In this way, more resources for learning are available and both teachers and students become more knowledgeable with the more recent development in the subjects they are learning (Ranasinghe, 2009).

TYPES OF TECHNOLOGY-BASED LEARNING

Technologies introduced in the classroom can take various forms from simple to complicated teaching and learning activities. The following describes some of the application of technology in the classroom (CIE, 2015).

- Bring Your Own Devices (BYOD). Here the students are asked to bring their own devices, for example notebooks, computer tablets, smartphones or others into their classroom and they use the devices to support their activities in the classroom. They can use their devices with internet facilities provided by the schools to access various resources of learning and use them for their research activities or for publishing their reports or using the resources for practice on certain competences as part of their curriculum (CIE, 2015).
- E-portfolios. As opposed to traditional portfolios with handwritten or printed collection of the students' work, e-portfolios are created both by the teacher and the students and published online to store the students' exercises, reports, essays, and other assignments and they can monitor the progress and development of their own learning (CIE, 2015).
- Flipped classroom. In this strategy, the students are asked to search for materials and other sources before they discuss with their teachers or with other students as part of their learning activities in the classroom (CIE, 2015). In a language class, for example, the students watch videos of certain places, take notes of the important elements of the places, and later in the classroom work collaboratively to create a descriptive essay on one of the places.
- Personal Learning Network (PLN). The students collect links with other people or resources to facilitate exchange of ideas with different people. The link could be made through social media or interest groups (CIE, 2015).
- Virtual Learning Environment (VLE). This is an e-learning education system that is web-based, but based on traditional face-to-face interaction. Lesson plans, course materials, exercises, homework, assessments, and links to external resources are provided for the students so that they can plan their study based on the information available online (CIE, 2015).
- Interactive Whiteboards (IWB). By using interactive whiteboards, teachers and students can display images or videos from a computer through a digital projector, to a large board or screen (CIE, 2015).
- Software Applications (Apps) are designed to operate on mobile devices such as smartphones and tablet computers (CIE, 2015).
- Web 2.0. This is the second generation of the World Wide Web. Web 2.0 is equipped with new features and functionality, for example. podcasts, blogs, wikis, RSS (Rich Site Summary – used for updating regularly changing web content), social networking and tagging (CIE, 2015).

BARRIERS IN THE USE OF TECHNOLOGY

The integration of technology in education and in the classroom is not without problems. There are some factors that may inhibit the success of the implementation of teaching and learning process by using technology. Firstly, lack of resources in schools could be the barrier for the successful implementation of technology in the classroom. If the hardware, software, internet access, and other supporting facilities are not adequately provided, teachers and students would find it difficult to fully integrate technology for their teaching and learning (Butler and Sellborn. 2002).

Secondly, some teachers do not have adequate knowledge and skills in computer technology. Teachers often struggle with an inadequate knowledge of specific technology, technology-supported pedagogy, and technology-related-classroom management. If this is the case, they would not be able to effectively integrate the technology in their classroom (Zhao and Frank, 2010)..

The third factor is institutional barriers. Factors outside of the classroom, including leadership, school time-tabling structure, and school planning can all prevent effective integration of technology. Many schools lack a healthy human infrastructure that supports technology innovations in the classroom (Butler and Sellborn. 2002; Zhao and Frank, 2010). Attitudes and beliefs are another factor. Teachers' attitudes about student use of technology can serve as a significant barrier to its integration. The specific feelings and preconceptions educators have about digital tools and their instructional purposes can serve as a significant barrier (or, conversely, an advantage) to their integration into the curriculum. The attitudes of the school leaders and administration can also be a barrier to technology integration (Butler and Sellborn. 2002).

The last factor is subject culture. Teachers may believe that certain types of technology may naturally fit in with some course subjects or topics more easily than others. Educators' beliefs that certain technologies are not relevant to their subject can serve as a strong barrier

CONCLUSION

The introduction of technology in the classroom should be conducted to give the best benefits to the students for their achievement of the competences as set out in the curriculum. The adoption of the technology should be adjusted with the local conditions of the schools. Teachers can adopt at enhancement or transformation level. Various forms on activities by using technologies can be conducted, including BYOD, E-portfolios, Flipped classroom, PLN, VLE, IWB, Software Applications, and Web 2.0. There are a numerous benefits of technology for the teaching and learning process in the classroom but also there are some barriers for its implementation.

REFERENCES

1. Butler, Darrel L., and Sellborn, Martin. 2002. Barriers to adopting technology in teaching. *Educause Quarterly* 2, pp. 22-27.
2. Cambridge International Examiantion. 2015. *Digital Technologies in the Classroom*. Cambridge: CIE. Retrieved 12 May 2016 from www.cie.org.uk
3. Cleaver, Samantha, 2014. *Technology in the Classroom: Helpful or Harmful?* Retrieved 20 May 2016 from <http://www.education.com/magazine/article/effective-technology-teaching-child/>
4. Ranasinghe, Arjuna I. 2009. The Benefit of Integrating Technology into the Classroom. *International Mathematical Forum*, 4, no. 40, pp. 1955 – 1961.
5. Wainwright, Ashley. 2010. *10 Reasons today's students need technology in the classroom*. Retrieved 10 May 2016 from <http://www.securedgenetworks.com/blog/10-Reasons-Today-s-Students-NEED-Technology-in-the-Classroom>.
6. Zhao, Yong and Frank, Ken. 2010. *An ecological analysis of factors affecting technology uses in schools*. Michigan: Michigan Department of Education. Retrieved 15 May 2016 from mkoehler.educ.msu.edu/OtherPages/Courses/CEP.../ZHAOFEANK_Technology.doc

Computer-Mediated Corrective Feedback on Writing: Principles and Practices

Iis Sujarwati

A Postgraduate Student of State University of Semarang

Corresponding author: i.sujarwati@yahoo.com

Abstract. Writing as a communicative language skill becomes the most difficult skill among others, especially for students of English as a Foreign Language. Since, it requires a hard effort to think out the sentences and joining them to be meaningful and communicative. Teacher's corrective feedback has a big role in enabling students to produce a good writing. Providing feedback can be used in connection with the computer technology through both synchronous and asynchronous communication. It can support students with explicit and implicit feedback which will be useful to develop their writing. By this, the recent paper will describe the principles of corrective feedback on the students' writing; and the role of computer as a medium in providing feedback on the students' writing. Furthermore, it will provide a teaching practice of using computer-mediated communication in delivering the corrective feedback.

INTRODUCTION

Writing in a second/foreign language (L2) is challenging, especially for academic writing in university level. Brown (2001, p. 335) states that writing pedagogy focuses on students on how to generate and organize the idea, to revise text for clearer meaning and to produce a final product. Moreover, Rivers (1981, p. 78) says that the purpose of written language is to convey the message of information accurately, effectively, and correctly. It means that writing as a process where the students have a chance to discuss their ideas naturally in written form and teachers should guide them in process of writing then evaluate their writing on their product in order to make a good writing that can be easily understood by the reader. Finding ways to assist learners to develop their L2 writing has been a major objective for teachers and educational researchers (Polio, 2003). One way commonly employed to help students improve their writing is the provision of feedback. Feedback is seen as essential to improve L2 writing (Leki, 2007). Teacher feedback can cover all aspects of writing, including content, organization and language use. Written feedback comments which specifically focus on language use (grammar, vocabulary, mechanics) are referred to as written corrective feedback (WCF), and are commonly used by ESL and EFL teachers (Hyland, 2006). This activity is not only can be done in a paper and pen, but also by using an electronic media, such as computer.

Nowadays, in the digital age, computer technology and computer software have a big influence in teaching and learning activity. We cannot avoid the effects of computer technology development. But, as a teacher we can guide our students to use this kind of technology wisely. How to utilize the computer in teaching and learning activity should be understood by both teacher and students. For example, the teachers can ask the students to use computer technology to find the material for their learning. In the writing process, computer technology and computer software can be valuable tool. It can be used by the teachers to deliver their corrective feedback towards the students' writing both online and offline. Warschauer (2007) highlights that computer can be used to teach new types of writing considering the online age that we live in today. Furthermore, (Hudson, 1984) states that the students in the computer-assisted classroom demonstrated not only more interest in discussions, and, subsequently more practice writing English, they were also more focused on the task at hand than the students in the oral classroom.

THE PRINCIPLES OF TEACHER FEEDBACK

Feedback is very critical in learning and teaching. An area of concern in the research on teacher feedback in second or foreign language is error correction or corrective feedback and its effects on student writing accuracy. Response to student writing has been a source of interest and debate in L1 composition theory and research since the early 1970s (Ferris, 1995). For several decades, both L1 and L2 scholars made extremely negative pronouncements

about the nature and effects of teacher response, especially instructors' written commentary. Research reviews by Hillocks (1986), Knoblauch and Brannon (1981), and Leki (1980a) as cited by Ferris (2003, p. 19) suggested that regardless of how written teacher feedback was delivered, there was no evidence that it was successful in helping students to progress as writers.

In contrast, many scholars have been proved that teacher corrective feedback is effective to improve the students writing performance. As cited by Ferris (2003):

“Writing teachers and students alike do intuit that written responses can have a great effect on students writing and attitude toward writing... written comments are time consuming, but teachers continue to write comments on students paper because we sense that our comments help writers improve...(Leki, 1990a, pp 57-58).”

But, then, several researchers suggest the use of effective feedback in academic writing pedagogy (Granville & Dison, 2009; Ferris, 2008; Li, 2007; Spencer, 2007; Weaver, 2006; Zhu, 2004; Cabral & Tavares, 2002; Saito, 1994). For instance, Weaver (2006) and Ferris (2008) concur that students should be shown their strengths and weaknesses so that they can improve on their future work. Weaver (2006) further states that some academics think feedback does not work as students are only concerned about the grade they receive from their assignments. She found that students were motivated to improve when they received constructive feedback and also suggests that tutors should provide appropriate guidance and motivation rather than diagnosing problems and justifying the marks. Similarly, Saito (1994) suggests that English Second Language (ESL) teachers need to make explicit the purposes of their feedback so that students can know how to handle that feedback and use it to their benefit.

By that point, the scholars were concerned on the importance of focusing on writing as a process rather than a fixed final product, with specific implication and application including the use of multiple drafting cycles that emphasized substantive revision and teacher feedback that took place between drafts rather than only after the final draft had been submitted (Ferris, 2003).

Corrective feedback may take different forms of teacher response to students' texts that contain errors. Ellis, Loewen, and Erlam (2006) categorize responses from teachers to students' error into three forms or strategies: (a) teacher feedback that indicates that an error has been committed, (b) teacher feedback that provides the correct form of the target language, and (c) teacher feedback that provides a type of metalinguistic information about the nature of the error.

In addressing grammatical errors on students' writing, teacher can use different feedback strategies. Furthermore, there are some types of written corrective feedback. Written corrective feedback, according to Bitchener and Ferris (2012, p. 116), can be defined as grammar/error correction. It can be direct which refers to the wrong word is crossed out and the right word is given or the provision of correct answers in response to student errors (Lee, 2008). While indirect feedback is in which an explanation, an example, a hint is given, but not the correction itself or the situation where an error is indicated but the correct form is not provided (Ferris & Roberts, 2001). Focused (only one or a smaller number of errors are corrected), or unfocused (all errors are corrected).

Both direct feedback and indirect feedback in correcting student errors are commonly practiced by writing teachers and teachers are free to use one or a combination of them. However, teachers need to pay attention to several principles of corrective feedback that are largely acknowledged in recent literature as pointed out by Lee (2008). First, in terms of long-term writing development, indirect feedback is regarded as more beneficial to student writers than direct feedback (Ferris, 2003; Ferris & Roberts, 2001). Second, when codes are used in indirect feedback, teachers are recommended to use consistent coded feedback that is supported by systematic grammar instruction as codes in feedback provision can be confusing for both teachers and students (Ferris, 2003). Third, corrective feedback should be specific on limited significant structures (Montello, 1997) and focusing on selective errors is generally more productive than correcting all errors because comprehensive error correction can be exhausting and overwhelming for both teachers and students (Lee, 2008).

ROLES OF TEACHER IN PROVIDING FEEDBACK ON STUDENT WRITING

Keh (1990) and Hedgcock and Leftkowitz (1996) suggest at least four roles that writing teachers play while providing written feedback to students: a reader or respondent, a writing teacher or guide, a grammarian, and an evaluator or judge. First is, teacher as a reader or as a respondent interacting with a writer. In this role, teachers respond to the content and they may show agreement about an idea or content of the text. Teachers may provide

positive feedback such as “You make a good writing” or “I agree with you” without giving any suggestion or correction.

Second is as a writing teacher or as a guide. That is, teachers may show their concern about certain points or confusing or illogical ideas in students’ text. In this case, teachers still maintain their role as a reader by only asking for clarification or expressing concerns and questions about certain points in the text without giving any correction. They may, however, refer students to strategies for revision such as choices of problem solving or providing a possible example.

Third is as a grammarian. Teachers write comments or corrective feedback with reference to grammatical mistakes and relevant grammatical rules. Teachers may provide a reason as to why a particular grammatical form is not correct or not suitable for a certain context such as choice of tense, use of article, or preposition. In this case, teachers may also give elaborate explanation of grammatical rules to help students improve their text.

Fourth is as an evaluator or judge. It is very common that many writing teachers may act only as an evaluator whose main role is to evaluate the quality of students’ writing as an end product of a writing process (Arndt, 1992) and grade students’ writing based on their evaluation.

Another notion comes from Brannon’s (1982) as cited by (Burke & Pietrick, 2010, p. 30) which stated that there are nine different roles tutors inhibit when reading and responding to student work; *first*, gatekeepers read the text to decide whether the student has sufficiently met some pre-determined criteria in order to gain membership in some group; *second*, judges evaluate the quality of the text; *third*, editors correct the text according to discourse and grammatical conventions; *fourth*, coaches analyze the text and use their expert knowledge to encourage student improvement; *fifth*, discourse community experts inform students about disciplinary expectations and conventions; *sixth*, sounding boards enable the students to see gaps in the text and encourage the writer to explore the alternatives that he or she may not have considered; *seventh*, collaborators work with students to produce the best quality work possible and provide feedback as a partner rather than expert; *eighth*, conversation patterns see feedback as interactional, as a way of creating a dialogue with the students; and *ninth*, common readers engage with the text out of pleasure and interest.

THE ROLE OF COMPUTER TECHNOLOGY TO WRITING SKILLS

Nowadays, computers offer many specialties to use in the writing process. They have prompts to keep writers on the point, highlight possible spelling mistakes, and offer a communication channel for corresponding with friends and colleagues (Daiute, 1985). Computers are being used in classrooms for instruction in composition, literature, decoding, reading comprehension, spelling, vocabulary, grammar, usage, punctuation, capitalization, brainstorming, planning, reasoning, outlining, reference use, study skills, rhetoric, handwriting, drama, and virtually every other area of language arts. There are also programs specifically designed for preschool, primary, upper elementary, middle school, high school, and college students, as well as students in adult, English as a second language, foreign language, bilingual, and special needs classes (Bruce, 1990).

Regardless of the writing medium, all good writing moves through an authoring cycle that begins with thinking about or discussing the topic and making prewriting notes. After the prewriting, writers can work on writing as an initial draft. When writers revise and edit, they can take their peers’, teachers’, and editors’ ideas about the papers (Strassman & D’Amore, 2002). In the writing process, computer and computer software can be valuable tool for many students. In addition to this, word processing, speech recognition, speech feedback, word prediction, and other varieties of software packages may help students with learning disabilities to participate in well-developed classroom writing programs (Williams, 2002).

Moreover, according to Bruce (1990) there are five roles of computer technology to writing:

1. Tutors. They can individualize instruction, provide learning material at a controlled pace, and record student progress. Artificial intelligence research has led to the specification of criteria for "intelligent tutoring systems" (Neuwirth, 1989). An intelligent tutor should have the ability to perform the task being taught and to discuss it articulately. Thus, a spelling tutor should be able to correct misspellings and to identify them as instances of general spelling rules. A second important requirement is a representation of the student's evolving knowledge, so that misconceptions can be diagnosed and addressed appropriately. Third, the system should have strategies for teaching. It should know how to present material, how to pose problems, and how to achieve the appropriate balance between tutor-direction and support for student-directed inquiry.
2. Tools. They aid in reading, allow students to produce and format texts easily, facilitate revision of texts, and check for spelling errors. They store in a compact and easily accessible form all sorts of information that learners need, from style sheets to encyclopedic data. Word processing is a real computer use, and serve an

important function, even if only help with the practical details of creating and sharing texts within a classroom.

3. Ways to explore language. They make the regularities, the beauties, and the difficulties of language something that students can examine and interact with in new ways. It can be used to create a microworlds for language. Investigation within these microworlds can be highly motivating for students. Moreover, they lead students to think deeply about the language pattern, conceptual relationships, and the structure of ideas.
4. Media. They make possible new modes of communication and "hypertexts," or "hypermedia," which allow the intermixing of tables, charts, graphs, pictures, sounds, video, and text.
5. Environments for communication. They are a new social realm that permits new forms of meaningful communication and reconfigures the relationships among students and teachers. Computers can be used to foster social interaction and thereby contribute to language development and learning.

PRACTICE OF GIVING CORRECTIVE FEEDBACK THROUGH COMPUTER TECHNOLOGY

As mentioned in the previous explanation, actually, there are two types of written corrective feedback; direct and indirect corrective feedback. There are also sub-categorizations of these major types. For instance, indirect corrective feedback divided into underlining and codes (Ferris & Roberts, 2001) while the effect of direct corrective feedback with or without written metalinguistic explanations (Bitchener & Ferris, 2012).

In this case, it will be presented how to use computer technology in giving corrective feedback. The focus is on three types of corrective feedback namely track changes, recast, and metalinguistic. The terms recast and metalinguistic corrective feedback and the characteristics of those are based on the model introduced by Lyster and Ratna (1997). Moreover, those types are provided in *Microsoft office word 2007/2010* which can be taken from the menu "review" The description can be seen in the following table.

Table 1. The characteristics of corrective feedback types in Microsoft office 2007

Type	Definition	Location in text	Example	Nature of error indicated	Target-like reformulation provided	Elicited output
Track changes	It is a computer-mediated method for providing corrective feedback that can be used in an implicit or explicit manner. It is based on reformulation of the error where the program strikes through deletions and marks insertions in different color	Inline	Rita and Jhony <i>goes</i> to school	Provided indirectly	Yes	Error is identified and reformulated
Recast	It is a computer-mediated method for providing corrective feedback in which the error is always formulated without providing any metalinguistic information about it	Marginal comments displayed inline	Rita and Jhony goes to school		Reformulation provided	Repetition of the error in the correct form
Metalinguistic feedback	It is a computer-mediated method for providing corrective feedback based on providing metalinguistic information or comment about the error without reformulating it	Marginal comments displayed inline	Subject-verb agreement	Provided indirectly	Yes	Reformulation on error

To make it clearer, the following figure represents an attempt made in this study to specify where and how the note is displayed.

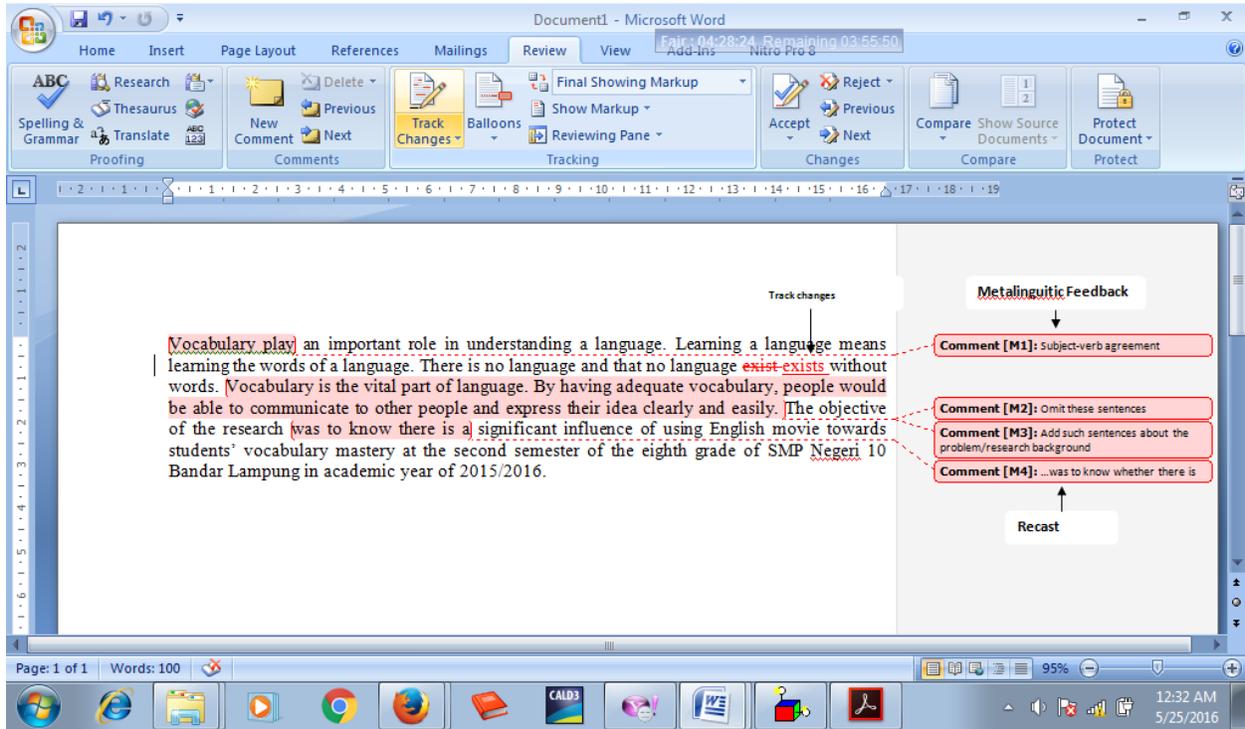


Figure 1. Screenshot of computer-mediated corrective feedback

CONCLUSION

The utilization of computer technology in teaching and learning activity is very useful especially in writing. It makes easier both for the students and the teachers to produce a good writing. The computer-mediated corrective feedback that can be done by the teachers enables the students to enhance their writing ability. The teachers' corrective feedback through computer also make an easier understanding for the students to know the incorrect parts of their writing and develop the students' metalinguistic awareness.

REFERENCE

1. Bitchener, J., & Ferris, D. R. (2012). *Written Corrective Feedback in Second Language Acquisition*. New York: Routledge.
2. Brown, H. (2001). *Teaching by Principles an Interactive Approach to Language Pedagogy 2nd Edition*. New York: Addison Wesley Longman Inc.
3. Bruce, B. C. (1990). *Roles for Computer in Teaching The English Language Arts. Techncal Reports No.522*. Urbana Campaign: University of Illions.

4. Burke, D., & Pietrick, J. (2010). *Given Students Effective Written Feedback*. New York: Open University Press.
5. Daiute, C. (1985). *Writing & Computers*. California: Addison-Wesley.
6. Ferris, D. R. (2003). *Response to Student Writing: Implications for Second-Language Students*. New Jersey: Lawrence Erlbaum Associates.
7. Ferris, D. R. (1995). Student Reactions to Teacher Response in Multiple Draft Composition Classrooms. *TESOL Quarterly* , 29, 33-53.
8. Ferris, D. R., & Roberts, B. (2001). Error Feedback in L2 writing Classes. How Explicit does it need to be. *Journal of Second Language Writing* , 161-184.
9. Hudson, K. (1984). *Introducing CAL: A Practical Guide to Writing Computer-Assisted Learning Programs*. British: Spinger.
10. Hyland, K. &. (2006). *Feedback in second language writing: Contexts and issues*. Cambridge: Cambridge University Press.
11. Lee, I. (2008). Understanding teachers' written feedback practices in Hong Kong secondary classrooms. *Journal of Second Language Writing* , 17, 69-85.
12. Leki, I. (1991). The preferences of ESL students for error correction in college level writing classes. *Foreign Language Annals* , 24, 203-218.
13. Leki, I. (2007). *Undergraduates in a second language: Challenges and complexities of academic literacy development*. New York: Lawrence Erlbaum.
14. Polio, C. (2003). Research on second language writing: An overview of what we investigate and how. Exploring the dynamics of second language writing. 35–65.
15. Rivers, W. (1981). *Teaching foreign language skills (2nd ed.)*. Chicago: University of Chicago Press.
16. Strassman, B. K., & D'Amore, M. (2002). The write technology. *Teaching Exceptional Children* , 34, 28-31.
17. Warsaucher, M. (2004). Motivational Aspect of Using Computers for Writing and Communication.

Gambang Semarang: The Spirituality of Simple Accustomed Belief in Seemingly Far-fetched Culture

Nadya Natalia & Angelika Riyandari

Unika Sugiyopranoto

Corresponding author: a_riyandari@unika.ac.id

Abstract. This paper commences with a review of generation Z's indifference on their own culture and lack of study on the connection between culture and spirituality. It is no doubt that culture is one of the solid sources of values. This paper is part of a project which tries to reveal the meaning of cultures for people living in certain areas. A tangible culture taken as the focus is *Gambang Semarang*, one of the country's cultural assets from Semarang, whose history highlights the roles of Javanese, Chinese and Arabs. This research is a qualitative research in which the data were taken from recorded materials on Semarang culture and from the interview with the participants. The result of the study shows that *Gambang Semarang* as a folk arts voluntary mix Chinese, Javanese and Arab cultures. The mixed cultures demonstrate the harmony of living, tolerance and respect practised by those three different ethnic groups. Thus, *Gambang Semarang* has the attached values of living together in peace, respect to others and tolerance reflect the spirituality of everydayness. It is suggested that fresh approach in wrapping up performing arts by communicating the values behind the physical performances is compulsory to make people, especially the young ones, appreciate their own culture.

INTRODUCTION

The term traditional culture is often perceived as unfamiliar and outdated, especially by today's young people, the Generation Z, who have absolutely oblivious of what is going on in their country's cultural development. Generation Z as defined by Michael T. Robinson (n.d.), are those who were born in the year 1995 to present, though there is not any standardized description for when a generation begins and ends. The distinctive trait contrasting Generation Z from any other generation is in that they are "the first true digital natives" (William, 2015), who are constantly and directly attached to known and unknown people and the issues around them through social media network. Generation Z is a step ahead from Generation X, for instance, who is relatively safety-oriented—a jaded generation who prefers talking on the phone or communicating through email without knowing any social media network (Mastroianni, 2016).

As social media network is a medium where generation Z spends time to get in touch with others, it is inevitably a place they learn their values. In the so-called continuously changing 'modern' world, members of Generation Z in Indonesia apparently overlook learning media in which values accordingly to their own culture can be learned. Only very few are still willing to spend money on, for example, a showcase of *wayang* where the *dhalang* usually gives "advice to local characters – businessmen, the hosts of the events, his own musicians, local and national dignitaries (Weiss, 2006, p. 5)." Generation Z's indifference to their own culture also partly dues to the fact that the numbers of such 'traditional' entertainments are deteriorating these days.

So much of generation Z's indifference, the terms 'modern' attached to social media and 'traditional' attached to local performances pose a challenge of their own. The Huffington Post has segregated the differences between modern and traditional culture; that modern culture thrives on change, whereas traditional one changes in conservative manner, opting to resist whenever it could (Knick, 2011). The contrasting idea of those two terms has driven young people apart from taking interest in 'traditional' culture.

Surfacing misconceptions happen all the time, unexceptionally when it comes to the term culture. As a "system of learned and shared meanings", culture is actually a part of one's everyday life in that culture influences attitude and ways of thinking (Knick, 2011). As what has been stated above regarding traditional and modern culture, the occurrence of changes are naturally supposed to keep the world going. How one's daily activities may look like is constructed by themselves and their surroundings—here the cultural values in which they live in and their ways of apprehending things become moderating factors in shaping their habits. That being said, the meaning of culture is

elaborated in greater details not merely about traditional beliefs and conservative values, but also what is happening in the civilization era the world is going through.

Discussions on culture on higher education level emphasize on its forms, identity, symbolic meaning, race, ethnicity, gender, but rarely on its spirituality dimension (Tisdell, 2003). Tisdell (2003) says that the lack of studies on the connection between culture and spirituality is a result of higher education's learning process which is typically through rationality, although in fact the development of rationality is not the only development which affects people's growth. In the same discussion, Tisdell argues that teaching should be made relevant to one's own culture to enable learners to absorb what they learn. She states the importance of being conscious of one's culture and of being able of making meaning of the culture. The meanings of the culture discussed here are pointed out by Tisdell as "attached to some old but familiar symbols that we may have thought we found no meaning in as adults at all (Tisdell, 2003, p. 12)."

Tisdell's emphasis on the importance of one's own culture and its meanings to enrich the learning process inspires the project in which this paper is derived from. The purpose of the project is to give meaning to *Pesisiran* (coastal area) culture of Semarang. As part of the project, this paper particularly focuses on finding spirituality in Semarang culture especially in *Gambang Semarang*. The focus is chosen due to the fact that previous researches on Semarang culture concern more on preserving the art itself, not on giving meaning to the art they practice.

In defining the term spirituality, this paper follows Tisdell's seven assumptions about the nature of spirituality which are: (1) Spirituality are not the same with religion, (2) Spirituality is about an awareness and honoring of wholeness and the interconnectedness of all things through the mystery of matters like the Life-force, God, higher power, higher self, cosmic energy, Buddha nature, or Great Spirit, (3) Spirituality is fundamentally about meaning-making, (4) Spirituality is always present in the learning environment, (5) Spiritual development constitutes moving toward greater authenticity or to a more authentic self, (6) Spirituality is about how people construct knowledge through largely unconscious and symbolic processes, often made more concrete in art forms such as music, art, image, symbol, and ritual which are manifested culturally, and (7) Spiritual experiences most often happen by surprise.

RESEARCH METHODOLOGY

This research is a qualitative research. This research will be done in Semarang. The data were taken from recorded materials on Semarang culture and from the interview with the participants. The interviews might consist of questions as follows:

1. What kind of Semarangan traditions do you know?
2. Do you know about the story behind the traditions?
3. Do you still believe in the tradition? Why?

The participants were traditional artists, local leaders, or any individuals who were knowledgeable about the cultures in Semarang. Snowball sampling is used to gain access to these individuals. Snowball sampling is appropriate because it can identify potential experts or scholars in local cultures and heritage. In this activity, qualitative inquiry is done because it can help the researcher to get in-depth information about the cultures in Semarang. As soon as potential participants are identified, interviews are done. The transcripts of the interviews, photographs and video are collected to obtain data for the research. The answers were then recorded and transcribed. The answers to the interview questions were categorized and analyzed to find out the beliefs of the participants with regard to Semarangan traditions. Results of the analysis were then written to obtain research conclusions.

Gambang Semarang: Conveying Meanings from Culture

The origin of *Gambang Semarang* is still highly debatable. Some sources mention that *Gambang Semarang* is an imported performing arts from *Betawi*. The reason for the opinion is that the music instruments used for *Gambang Semarang* were bought from Jakarta and those instruments are similar to the instruments used in *Gambang Kromong* which consists of *gambang*, *bonang (kromong)*, *suling*, *kendhang*, *gong*, *kecrek*, string instruments (*tehyang*, *kongahyan*, and *sukon*) and trumpet (Kaliri as cited by Puguh (1998-2000)). This performing arts is established by Lie Hoo Soen, a member of *volksraad* (Dutch House of Representatives) Semarang. As a fan of *Keroncong* and a member of performing arts organization 'Krido Hartojo', Lie Hoo Soen has an idea to create a typical performing arts for Semarang. Lie Hoo Soen shared his concern with the Mayor of Semarang, Boesevain who approved and commended the buying of *Gambang Kromong* instruments from Jakarta. *Gambang Semarang's* practices were done regularly upon the completion of the instruments.

Dhanang Respati Puguh (1998-2000, pp. 40-41) writes that *Gambang Semarang* was brought by Chinese immigrant to Semarang. The Chinese came to Semarang in 1416 and then went to other areas in Central Java such as Jepara, Lasem, Rembang, Demak, Buyaran, and Semarang. Most Chinese in Semarang lived in Semarang urban area and mixed with local people; thus mixing the Chinese culture the immigrants originally possessed with the Javanese culture. *Gambang Semarang* also a mix between Chinese and Javanese performing arts as can be seen in the music instruments used in *Gambang Semarang* mentioned above. The dancers and the female singers who were mostly Chinese wore *Semarangan Sarong*, *kebaya encim* (a traditional Javanese *kebaya* modified by the Chinese Indonesian made of an embroidered clothes in both sides and the bottom of its front side looks like a cone) and *gelung kondhe* (Javanese hair bun).

In the years after, *Gambang Semarang* was performed in the Night Market (*Pasar Malam*) of Kudus, Pati, Juwana, Temanggung, Parakan, Wonosobo, Magelang, Weleri, Pekalongan, and Cirebon. In 1940, two musicians from Magelang: Oei Yok Siang (music composer) and Sidik Pramono (lyricist) composed a song called *Gambang Semarang*. This song was performed by *orkes Perindu* (Perindu Orchestra) by Nyi Ertinah, the singer, and broadcasted on Laskar Rakyat Studio, Magelang.

Gambang Semarang is more popular as the title of a so-called Semarang folk song or the name of Semarang traditional dance, while *Gambang Semarang* actually is a combination of several performances: music, vocal, dancing, and comedy. *Gambang Semarang* is a folk art as it is developed communally by the people. Based on its characteristics, *Gambang Semarang* can be categorised as traditional art as it has historical and cultural values. Initially *Gambang Semarang* was only familiar for certain level of society. In the later years, *Gambang Semarang* became well-known by more people. During 1970-1980, *Gambang Semarang* was performed in various events such as Night Market (*Pasar Malam*), the celebration of Indonesian Independence Day, Ied, government offices events, and wedding party. However, as time changes, *Gambang Semarang* is left out by the people. In 1990, as a part of its political agenda, the government of Semarang Municipality revived *Gambang Semarang*. Since then on, the development of new versions of *Gambang Semarang* is dominated by government institutions and higher education institutions.

As a part of folk art, *Gambang Semarang* is discussed by Puguh (1998-2000) from the aspects of:

1. Semarang style Javanese dialect as a medium of communication during the performance, the medium of the comedy and the medium of song lyric;
2. The traditional story/the folk story of Semarang as comedy materials and song materials;
3. The traditional costumes and the accessories of Semarang culture as an inspiration of dance costumes and the comedian costumes of *Gambang Semarang*;
4. Semarang *Karawitan* (traditional music instruments) as a material for the development of repertoire and the instruments of *Gambang Semarang*.

The first aspect discussed is the language. The vernacular, the local language, is a medium of characterization in a performing arts as it helps to build the identity of a role played by the actor. The use of local language automatically gives local flavour to the performance. By using *Semarangan* dialect, *Gambang Semarang* brings out the atmosphere of Semarang, thus emphasizes the setting of place in the performance. *Semarangan* dialect, which is keragaman folk pendukungnya. *Gambang Semarang* adalah suatu pertunjukan yang dibangun berdasarkan keragaman sosio-cultural masyarakat pendukungnya.

The second aspect is folk story. Gado-gado Semarang lyrics, a song written by Kelly Puspita mengandung the material of folk story. This song is in Javanese language.

Semarang jarene mula bukane
Saka tembung kutha aseme arang
Adipatine sing kondang asmane
Kang katelah Ki Ageng Pandanaran
[Semarang, it is said that, the origin
Is from the city where tamarind (*asem, asam* (Indonesian language)) can hardly found
The regent is famous, his name
Is Ki Ageng Pandanaran]

The first verse of this song shows the connection with the local legend ‘the origin of Semarang’ in which Ki Ageng Pandanaran was the main character. Ki Ageng Pandanaran mempunyai bekal agama Islam yang kuat dan kemasyarakatan. karena dia meruoakan putra dari R. Made Arang, a descendent of R. Patih, the King of Demak, the first Islam Kingdom in Java. The story on Ki Ageng Pandanaran is related to the teaching of Islam religion. Atas ijin sultan Demak, ia membuka hutan untuk dijadikan pemukiman. Tempat yang dipilih adalah tempat yang jarang

pohon asalnya, yang disebut desa Asemarang, yang kemudian disebut Semarang. Karena ketekunannya menyiarkan agama, ia kemudian bergelar Kyai Pandan Arang.

This song includes the story related to Islam which its teaching come from the middle east.

Semarang yo yu kuta pesisir
Akeh uwong manca kang pada mampir
Ana Koja kok jarene Encik
Dhandanggula dicengkok cara Mandarin
[Semarang is a coastal area
Where many foreigners come to visit
There is a Koja (an Arab descendent) who is called Encik (An Indian is usually called Encik.)
Dhandanggula (one of Javanese traditional song) is sung in Chinese style]

As a coastal area, Semarang is a harbor city where foreigners, mostly Indian, Chinese, Arab, can enter. Some foreigners only come to visit and trade with the locals, some others stayed and blended in with the local people. An area called Pakojan is where a Koja lives. A Koja is a mixed of Indian and Arab who live in an area called Pakojan (A place of Koja). Pecinan is a place where the Chinese lives. Encik is a nickname used by local Javanese people after an Indian. The mixed culture can be seen in the last line when a traditional Javanese song is sung in Chinese style. The last sentence once again emphasize Gambang Semarang as a mixed culture.

The third aspect is costume. The dancing costume designed for Gambang Semarang Fakultas Sastra UNDIP takes after pesisiran costume. The kebaya is made of embroidered clothes in the side and the bottom of its front is meruncing. The kain worn is a songket with sonder as the accessories. The dancer hair bun is a mix of Javanese, European, and Chinese hair bun. Paduan Berbagai etnis yang terjadi pada masyarakat Semarang telah melahirkan bentuk-bentuk busana yang menyatakan dirinya sebagai masyarakat kota pesisir. The mix of different ethnic groups expresses through costumes worn by Gambang Semarang dancer. Kebaya Encim is a mix between Javanese traditional dance and Chinese style.

The clothes worn by indigenous women of Indonesia (particularly Java) subsequently worn by Tionghoa Peranakan and Indo Belanda. From 1872-1920 Dutch women also wore kebaya and batik sarong in their house because the clothes were very comfortable to use in the hot and humid tropical region. To differentiate their position as the highest class in the colonial hierarchy, they wore kebaya made from luxury fabric and batik sarong, which designs was derived from European style in soft colours. On February 10, 1910 the colonial government issued a regulation for the Tionghoa Peranakan: "Wet op het Nederlandsch Onderdaanschap" (Act on Dutch nationality, on gelijkgesteld which means 'equalization'). This equalization led rich Tionghoa Peranakan women to wear kebaya and batik sarong similar to the Dutch's women. First they imitated the Dutch kebaya to white kebaya kerancang. But at last they wore the colourful kebaya sulam, which was embroidered with China's ornament design. These Tionghoa Peranakan's Kebaya was known as Kebaya Encim. Tionghoa Peranakan were descendants from mixed marriage of Chinese men and indigenous Indonesian women. Kebaya Kerancang (cutwork) made by perforate the fabric of kebaya after it had been embroidered to make it similar of lace. (Lukman, Amir, & Sunarto, 2013).

The music players in Gambang Semarang wears Surjan. Ada 2 macam bentuk surjan.

1. Surjan dengan krah (bentuk lingkar leher) shanghai
2. Surjan dengan krah gaya eropa. Pemakaian surjan dengan krah eropa dialasi dengan baju kokok di dalamnya. Surjan merupakan busana resmi bagi pria pribumi dari usia remaja sampai dewasa berbentuk baju lengan panjang dengan kancing di bagian depan. Untuk melengkapi busana, para pria memakai ikat kepala (iket) corak batik Surakarta atau Yogyakarta serta menggantung jam saku yang berfungsi sebagai penunjuk waktu dan hisasan.

Regardless its controversy about the origin of Gambang Semarang. It is obvious that Gambang Semarang is a mix of Chinese culture and Javanese culture produced and performed by both Chinese and Javanese culture. The mix was created inclusively without any burden of prejudice of discrimination between Chinese culture and Javanese culture. It is a voluntary mix as a result of two cultures which live side by side.

What meanings, either hidden or shown, are being conveyed in every dance movement and song lyric of Gambang Semarang.

Gambang Semarang's lyric is an expression of the narrator impression on the aesthetic values of Gambang Semarang:

Empat penari, kian kemari
Jalan berleumpang, aduh...

Sungguh jenaka menurut suara
Irama Gambang

...

Bersuka ria, gelak tertawa

Semua orang, karena ...

Hati tertarik grak grik

Si tukang kendang

[The four dancers dancing energetically

Walk slowly

.....

The dancing is very energetic

Different from the origin of Gambang Semarang which was created naturally to fulfil people's need for entertainment. The naturalness of Gambang Semarang was reflected on its songs and dances which unlike its Gambang Kromong Betawi, did not follow rigid notation and pattern. Starting from 1990s Gambang Semarang was developed for political reason which makes it miss its naturalness although it is not without benefit as Gambang Semarang becomes better and well-arranged.

Puguh (Puguh, 1998-2000) quotes Soengkono, one of the informants in his research who described Gambang Semarang as "...suatu pemandangan unik yang bernuansa Cina setengah Jawa. [... a unique performance which was half Chinese and half Javanese]."

In the art which is based itself on the tradition, the creativity, aesthetics and values, the traditional symbolic values can bound a group of people. → whether Javanese or Chinese dapat dipersatukan, dapat bersatu, dapat memiliki rasa kebersamaan sebagai satu bagian masyarakat lewat Gambang Semarang. Tidak lagi dipisah-pisah.

Religiositas yang mengajarkan untuk bersatu padu, saling menghormati.

Nilai historisnya dapat diambil dari jenis atau akar dasarnya sedangkan nilai modernnya dapat dimasukkan pada pembuatan komposisi nada dalam lagu atau gerak tari serta modifikasi artistiknya seperti warna, pencahayaan, desain panggung atau suasana.

The most obvious karawitan influence is the music instrument.

Designating Religious Spirituality in Everydayness

- The term religious spirituality is offered in most forms of existing culture in the country.
- Fresh approaches in wrapping up the deliverance of each culture are compulsory in order for the citizens to completely appreciate them.

CONCLUSION

- Culture is not old-fashioned but actually is following the development of the world in everyday life.
- A positive manner in perceiving religious spirituality practically lightens up one's understanding of his/her own culture which later on grows his/her patriotism naturally.

REFERENCES

1. Knick, S. (2011, May 25). Traditional Culture and Modern Culture: Man's Fall from Grace. Retrieved from The Huffington Post: http://www.huffingtonpost.com/stanley-knick/traditional-culture-and-m_b_655992.html
2. Lukman, C. C., Amir, P. Y., & Sunarto, P. (2013). Kebaya Encim as the Pehnomenon of Mimicry in East Indies Dutch Colonial Culture. *iArts and Design Studies* Vol 13, 15-22.
3. Mastroianni, B. (2016, March 10). How Generation Z is changing the tech world. Retrieved from CBS World: <http://www.cbsnews.com/news/social-media-fuels-a-change-in-generations-with-the-rise-of-gen-z/>
4. Puguh, D. R. (1998-2000). *Penataan Kesenian Gambang Semarang sebagai Identitas Budaya Semarang*. Semarang: Universitas Diponegoro and Dikti.

5. Robinson, M. T. (n.d.). The Generations: Which Generation are You in? Retrieved from Career Planner: <http://www.careerplanner.com/Career-Articles/Generations.cfm>
6. Tisdell, E. J. (2003). *Exploring Spirituality and Culture in Adult and Higher Education*. San Francisco: Jossey-Bass.
7. Weiss, S. (2006). *Listening to Earlier Java: Aesthetics, Gender and the Music of Wayang in Central Java*. Leiden: KITLV Press.
8. William, A. (2015, September 20). Move Over, Millennials, Here Comes Generation Z. Retrieved from New York Times: http://www.nytimes.com/2015/09/20/fashion/move-over-millennials-here-comes-generation-z.html?_r=0

Development of Technopreneurship Learning Model In Vocational High School Machinery Program

Edy Ismail¹⁾, Samsudi²⁾, Dwi Widjanarko³⁾

¹⁾ *Master of vocational education UNNES, lecturer of Demak state community college* ^{2),3)} *thesis supervisor*

¹⁾ Corresponding author: mustedyismail@gmail.com, ²⁾samsudi234@staff.unnes.ac.id, ³⁾dwi2_otosmg@yahoo.com

Abstract. This research aims to develop Technopreneurship learning model in package engineering expertise machining; test the effectiveness and practicality of the Technopreneurship learning model in package engineering expertise machining. The methods used are research and development. Subjects trials one Technopreneurship learning group. Instruments of collecting data are teacher and student's questionnaire sheets, validation instruments, interpersonal, intrapersonal, skill observation sheet, product result, teachers and students response, cognitive test. Analysis of data with t test for effectiveness and practicality of learning. Results of the research is a Technopreneurship learning model that has 4 stages to improve attitudes technopreneur, develop products based on the results of an investigation into the need for appropriate technology tools in surrounding communities. Technopreneurship learning model effectively declared the results of post test better assessment of the results of pre-test assessment. Technopreneurship learning model implemented in the second semesters of grade XI who have taken industrial practice. Teachers must have a productive capabilities and entrepreneurship.

INTRODUCTION

National Labour Force Survey Data (Sakernas) 2004-2014 showed unemployment Vocational High School in February 2013 amounted to 864.649 (Central Bureau Statistik, 2014). Data in August 2013 the unemployment rate increased by 45.51 % of the data in February 2013. Data in February 2014 decreased by 32.65 % of the data in August 2013 and by a further unemployment rose by 67.34 % in August 2015 increase in the unemployment rate in each month of August due to post-graduate students. It is caused by one factor imbalance between the numbers of jobs provided by the number of potential workers and occur a lack of compatibility link and matches the needs of the competencies needed by the company with the education provider. Problematic number of job seekers exceeded the number of jobs available will be able to be minimized by the ability of student entrepreneurs who owned the time of graduation.

This study discusses the development model of learning that can improve students' entrepreneurial competence-based technology by considering the potential to help solve environmental technology needs for the community. Entrepreneurship synergized with technology is a form of Technopreneurship (Gonzales in Depositario et al, 2011: 106). Technopreneurship is an entrepreneurial process begins with innovation (Siswadi, 2013: 7). Technopreneurship can grow well if there is a partnership of industry, academia and government through education, training and coaching to achieve competitive advantage (Etzkowitz and Leydesdorff, 2000 in Walker, 2012: 12). Technopreneurship learning process would be achieved if supported by the right curriculum, effective learning methods and good management (Sudarsih, 2013: 62). So technopreneurship education would be better if synergy with practical learning.

Educational practice has been more oriented to the completion of the teacher's job sheet based on competence appropriate curriculum. Determination job sheet product yet practice -oriented technology needs for the community. Competence development would be more meaningful if needed surroundings. Learning-based productive practices in social productive activities will provide a real experience to achieve something important for themselves and the environment (INEPS, 2012).

So the need for synergy between learning Technopreneurship with productive practice learning to improve students' attitudes Technopreneurship before completing vocational education . It created a basis for consideration in dealing with various issues , among others : (1) The challenges of globalization associated with readiness skills and the quality of vocational school graduates, but stock in Technopreneurship still minimal, (2) Unemployment are

open for vocational tend to be high because of the vocational school graduates are not absorbed in employment which are available.

(3) Entrepreneurship education given vocational student's engineering expertise machining program is general, not related to the practice of learning outcomes. (6) Reinforcement learning practices that integrates with Technopreneurship elements as a first step to increase human resources who are ready to face the globalization era, which is still not optimal.

The purposes of this study are: (1) Describe the learning model Technopreneurship on a package of technical expertise machining. (2) Testing the effectiveness of the learning model Technopreneurship on a package of technical expertise machining. (3) Explains the practicality of learning model Technopreneurship on a package of technical expertise machining.

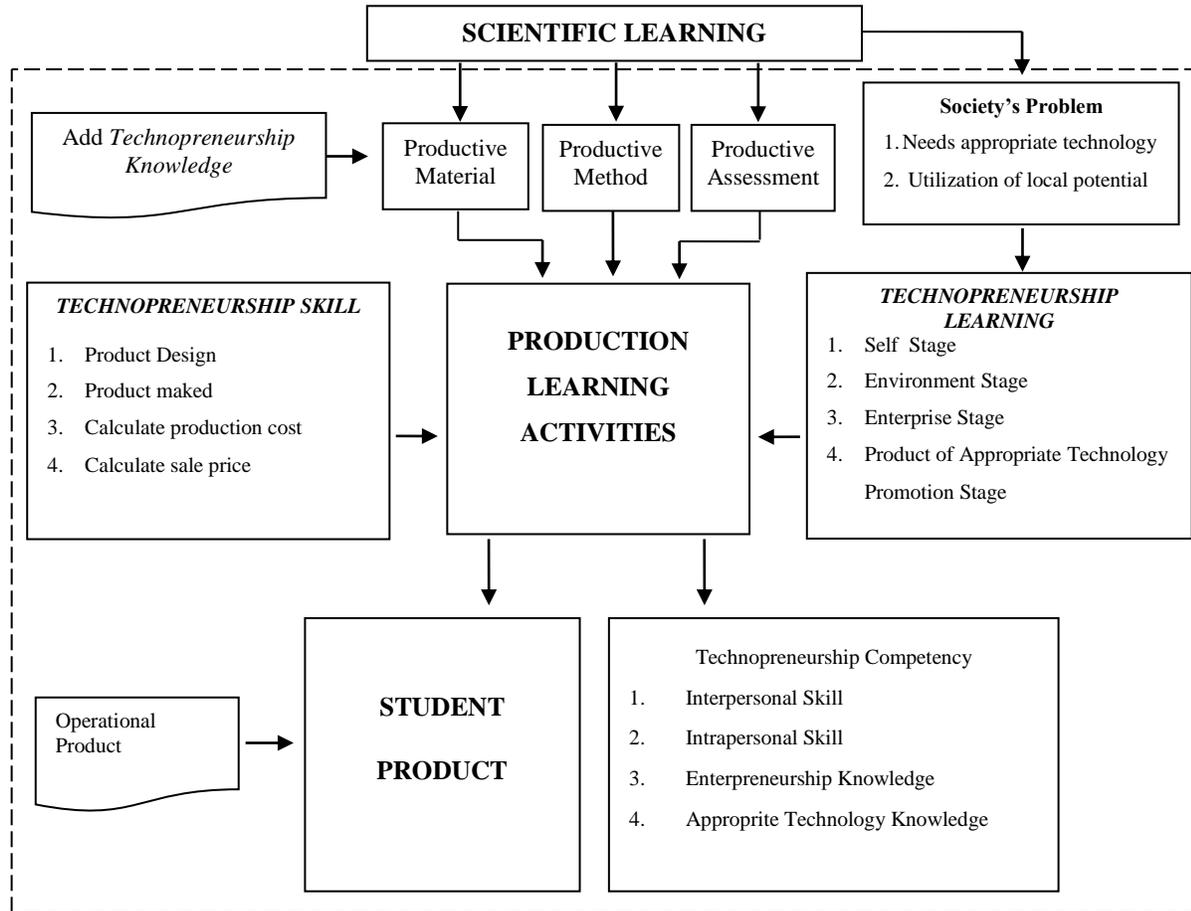
RESEARCH METHODS

In this study, using R & D on developing learning model Technopreneurship. The steps of research R&D according to Sugiyono (2013: 532) consists of 11 steps, among others: Potential and problems, (2) Literature and collection of data, (3) design study model Technopreneurship, (4) Validation of the model design, (5) Revised design, (6) Making learning model technopreneurship, (7) Trial Limited learning model technopreneurship, (8) revision learning Model technopreneurship, (9) Testing learning Model Technopreneurship, (10) Revised learning Model technopreneurship and (11) Test Field.

The subject of this research is the study group Technopreneurship SMK Saraswati Salatiga. Data collection instruments used includes questionnaires, written test, observation sheets and evaluation sheets. The measured variable is the attitude of interpersonal, intrapersonal, product knowledge and appropriate technology. Analysis of the data used to test the effectiveness test T test, practical test by analyzing the response of the respondents.

RESULTS AND DISCUSSION

The final result of the development of the learning model Technopreneurship on a package of technical expertise machining is “*Produktif Orientasi Lapangan 4 Tahap (POL 4T)*”. Model schema is:



Pictures 1. POLAT Technopreneurship Learning Model

POL 4T technopreneurship learning model is an integration of productive practice learning class XI student of Mechanical Machining with learning technopreneurship developed from models SEED. An achievement competence technopreneurship section on the material this entrepreneurship will facilitate students in creating creativity and innovation having gained knowledge to solve problems and find appropriate opportunities Zimmerman opinion and Scarborough, 2002 in Sudarsih 2013:57).

The final model of learning Technopreneurship after the test phase experience a change in the stage of building a business. Reduction of this stage due to the consequences of the cost and time required to reach the stages of building a business very much and students in a class that many are not allowed to do in learning optimally. Development is done on aspects of the syllabus, lesson plans, teaching materials. Productive materials given to the student teachers are given additional material about Technopreneurship to students. Competencies productive granted in accordance with the order in the syllabus of existing product and developed elements of competence Technopreneurship material.

Early learning method used is the method of teacher lectures related to the description of the reality of the needs of technology, observation of students, community technology problem identification, determination of efforts to

solve community problems further product planning practices already consulted with teacher educators to serve as a practice project was undertaken. The measures resulted in stages Technopreneurship students directly involved with the problems of society needs technology that will increase the level of awareness of students, reading opportunities, solve the problem of the solution is a form of the character of a Technopreneurship the opinion of Okorie (2004: 66). So this technopreneurship model execution will improve the indicators of a techno.

Assessment is done with the product assessment of student outcomes and competencies Technopreneurship students grouped in the attitude of interpersonal, intrapersonal, entrepreneurial knowledge and knowledge tools Appropriate Technology (TTG). Activities in Technopreneurship learning models include: the first phase of self-understanding. This stage of the teacher role is to help students understand their potential, hobbies, abilities and skills of students. At this stage aims to enable students to know the extent of their potential, ideas, knowledge and technical skills and productive capabilities so that when learning is done in groups can be optimized in the division of tasks and responsibilities of the group. The process of self-understanding of students conducted by one teacher in team teaching.

The second stage is the stage of understanding the environment is about mastering the environment by observing the condition of the environment, the needs of the environment so as to generate product ideas are needed community. Understanding the environment is done by direct observation, look at existing technology tool, view videos, images in the process of generating ideas based on existing local potential. This process is part of learning in vocational education. Vocational education is an education that takes into account local potentials in learning activities (Slamet, 2011: 197). Local potential include all the wealth that has distinctiveness, uniqueness, historical as markers in the city or region (Roesmanto, 2007: 23). This stage appears the level of creativity, innovation, future-oriented toward environmental potential student observed. Leadership, communication skills, and express opinions will appear in this stage.

Aspects of the skills that appear at this stage is the ability of the students in making the design tools and the results of the observation field supplies. The process of designing a control group with the guidance and direction of teachers 2 in team teaching. The results of this phase in the form of product design practices that further consultation with the teacher for a productive product done during the learning practice.

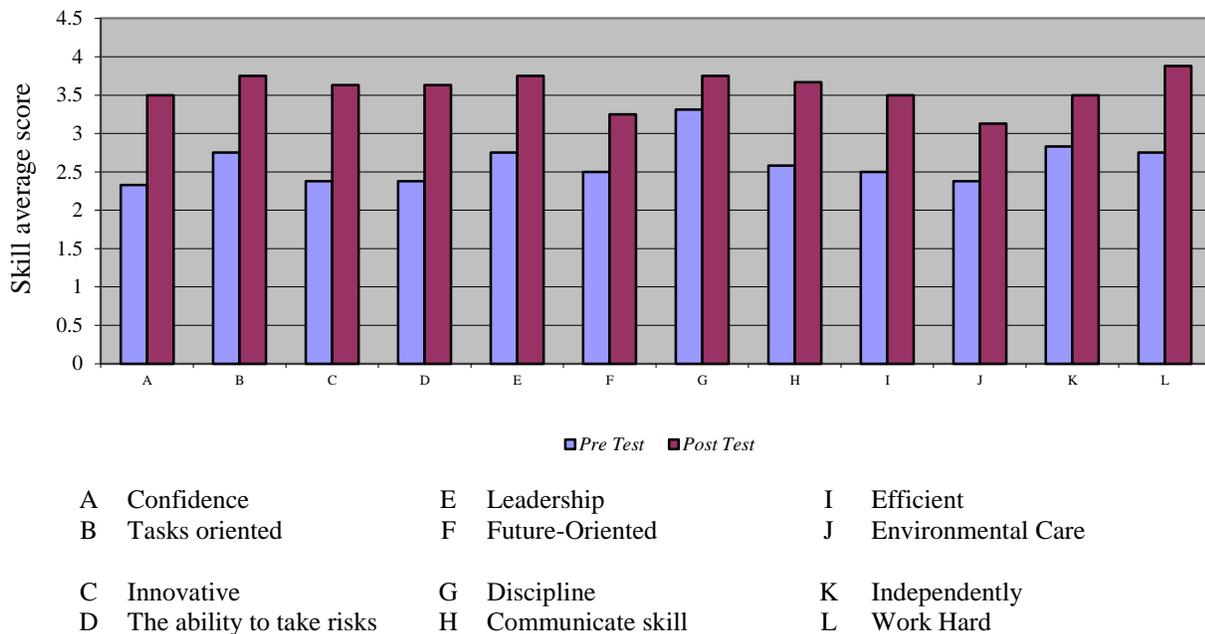
The third stage is the stage of understanding entrepreneurship is related to student knowledge stage entrepreneurial element that contains knowledge about the definition of the business, the elements in self-employment and entrepreneurial character traits, how to calculate the cost of production, marketing, how to face obstacles and risks. At this stage student entrepreneurs are combining knowledge already acquired on entrepreneurial learning is applied in practice learning. Patterson and Mitchell in Putero et al (2013: 19) argue that an engineer not only understand the physical characteristics of a product or system that is designed, but also the general business perspective in its management system. This stage of the process is guided by three teachers in team teaching.

The fourth stage in this learning model is the result of the introduction of technology products that made the students. Students do a presentation to the class associated with how the background of the device is made, how the tool works, how to make, how to test the feasibility of tools and pricing tools. Product introduction phase improves communication skills, confidence, and teamwork. The effectiveness of the learning model technopreneurship tested using different test pre test and post test. Testing the use of test results technopreneurship learning model that was tested in one classroom with one group scale limited number of 4 people with pre test and post test. Analysis of differences in learning outcomes of students carried out to determine whether the differences in learning outcomes of students with the use of the technopreneurship learning model. Assessment Results pre test and post test are as follows:

Table 1 Results of the assessment pre-test and post-test on the learning model components Technopreneurship on a package of technical expertise machining

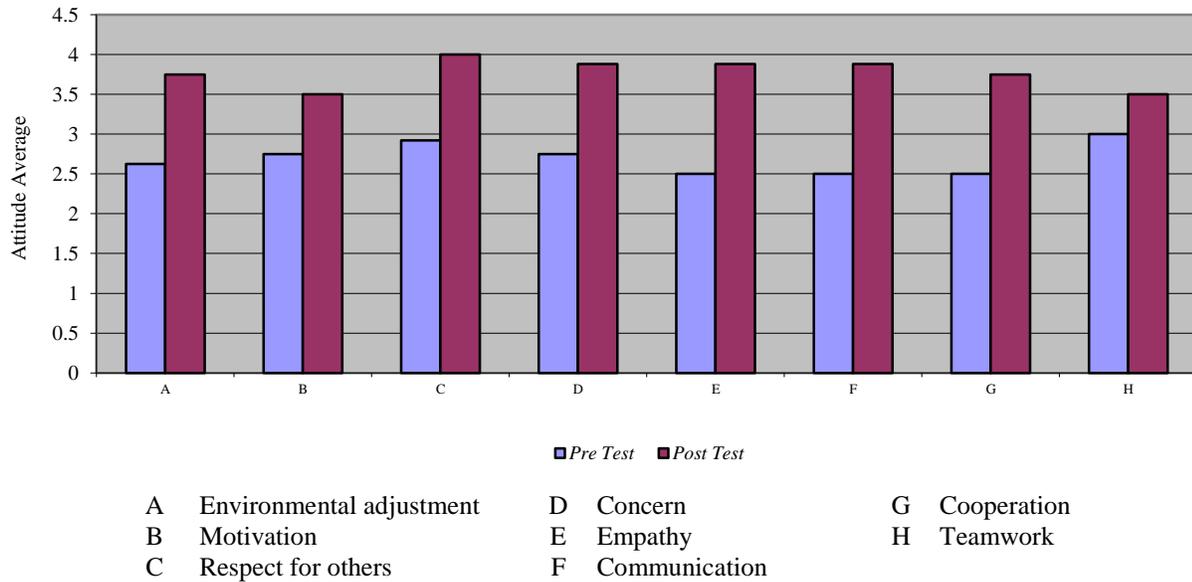
No	Rated aspect	Pre-Test		Post-Test	
		Average	Criteria	Average	Criteria
1	Interpersonal Skill	2,42	More low	3,56	Very High
2	Intrapersonal Skill	2,69	High	3,64	Very High
3	Knowledge	1,37	Low	2,69	High
4	Productive Skill	1,75	Low	3,50	Very High
5	The ability of appropriate technology product	1,00	Low	3,66	Very High

This Technopreneurship learning model declared effective by the test results of all aspects of the overall model is rated at trial Technopreneurship learning model occur significant increase. Attitude interpersonal skill is an aspect that describes the ability to manage the work environment so as to adapt to the work situation (Hamidah, 2013: 55). The trial results interpersonal attitudes, among others:



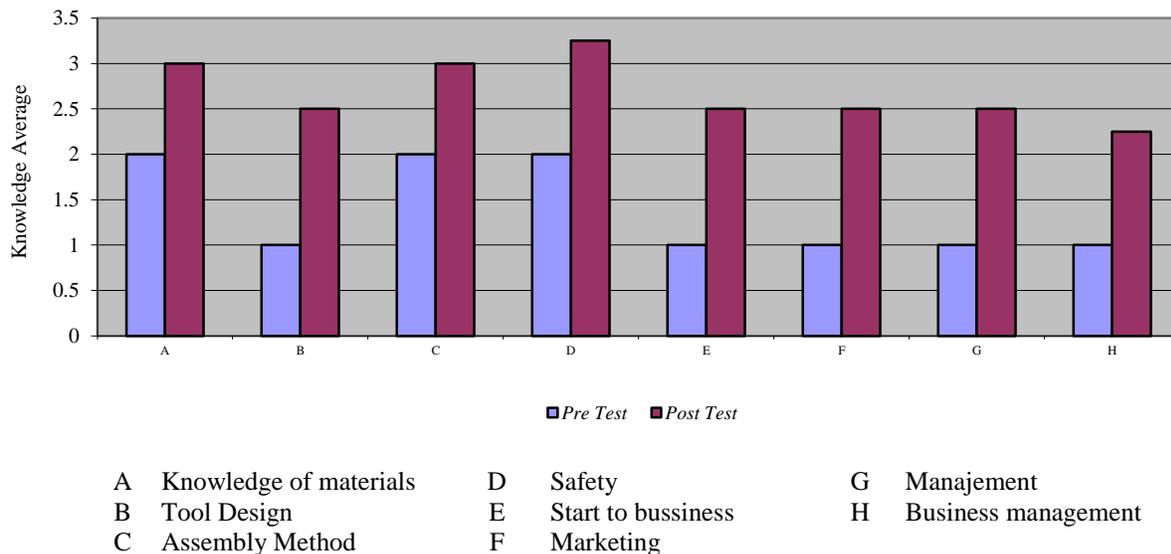
Picture 2. Interpersonal Attitudes Result

All aspects of interpersonal attitudes of students increased after using model Technopreneurship on a package of technical expertise machining. The highest ratings are in the attitude of hard work, this is because students are required to cooperate with other students and complementary to complete its work in making products operations. Changes highest in the innovation element with a value of t -test paired sample test showed -19. That is a very high change in the aspect of innovation after Technopreneurship learning model.



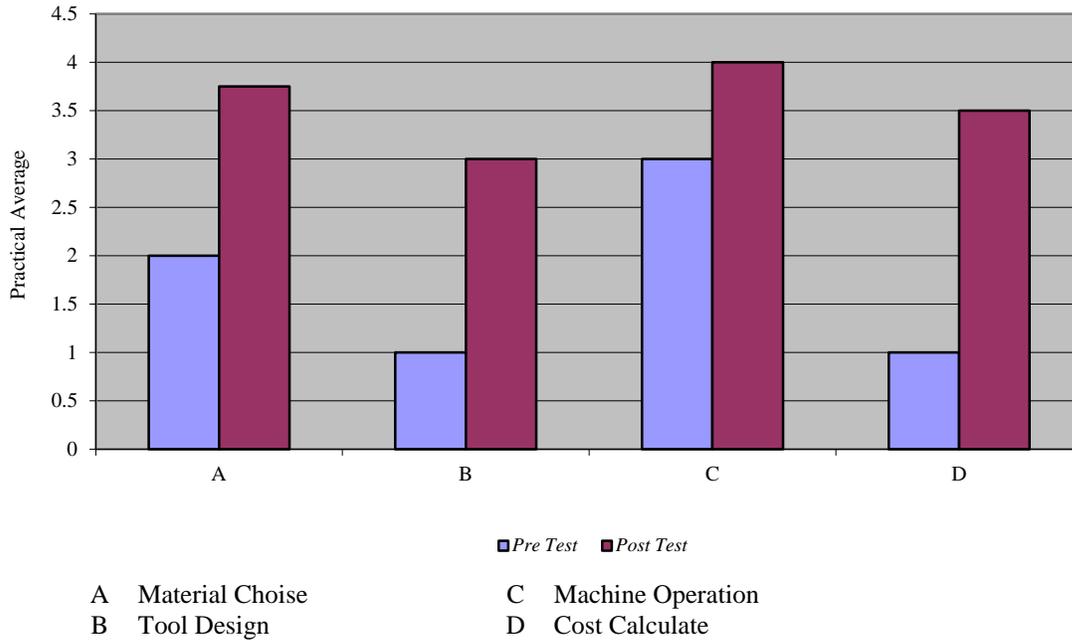
Picture 3. Intrapersonal Attitude Trial Results

Overall intrapersonal attitudes of students increased after using model Technopreneurship on a package of technical expertise machining. The highest ratings are in respect for others. The increase in pre-test and post-test highs on empathy and communication, this is because students work in teams, students practice their product linkages with other students to become operational products. The test results paired sample test showed the cooperative attitude of -15,121. Communications at -11,000. The test result can be imaged Technopreneurship knowledge graph as follows:



Picture 4. Technopreneurship knowledge testing Results

The test results paired sample test showed an increase greatest in the indicator safety with t calculate equal to -8,660. Aspects of increased knowledge of the aspects of material selection knowledge, design knowledge, and safety by a margin of 1:25. The test result can be imaged chart Technopreneurship skills as follows:



Picture 5. Technopreneurship Skills Trial Results

The test results paired sample test showed the biggest improvement in the indicator calculates the costs by t calculate equal -17,000. Increase student’s skills in aspects of calculating costs because during this time the student was never calculating the current cost of doing productive practices. The trial results TTG tool can be imaged graph as follows:

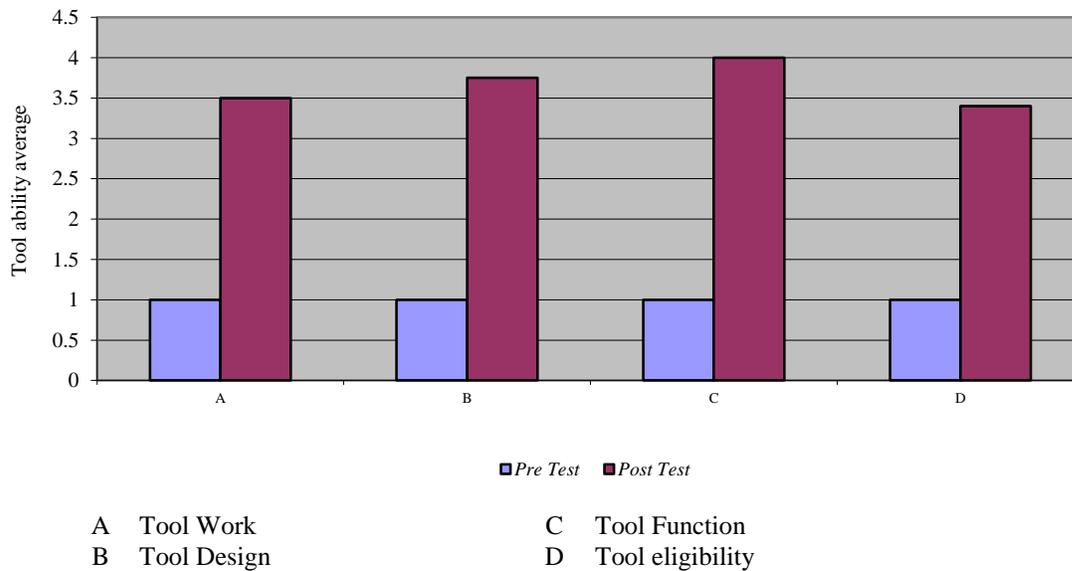


Figure 6 Appropriate Technology Product Testing Results

Function tool experienced the highest increase this matter because the results technopreneursip practice in learning is the result of the operation. So the focus in the final practice product is how the student can use and function. The test results proved the practicality of the results of the questionnaire respondents stated that 91.54 % stated that the practical learning model with very high criteria.

DISCUSSION

In the overall interpersonal attitudes occur significant differences between before and after application of learning models Technopreneurship. The increase in the interpersonal aspects contained in the aspect of improving the attitude of confidence increased since the implementation of the model is done in groups so that every moment of learning going discussion group for the process product. In the lead group learning ability to organize and affect other students in the discussion so that ads confidence of students increases. This task-oriented attitude increases for each student in the group given the task or practices to create a product that is operational. The linkage rate and yield of products by the students greatly affect the results of other students practice and results in group practices. These results are also appropriate in the opinion of Geoffery G. Meredith (Ahmad et al, 2011: 24) the task-oriented attitude is characterized their achievement needs, result oriented, persevering, resolute, determined hard work, have a strong encouragement, energies and initiative. Innovative attitude will arise due to the manufacture of products that are the result of observation operational needs of the community. Prodan in Dolatabadi (2013: 140) argues that innovation will occur if separated from large groups or others. Implementation of practice in groups and come from the observation of people's needs would increase a person's attitude innovation.

The ability to take risks with their students increased synergy results working practices. The decision to undertake immediate student results according to the design and design practice will enhance students' ability to take risks to do during practice. This will increase the creation of new products that have not been tested reliability, strength and feasibility. Learning that originated from students and teachers do according jobsheet not associated with the practice of other students, Technopreneurship learning model these students are working on the workpiece according to the design that was designed and undertaken related to the results of other students.

There is communication and advise members during the learning process, so there is a student's ability to argue and accept criticism and suggestions from others. According to Geoffery G. Meredith in Ahmad (2011: 2) positions of leadership have the feature to behave as a leader, sociable, responding to suggestions and criticisms. Aspects of the highest increases in communication sociable attitude because in practice carried out in groups. Intrapersonal attitude overall increased after learning Technopreneurship with demonstrated the entire t test paired sample test result was negative. Attitude, motivation increases because students feel product to be made is the responsibility of one team so that if there is an idea of the other students better than students' ideas, the students will use the idea. Cooperation, communication and team work increased in the test results because the learning models with group work in finishing products made by the students.

Increased knowledge aspect as in the manufacture of students should know and understand what kind of quality products that fit in a circuit made. Students are able to choose products that are ideal and suitable in making an efficient product, but the expected future performance is not reduced. Knowledge of safety, increase with more complex forms of work that the students in making the product. Skills choice of materials and design tools increased since the previous students have never done the design tools in practice, but just doing the work piece in accordance with a given job sheet. Products Technopreneurship overall learning outcomes, increased after learning Technopreneurship. An increase in the product features and functions of the tool. This is because the product is the result of observation of the tool needs as required by the operational community.

CONCLUSION

Based on the results of research and development model that has been done, the results of the analysis and discussion can be summarized as follows : (1) learning model Technopreneurship on a package of technical expertise machining combine competence Technopreneurship and productive with yield practical products Appropriate Technology -based environment according to the needs of the technology community. (2) Learning model technopreneurship effectively used in learning the machining technique based membership packages were significant differences in post-test results better than pre-tested.

REFERENCES

1. Ahmad, A. W., Haryadi, A. D., Rosalina, E. 2011. Upaya Meningkatkan Motivasi dan Hasil Belajar Kewirausahaan melalui Kombinasi 5 Teknik Pembelajaran pada Mahasiswa Politeknik Negeri Padang. Padang: Jurnal Akuntansi & Manajemen Vol 6. No. 2 Desember 2011 hal. 23-39.
2. Badan Pusat Statistik. 2014. Pengangguran Terbuka Menurut Pendidikan Tertinggi yang Ditamatkan 2004–2014.
3. Depositario, Dinah Pura; Aquino, Nanette A. ; Feliciano, Katrina C. 2011. Entrepreneurial Skill Development Needs of Potential Agri-Based Technopreneurs. Phillipines: J.ISSAAS Vol. 17 No. 1:106-120.
4. Dolatabadi, Reza Vazifeh; Meigounpoory, Mohammad Reza.2013. Effective Determinants of corporate Nano-Technopreneurship Process in Active Technological Knowledge Base Firm. Iran: HRMARS.International Journal of Academic Research in Economics and Management Science, September 2013, Vol 2
5. Hamidah,Siti.2013. Model Pembelajaran Soft Skills Terintegrasi pada Siswa Program Studi Keahlian Tata Busana.Fakultas Teknik Universitas Negeri Yogyakarta.
6. INEPS. 2012. *Definition of Productive Learning by INEPS-Members. Portugal: 2nd congress of INEPS in 1992 in Peniche/Portugal.*
7. Okorie N.N, Kwa D.Y, Olusenle. S.O.O, Akinyanmi A.O, Momoh I.M, 2014. Technopreneurship : An Urgent Need in The Material World for Sustainability in Nigeria. Nigeria : European Scientific Journal October 2014 edition Vol 10. No.30 ISSN: 1857-7881.
8. Putero, S. H. & Budiarto, R. 2013. “Peran UMKM dalam Pengembangan Technopreneurship Perguruan Tinggi”. Makalah. Proseding Konferensi Nasional “Inovasi dan Technopreneurship” Bogor, 18-19 Februari 2013. Hal. 18-26.
9. Roesmanto, 2007. Pemanfaatan Potensi Lokal dalam Arsitektur Indonesia. Semarang: Universitas Diponegoro.
10. Siswadi, Yudi. 2013. Analisis Faktor Internal, Faktor Eksternal dan Pembelajaran Kewirausahaan yang Mempengaruhi Minat Mahasiswa dalam Berwirausaha. Medan: Universitas Muhammadiyah Sumatera Utara, Jurnal Manajemen & Bisnis Vol.13 No. 01 April 2013 hal. 1-17.
11. Slamet P.H. 2011. Peran Pendidikan Vokasi dalam Pembangunan Ekonomi. Jurnal. Cakrawala Pendidikan Th XXX No 2 Juni 2011. Hal. 189-202.
12. Sudarsih, Endang. 2013. “Pendidikan Technopreneurship: Meningkatkan Daya Inovasi Mahasiswa Teknik dalam Berbisnis”. Makalah. Proseding Konferensi Nasional “Inovasi dan Technopreneurship” Bogor, 18-19 Februari 2013. Hal. 55-63.
13. Walker, Kevin. 2012. The Technopreneurship Process: Academian Entrepreneur University Spin-Offs. Dubrovnik : RIThink Journal 2012, Vol. 2

Enhancing Student's Problem Solving Ability: A Qualitative Study of Brain-Based Learning Implementation in Mathematics Classroom

Taulia Damayanti ^{a)} and Masrukan ^{b)}

Semarang State University, Sekaran, Gunungpati, Semarang

^{a)}Corresponding author: tauliadamayanti@gmail.com
^{b)}masrukan.mat@mail.unnes.ac.id

Abstract. The central aim of the study was to investigate the enhancing of student's mathematics problem solving ability through Brain-Based Learning Approach aided by Math Circuit. Problem solving skills and honest character were examined to study it influences in problem solving ability. Qualitative method was used. Initial problem solving test was conducted to obtain participants. Students of VIII C SMP Negeri 1 Pecangaan who placed on in the first rank, first quartile, second quartile, third quartile and the last rank on the initial test were selected to be participants. The data were collected by observation, interviews, and test; and analyzed by qualitative method supported by gain analysis. The results are problem solving skills and honest character of all student participants improved and it enhanced their problem solving ability. Student who had low level problem solving ability in initial test reached the minimum mastering criteria on problem solving test.

INTRODUCTION

Problem solving is one of process standards in NCTM Principles and Standards for School Mathematics (2000). According to NCTM (2000) solving problems is not only a goal of learning mathematics but also a major means of doing so. It is an integral part of mathematics, not an isolated piece of the mathematics program. Furthermore, NCTM (2000) argued, by solving mathematical problems, students acquire ways of thinking, habits of persistence and curiosity, and confidence in unfamiliar situations that serve them well outside the mathematics classroom. John Dewey in Kuswana (2012) termed 'problem solving' as two separate things, which is 'ability' and 'skills' of the intellectual (problem solving). The term is equated skills as art and capabilities as knowledge. Polya (1957) distinguished four phases of solving problem: *understanding the problem*, *devising a plan*, *carrying out the plan*, and *looking back*.

National Examination Data of Junior High (*SMP/MTs*) in the Academic Year 2010/2011 shows that the problem solving indicators related to the geometrical surface area, the comprehension degree of *SMP Negeri 1 Pecangaan* students only reach 21.27 % (Balitbang, 2011), on the following year there was increasing point up to 79.83 % (Balitbang, 2012). Interview conducted with eighth grade mathematics teacher of *SMP Negeri 1 Pecangaan* were found that problem-solving ability of students in class VIII in their school is still low.

Mathematics learning, instead of to take responsibility for mathematical problem solving ability for students, also has to take responsibility for character development. The character educational content has been put on the school lesson plan, but not in the specific development. According to the teachers, the most character which is needed to be formed in the eighth grade students is honesty character. This is supported by the latest curriculum, the 2013 curriculum, which includes the honesty content as the first attitude that is imprinted on Core Competence of Social Attitudes for Junior High students in the Educational and Cultural Ministry Law (*Permendikbud*) Appendix Number 68 Year 2013. Honest character has been described as behavior that is based on an effort to make themselves as one who can always be trusted in words, actions, and employment (Kemendiknas, 2010: 9). To response these problems, we need a mathematical learning which can improve the affective aspects of honesty character and of psychomotor aspects of problem solving skills in hope that it can optimize the cognitive aspects of students problem solving abilities. Mathematics learning by using Brain-Based Learning approach aided Circuit Math is convinced to fill these needs.

Jensen (2008) states that Brain-Based Learning (BBL) approach is the learning program that is aligned with the way of brain designed naturally to learn. The planning stages of BBL approach expressed by Jensen (2008) namely, (1) pre-exposure, (2) preparation, (3) initiation and acquisition, (4) elaboration, (5) incubation and memory encoding, (6) verification and confidence check, and (7) celebration and integration. This learning media which can support the learning process with BBL approach is Circuit Math. This media is adapted from snakes and ladders game developed by Yusuf and Auliya (2009). According to Yusuf and Auliya (2009), Mathematics circuit can increase the concentration of the learners so that cognitive content is more quickly absorbed in the learning process. Instead of cognitive aspect, the affective and psychomotor content are also increased.

Saleh research (2011) shows that students who received learning with Brain-Based Learning approach have better understanding concepts than learners who received conventional learning. Seyihoglu and Kaptan research (2012) shows that the learning which uses Brain-Based Learning approach has a positive effect on the students attitude towards learning process. From the qualitative analysis, it was found that the learning process is very entertaining for students.

Research Questions

The central aim of the study was to investigate the enhancing of student's mathematics problem solving ability through Brain-Based Learning Approach aided by Math Circuit. Problem solving skills and honest character were examined to study it influences in problem solving ability. Figure 1 represents a diagram that sets up the research questions of the research study. The top of the triangle represents the focus of this research study and the bottom of the triangle represents the role factors play in influencing and supporting problem solving ability of students.

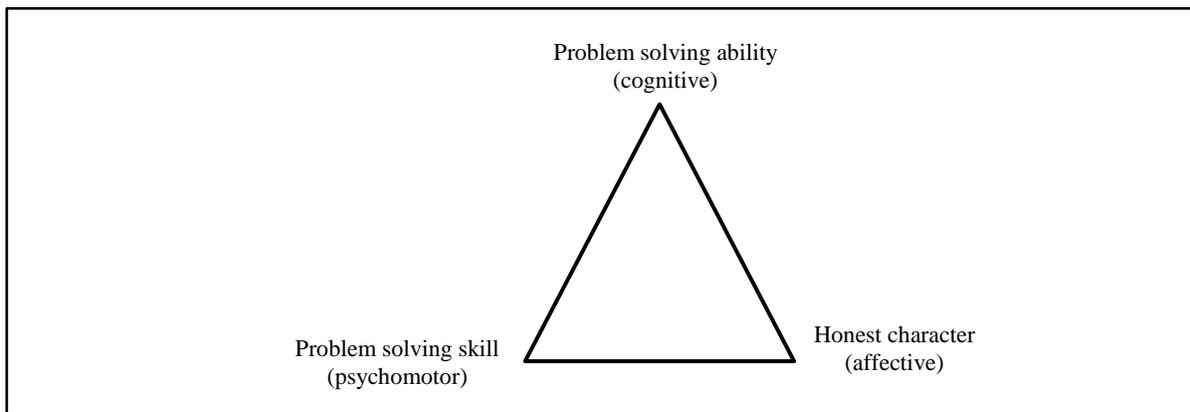


FIGURE 1. Research Questions Diagram

Based on the explanation above, the research questions are:

1. Are problem solving skills (psychomotor) and honest character (affective) of eight grade students improved by implementation of Brain-Based Learning approach aided by Math Circuit?
2. What are processes to improve problem solving skills (psychomotor) and honest character (affective) of eight grade students?
3. Is problem solving ability of eight grade students enhanced by implementation of Brain-Based Learning approach aided by Math Circuit?
4. What is the influence of problem solving skills and honest character in enhancing process of student's problem solving ability?

METHOD

The research use qualitative method. According to Maxwell (2012: 3) qualitative research design, to a much greater extent than quantitative research, is a "do-it-yourself" rather than an "off-the-shelf" process, one that involves "tacking" back and forth between the different components of the design, assessing their implications for one another. It does not begin from a predetermined starting point of proceed through a fixed sequence of steps, but involves interconnection and interaction among the different design components.

Procedure

We need to make explicit the procedures and thought processes that qualitative researchers actually use in their work (Miles & Huberman, 1984). There was five step in this research procedure. (1) Preparing: problem observation, problem identification, arranged research proposal, revised research proposal, arranged research instruments and lesson plans, proposed research permission, tested and analyzed research instruments. (2) Implementation: initial problem solving test, analyzed the results of initial problem solving test to obtain participants, implemented Brain-Based Learning approach aided by Math Circuit in mathematics classroom and observed the problem solving skills and honest character during the lessons (5 meetings), conducted interviews with student participants about problem solving skills and honest character (5 meetings), problem solving test to measure problem solving ability after 5 meetings. (3) Data Analyzed, (4) Drawn Conclusion, (5) Arranged research report.

Participants

Qualitative researchers typically engage in purposive rather than random sampling (Miles & Huberman, 1984). Purposive sampling was selected. Initial problem solving test was conducted to obtain participants. Students of VIII C SMP Negeri 1 Pecangaan who placed on in the first rank, first quartile, second quartile, third quartile and the last rank on the initial test were selected to be participants.

Instruments

According to Miles & Huberman (1984) in qualitative research, data may have been collected in a variety of ways (observation, interviews, extracts from documents, tape recordings). In this research, data were collected by observation and interviews for problem solving skill and honest character, and test for problem solving ability. Instruments to collect data were observation checklist, interview protocol, and problem solving test. Problem solving test was designed based on Polya's problem solving strategy and it adapted from *Practical Worksheet in Assessment in The Mathematics Classroom, Chapter 3: Assessing Problem Solving in the Mathematics Curriculum: A New Approach* arranged by Lam, et al. (Kaur & Yoong, 2011).

Data Analysis

Data analysis in this research followed Miles & Huberman (1984) that consists of three concurrent flows of activity: data reduction, data display, and conclusion-drawing/verification. Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the raw data that appear in edited field notes. Data display defined as an organized assembly of information that permits conclusion-drawing and action-taking. Conclusion-drawing and verification involves drawing meaning from displayed. To support qualitative analysis, gain analysis by Hake (1998) was conducted.

RESULTS AND DISCUSSION

Honest Character

Students who became research subjects in this study were referred to the code of S-1, S-2, S-3, S-4, S-5, in order of the highest scores to the lowest on the problem-solving ability initial test. Each subject has a different level of honesty character. Indicators of honesty character as defined by Kemendiknas (2010b) are used as the basic steps to determining the indicators in this study. The increasing of honesty character study of five research subjects can be seen on Fig. 2.

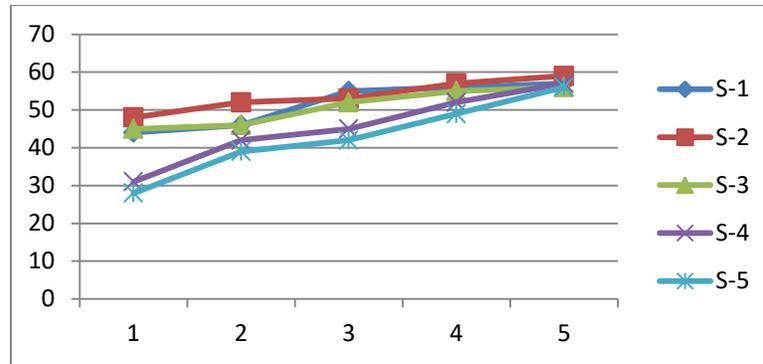


FIGURE 2. Honesty Characters Improved Charts

Figure 2 shows the increasing of honesty character of each subject based on the score obtained. S-1, S-2 and S-3 are on the same level and the increasing tended to has similarities. While the S-4 and S-5 was firstly being located in low, but little harder they were able to achieve at the same level with the others. Indices recapitulation of gain honesty character and their categories can be seen on Table 1. The categories include H (High), M (Medium), and L (Low). The gain index improvement of honesty characters in all research subjects were in high category.

Table 1. Gain Recapitulation Honesty Character with Their Categories

Subject	Gain Honesty Character				I to V (Total)
	I to II	II to III	III to IV	IV to V	
S-1	0,13 (L)	0,64 (M)	0,20 (L)	0,25 (L)	0,81 (H)
S-2	0,33 (M)	0,13 (L)	0,57 (M)	0,67 (M)	0,92 (H)
S-3	0,06 (L)	0,43 (M)	0,38 (M)	0,20 (L)	0,73 (H)
S-4	0,38 (M)	0,17 (L)	0,47 (M)	0,63(M)	0,90 (H)
S-5	0,34 (M)	0,14 (L)	0,39 (M)	0,64 (M)	0,88 (H)

Character can be developed by determining what the appropriate character focus which is developed for the material/subject. After determining what the character is going to be developed, the next step is to determine the indicators. In determining indicators, teachers can hold on character indicators compiled by Kemendiknas. These indicators can be elaborated and mutually adjust of the learning steps were seem to be suitable one. Character development can be developed by habituation learning. With continuous habituation, the student characters will develop as the researchers expect to.

After the first step is developed, the next step is about the practice of character development which is being done by the students. According to Lickona (1991), noble characters (good character) include knowledge of goodness, and generate to the commitment (intention) towards goodness, and finally actually do the good things. In line with this opinion, researchers recommend how are the processes of providing treatment to the student in order to develop the character. The first treatment performed on the students is to give students understanding values of the character wanted to develop. The understanding values include character descriptions and character achievement indicators. By providing the understanding values, the students come to know what to do in order to develop the character on themselves. After providing the understanding values, the next step is to motivate the students to develop their character. Motivation may be delivered in the importance of a character, stimulus to behave according to the appropriate character, and praise for the students who have behaved according to the character indicators. Motivation has purpose to make the students are committed on developing the character of their own. The third stage is to habituate the students to implement the indicator character by completing activities that support their

learning process. The fourth stage is the scoring and evaluating process to determine the character development progress of the students. Scoring and evaluating process become the basic step on determining the further treatment.

Learning Brain-Based Learning approach aided Circuit Math can be used as an alternative to developing the honesty character. This study has shown that the honesty character of students can be increased through the learning. In addition, as described earlier, there is a strong link between Brain-Based Learning and the principle of character educational application which is to create a challenging and meaningful learning. The role of Mathematics Circuit also can not be ruled out, this is in line with Joseph and Saints (2011) presentation that the Mathematics Circuit develop the students to correct each other, to remind, to discuss, and to play honestly. Math circuit in this study was designed specifically for habituation honesty behavioral so that it takes a big role as a learning media for learning process which contiguous with Brain-Based Learning approach in improving the honesty character.

Problem Solving Skills

Each subject has different level of problem-solving skills. Indicators of problem solving skills determination adjusted with problem-solving steps by Polya (1957) are understanding the problem, planning a solution, implementing the plan, and re-examine the results of the calculation score. Problem-solving skills improvement by the fifth research subjects can be seen in Fig. 3. From Fig. 3, it shows at the first meeting, S-1, S-2, S-3, S-4 and S-5 are positioned sequentially from top to bottom. At the third meeting, S-2 and S-3 have the same level with the S-1. At the fourth meeting, S-4 has the same level with the other three subjects. S-5 is being under the other four subjects. As described previously, S-1 is not being increased at the second to the fifth meeting because of the score is already being closed to maximum point. The other research subjects can reach the same level as the S-1 because they were developing at learning process.

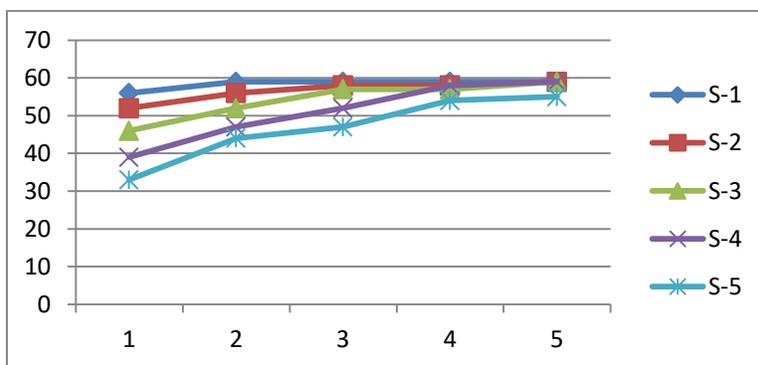


FIGURE 3. Problem Solving Skills Improved Charts

Gain problem-solving skills indices recapitulation and their categories can be referenced in Table 2. The problem-solving skills improvement were high for all subjects.

Table 2. Gain Recapitulation Problem-Solving Skills with Their Categories

Subject	Gain Problem-Solving Skills				I to V (Total)
	I to II	II to III	III to IV	IV to V	
S-1	0,75 (H)	0,00	0,00	0,00	0,75 (H)
S-2	0,50 (M)	0,50 (M)	0,00	0,97 (H)	0,86 (H)
S-3	0,43 (M)	0,63 (M)	0,00	0,67 (M)	0,93 (H)
S-4	0,38 (M)	0,38 (M)	0,75 (H)	0,50 (M)	0,95 (H)
S-5	0,40 (M)	0,19 (L)	0,54 (M)	0,17 (L)	0,81 (H)

Learning begins with the preparation of physical and psychological conditions of learners, delivery of learning objectives, and summarizes the checking task. The teacher gives apperception. Then the teacher shared student worksheet containing structured questions to find the formula of geometric surface area. At the first meeting the writers give the students a cube, the second meeting should be beam, on third meeting is prism, and fourth is a pyramid. Students work on the worksheet by discussion group then continue with presentation. In this process the teacher provides scaffolding. Furthermore, students do the exercises on Students Book then presentation continued. Like the previous stage, at this stage the teacher also gives scaffolding. After that, the students were given relaxation time, write on, and reflect on the material. The students were allowed to ask the teacher if the instruction is not clear yet. Then the students played a Circuit Math game. The lesson was being closed by a conclusion, awards, motivation and homework.

The key to success of this problem solving skills improvement is how to fill the learning stages and make any creation of Brain - Based Learning on general so that can achieve the purpose. Further analysis, there are components that are included in the learning stages of Brain - Based Learning approach aided Math Circuit contributed to the successfulness of problem-solving skills improvement. The things that cannot be ignored, such the process of finding the formula contained in student worksheet, problem-solving exercises contained in the Students book, and the teacher assistance provided in the scaffolding form. Exercises has been sufficiently proven that it can improve problem-solving skills. This is in line with the Thorndike theory (Anni and Rifa'i: 2009) that the relationship or connection between stimulus and response will be stronger if the subject do frequent exercise. It is not just give exercises, which must be considered is how students feel comfortable in doing the exercise. This is done based on the theory of Thorndike stated that forcing someone to do something that is not their desire will lead on disappointing and frustrating. The process of learning which is relaxing with group work and Mathematics games Circuits will be a good strategy to make the enjoyable work process. In addition, the scaffolding which is stated by Vygotsky (Anni and Rifa'i: 2009) is also very effective to make the students are not too frustrated and more excited in doing exercises.

Problem solving skills can be improved by solving the exercises with sufficient quantity and quality. It can be in the form to make the students happier in working the exercises with varieties of learning process or the use of instructional media such as Math Circuit. The provision of facilities such as scaffolding is an effective way to improve problem-solving skills. It can be in the form to create two sessions of exercises, firstly the session that allow students to share their ideas and get some help from their problems, and secondly the session that make students practice independently.

Problem Solving Ability

Problem solving ability test was conducted at the end of the study to determine the thoroughness of the students on the geometric surface area material. The subject researchs will be success in reach completion if they gain score over than 81. Based on the results of the test data showed that all of research subjects reached complete criteria with great score of 100 for the S-1, S-2, S-3 and S-4, whether 82.5 for the S-5. In addition, from the 24 children in the class where the research is, 21 of them have score above the individual standard minimum score so completeness percentage reached 87.5%. This fact indicates that the application of Brain-Based Learning approach aided Circuit Math in the math learning material of the geometric surface area, the fifth research subjects can achieve the great score and complete the individual standard minimum score and VIIIIC class where the research is can achieve the high scores.

Problem-solving abilities can achieve high score when research subjects have problem-solving skills. Problem-solving skills can involve with a good concept of understanding and sufficient problem-solving exercise. It is being complete by a good honesty character so problem-solving ability can be optimized. Good concept of understanding can be achieved with four things namely (1) the provision of initial assignment in the form of summarizing the material before the meeting happen, (2) the connection between the material and the real world and its apperception, (3) the student have to find the formula for the geometric surface area, and (4) the giving time to reflect on the material and to write notes. These four things have become a strong foundation of the students understanding on the geometric surface area material. Within a good concept of the understanding and a sufficient problem-solving exercises, problem-solving skills of the research subjects will be increased. Problem-solving skills improvement in line with the increase of the honesty character. Within the problem-solving skills improvement and the honesty character, research subjects can achieve completeness criteria specified in the problem solving ability test. The example of student work results can be referenced in Fig. 4.

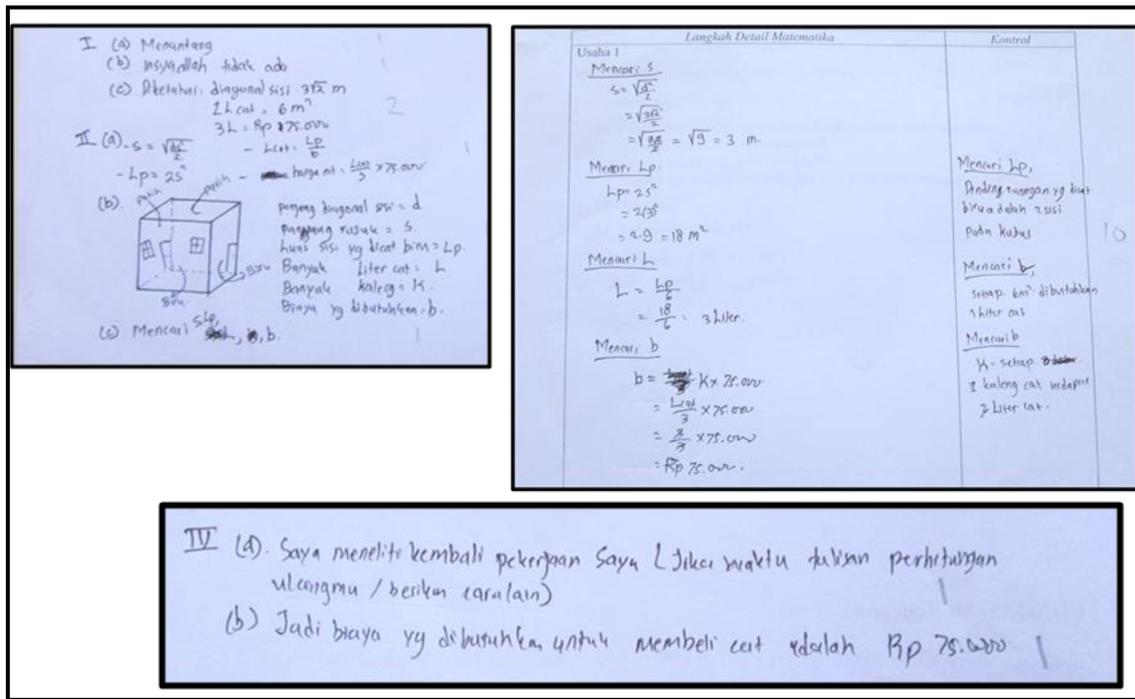


FIGURE 4. Work Result S-1

The fact which was obtained from this research is the problem-solving skills improvement in line with the increase of honesty character and followed by the completeness of the problem-solving ability test. From this fact, any recommendations made by the researchers are create the learning process that can develop honesty character and improve the problem-solving skills to help students achieve complete criteria and great score in the problem solving ability test. In general, the researchers recommend the learning process is divided into three stages, namely (1), pre-learning (2) learning, and (3) pasca- learning. On the pre-learning phase, students were given the task to know the previous understanding in order to prepare students to make them easily accept the material during a lesson. The learning phase is the most important stage. Because at this stage, the creation of teacher is needed to complete the purpose of learning process. At the pasca-learning phase, the students are given homework as the material to get deep-understanding what has been achieved during the learning process in the classroom. All of these stages are loaded in a fun, challenging, and meaningful learning atmosphere.

CONCLUSIONS

Students honesty character development can be developed through four stages, namely (1) to construct the understanding of students about the honesty character, (2) to motivate the students to develop the honesty character, (3) to make the students being usual to carry out the honesty indicator of character through the supporting activities on learning process, and (4) to conduct the scoring and evaluating process on determine the students honesty character development in order to take an appropriate reaction. This reaction is developed in learning with Brain-Based Learning approach aided Math Circuit at the geometric surface area material of the class VIII. Honesty character of students was improved through the learning.

The problem solving skills improvement can be developed through the Brain-Based Learning approach aided Math Circuit. It was taken by giving students the problem-solving exercises sufficiently in terms of quality and quantity. It was given by two phase exercises, namely dependent and independent exercises. These exercises performed in a challenging, meaningful, and fun learning atmosphere.

Mathematical problem-solving ability of students enhanced and raised minimum mastering criteria through that learning. The improving problem solving skills and honest character have positive effect to student problem solving ability.

ACKNOWLEDGMENTS

This research was funded by *Daftar Isian Pelaksanaan Anggaran (DIPA)* Semarang State University No: DIPA-023.04.2.189822/2013, 5 Desember 2012 appropriate with *Surat Perjanjian Pelaksanaan Penelitian bagi Mahasiswa* No: 1.10.6/PPK.3.1/2013, 10 Juni 2013. This article can be finished with help and guidance of many people. Therefore, the authors give thanks to: (1) Prof. YL. Sukestiyarno, M.S., Ph.D. (2) Professor Fathur Rokhman, Hum., Rector of the State Semarang University (3) Professor Dr. Wiyanto, M.Si, Dean of Science and Mathematics Faculty, Semarang State University, (4) Drs. Arief Agoestanto, M.Si, Chairman of Mathematics Department, (5) Head of SMP N 1 Pecangaan who has given permission to this research, (6) Sulistyowati, S.Pd., a mathematics teacher who has helped and guided the authors in this research process (7) the students of VIII class SMP N 1 Pecangaan who have participated in this research.

REFERENCES

1. Anni, T.C & A. Rifa'i. 2009. *Psikologi Pendidikan*. Semarang: Universitas Negeri Semarang Press.
2. Balitbang. 2011. *Hasil Ujian Nasional Tahun pelajaran 2010/2011 untuk Perbaikan Mutu Pendidikan*. Jakarta: Kemendiknas.
3. Balitbang. 2012. *Hasil Ujian Nasional Tahun pelajaran 2011/2012 untuk Perbaikan Mutu Pendidikan*. Jakarta: Kemendikbud.
4. Hake, R. 1998. *Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses*. Indiana: American Association of Physics Teachers. Available on <http://web.mit.edu/rsi/www/2005/misc/minipaper/papers/Hake.pdf> [accessed 10-02-2013].
5. Jensen, E. 2008. *Brain-Based Learning The New Science of Teaching & Training*. Translated by Yusron, N. 2008. Yogyakarta: Pustaka Pelajar.
6. Kaur, B. & Yoong, W. K. 2011. *Assessment in The Mathematics Classroom, Yearbook 2011, Association of Mathematics Educators*. Singapore: World Scientific Publishing.
7. Kemendiknas. 2010. *Bahan Pelatihan Penguatan Metodologi Pembelajaran Berdasarkan Nilai-Nilai Budaya untuk Membentuk Daya Saing Dan Karakter Bangsa*. Jakarta: Kemendiknas.
8. Kuswana, W. S. 2012. *Taksonomi Kognitif: Perkembangan Ragam Berpikir*. Bandung: PT Remaja Rosdakarya.
9. Lickona, T. 1991. *Educating for Character: How Our School Can Teach Respect and Responsibility*. Translated by Wamaungo, J.A. 2012. Jakarta: Bumi Aksara.
10. Maxwell, J. A. 2012. *Qualitative Research Design: An Interactive Approach*. California: SAGE Publications.
11. Miles, M. B., & Huberman, A. M. 1984. Drawing valid meaning from qualitative data: Toward a shared craft. *Educational researcher*, 13(5), 20-30.
12. Miles, M. B. & Huberman, A. M. 1992. *Analisis Data Kualitatif: Buku Sumber Tentang Metode-metode Baru*. Translated by Rohidi, T.R. 2009. Jakarta: Penerbit Universitas Indonesia.
13. NCTM. 2010. *Executive Summary: Principles and Standards for School Mathematics*. Available on https://www.nctm.org/uploadedFiles/Standards_and_Positions/PSSM_ExecutiveSummary.pdf [accessed 23-05-2016]
14. Polya, G. 1957. *How to Solve It*. Princeton University Press.
15. Saleh, S. 2011. The Effectiveness of The Brain Based Teaching Approach in Enhancing Scientific Understanding of Newtonian Physics Among Form Four Stidents. *International Journal of Environmental & Science Education*, 26(1): 91-10. Available on http://www.ijese.com/IJESE_v7n1_Salmiza-Saleh.pdf [accessed 10-02-2013].
16. Seyihoglu & Kaptan. 2012. The Effect of Brain Based Learning Approach to Elementary Teacher Candidates' Attitude and Achievement in Geography Lesson. *H.U. Journal of Education*, 42: 380-393. Available on <http://www.efdergi.hacettepe.edu> [accessed 10-02-2013].

The ICT Development for the Young Learners as Media Education

Muammad Nafi Annury

Post-Graduate, Semarang State University, Indonesia

Corresponding author: nafiannury@gmail.com

ABSTRACT. The development of information computer and technology has grown up rapidly in this modern era. This condition, particularly, affects all aspects in the human live; especially the development of education. As teachers, however, development of ICT brings a new concept of improvement ways to deliver the materials in the classroom. We, of course, need to master the ICT as a means of transfer of knowledge that makes our duty to be easily understood. In the other hand, the development of ICT psychologically makes the young learners become more individual and introvert to another. Here, initially, as the result of gaining the ICT affects the social aspect at educational surrounding. The young learners, sooner or later will have problems adapting their self in this challenges. Hopefully, teachers may give a better understanding, and they are able to use ICT as educational media who explore the benefits from media as well as possible.

TEACHING THE MEDIA

In the dictionary defines a ‘medium’ an intervening means, instruments or agency: it is a substance or a channel through which effects or information can be carried or transmitted (Sadily and Echols: 2000). A medium is something we use when we want to communicate with other people indirectly, rather than face by face contact. This dictionary definition tells us the definition about the media, which is used as the basis of the media education curriculum. The media do not offer a transparent window of the world. They provide us channels through which representation and image of the world can be communicated indirectly (Buckingham, 2008). The media, furthermore, provide us with up-dated information, which we want to achieve for expanding our views about this world.

In the other hand, the term ‘media’ itself includes the whole range of modern communications media that already known, such as: audio visual aids, the cinema, video, internet, photography, pictures, advertising, newspaper, magazines, games and so on. Media *texts* the programs, films, images, web sites that are carried by these different forms of communication. Many of these are called ‘mass’ media, it means that they reach large audiences; although some media are intended to reach only small or specialized audiences.

Nowadays, people cannot be lived with technology. Electricity and communication devices are means for people communicating with others. People tend to be not having *self-confidence* without their gadgets actually. The improvement of ICT in this era has influenced the way how people live actually. This can be seen that the use ICT cannot be separated from our daily life. The internet, television, computer and cell phones are the examples of devices which we had surround us.

The use of ICT is not merely for fun but also, it can be used for media education. We may see that ICT as media education has applied in education institution; such as play group until universities. Teachers and students are already having good perspective of the existence from the ICT. Teachers and students need to use it for better quality in understanding about certain subject matters after all. Here, they sometimes face many problems when using the ICT. The problems come up while they do not have understanding or illiterate towards something which contain inside of ICT’s usage. As we know that the media of education which comes from the ICT’s device has their own strength and weaknesses.

Media Education

Media text sometimes, consist of several 'languages' or forms of communication: visual images, audio (sound, music or speech) and written language. Media education, therefore, aims to develop a broad-based competence, not just in printed text only, but also it contains other symbolic systems of images and sounds. This competence is frequently described as a form of literacy: and it is argued that in the modern world 'media literacy' is just as important for young people as the more traditional literacy of print.

Media education then is the process of teaching and learning about media; media literacy is the outcome, the knowledge and skills learners acquire. Media literacy involves 'reading' and 'writing' media. Therefore, media education aims to develop both critical understanding and active participation. It of course enables young people to interpret and make informed judgments as consumers of media; but it also enables them to become producers of media in their own right. Media education is about developing young people's critical and creative abilities. By these, the rapid information which growth, and change in minutes can be followed by young people for enrich their own knowledge and information. As we know that the young people need to be guided while they learn something new. However, parents and the adult learners should give further explanation concerning the new information which should be given to the young learners. Psychologically, young learners may absorb information given to them fast. It is relevant with their psychology that they such a sponge; may absorb liquid fast. Information just like a sword, both its side is sharp.

Media education is concerned with teaching and learning about the media. These educational media also provide versions or representations of the world, and for that reason, media educators have often sought to challenge the instrumental use of media as 'teaching aids'. This emphasis is particularly important in relation to the contemporary enthusiasm for new technologies in education, where media frequently seen as neutral means delivering 'information'. While it can have a fruitful critical dialogue with these areas, media education should not be confused with educational technology or with educational media.

The Importance of Media Education

Why should we be teaching young people about media? In most industrialized countries, children now spend more time watching television than they do in school, or indeed on any activity apart from sleeping, Buckingham (2008) quoted Livingstone and Bovill (2001); Rideot et al (1999). Films, magazines, computer games, and popular music are the media which we may add to this time they devote. These points often lead on the broader assertions about the economic, social and cultural importance of the media in modern societies. The media are major industries, generating profit and employment; they provide us with most of our information about the political process; and they offer us idea, images and representations (both factual and functional) that inevitably shape our view of reality. The media are undoubtedly the major contemporary means of cultural expression and communication: to become an active participant in public life necessarily involves in making use of the modern media. The media, it is often argued, have now taken the place of family, the church and the school as the major socializing influence in contemporary society.

Talking about ICT as media education Buckingham said that there are three dimensions consists in the use of media education. Firstly, like many advocates of media education; it is lack of progress we seem to have made among educational policy-makers in recent years. Where students are free to choose it – and teachers free to offer it - media education continues to expand a quite alarming rate. Secondly, among academics there has been a flourishing of esoteric political rhetoric and an increasing taste for utopian fantasies about educational change. The third, there are some fact that teachers of media education still seem to be insufficiently recognized and supported. Despite the generally inhospitable climate, there is a great deal of excellent work being done in the field by highly dedicated teachers and committed students.

In the other hand, in the developed country information is already opened widely. That depends on the customers select the information that they want to get. We may, sometimes, see that the customers who live in the developed country have already understood in fulfilling their needs about information. They wisely select and use the media surrounds them as well as possible. They also knew that information has a big influence for their life if it does not use in proper way.

It is large different with the developing country. People in these countries, sometimes, not understood or even they do not care about abusing information. They, furthermore, use the media surrounds them improperly. It can be seen that in the developing countries, people less in maximizing the media as a means of improving their knowledge and information. They often use the internet for something useless, it is seen from the young people tends to watch pornography pictures or films from it.

The media is just like the flowing blood in our body. It influences and become a routine of everyday life, and they also provide of the ‘symbolic resources’ we should use to conduct and interpret our identities. As stated by Buckingham quoted Silverstone (1999) he has argued that, the media are now at the core of experience, at the heart of our capacity or incapacity to make sense of the world I which we live’. And as he suggests, it is the reason that we should study them.

In these terms, therefore, that is why the argument for media education is essentially an argument for making the curriculum relevant to children’s lives either outside or inside school, and to the wider society. Practically, however, many rationales for media education should adopt a much less neutral approach. Media education should be regarded as a solution to an education problem; and children’s relationship with the media is seen, not so much as fact of modern life, as a harmful and damaging phenomenon those educators must seek to confront. As we shall see, the reasons why that relationship is seen to represent a problem, and hence the nature of the solution which are offered are quite variable. For some, the major concern is about the media’s seems lack of cultural value, as compared with the ‘classic’ of great art of literature; while for others, the problem is to do with the undesirable attitudes or forms of behavior which they are seen to promote.

Just like any other field of education, then, the media education is characterized by an ongoing debate about its fundamental aims and methods. Few teachers are formerly trained in media education; and they therefore tend to approach it form disciplinary backgrounds, and with diverse motivation is through a historical perspective.

Our approach to the media education is bound to depend upon the asumptions we make about the relationships between media and their audiences. Nowadays, children are surrounded by the various kind of media actually. The media plays the important roles in educational sector; however, it needs people wisdom when in the usage. There are two valuable lessons to be learned here; they are as follows: first, one of the significant roles that family has or can have as mediators of the televisual experience between the media sources and the younger members of the family – this theme is now well known in the psychology of media, but it always needs repeating. Secondly, is the native nature of the viewing experience and how media provides a source that can challenge us. That depends on us whether we use it well or badly, in our roles as parents and educators, it is up to us to teach and tell others how to do so.

The History of Media Education

Decade	Focus	Figures	Missions
1930’s	The mass media in schools. Classroom exercises using extracts from journalism, popular fiction and advertisement.	F.R Leavis & Denys Thompson	Preservation of the literacy heritage, the language, the values and the health of the nation. Encourage students to ‘discriminate and resist’ against the commercial manipulation of the mass media and hence to recognize self evidence merits of ‘high’ culture
1950’s	Culture was no longer as a fixed set of privilege artifacts an approved ‘canon’ of literary texts, for example but as ‘a whole way of live’; and cultural expression was seen to take a whole range of forms.	Raymond Williams, Richard Hoggart	A challenge to the Leavisite notion of ‘culture’. To challenge the distinction between high culture and popular culture, and ultimately between art and lived experience
1960’s		Stuart Hall and Paddy Whannel	Extensive range of suggestions for teaching about media, and particularly about cinema.
1970’s		Graham Murdock and Guy Phelps	Leavisite approach was steadily losing ground as younger teachers sought to recognize and to build upon their students’

			everyday cultural experiences.
1980's	Screen theory: it was the most significant vehicle for new developments in semiotic, structuralism, psychoanalytic, post-structuralism, and Marxist theories of ideology.	Len Masterman	Suggests how these academic approaches might be applied to classrooms in schools.

Democratization and Defensiveness

As we concern that there is a fuller analysis of the evolution of media education would need to locate these approaches within the changing social and cultural climate of their times; and particular to relate them to the ongoing struggles for control over educational policy-making.

By these qualifications in mind, it is possible to read this history in terms of two contradictory tendencies. On the other hand, the development of media education is a part of a wider move towards democratization, a process whereby students' out of school cultures are gradually recognized as valid and worthy of consideration in the school curriculum. It means that media education could be seen as one dimension of the 'progressive' educational strategies that began to gain widespread acceptance in the 1960's and 1970's.

This move figured out of growing recognition that the traditional academic curriculum was inadequate for the large majority of students, and particularly for working-class students. Teaching children about the media enabling them analyzing how media texts are constructed, and to understand the economic functions of the media industries is seen away of 'empowering' them to resist such influences. In the progress, it is argued that children will become rational consumers, able to view the media in a 'critical' and distanced way.

The defensiveness may have several motivations, which take on a different significance at different times and in different national and cultural context. Here, the media are seen to be primarily responsible for inculcating these false beliefs or behaviors for encouraging children to believe that all problems can be solved through the violence, or through acquisition of material goods. And it is through a rigorous training media analysis that such dangers can be prevented (Anderson, 1980) quoted by Buckingham.

The defensiveness may come from the stakeholders who protect the young learners from bad effects result by the media. By the law enforcement and government policies, however, the television operators may take a part in the protection of young people to keep them away from the information abused. The television operators may in charge by the customers if they break the regulation forced by certain areas.

It needs a distinct regulation amongst customers, government and the operators to create the conduciveness atmosphere. By this, we hope that all of us do feel in responsible to educate young people in such a way, so that they can study hard and not involve in bad habits.

In each case, therefore, media education is proposed as a way of dealing with some very wide and complex social problems. Much public debate about children's uses of the internet has focused on the dangers of violence, pornography, and so on. Here, media education is yet again perceived by some as a kind of inoculation – a means of preventing contamination, if not of keeping children away from the media as a whole.

In the modern era, actually, the media may grow up rapidly. It reflects the 'democratization' that already done in a certain place as well. In developed countries, the progress of media being indicators of the 'democratization' has been run well. It representing in the west that they give a large opportunities for their people to obtain various information present in their daily life freely.

Thus by this kind of 'democratization' of media has good and bad effects towards people, especially, the young people who fragile to face the various kind of information surround them actually. So, we cannot put these problems away from us as the customers. We have right to protect our generation from the bad effects of abusing media.

The Media and the Childhood

It is still in debating about the relationship between media and the children. People argue that media can give bad influence for children and other is vice versa. We, therefore, need to concern the role of the media itself as a part of dynamic and multi-typed process is all about among technology, texts, economics and also the audiences.

Childhood is the age span ranging from birth to adolescence. In developmental psychology, childhood is divided up into the developmental stages of toddlerhood (learning to walk), early childhood (play age), middle childhood (school age), and adolescence (puberty through post-puberty). The term childhood is non-specific and can imply a varying range of years in human development. Developmentally, it refers to the period between infancy and adulthood. In common terms, childhood is considered to start from birth. Some consider that childhood, as a concept of play and innocence, ends at adolescence. In many countries, there is an age of majority when childhood officially ends and a person legally becomes an adult. The age ranges anywhere from 15 to 21, with 18 being the most common.

In some extends, the developmental of the childhood can be stated as follows:

- Early childhood. It is the first step of children begins to speak and taking step without parents independently. The term *childhood* is non-specific and can imply a varying range of years in human development. Developmentally, it refers to the period between infancy and adulthood. In common terms, childhood is considered to start from birth. Some consider that childhood, as a concept of play and innocence, ends at adolescence. In many countries, there is an age of majority when childhood officially ends and a person legally becomes an adult. The age ranges anywhere from 15 to 21, with 18 being the most common.
- Middle childhood. Middle childhood begins at around age seven or eight, approximating primary school age and ends around puberty, which typically marks the beginning of adolescence.
- Adolescence. Adolescence is usually determined by the onset of puberty. However, puberty may also begin in preadolescents. The end of adolescence and the beginning of adulthood varies by country and by function, and even within a single nation-state or culture there may be different ages at which an individual is considered to be (chronologically and the legally) mature enough to be entrusted by society with certain tasks.

As the description above, the development of the childhood is therefore, being our attention to be concerned well. Children cannot be independent ones yet; they still develop in the future. However, the environment surrounding us gives the major impact due to the children development. The environment, actually, consists of two major points, such as the inner (family) and the outside one. Both environments, however, children will develop their knowledge gradually. They learn everything surrounds them; try to speak, having interaction with someone else, understanding what they see, listen and touching what they find in front of them for instances. This is all the process of learning for. By this, the development of children self-behavior would be improved naturally.

Thing that we should know, however, the enlightenment philosophers based their ideas their ideas on their beliefs that man is the nature good and pure, and that individual differences can be attributed to environmental circumstances. The environment could be positive, stimulating influences on children, but could also have a negative and destructive effect.

The notion that media is the main problem which destruct the young people has already stated at Neil Postman's book 'The Disappearance of Childhood' (1983) quoted by Buckingham (2008). Postman said that our modern conception of childhood was a creation of the print media; at the new media, particularly television, are destroying it. Buckingham (2008) argues that this is primarily to do with the children's access to information. Whereas acquiring print literacy took a long period of apprenticeship, we don't have to learn to read or interpret television. Television is, he argues a 'total disclosure medium': through television, children are increasingly learning about the 'secrets' of adult life – sex, drugs, violence – that would previously have been hidden in the specialized code of print.

As stated above it may conclude that by the media, teacher should be aware of using media such as television may increase the creativity inside the children. They can use television to ease teaching process. Here media not only offers advertisement which entertains its audiences, but by this media the young learners may watch and listen to the motion pictures. It may reduce the young learners being bored while studying certain materials given from their teacher.

Contradictorily, the television also may give bad effects if it is used without any guidance of course. Here, again, the guidance and teachers advisory is still needed to educate the young learners in general. However, young learners do not have a mature understanding towards what they see and listen, particularly information which come across in their daily lives.

We should take some responsibilities towards the young learners' future. We, of course, do not want to gamble about young learners' future. We often feel in blue when seeing the phenomena occurs surrounding us having read or hear the misbehave attitude done by young people from the newspaper or television. Beside the parental

guidance, furthermore, the government policy and law enforcement should be enforced to protect young learners from the negative influences derive from media especially audio visual aids.

Don Tapscott (1998) as quoted by Buckingham (2008) argues that the boundaries between childhood and adulthood are blurring; and he agrees that media technology – particularly digital technology – is primarily responsible for this. But rather than regretting this development, he sees it as a form of liberation or empowerment for young people.

As the stated above, actually, there is no distinct boundaries toward information that faced by the children and adult one. It is a real problem that necessarily to be solved as well as possible. The strict regulation and law enforcement plays the important roles to defense the young people from attacking information surround them. On the other hand, the attacking information may create a motivation from young people to consume information which is good or not.

Tapscott (1998) as quoted by Buckingham (2008) states that: television is seen as passive while the net is active; television ‘numbs down’ its users, while the net raises their intelligence; television broadcasts a singular view of the world, while the net is democratic and interactive; television isolates, while the net builds communities; and so on. It clear, however, there are many advantages and disadvantages as the outcomes of media.

Children as young learners must be protected from the media abused. There are many factors why protecting children as one of the focuses in doing teaching and learning process. Children when stay at their houses; so the parents must facilitate them with parental guidance while they watching audio-visual (television, video recorder). It is the same when they study at their schools; so that teachers must be responsible too. Children having different their own styles in consuming media as experienced. We should consider to all these dynamics point of view.

It is possible to identify two contrasting views of the relationship between children and media, both of which have been influential in popular and academic debate. On the one hand, there is the idea that childhood as we know it is dying or disappearing, and that the media are now a force of deliberation that is more open, more democratic, and socially aware than their parents’ generation. In some ways, these two views are diametrically opposed, not least in their underlying assumptions about childhood; yet there are also some striking similarities between them.

IMPLICATION FOR EDUCATION

1). School’s Program.

The development of media has increased rapidly nowadays. This consequence will affect the human life style in every sector. It also will affect toward education of young people sooner or later. The separation between children’s and adult’s media world is becoming urgent and need to cleared, although the there is a changing of terms occurred. Children will grow up someday, and they can no longer to be ‘protected’ from their experiences that they will meet at in their future. This kind of experiences may sometimes, changes their habits and morally destruct, even unsuitable.

Regarding this, reinforcing the urgent need for a systematic program of teaching and learning of media is should be taken. Yet again, many factors influence how well young people can learn what we want to teach them. For example, mental perspective, which is shaped by the learner’s age, gender, generation, culture, beliefs, and attitudes, influences the learning process. Education (formal and informal), intelligence (degree and type of intelligence), disabilities (physical, neurological, and neurobiological), and language fluency affect how people learn also. In addition, a teacher must be aware of the learning environment, reasons for learning, learning strategies, sources of motivation, and an individual’s preferred learning style (Stuart, 1992). Theories that categorize the way that young people process information not only offer insight, but also provide the basis for increasing the effectiveness of media.

Awareness of how another person understands best provides a means of increasing the effectiveness of media and effective communication increases the likelihood that the message (or lesson) will be understood, applied, and retained more readily. In essence, Learning Style is “the biologically and developmentally imposed set of characteristics that make the same teaching method wonderful for some and terrible for others” (Dunn & Griggs, 1988, p. 3). Significantly, learning styles are not dichotomous (black or white; present or absent), but generally operate on a continuum or on multiple, intersecting continua. For example, a person might be more extroverted than

introverted, more closure-oriented than open, or equally visual and auditory but less kinesthetic and tactile. Few people if any could be classified as having all or nothing in any of these categories (Ehrman, 1996).

2) Inadequate Resources.

Even if the above problems are overcome there is often difficulty for teachers who have had some training to be able to use media because there are insufficient media resources in the school or there is not enough time to review them and plan lessons incorporating their use.

In spite of the problems listed above and many others, some positive things have been learnt from previous experiences of different imitative and training programs. Where schools have had the backing of the head teacher and there is long term policy for the school to integrate ICT into the teaching then they have been successful in gradually developing the use of media as ICT in different areas. Teachers who are familiar with teaching media (ICT) are easily able to apply their technique in teaching more attractive ones. It is supported by Preston (1999) that argues studies of teachers who belong to an internet network of supporting teachers, such as Miranda Net, have shown that the support enables them to use them in their teaching even if few other teachers in the school are doing so.

Media will be so useful if they are used carefully and creatively prepared by the teachers, and they are used effectively to support the presentation of the lessons during the teaching and learning process. This leads to the conclusion that use of such kinds of media is needed for children's development. Sadiman states that instructional media for the teaching learning process especially in Indonesia can be clarified into four categories; they are stated below:

- Games and simulation: word, puzzle and role playing.
- Visual media which is media that can be seen and the function of visual media; distributing the message from the source to the receiver.
- Audio media are different from the visual in common as audio that connects with one of the five senses that are ears that can hear something produced by sound. What is meant by the audio media here is the media that is useful indeed.
- Audio-visual media is media that is useful because of their sound and picture. The examples are: TV and video recorder which being turned on then producing picture as well.

CONCLUSION

Recent developments of media technologies can be understood. Television or internet as part of the result of modern era has played the important role affects the learning styles of young people. As a result, teacher should concern of the tendency of learning still that arise from the young learners can be varied. Some of them tend to visual learners, and the others may have audio lingual style.

From this comparison, obviously, we may start a new beginning to improve our knowledge and skills in using the media as a means of teaching and learning aids. Television, internet, printed texts and audio devices are able to maximize teaching and learning process towards young learners. It is, of course, with all consequences that the media also produce the bad sides while being used. The young learners are fragile ones; consequently, a good systematic program of teaching and learning media is urgently required. Here, the pros and cons of media as teaching and learning device can be properly separated. It is no doubt that media play the important roles in the educational progress world just like the now on.

Last but not least, the writer hopes that this paper may enlighten our perspective towards the development of ICT in facilitating students, especially the young learners in the classroom. There are many points that should be paid for our attention. Teachers and parents, however, always give their guidance and take care of the problem raised from the use of ICT actually.

REFERENCES

1. Anderson, J. (1980). The Theoretical Lineage of Critical Viewing Curricula. *Journal of Communication* 30(3): 64-70
2. Buckingham, D. (2008). *Media Education: Literacy, Learning, Contemporary Culture*. Cambridge University Press
3. Livingstone, S. and Bovill, M. (1999) *Young People, New Media* London: London School of Economics and Political Science

4. Postman, N. (1992) *Technopoly, The Surrender of Culture to Technology*. New York: Knopf Preston,
5. Rideout, V. J., Foehr, U. G., Roberts, D. F. and Bodie, M. (1999) *Kids & Media @ the New Millennium* Menlo Park, CA
6. Silverstone, R. (1999) *Why Study the Media?* London Sage
7. Tapscott, D. (1998) *Growing Up Digital: The Rise of the Net Generation*. New York: McGraw Hill

Differences in the Concept of Authentic Assessment and Authentic Assessment on the *Kurikulum 2013*

Sari Yustiana

Universitas Islam Sultan Agung

Corresponding author: say_yuna@yahoo.com

Abstract: Differences in the concept of authentic assessment and authentic assessment on the *Kurikulum 2013* background on a confusion between the notion of authentic assessment on the general concept with the understanding and application of authentic assessment on the *Kurikulum 2013* in Indonesia. The description of the differences in the concept of authentic assessment and authentic assessment on the *Kurikulum 2013* aimed to know in greater depth the difference of the two. Benefits after knowing the difference in the concept of authentic assessment and authentic assessment on the *Kurikulum 2013* were practitioners in particular can applying it better. Because good authentic assessment instruments will be able to measure the ability of learners as a whole. The fundamental differences in the concept of authentic assessment and authentic assessment on the *Kurikulum 2013* is in defining the meaning, it causing differences in the types of instruments used. In the concept, authentic assessment refers to performance assessment. While, authentic assessment on the *Kurikulum 2013* focused on the assessment of attitudes, knowledge and skills.

INTRODUCTION

Since implemented Kurikulum 2013 in Indonesia, authentic assessments into assessment that must be known by the teacher. Authentic assessment is not a new type of assessment, this assessment has been there since the previous curriculum implementation. But teachers do not apply it because they do not understand. A large part of the teachers just use paper and pencil test. This assessment is more easily implemented, besides the Indonesian education more concerned with the cognitive even the skill. In order for teachers to understand and apply, the government provided training to teachers. At the training teachers are given an understanding of the meaning and form of instruments in the authentic assessment. However, if we analyze the concept of authentic assessment in general with the concept of authentic assessment in the Kurikulum 2013, there is a difference between the two. This is what teacher-in-particular-and-academia-in-general-to-know. Because by knowing this, we can certainly refer to and use of this type of assessment..

The Concept of Authentic Assessment

At the beginning of the emergence of authentic assessment due to the dissatisfaction of the traditional assessment or a paper and pencil test. Traditional assessment thought to be able to distinguish the ability of students as participants test. Traditional test items that examine core understanding of disciplines are often discarded because they fail to discriminate among test takers (Cheek: 1993).

Paper and pencil tests are considered not able to measure student's actual competence. Because only judge from one side. Student activities daily can not be measured by this assessment. As a result, the ability of students can not actually be measured. Traditional assessment also be unable to assess students in problem solving. Because only judging from concept in the test. Furthermore, the traditional assessment cannot assess multifaceted thinking, and cannot assess complex problem solving (Moon, at.all 2014).

Understanding of authentic assessment are different of the experts. However, generally speaking authentic assessment is synonymous with performance assessment. As stated by (Darling - Hammond , 1997) that "authentic assessments, often called performance-based assessments, engage students in real-world tasks and scenario-based problem solving more than traditional measures such as multiple-choice pencil-and-paper tests". In that argue, in

authentic assessment, students must work in the real world test. Not just in paper and pencil tests, like happen in most of schools.

Authentic assessment as performance assessment is also defined by other expert like Cumming & Maxwell and Wiggins, that argue domain construction of authentic assessment is same with performance assessment. Performance also involves an emphasis on the integration of knowledge and holistic applications. So, the concepts of authentic assessment is usually written performance assessment. Authentic assessment is synonymous with performance assessment because these assessment is assess the performance of students at different levels. Of the above opinion can be concluded that the concept of authentic assessment is synonymous with performance assessment or can be said that authentic assessment is part of the performance assessment.

Authentic Assessment on the *Kurikulum 2013*

The implementation of the *Kurikulum 2013* in Indonesia requires that teachers use authentic assessment approaches. This assessment has been launched in the previous curriculum, *Kurikulum 2006* or what is often called *Kurikulum Tingkat Satuan Pendidikan* (KTSP). Authentic assessment that implemented in *Kurikulum 2013* refers to *Peraturan Menteri Pendidikan Nasional RI No. 20 Tahun 2007* about education assessment standards is comprehensive and sustainable. Comprehensive means assessment by teachers covering all aspects of competence (cognitive, psychomotor and affective aspects) using a variety of assessment techniques are appropriate

In concept of *Kurikulum 2013*, authentic assessment is “*penilaian yang menilai peserta didik dari berbagai aspek.*” (Kemendikbud, 2013: 218). The aspects assessed were: attitude, knowledge, and skills. All the aspects that must be based on the actual situation in the real world , and learners should apply the concept of learning in the real world anyway. Depdiknas (2006:3) “*Penerapan konsep dan teori di dunia nyata dapat diartikan bahwa kegiatan penilaian harus bermakna. Selain itu, penilaian otentik adalah memandang penilaian dan pembelajaran secara terpadu, mencerminkan masalah dunia nyata bukan dunia sekolah, menggunakan berbagai cara dan kriteria, dan holistik (kompetensi utuh merefleksikan pengetahuan, keterampilan, dan sikap)*”. Of that argument, it can be said that authentic assessment on the *Kurikulum 2013* is defined as the assessment of knowledge, skills, and attitudes.

Assessment of knowledge in authentic assessment is an assessment that measures the cognitive domain. In the *Kurikulum 2013* knowledge assessment is at *KI 3* that understands knowledge (factual, conceptual and procedural) by curiosity about science, technology, art, and culture -related phenomena and events are seen. Techniques of Knowledge Authentic assessment include written tests, observation of discussion, question and answer, and the conversation. It is like the explanation contained in the Permendikbud No. 104 of 2014 on the assessment standards

Skills competence said as psychomotor competence. Skills is an action or application after the participant had previously acquired knowledge. So the skills assessment as a form of activity assessment of learners in applying the knowledge that is adjusted dengan learning objectives and indicators. Assessment techniques used to measure skills assessment are performance, project , portfolio , and product technique.

Attitude with regard to the response shown someone against something . Such a response can be positive or negative. Aside from being a feeling of like or dislike about something as well as determining a person's behavior . The attitude that comes up in learning is influenced by what is learned learners . So that the attitude shown learners are the result of material or learning undertaken learners.

Kurriculum 2013 split into two competencies attitude, the attitude of spiritual associated with the formation of learners who believe and fear Allah, and social attitudes related to the formation of learners are noble, independent, democratic, and accountable. As in the competence of knowledge and skills , assessment of attitudes also have its own assessment techniques. Attitude assessment techniques can use observation , self-assessment , peer assessment and journals (Kemendikbud, 2013: 16).

CONCLUSION

Authentic assessment is the general concept is defined as performance assessment. Or said also tahat authentic assessment is part of the performance assessment. That assessment thoroughly integrate knowledge. Meanwhile, authentic assessment in the *Kurikulum 2013* is a comprehensive assessment that includes the realm of knowledge, skills, and attitudes. In every sphere there are technique respectively. In the *Kurikulum 2013*, performance assessment is part of the skills assessment. So the main difference from the general concept of authentic assessment

and authentic assessment on the Kurikulum 2013 is on the understanding, and in the distribution of student assignments .

REFERENCES

1. Cheek, D. W. (1993). *Plain talk about alternative assessment*. Middle School Journal, 25(2), 6-10)
2. Cumming, J & Maxwell, G.S. (2014). Contextualing in Authentic Assesment. *The Journal Assesment in Education*, Vol. 6, 177-194.
3. Darling-Hammond, L. (1997). *The right to learn: A blueprint for creating schools that work*. San Francisco: Jossey-Bass.
4. Depdiknas. 2006. *Rancangan Penilaian Hasil Belajar*. Jakarta: Depdiknas
5. Permendikbud. 2007. *Standar Penilaian Pendidikan*. Jakarta: Depdiknas
6. Permendikbud no 104. 2014. *Standar penilaian Pendidikan*. Jakarta: Depdiknas.
7. Wiggins, G. P. (1993). *Assessing student performance: Exploring the purpose and limits of testing*. San Francisco, CA: Jossey-Bass/Pfeiffer.

The Use of Computer Media on Dysgraphia Children in Learning Writing

Oktarina Puspita Wardani^{a)} and Meilan Arsanti^{b)}

*Indonesian Language and Literature Department, Faculty of Teacher and Training Education
Islamic University of Sultan Agung*

^{a)}Corresponding author: oktarinapw@unissula.ac.id

^{b)}meilanarsanti@unissula.ac.id

Abstract. According to O'hare et Brown (1989), dysgraphia is development tardiness or an anomaly or disturbance in writing. It is a permanent and continued disruption in writing ability as well as functional disruption that is indicated by inability in making movement: very slow movement or very quick movement, so that the writing is unreadable and unorganized. Formulation of problem in this article is how the use of computer media on children with dysgraphia in writing ability. The aim is to figure out the writing ability of children with dysgraphia with the use of computer media. Dysgraphia sufferers focus their attention on the picture of letter. They can not write, hear, and think simultaneously at the same time, as of writing activity is such cognitif burden for them (Duband 2015:12). Concentration and eye coordination, as well as hands movement to write are hard ordeal for disgraphia sufferers. So that it needs to teach them how to write by pressing keyboard buttons in computer in order to reduce their ordeal. Computer media is able to help children with dysgraphia in learning how to write. It is not necessary for them to hold pencil to write as holding pencil is one of difficulty for them. Therefore computer media can reduce fear level of children with dysgraphia in learning writing.

INTRODUCTION

According to O'hare et Brown (1989), dysgraphia is development tardiness or an anomaly or disturbance in writing. It is a permanent and continued disruption in writing ability as well as functional disruption that is indicated by inability in making movement: very slow movement or very quick movement, so that the writing is unreadable and unorganized.

Dysfunction of the brain or the nerves cause various anomalies in their behavior and adapt to the environment. One of the dysfunction of the brain or the nerves that can cause complications for the sufferer to obtain language competence, ie people unable to understand verbal information, the information and provide information orally or in writing.

The act of providing daily information or writing involves various muscles, articulation and maturity of the brain (spatial orientation, mastery of the spoken language, attention), especially the upper muscles of articulation and the prime mover in writing activities (Moczadlo 2010: 10). Dysgraphia can be experienced by children who suffer from disorders in the parts that have been mentioned by Moczadlo and also can be experienced by adults from stroke or trauma that causes brain dysfunction associated with writing.

The cause of dysgraphia is due to neurological factors, ie the factors of left front brain disorders that is associated with writing skills. This neurological disorder inhibits the ability of writing that includes physical barriers, such as can not hold a pencil steadily or bad handwriting. Children with dysgraphia disorder actually have difficulty in harmonizing memory with the control muscle movement automatically when writing letters and numbers.

Obviously children with dysgraphia disorder must be helped and given special treatment in order to be able to write properly. One can attempt to help and treating children with dysgraphia disorder that is by utilizing a computer media. Computer media used as aids for children in learning to write. Therefore, in this article discussed about how to use the computer media in children with dysgraphia in writing skills, so as to find out the benefits of computer media in children dysgraphia in writing skills.

DISCUSSION

Learning disorder is a neurological disorder that affects the ability to receive, process, analyze or store information. Children with learning disorders may have the same level of intelligence or even higher than their peers, but often struggle to learn as fast as those around them. Problems associated with mental health and learning disorders are difficulties in reading, writing, spelling, remembering, reasoning and motor skills and problems in mathematics.

Dysgraphia can be distinguished by its dimensions, namely the difficulty experienced and the writing that is resulted by sufferers. Below is presented the difference of the three categories.

Tarbes distinguishes dysgraphia in two dimensions as follows.

1. Dysgraphia linguistic associated with the error writing the word, in a letter, for example the Indonesian word 'dari' was written 'bari', 'nuri' written 'muri', 'ubi' written 'upi'. In addition, another mistake is to reduce the letter or add a letter or an error in the decoding of words, for example: Da berkatta (the first word about the letter i and the second excess-letter word t) should be written 'Dia berkata', Sayamakan ku e should be written Saya makan kue.
2. Dysgraphia motor relating to the bad shape of the letter (grapheme).

Deuel cited by Jover (2012: 23) states that dysgraphia is often associated with dysfunction of the others, for example a) dysgraphia linked to impaired language (dyslexia, impaired syntactic, language disorders, disortografi), b) dysgraphia associated with motor disorders (developmental disorders motor, impaired hand-eye coordination, impaired fine motor), c) dysgraphia associated with impaired cognitive function (interference sequential, impaired executive functioning, disruption of planning), d) dysgraphia linked to impaired spatial arrangement, spatial structures, and interference visio-spatial.

Thus, it can be said that dysgraphia is related to lateral dominance disorders, body scheme (awareness of the body, its parts and its function and its relation to somesthetic sensors and visual), disorders of muscle tone and emotional-affective and interference adaptation.

Children or people who have dysgraphia need help from others to solve the problem. This is in accordance with Vygotsky's theory of the Zone of Proximal Development that the level of potential development, children or people with dysgraphia need to be assisted or guided to optimize the writing abilities.

One way that can be done by parents to help is to provide electronic aids to children such as a computer, laptop, or notebook. By using these tools, children will more easily understand their mistakes in writing exercises. Computers can be used for writing, drawing and arithmetic. For children can press the button and bring up a certain letter in a colorful display that is a great experience and full of wonder for them. Computers provide a variety of fonts and facilities to manipulate, change the size, color, font, and so on.

People with dysgraphia focus their attention on the "image" of letters. They can not write, hear, think simultaneously at any one time, so the act of writing is the cognitive load (Duband 2015: 12). Concentration and coordination of eye and hand movements to write a serious ordeal for people with dysgraphia. To reduce the pain, need to be taught how to write by pressing buttons located on the computer keyboard. Basically, when children with dysgraphia learn to write they are not burdened with the use of stationery such as ballpoint or pencil. This is because they focus their fingers to squeeze or press the buttons on the computer keyboard. Thus, they can focus more on writing and instead focus on his handwriting, so that the paper produced can be better and legible.

CONCLUSION

Dysgraphia is the inability to write as seen from the bad shape of the letter written because the sufferer is not able to perform the cursive movement, making lines. Dysgraphia symptoms can be recognized when the writing process and writing results. Dysgraphia can be distinguished according to the dimensions and shape of the resulting writing of the sufferers. Treating dysgraphia can be done through the provision of appropriate tools and training. One of the dysgraphia treatment for children is by using computer tools so that children do not feel pressured to learn to write..

REFERENCES

1. Duband, Valérie. 2015. *Dysgraphie et Compensation*. [Lyon: Dysmoi](#)
2. Jover, Marianne. "Trouble de l'acquisition de la coordination et troubles de l'écriture: peut-on parler de comorbidité" *Developpements* édition Juin 2012 p.19-25. Marseille: Centre Psycole
3. O'hare A.E., Brown J.K., 1989. *Childhood dysgraphia*. Part 2. A study of hand function, *Child: Care, Health and Development*,15(3), 151-166.
4. Moczadlo, Sophie. 2010. *Vers une nouvelle approche de la prise en charge de la dysgraphie*. Mémoire. Toulouse: Université Paul Sabatier
5. <http://www.graphotherapie.fr/dysgraphie.htm> diunduh tanggal 21 April 2015.

Reasoning Ability Students in Mathematics Problems Solving Viewed from Cognitive Style

Mochamad Abdul Basir, Hevy Risqi Maharani

*Mathematics Education Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: abdulbasir@unissula.ac.id

Abstract. The ability of mathematical abstraction students will only be widened materials that follow set procedures without knowing their meaning if kemamampuan reason students are not developed. The research objective to describe students' mathematical reasoning skills to problem solving through Search, Solve, Create and Share strategy viewed of field dependent and field independent cognitive styles of students. Research type is descriptive qualitative study. Data were collected through the provision of reasoning ability tests and the Group Embedded Figures Test (GEFT). Analysis of the data by reducing the data, present data and make inferences. The results showed that the subject of cognitive style field independent control over three of the seven indicators of mathematical reasoning abilities. While the subject of cognitive style field less dependent only controls four of the seven indicators of mathematical reasoning abilities.

INTRODUCTION

The quality of national education needs to be improved as a matter of strategically developing the quality of human resources in order to have the skills, attitudes and knowledge that is oriented towards the mastery of science and technology. Improving the quality of national education are shown in the improvement of the educational curriculum.

The orientation of the curriculum emphasizes the learning process by not forgetting the achievement of learning outcomes the purpose of learning mathematics in school (Ismail, 2000) is to increase the sharpness of the reasoning of students who can solve problems in everyday life; and improve the ability to think in using numbers and mathematical symbols. Therefore, teachers stimulate students to reason in solving mathematical problems. Students are not forced to use his reason, this is because the students can make a frustrating and assume that mathematics is difficult and scary. When one or two attempts, students are frustrated and not sure of being able to do it again so that students no desire back to try to do it. Therefore, teachers need to understand the characteristics of students in using mathematical reasoning abilities of students in solving problems.

Mathematical reasoning can be used as a foundation in understanding and doing math as well as an integral part of solving the problem (Jones, 1999; NCTM, 2000, Artzt & Yaloz, 1999). Reasoning is different from thinking (thinking), according to Artzt & Yaloz (1999) and Peressini & Webb (1999) mathematical reasoning is an important part of thinking that involves the formation of generalizations and describe valid conclusions about the link between ideas and how these ideas. Jones (1999) argued that mathematical reasoning is also seen as a dynamic activity that relates a variety of ways of thinking in understanding, formulating, and find relationships between ideas, describe conclusions about ideas and relationships between ideas.

Relationship between reasoning by thinking, Sternberg (1999) explains that the mathematical reasoning requires the ability to think logically, practical thinking, creative thinking, and analytical thinking. Thinking logically is to think in a certain pattern or logic; and analytical thinking process. Reasoning is an activity that relies on an analytical, within the framework used for analytical thinking is the logical reasoning. Regulatory Documents Director General of Basic and Secondary Education about the indicators of the ability of reasoning to be achieved by students include serving capability mathematical statements, either orally, in writing, pictures and / or diagrams; Ability to submit allegations; Ability to perform mathematical manipulations; Ability to compile evidence and provide proof of the authenticity of the solution; The ability to draw conclusions from a statement; The ability to check the validity of an argument; and the ability to find patterns or properties to make generalizations. The design of the learning activities are expected to facilitate students in gaining knowledge and expertise. In the process, it is often assumed that the students have the same cognitive style. Whereas, in reality, is not always the case. Cognitive

styles of different students may affect the student's ability to think and reason in resolving the matter. This is in accordance with the opinion of Coop and Sigel (Lastiningsih, 2014), cognitive style has no correlation with the intellectual and perceptual behavior. Intellectual associated with a person's ability to think, while perceptually associated with a person's ability to view or interpret anything.

The focus of research in the field of cognitive style field independent (FI) and field dependent (FD) developed by Witkin, et.al on solving problems through SSCS strategy. Appropriate learning strategy is expected to improve students' mathematical reasoning abilities. According Pizzini, Abel and Shepardson (1990), to facilitate students' learning model SSCS in solving mathematical problems. SSCS problem solving strategy consists of four stages, namely stage search, identify problems, solve stage, the planning problem resolution, create stage, solving problems, and share the stage, communicating the results of the settlement of the problem (Laboratory Network Program, 1994).

The instrument used to measure cognitive style FI and FD in this study are instruments Group Embedded Figure Test (GEFT) developed by Witkin. This study will analyze the reasoning abilities of students based on cognitive style Field dependent and field independent in solving the problem of mathematical reasoning on the material system of linear equations of two variables. The problem therefore is defined is how the reasoning skills of students through problem solving SSCS terms of field dependent and field independent cognitive styles of students?

RESEARCH METHODS

This study aimed to describe in depth the reasoning abilities of students in solving mathematical problems based on cognitive style. Therefore, this type of research is descriptive research. The description that describes the reasoning abilities of students obtained after students completed the instrument test the ability of reasoning on the material system of linear equations of two variables in learning by using strategies Search, Solve, Create and Share, which previously students completed the instrument GEFT to know the type of cognitive style Field Dependent (FD) or Field Independent (FI). Data were analyzed test results and further described in the form of the written word or the description of the research subjects. Therefore, this study is a qualitative research. Thus this type of research is descriptive qualitative research.

The study was conducted in class X-8 SMAN 14 Semarang in the school year 2015/2016. Chosen subject of class X because generally students in class X between the ages of 15-16 years are at the stage of formal development in accordance with the stage of development of intelligence and knowledge by Piaget (Suparno, 2001). In addition, the chosen subject for students of class X students in this class is considered to have enough to have the necessary knowledge to complete tasks related to mathematical reasoning. The election process begins with the research subject of cognitive style test that uses GEFT instrument developed by Witkin, et.al which consists of 25 items. The criteria used in the selection of the subject using the criteria according to Kepner and Neimark (Lastiningsih, 2011), which is a subject that can be answered right 0-9 classed FD and 10-18 classed FI. Subsequently, it was determined two research subjects who had lower cognitive styles FI, two research subjects who have high cognitive styles FI, two research subjects who had lower cognitive style FD and two research subjects who had high FD cognitive style.

Instruments in the study consisted of the main instruments and auxiliary instruments. First, the main instrument is the researchers themselves, because the researchers directly related to the subject of the research and not be delegated to others. Second, auxiliary instruments, consisting of cognitive style GEFT test instrument developed by Witkin, et.al. and reasoning ability test instrument on the material system of linear equations of two variables. To be feasible and valid instrument for use in the research conducted by the validation of content and language experts.

Collecting data in this study, will be used techniques of the test, which is a technique to collect data about cognitive style profiles of students in solving FIFD shaped test cognitive style and problem solving mathematical reasoning ability test given to prospective research subjects. Preliminary data obtained from the prospective research subjects are the results of tests of cognitive style. This data is analyzed by using the following criteria, the study subjects who answer as many correct score 0-4 classed low FD, 5-9 classed high FD, 10-14 classed FI low, and 15-18 were classified high-FI. While the data obtained from the problem-solving test reasoning ability, analyzed the data reduction stage, reducing the data referred to in this research is a form of data analysis refers to the sharpening process, classify, eliminating unnecessary data and organize raw data obtained. Stage Presenting Data, the data presented in the form of a collection of information organized so as to allow their conclusion. Stage Interpreting and Attractive conclusions from data that has been obtained, the data described interpret and give meaning and draw conclusions.

Develop procedures starting from the research design research instrument consisting of cognitive style test instruments, test reasoning ability; Validate the content and language to test reasoning ability; Provide cognitive style tests to prospective research subjects; Analyzing the data obtained on cognitive style tests to determine the potential research subjects; Give reasoning ability tests to prospective research subjects; Triangulate the data; Perform data analysis, through data reduction, data presentation, and drawing conclusions; writing reports

RESULTS AND DISCUSSION

The results of the study can be obtained a description of the mathematical reasoning abilities of students in solving the material system of linear equations of two variables as follows;

1. Cognitive style Subject High Field Independent (FI)

Subject stylish cognitive FI high in problem solving SSCS can control more than six indicators of the ability of mathematical reasoning, the subject-style cognitive Field of independent high-proficient in presenting the statement of mathematics in the form of oral, written and images on stage search strategy SSCS so may submit allegations of manipulation mathematical model of a line with stage solve the problem. Thus the subject is able to prepare and give evidence of the truth of a settlement that could serve as a foundation in drawing conclusions from a statement by finding a pattern in making generalizations fit on the stage create, but the subject-style cognitive FI high yet accustomed to check a validity of a statement as to the stage to share in solving the problem SSCS.

2. Cognitive style Subject Low Field Independent (FI)

Subject FI low cognitive style in resolving the problem solving SSCS can control more than three indicators mathematical reasoning abilities. Subject stylish cognitive FI low at this stage of the search can identify the problem mathematically in the form of oral, written or images that can be used as material on stage solve in filing provisional estimates used on stage create in doing mathematical manipulation to prepare and give evidence to the truth of the settlement, but the subject FI low cognitive style less proficient in finding mathematical patterns to make generalizations, thus experiencing difficulties in attracting the conclusion of a statement and are not accustomed to checking the validity of an argument;

3. Cognitive style Subject High Field Dependent (FD)

Subject FD cognitive style high in solving mathematical problems mastering less than four indicators mathematical reasoning abilities. Subject FD cognitive style high proficient in presenting mathematical statement of good oral, written, and pictures to facilitate the allegations filed while at the search stage. It can be used as an ingredient in manipulating solve mathematical models on stage. But the subject of cognitive style high FD less capable in preparing and giving evidence at this stage that create difficulty in drawing conclusions from statements. Thus the ability to check the validity of an argument is not done, it is caused by the ability to find patterns to make generalizations.

4. Cognitive style Subject Low Field Dependent (FD)

Subject lower FD cognitive style in solving mathematical problems is only one indicator of the ability to master mathematical reasoning. Subject FD cognitive style is low only capable of presenting a mathematical statement by writing nothing is known in the problem set by the search stage in the strategy of SSCS. Subject weak in the settlement plan put forward allegations as stages so that the subject solve difficulties in problem solving.

The characteristics consistently shown individuals in learning, perception, mindset as a cognitive style is the character of a person to solve problems, think, observe and remember, therefore cognitive style will affect the mastery of concepts students, because it is a representation of the character of each student in the process learning that takes place. The link between reasoning by thinking, Sternberg (1999) explains that the mathematical reasoning requires analytical thinking, creative thinking, and practical thinking. Goodenough and Witkin (1977), mengklasifikasikan students into the field type independent if he is able to separate the substance from the context or from its global territory, they have a tendency analytical. While the students are categorized as dependent fields if they have a tendency to better recall the conversation as well as social information such as the overall picture of a given context.

Bertini (1986) summarizes the general trend of student learning styles field independent and field dependent, ie the students field independent during the learning process does not follow the standard procedure indicated on an

issue, he is understood to transfer the matter to a new structure based on the main concept of the problem, students FI interested in problem solving, and more concentration of completing a task within the scope of social limited (alone) otherwise students field dependent understanding a problem is superior if the following rules of thumb, he resolve the problem by reasoning the (recall) of information that has been presented by teachers, FD type more comfortable learning in a group and have a broad social interaction. Witkin asserts that individuals who have cognitive style field independent has superior capabilities in terms of analysis, structuring, and reasoning skills in accordance with the scientific method, whereas individuals who have cognitive style field dependent, weak in structuring and solving problems based on scientific method type is more convenient if given a lot of guidance from others. In other words, the individual FI superior to individual FD.

CONCLUSION

Subject field independent cognitive style capable of controlling more than three indicators mathematical reasoning abilities. While the subject of mathematics enabled field dependent cognitive style controls just less than four indicators reasoning ability matematis.dengan other words people are superior to field independent individuals dependent field.

REFERENCES

1. Artzt & yalloz. (1999). *Mathematical Reasoning during Small-Group Problem Solving* dalam Lee V. Stiff dan Frances R. Curcio (ed) Developing Mathematical Reasoning in Grades K-12, 115-126. Virginia USA: NCTM
2. Ford, N., Wilson, T. D., Foster, A., Ellis, D., & Spink, A. (2002). Information seeking and mediated searching. Part 4. Cognitive styles in information seeking. *Journal of the American Society for Information Science and Technology*, 53(9), 728-735.
3. Goodenough, D. R., & Witkin, H. A. (1977). Origins of the field-dependent and field-independent cognitive styles. *ETS Research Bulletin Series*, 1977(1), i-80.
4. Jones. G.A, Thornton, C.A, Langrall, C.W, dan Tarr, J.E. (1999). *Understanding Students' Probabilistic Reasoning*. dalam Lee V. Stiff dan Frances R. Curcio (ed) Developing Mathematical Reasoning in Grades K-12, 146-155. Virginia USA: NCTM.
5. Laboratory Network Program. 1994. *Promising Practices in Mathematics and Science Education*. Tersedia http://openlibrary.org/works/OL3583961W/Promising_practices_in_mathematics_and_science_education.
6. Lastiningsih (2014). Deskripsi Berpikir Siswa SMP dalam Pengajuan Soal Berdasarkan Taksonomi Empirik Ditinjau dari Gaya Kognitif Field Independent dan Field Dependent. *Prosiding Seminar Nasional Pendidikan Matematika Unissula*.
7. Peressini, D. dan Webb, N. (1999). *Analyzing Mathematical Reasoning in Students' Responses across Multiple Performance Assesment Tasks*. dalam Lee V. Stiff dan Frances R. Curcio (ed) Developing Mathematical Reasoning in Grades K-12, 156-174. Virginia USA: NCTM.
8. Pizzini, E.L dan Shepardson, D.P. (1990). *A Comparison of The Classroom Dynamics of a Poble-solving and traditional laboratory model of instruction using path analysis*.
9. Tersedia <http://adsabs.harvard.edu/abs/1992JRScT..29...243P>, (diakses tanggal 13 Desember 2014)
10. Sternberg, Robert J. (1999). *The Nuture of Mathematical Reasoning* dalam Lee V. Stiff dan Frances R. Curcio (ed) Developing Mathematical Reasoning in Grades K-12, 37-44. Virginia USA: NCTM.
11. Suparno, P (2001). *Teori Perkembangan Kognitif Jean Piaget*. Yogyakarta: Kanisius

The Development of Multimedia Interactive Science Learning Material at Students 5th

Jupriyanto

*Elementary School Teacher Education Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: jupriyanto@unissula.ac.id

Abstract. The study focus the development learning material on the material respiration and digestion. The purpose of this study was obtain a valid learning material then practical and effective learning. The research is development research with four-D models. The population in this study were elementary school students of SD Negeri Banjarsari 1, SD Negeri Banjarsari 2, and SD Negeri Kalisari 3 at 5th class. The variables of the material validation, multimedia validation, the response of teachers respons of students', and students test.. The average value validator of interactive multimedia 3.82 so that the study was supported to be valid. The positive response of students' interest in learning to follow and teachers gave very good comments, the teaching-learning device is so practical to used. Resulted of class control has mean 67.25 and experiment class has mean 81.75. Thus, interactive multimedia was effective.

INTRODUCTION

Challenges in the world of education in Indonesia one of which relates to the availability of textbooks and reading interests of students in the school. Surveys conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), quoted from Republika (2013), in 2012 stated that Indonesia's first contested books to be read by 1000 people or read in Indonesian index of 0.001. Compare with Singapore 550 books read for 110 people. In 2012 also, Indonesia claimed the No. 124 out of 187 countries in terms of Human Development Index (HDI), especially in meeting the needs of education.

Schools as an educational institution, is very important in the promotion of human resources. School program regularly and systematically implemented, with adequate facilities and infrastructure and the role of teachers as counselors will produce a quick understanding and reasoning for students in decision-making. The success of course also determined by many factors one of which should be no linkage between learning components such as the objectives, methods, media, materials, and evaluation of learning.

Rapid advancement of science and technology is a development that gives access to change people's lives, there are many problems that can be solved with the mastery of science and technology. These changes also bring the society into the global competition intensifies, forcing a nation should strive to develop and improve the quality of human resources to be able to participate in global competition.

Learning in schools by making use of technology and information, especially in primary schools is very low. Based on data from the Center for Technology and Communication (Pustekkom) contained in kompas.com (2009), the number of primary schools have computer labs only reached 10 percent. This amount is much lower than the existence of a computer lab at the middle school.

One form of renewal of learning is to use effective instructional media, engaging and meaningful for students. In addition, if the media is designed and crafted the better the media was in its function as a channel message, for certain topics the media can be better than the teacher in delivering the message, the better the medium smaller distortion and better the message was received students.

Interactive multimedia is expected to find a pattern that is more effective in learning, so any learning material can be presented in such a way and expected to be more attractive, effective and adheres to, and the results can be applied to any subject. Especially to meet the needs of teaching in the elementary media to maximize the utilization of existing computer laboratorium so its use can be applied in addition to extracurricular learning computer.

Based on the background, the issues raised in the development of interactive multimedia teaching materials are :

5. How does the development of teaching materials engineering science with interactive multimedia learning material digestion and breathing?

6. How can the effectiveness and practicality of interactive multimedia teaching materials developed?

Multimedia interactive learning material

Teaching materials will be meaningful for students and teachers if the teaching material is organized through a design that enables one to use it as a learning resource. Steketee (2006) explained by integrating ICT as a learning resource in regular classes, will provide innovative ways for students to learn. While Nusir (2012) describes the use of technology impact change with the use of conventional learning models face towards computer-based learning. Forms of utilization models in the computer-based interactive multimedia learning according to Rusman (2005) may be a drill, tutorial, simulation, and games. One purpose of learning with interactive multimedia is wherever possible replace the teaching and learning process in a conventional educational system.

There are three types of the use of multimedia in learning. First, multimedia is used as one element in the classroom. Exercises and tests on the first type is not given in the multimedia package, but in print form given by the teacher. Second, multimedia is used as a self-learning materials. Unlike the first type, the second type throughout the instructional needs of users satisfied entirely in the multimedia package. Third, multimedia is used as a medium only in learning. The entire learning facilities that support learning objectives have also been provided in this package. IPA is a science that needs to be mastered in order to increase human resources and is one of the subjects that occupy an important role in education. Science education is expected to become a vehicle for students to learn about themselves and the environment, as well as prospects for further development in applying it in our daily lives. Some concepts in science come from experience or direct observation, it is often referred to as a concrete concept. There is also in addition to doing the direct experience also requires abstract thinking. Natural Sciences in essence is to answer the question empirically truth through scientific methods.

RESEARCH METHODS

The model of development used to develop interactive multimedia teaching materials in the research are Four-D model of the modification of the model Thiagarajan, Semmel, and Semmel. Modifications were done is a simplified model into three phases, namely the definition (define), design (design), and development (develop). For the deployment phase (disseminate) is not done.

Stages of development of Interactive Multimedia Instructional Materials (BAMI) in the study described as follows;

1. The definition phase (Define)

Pendefinisian phase aims to establish and define the learning needs by analyzing the goals and limits of the material. Definition phase activities include:

- a. Analysis Library
- b. Competency analysis
- c. Material analysis
- d. Formulate learning objective

2. Stage Design (design)

This stage aims to design or initial design of Interactive Multimedia Instructional Materials (BAMI). Based on the definition phase, the researchers compiled a first draft that BAMI products that will be developed. At this stage steps to create interactive multimedia teaching media is designed to be based on material analysis, competency analysis, and learning objectives that will be done.

3. Development Phase (develop)

Starting with the product development phase pendefinisian kebutuhan analysis of teaching materials. Draft I designed after the formation of needs analysis taking into account the learning objectives and learning indicators. The next step to validate the first draft by multimedia specialists and subject matter experts. The tests showed I Draft multimedia included in both criteria with notes the need for revision of the product.

RESULTS AND DISCUSSION

The end product of the research and development of teaching materials are shaped IPA interactive multimedia. Product development done in several stages. The end product produced in this development is the Interactive Multimedia Learning Material (BAMI) which can be used in primary schools to Class V.

The end product is BAMI tutorial presents the lessons related to stimulus response. Piaget stated that the learning abilities Differ at each developmental stage (Roblyer, 2006). Theory of cognitive development view that children's learning abilities according to their stage of development and the advancement of learning should be adapted to the exploration stage of development of students. In this case BAMI can provide "electronic manipulatives" to support the exploration activities for the various stages of development.

In general, voiced their validator BAMI included in either category but with a slight revisions that need to be done. Some components in the BAMI be revised. Revisions contained in the main menu font changes multimedia titles. Subsequent changes contained in pictorial symbols of each menu. Subsequent changes contained in subtitle change. The revision was carried out with no change in the content of the initial kontens assessed by validator own good.

Validator suggested revisions and additions there is the addition apersepsi author. Apesepsi intended to stimulate users to be interested in interactive multimedia. Author contains the name of the multimedia-makers aiming to avoid plagiarism media by others. Overall, the validator provides 3.84 value included in either category.

Draft I, which has been validated and revised to be further tested Draft II. Experiments performed with the test data, the limited testing and extensive trials. The trial involves a fifth grade students from each school, the SD Negeri Banjarsari 1, SD Negeri Banjarsari 2, and SD Negeri Kalisari 3. Trials with the validity of data to produce data about all of the questions contained in interactive multimedia valid. 0.942 about the reliability level greater than 0.05 otherwise reliable in very high category. Data in interactive multimedia declared valid and reliable.

Limited test resulted in an average value of 76.85 students. The level of student interest is as high as 4:35. The results of interviews with teachers on a limited trial demonstrated effective use of interactive multimedia in teaching with adequate computer facilities. The use of BAMI as the embodiment of the use of learning technology can improve students' understanding and innovation of teachers in delivering learning materials. Steketee (2006) explained by integrating ICT as a learning resource in regular classes, will provide innovative ways for students to learn. This exposure, supported by the framework and the implementation of relevant if the potential of ICT to be realized.

It seems clear that learning to use BAMI able to increase student learning that stems from the concentration of students . Data conducted extensive testing on the experimental class and comparison to the control class . Both classes are normally distributed and heterogeneous. There are differences in the average results of tests conducted on these two classes. An average of 81.75 experimental class and the average grade 67.25 so BAMI controls better and more effectively used in learning.

CONCLUSION

Interactive Multimedia Instructional Materials valid, practical, and effective and fit for use as a learning resource . It is shown from the results of validation 3.84 included in either category. Results from limited testing shows scores of students ketetarikan 4.5 into the category of a very good and comprehensive test score of 4.6 is also entered in the excellent category. Test scores obtained in the pilot area in the experimental class 81.75 with a comparator control class 67.25. BAMI effectively used in learning.

The end product is recommended interactive multimedia can be used in learning science in elementary school. Selection of color gradations determine student interest in the multimedia show. Color adjustment is determined by the characteristics of elementary school students into consideration in the development of interactive multimedia. Selection of simple animation also affects the interest of students to the interactive multimedia.

REFERENCES

1. Kompas. 2009. Pustekom. *Pembelajaran ICT di Tingkat SD Masih Rendah*. www.edukasi.kompas.com. Diakses tanggal 27 Juli 2014.
2. Nusir, Sawsan. 2012. Studying the Impact of Using Multimedia Interactive Programs at Children Ability to Learn Basic Math Skills. *Journal of Acta Didactica Napocensia*, Volume 5 Number 2 May 2012. Halaman 74-75
3. Republika. 2013. Perpusnas : Minat Baca Masyarakat Indonesia Masih Rendah. www.republika.com. Diakses pada tanggal 12 Januari 2014

4. Roblyer, M.D. 2006. *Integrating Educational Technology Into Teaching*. Upper Saddle River, NJ : Pearson Merrill Prentice Hall
5. Rusman, 2005. Pengembangan Kurikulum Model Desain Sistem Pelatihan Berbasis Kompetensi. *Jurnal Teknologi Pendidikan Edutech*. 2, (2). 33-39
6. Stekettee, Carole. 2006. Modelling ICT integration in teacher education courses using distributed cognition as a framework. *University of Notre Dame Australia: Australasian Journal of Educational Technology*. Volume 6

The Role of Islamic Culture of Academic Achievement Students in Mathematics Education Program

Mohamad Aminudin

*Mathematics Education Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: aminudin@unissula.ac.id

Abstract. One strategy Mathematics Education Sultan Agung Islamic University to produce a generation of *khairu ummah* diterapkasn constantly in the process of education and learning is the Academic Culture Islami (Budai). This study aimed to determine the effect and Budai or relationship to mathematics achievement. This research includes associative quantitative research with a sample of 74 students. Variable Budai consists of cleanliness, prayer, lifestyle, style of dress, academic atmosphere, and exemplary in which data collection using validated questionnaires. Mathematics achievement data is taken from the results of the midterm odd 2015/2016. Data analysis using regression and bivariate correlation test. The results showed the influence of these variables individually Budai towards mathematics achievement is still relatively weak. While variable Budai variables together towards mathematics achievement is still relatively weak, but still better than individually. Relationships six variables Budai towards mathematics achievement has little closeness six variables while the relationship between the average category Budai moderate or sufficient. It can be concluded the need for reconstruction and curriculum-based learning Budai who have a relationship and influence on mathematics achievement. Budai is not just a culture beyond academic achievement, but Budai should provide insight, ideas, and motivation to improve science and mathematics achievement.

INTRODUCTION

Unissula have the vision and mission into the future. Unissula Vision is a leading Islamic university in building a generation of *Khaira Ummah*, develop science and technology on the basis of values - values of Islam and establish the Islamic civilization toward a prosperous community that is blessed by Allah in the framework of *rahmatan lil a'lamin*. (Www.unissula.ac.id).

The study program mathematics education is one of the courses in the Faculty of Education (Guidance and Counseling) Unissula that equip students with professional competence, pedagogic, social and personality which if passed would be a teacher who *berakhlakul karimah* and as the best generation. All of this will be realized if since the beginning of the semester student of mathematics education has had a good character and equipped for academic education with Islamic culture.

Unissula including mathematics education FKIP Unissula education motto is *Bismillah*, Build Generation *Khaira Ummah*. The motto attainment strategy is to implement the education process as "Academic Cultural Islami (Budai)" (Anwar, R, 2012). (Www.unissula.ac.id)

Several strategies are applied in Unissula Budai especially FKIP is build an Islamic learning society, the movement of prayers, movements of Islamic dress, *taharah* movement, the movement pattern, hospitality Islamic movement, and movement quality of life (Anwar, R, 2012). The strategy applies not only to faculty and students, but also in the process of learning, especially mathematics.

Character education can not be separated from Budai-based learning activities. Learning is student actions and behavior are complex. learning as an action for study only experienced by students, and learning as well as changes to existing behavior in students (Mudjiono, Dimyati, 2009). learning is also a mental shift that can be caused by a culture or rules applicable environment of a college or faculty. Thus after the students learn mathematics expected changes in knowledge and better behavior towards the Islamic character.

Changes in knowledge and behavior in learning is influenced by external factors and internal factors of students. some internal factors that affect learning, among others, attitude, motivation, concentration, processing materials,

save the acquisition of learning outcomes, explore learning outcomes stored, performance capabilities of learning outcomes, confidence, intelligence, habits of learning, and the ideals of the student (Mudjiono , Dimiyati, 2009). Internal factors can usually be seen based on the achievement of students.

The fact that there is connection with pemberkakuan Budai in mathematics education courses by naked eye can observe that character Budai researchers have never been evaluated to be the effect on student achievement. This phenomenon is urgent for judging as to how much influence Budai on learning achievement.

Learning is essentially a process of individual behavior change are relatively fixed as a result of the experience, while learning is an effort to organize the environment that gives a feel for the program learn to grow and develop optimally (Suherman, et al, 2003). Thus the study requires a learning process that was deliberately designed so that students can learn well.

Anni (2006: 5) states that the learning outcomes are obtained learner's behavior changes after experiencing learning activities. While Mulyasa (2009 B: 208), states that the assessment of learning outcomes in essence is an activity to measure behavioral changes that have occurred in self-learners. According Prawiradilaga (2008: 69-70), one of the purposes of assessment of learning outcomes is to measure the level of understanding of the material just given. Gagne (1985) states that learning achievement is divided into five aspects, namely intellectual ability, cognitive strategies, verbal information, attitudes, and skills.

A good education not only produce graduates who are able to compete, but also established a human resources (HR) are high quality and balance between the intellectual, moral, and spiritual. Education does not only produce graduates who berpengatahuan and cultured but also character. Research and Development Department of Education (Sani, 2011) stated academic dimension character have a role that is no less important and the school has developed a character education impact on improving learning achievement.

RESEARCH METHODS

This research is quantitative asosiasi. This research looking for the percentage relationship and influence between independent variable dependent variable. This research is beginning to see the extent of the effect of the implementation of Budai on mathematics achievement in students of mathematics education FKIP Unissula. This study population is a student of mathematics education FKIP Unissula and sample as many as 74 people were taken using incidental sampling technique.

Variables in the study include the independent variables and the dependent variable. Independent variables include cleanliness, prayers, lifestyle, style of dress, academic atmosphere, exemplary. The independent variable in question is mathematics achievement. Instruments in this study is the use of a questionnaire with Likert scale 1-4 for the independent variables and the documentation of the results of final exams for the dependent variable.

Statistika test used in this study is a prerequisite test and test hypotheses. for the simple regersi prerequisite test include tests for the dependent variable. Hypothesis testing using simple linear regression test (Sukestyarno, 2010). Traf significance in this study amounted to 5%.

RESEARCH RESULT

Normality test results on a sample of 74 people using test Kolmogorof Smirnov (KS) aided SPSS with significance level of 5% obtained sig result of the calculation using SPSS produce the Sig. in Table Test of normality using Kolmogorof Smirnov of 0.200 or 20%. Skewness and kurtosis value in a row is -0.337 and 0.591. Because the value of sig count = 20% > 5% it can be concluded that the data included normal distribution. And because the value of skewness and kurtosis close to zero then the dependent variable data is homogeneous.

Simple linear regression test results obtained as follows:

1. cleanliness variables affect the learning achievement of 0.2%.
2. prayers variables affecting the learning achievement of 0.5%.
3. lifestyle variables affecting the learning achievement of 0.6%.
4. variable affecting the learning achievement of Islamic clothing by 0.5%.
5. The variable academic atmosphere affect the learning achievement of 0.2%.
6. exemplary variable affecting the learning achievement of 2.3%.
7. The six independent variables affecting the learning achievement of 5.7%.

DISCUSSION

One of the strategies of education in Unissula is enforced movement of Islamic Academic Culture. In this study the authors measure the Budai through questionnaires cleanliness, prayer, lifestyle, style of dress (Islamic), academic atmosphere, and exemplary. The results showed that the influence of these variables individually to mathematics achievement was small. If these variables jointly affect mathematics achievement is only 5.7%.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.240 ^a	.057	-.027	10.57275

a. Predictors: (Constant), keteladanan, busana_islami, suasana_akademik, kebersihan, shalat, gaya_hidup

It can be concluded that while many students do not understand Budai and apply it. Likewise, teachers do not optimally understand, teach, and give a good example to the students about the value investment Budai in learning and improving learning achievement in mathematics.

It is noteworthy is the result of the correlation between variables cleanliness, prayer, lifestyle, style of dress (Islamic), academic atmosphere, and exemplary. If the correlation of independent variables with the dependent variable mathematics learning achievement category is weak, then the level of correlation between the independent variables include the category average moderate or sufficient. The following translation is complete through the table.

Table 2. Level of closeness Correlation

	Cleanliness	Salah	Lifestyle	Islamic dress code	Academic atmosphere	exemplary
Cleanliness		53,3%	53,2%	33,8%	47,9%	58,1%
Salah	53,3%		55%	47,5%	44,8%	56,9%
Lifestyle	53,2%	55%		49,1%	39,3%	57,6%
Islamic dress code	33,8%	47,5%	49,1%		25,1%	44,5%
Academic atmosphere	47,9%	44,8%	39,3%	25,1%		51,5%
exemplary	58,1%	56,9%	57,6%	44,5%	51,5%	

The explanation above shows that not optimal Budai especially on variable cleanliness, prayer, lifestyle, style of dress (Islamic), academic atmosphere, and exemplary in mathematics education courses. The need for the role of teachers in developing strategies and methods of learning not just a formality inculcate Islamic values in the classroom, but that is based Budai clear and measurable. The need for reconstruction of the curriculum that connects Budai movements in the field of mathematics and mathematics education. So with that, it will be born generations of pious that will make a significant contribution in building the civilization of Islam.

CONCLUSION

Results of research and discussion can be concluded that it is not a significant difference between the variable cleanliness, prayer, lifestyle, style of dress, academic atmosphere, the example of the mathematics achievement both individually and jointly. But by using the Pearson product moment correlation test showed that there is a significant correlation in the independent variables which include cleanliness, prayer, lifestyle, style of dress, academic

atmosphere, and exemplary. No significant correlations occurred in independent variable with the dependent variable.

It can be concluded that the Islamic academic culture in the mathematics education courses are not biased improve mathematics achievement. These results will be the subject of discussion and evaluation in mathematics education lecturer environment for more serious give academic understanding of Islamic culture in improving mathematics achievement.

REFERENCES

1. Anwar, R. 2012. *Risalah Bismillah Membangun Generasi Khaira Ummah*. Semarang. Unissula Press.
2. Mudjiono, Dimiyati. 2009. *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta.
3. Suherman, H.E., dkk. 2003. *Common Textbook Strategi Pembelajaran Matematika Kontemporer*. Bandung: Jurusan Pendidikan Matematika FPMIPA UPI.
4. Anni, C.T, Rifa'i, A., Purwanto, E., dan Purnomo, D. 2006. *Psikologi Belajar*. Semarang: UPT MKK UNNES.
5. Mulyasa, E. 2009. *Implementasi Kurikulum Tingkat Satuan Pendidikan Kemandirian Guru dan Kepala Sekolah*. Jakarta: Bumi Aksara.
6. Prawiradilaga, D. S. 2008. *Prinsip Disain Pembelajaran (Instructional Design Principles)*. Jakarta: Kencana.
7. Sani, Abdullah. 2011. *Pendidikan Karakter di Pesantren*. Bandung : Cita Pustaka Media.
8. Sukestyarno, Y.L. 2010. *Olah Data Penelitian Berbantuan SPSS*. Universitas Negeri Semarang.

Structural Study by A.J. Greimas The People's Princess Stories Kumala

Evi Chamalah

*Indonesian Language and Literature Departement, Faculty of Teacher Training and Education,
Sultan Agung Islamic University*

Corresponding author: chamalah@unissula.ac.id

Abstract. Issues in this study is the structure and functions of the various elements, the theory used in this research is the structural theory. In addition, because the object of study is folklore, theory applied is the structural theory developed by A.J. Greimas. This is done with the consideration that A.J. Greimas is one of the structuralist originally developed his theory through the study of folklore or fairy tales. This study is not intended to develop a theory, but only studies that tried to apply the theory of the text Greimas structural Indonesian folklore. Therefore, the methods used in the analysis is the method of deductive structural direction.

INTRODUCTION

Putri Kumala folklore is a folktale from Semarang regency, Central Java province. In the beginning of this story in the form of oral literature, but then retold and documented by the Department of Tourism and Culture District of Semarang in 2009. Therefore, this article is no longer of oral literature, but literature written. Moreover, the story is no longer a special property of the people of Semarang District, but has become the property of Indonesia because it was written in the Indonesian language and disseminated. Said, because this story has been published in a book set Folklore Semarang District, the Department of Youth, Sport, Culture and Tourism, Semarang regency.

Nowadays there is a tendency that the Indonesian literary world trying to stories or literary areas. This effort has been apparent result is to be done through the issuance of folklore in each province by the language centers.

It is actually a reality that is encouraging, but it appears the new phenomenon of literature pertaining to the existence of the archipelago. This phenomenon arises because the book spread only used as decoration on the shelves of the library, this means not interest readers and researchers.

One attempt to anticipate this phenomenon is the study of folklore Putri Kumala from Semarang regency. Folklore is selected as the data for the following reasons. According to the writer's observation, this story has not been studied in people.

Issues addressed in this study is the structure and functions of the various elements, the theory used in this research is the structural theory. In addition, because the object of study is folklore, theory applied is the structural theory developed by A.J. Greimas. This is done with the consideration that A.J. Greimas is one of the structuralist originally developed his theory through the study of folklore or fairy tales.

This study is not intended to develop a theory, but only studies that tried to apply the theory of the text Greimas structural Indonesian folklore. Therefore, the methods used in the analysis is the method of deductive structural direction. That is, the concept of structural theory is used as the basis for the study of the text, not the study of the text used to change or develop the concept of structural theory. Based on the principle of structuralism, the analysis remains a major foothold in the text (the work of) itself. Meanwhile, the results of structural analysis are presented with descriptive techniques (Suwondo 2011: 76).

THEORETICAL BASIS

Structural Theory A.J. Greimas

Greimas is one of the French researchers structural theorists (Teeuw 1984: 293). As well as Propp, Levi-Strauss, Bremond, and Todorov, Greimas also developed his theory based on structural analogies in linguistics derived from Saussure (Hawkes 1978: 87). By looking for structural analogy in linguistics that Greimas apply his theory in Russian fairy tales or folklore.

Selden (1991: 61) explains that through his writings *Semantique structurale* (1966), Greimas only offer a smoothing over Propp's theory about 31 functions and 7 circles of action. Greimas more structuralist than Propp. If Propp only focused on the framework of fairy tales, Greimas wider scope that is up on the grammar of narrative is universal by applying the semantic analysis of the structure. Propp filed 31 functions, while Greimas filed 20 functions. The functions are (1) absentation, (2) Interdiction vs violation, (3) reconnaissance vs information, (4) fraud vs. complicity, (5) villainy vs. lack, (6) mediation vs beginning counteraction, (7) departure , (8) the first function of the donor vs. the hero's reaction, (9) the receipt of a magical agent, (10) spatial translocation, (11) struggle vs victory, (12) marking, (13) liquidated of the lack, (14) return, (15) the pursuit vs rescue, (16) Unrecognized arrival, (17) the difficult, task vs. solution, (18) recognition, (19) exposure vs Transfiguration, (20) punishment vs wedding (Schleifer 1987: 122). Twenty of these functions dikempokkan into three structures, namely (1) syntagmes contractules (contractual structures' by agreement '), (2) syntagmes performanciel (disjunctive structures' is organizing'), and (3) syntagmes disjontionnels (disjunctive structures' is disconnection ') (Hawkes 1987: 94; Scholes 1977: 108). Meanwhile, instead of seven spheres of action proposed by Propp, Greimas offers three spheres of opposed that includes six actants (roles, actors), namely (1) subject vs object 'subject-object', (2) sender vs. receiver (*destinateur vs destinataire* 'sender-recipient'), and (3) helper vs. opponent (*adjuvant vs opposant* 'helper-opponent') (Hawkes 1978: 91-93; Culler 1977: 82; Scholes 1977: 105-106; Schleifer 1987: 96.186; Suwondo 2011: 78).

Synopsis Folklore Princess Kumala

Once upon a time there lived a young man named Warasta Yuwana. He lives alone in the middle of the teak forests. Villagers on the outskirts of teak forest very fond of him. Warasta children who are diligent and helpful. If anyone needs help, Warasta did not hesitate to help with all the capabilities they have.

Meanwhile, elsewhere, namely in the Java Sea, dominion a queen named Queen of the Java Sea. She lives with her only child named Putri Kumala Tirtasari. If it was a small commotion among the queen with her daughter. He intends to see another life through the magic mirror mother. Prohibition The Queen had made a sad Kumala, who usually seemed cheerful face turned wistful. Kumala is actually good and obedient child. The queen herself very expect to Kumala daughter could inherit the throne.

Apparently, the queen does not bear to see their beloved daughter sad. Finally, he allowed his daughter to look for life elsewhere through a magic mirror. From inside the mirror, Kumala saw a man looking out from inside the house. This man is none other than Warasta Yuwana. This young man is being shouldered axes to chop down a tree. Once up in the woods, Warasta Yuwanapun immediately picking old trees to be cut down. After determining the choice, take off the clothes worn Warasta to start the dirty work.

To the astonishment of Kumala, witnessed valor Warasta. His skin was white, tubuhnyaapun seemed filled with muscles toned. Kumala unblinking look at the beauty and valor Warasta. Changes in expression and indication Kumala turned out caught by the Queen. Because they do not want something happened to her daughter, the Ratupun immediately close the magic mirror. Kumala how surprised and disappointed to see his mother closed the magic mirror.

One day, Kumala crept toward Pengilon room. She wants to look deeper Warasta life through the magic mirror. With great prudence and while tiptoe so as not to sound of his footsteps, Kumala Pengilon room was entered and immediately opened a magic mirror. He can not wait to see Warasta.

In an instant, mirror shattered. His voice is much more powerful than the sound of broken jars ago. Beep invited the new Queen came to the room to rest for the origin of the voice. To the astonishment of the Queen, on learning that the voice was coming from the room Pengilon. The Ratupun rushed in. Arriving on the doorstep of The Queen could not resist shouting angry. The Queen stunned, watching the magic mirror crumbled to the ground. The Queen was so surprised and shocked. Terpukulnya so as to taka da longer words that can come out of his mouth. The queen's chest tightness, breathing irregularly and the heart beating so fast.

With all the courage, Kumala facing mother to apologize how shocked Kumala not had time to open her mouth, the Queen raised her head furiously. In her hands staff that was firmly grasped. Unusually too, the muscles of her hands visible. Because it could not resist the Ratupun venting anger and disappointment with stomping stick in his hand. Instantly, ocean and land endlessly shaking constantly. The waves rolled violently. Seawater up to the area of residence Warasta. The place where Warasta find wood submerged in water. Because water waves Warasta can not keep his balance he fell on top of a new timber felled and fall so that his body submerged in seawater.

Seeing this event, Kumala not wasting time. He left his mother, without thinking she appeared on the surface of the water and immediately help Warasta who was bobbing above the newly harvested teak. Kumala Warasta putting in place high enough so as not washed away.

Without blinking, Putri Kumala not get enough of looking at his face Warasta. Now, he felt the desire to meet Warasta been met. Feeling happy it did not offset the condition of his body increasingly frail, he who usually live in the water must be long enough for caring Warasta mainland. Putri Kumala suddenly felt his body limp, her eyes dizzy and his breath felt tight and he felt no luat again, then he immediately lay down beside Warasta, his head placed on the chest Warasta. Her hands clutched Warasta body.

A few days later, Warasta started awakened from the stupor. How shocked Warasta when he saw there was a beautiful princess who slept disampignya. Daughter's hand was still wrapped around her chest. He looked at it with a beautiful princess full of confusion and proud. She looked like an angel. He was very handsome. Lifetime he had never seen the woman secantikini. Seperti not the human race, he thought. Warasta began to fall in love with Kumala. Kumala face approached his hand to rid it of wet leaves stuck to her forehead and cheeks, but suddenly there was a white shadow coming out of the body Kumala.

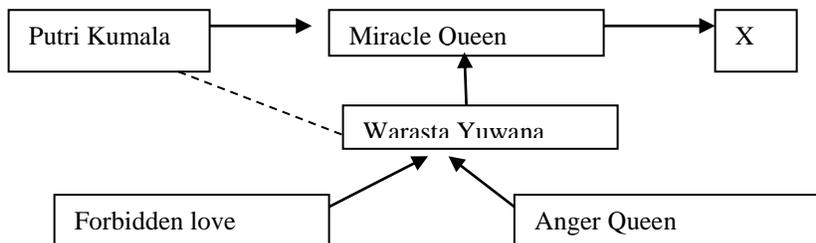
As a form of love and reply mind, Warastapun Kumala bury bodies beside a large teak wood that had felled. Kumala tomb was decorated with rocks that are scattered around the place as a headstone. To commemorate Kumala, Warasta named the area without a name it with the name of Karangjati, derived from Krang and Teak.

DISCUSSION

Analysis of the structure and functional actants emphasis on the characters and the various functions because essentially only the characters that animate the story and were able to build a relationship between elements in the overall structure. Here is a form patterns at the same actant structure functional model.

Structure Aktan

Pattern 1: Putri Kumala as the First Subject



Note: X = no recipient for the subject died before getting the object

In this chart, can be traced that Princess Kumala occupying a role as a sender wants Warasta Yuwana became her lover (the object). Therefore, he always saw activity in a magic mirror Yuwana Warasta owned the Queen. Thus the queen serves as a subject. In the course of his journey, his love for the daughter Kumala harbored Warasta, but the Queen did not accepted because they were different world. Thanks to anger the queen, Kumala could meet Warasta though the circumstances were not good. However, in this structural pattern of the story came to a standstill because of Kumala killed by anger the Queen. Warasta survived thanks to the help of Kumala. Therefore, Warasta Juwana act as a false hero so that the functional structure of the groove stalled on the main stage.

Functional Structure

The situation at the beginning: in the pattern of this structure the story begins with the appearance of Princess Kumala desire to see Yuwana Warasta activity in the magic mirror. Transformation: the story moves continued until finally the Queen know that Princess Kumala in love with Warasta Yuwana. But thanks to anger the Queen, Princess Kumala can ride to the mainland to meet Warasta Yuwana. Situation end: Putri Kumala help Warasta Yuwana when Warasta almost adrift and tottering on the wood. A few days later, Kumala daughter died because her body can not be too long in the mainland. The story ends swhen Warasta Yuwana buried beside Princess Kumala large teak felled.

CONCLUSION

From the whole description above, a conclusion can be drawn as follows. Based on the analysis of the structure of actants well as functional models can be said that the storyline Putri Kumala found one structure into a framework or storyline. When examined in detail, there is still the possibility of present patterns of other structures, for example Warasta Yuwana as the subject or the Queen as a subject. But the writer just describe a pattern in accordance with its role and its relationship with the main character.

From the above analysis it can be concluded that the folklore of Semarang District has a message that as children should always obey their parents, because the parents will bring disaster murkaorang. In addition, the blind love of a person often makes a person take the wrong decision, as a result many people who bear the consequences.

REFERENCES

1. Culler, Jonathan.1977. *Structuralist Poetics: Structuralism, Linguistics, and the Study of Literature*. London: Routledge & Kegan Paul.
2. *Of Youth, Sport, Culture and Tourism. Folklore set 2009*. In the district of Semarang. Semarang: Semarang District Government.
3. Hawkes, Terence. 1978. *Structuralism and Semiotics*. London: Methuen & Co. Ltd.
4. Schleifer, Ronald. 1987. *A.J. Greimas and the Nature of Meaning: Linguistics, Semiotics, and Discourse Theory*. London and Sydney: Croom Helm.
5. Selden, Rahman. 1991. *Free Readers Literary Theory MasaKini*. Translation Rachmat Djoko Pradopo. Yogyakarta: Gadjah Mada University Press.
6. Suwondo, Tirta. 2011. *Study of Literature, Theory and Practice Basic Concepts in Literary Works*. Yogyakarta: Gama Media.
7. Teeuw, A. 1984. *Literature and Literary Studies: Introduction to the Theory of Literature*. Jakarta: Java Library.

Improving Religious Character and Achievement Based Learning Through Islamic Culture of Social Science Subject Class V SDN 02 Temulus

Yulina Ismiyanti

*Elementary School Teacher Education, Faculty of Teacher and Training Education
Sultan Agung Islamic University*

Corresponding author: yulinaismiyanti@gmail.com

Abstract. Social science learning not only procurement field of science but also has the commitment and awareness of social values and humanity. However, these subject have not been fully achieved. The most salient fact found many students who perform drug abuse, promiscuity, action brawl, smoke, coloring our education. This is motivated condition of education in Indonesia is practically increasingly materialistic fails to apply the values of moral character and lead to the destruction of the nation. Based on the results of field studies at SDN 02 Temulus social science learning still dominated cognitive aspects but less shaping the character of students. To overcome these problems given application solutions based learning academic culture of Islam (BudAI). BudAI essentially contain reinforcement ruhiyah or religious character and the strengthening of science and technology. This research is a classroom action research design using Kemmis and Taggrat include planning, action, observation, and reflection. The results showed an increase in religious character and student achievement in the first cycle obtained a score of 14.7 in both categories, the second cycle increased to 15.5 in both categories, and the third cycle increased to 17 with very good category. The percentage of completeness of student learning outcomes first cycle of 73.7%, the second cycle increased to 78.9%, and the third cycle increased to 92.1%. Concluded application BudAI based learning can improve the character of the religious and student achievement in SDN 02 Temulus.

INTRODUCTION

National education aims to develop students potentials to become a man of faith and devoted to God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and responsible (Law No. 20 2003 Article 3 of the National Education System). In reality, the purpose of education has not been fully achieved to form an intelligent human being, piety, and morality. This is motivated condition of education in Indonesia is practically increasingly materialistic and have resulted in the destruction of the morals of the nation.

Data and facts about the case of moral transgression released media increasingly worrying. Cases of complaints of violence against children during 2012, approximately 60% of the total complaints (about 2,637 complaints) were cases of sexual violence. National Narcotics Agency (BNN) revealed that, in the case of drug abuse continues to rise among teenagers. Start 2.21% (4 million people) in 2010 to 2.8 (approximately 5 million) in 2011. The association is sex that resulted in the increase of HIV / AIDS and fighting between students is also increasing (Source: Reuters) . Experts and practitioners agree that the data presented above are only a small part of the tip of the iceberg of legal and ethical violation cases were revealed through the media.

The development potential of learners nuanced character should receive special attention in the practice of education in Indonesia. However, in practice, our current educational purposes only emphasized the mastery of science and technology and skill, education and even more are expected to produce graduates ready to work, so that the educational value of nearly untouched. Learning values-based character apparently not getting adequate proportion in the learning process. The potential of the students have not been optimally integrated in the learning resulting in silting of the character values among children and adolescents today.

Based on the results of field studies at SDN 02 Temulus learning in school is still dominated by cognitive, less aspects shaping the character of students. Planting religious values have not touched on other subjects besides religion. Through the cultivation of religious values is expected to become a shield for students against negative characters, where religious values are the basis for cultivation of positive values to another.

Therefore, to give birth to a generation that is not only highly knowledgeable but also pious and the congregation needs to be applied based learning Academic Culture Islam (Budai) at SDN 02 Temulus are supported 100% of teachers, employees and students are Muslims. Application of Budai is one form of character education. Budai essentially contain ruhiyah reinforcement and strengthening science and technology. The reinforcement ruhiyah is strengthening faith, worship, and morals are packaged in civilizing movement which includes movement of prayer congregation, the movement of Islamic dress, thaharah movement, the movement pattern, the friendliness of the Islamic movement, and movement quality of life. While the strengthening of science and technology consists of spirit iqra, develop science and technology on the basis of Islamic values, Islamic Learning Society, and an appreciation of science and technology (Unissula, 2005).

Budai based learning in this study focused on social study learning. In accordance Permendiknas 22 of 2006 subjects of interest not only in the procurement field of science but also have commitment and awareness of social values and humanity (MONE, 2006). So that the implementation of Budai in this study not only through habituation associated values or religious character is also supported by incorporating the material values of Islam in social studies learning.

Character education is very important and necessary in life as individuals, communities, nations, and states. School as a second environment for children can be a national character building by providing the feel and atmosphere that supports the efforts internalization values and ethics to be implanted. Character education is based on the belief that the development of spiritual, ethical, social and emotional learners as important as academic achievement.

Many studies have shown a positive impact on the academic success of character education. Bulletin Marvin Berkowitz results of a study from the University of Missouri St. Louis (2005) revealed that an increase in student motivation in academic achievement in schools that implement character education. The classes are comprehensively engaged in character education showed a drastic reduction in negative student behaviors that can hinder academic success.

Research in other countries also proves the high level of legal violations are a result of lack of attention to the education of character. Goleman (2000) argues that the success of a person in the community, 80% are influenced by emotional and spiritual intelligence (SQ and EQ), and only 20% is determined by the intelligence (IQ). Children who have problems in spiritual intelligence and emotions, will have difficulty learning, hang out and can not control his emotions. Spiritual and emotional intelligence is what contributes to the success of learners, where the religious character associated with emotional and spiritual intelligence.

Budai based learning is expected to form the school community that continues to support the values of Islam, and Islam as an academic community way of life, a source of inspiration, motivation, as well as a filter in the scientific and cultural activities. Religious values in Budai is also expected to become a vaccine for students not to be influenced to do the attitudes which deviated that could ruin his future. In the end, Islamic Learning Society is the result of solid execution of Budai.

METHODS

This research is a classroom action research design using Kemmis and Taggrat include planning, action, observation, and reflection. The subject were 38 students and 1 teacher of class 5 SDN 02 Temulus. Test method and observations a use to describe data of religious character and achievement based learning.

RESULT AND DISCUSSION

The result of the study include the description of teaching and learning documents, as follows:

Results of student religious character observation in the first cycle obtained a score of 559 and an average score of 14.7 in both categories (B) as follows:

Table 1. The Observation Result of Religious Attitude Cycle 1

No	Indicator	Level				Amount	Average	Category
		1	2	3	4			
1	Pray before and after lesson	1	8	25	4	108	2,8	B
2	Read "Juz Amma" before starting lesson	1	5	21	11	118	3,1	B
3	Clean and dirty appearance	0	14	16	8	108	2,8	B
4	Courteous to teachers	0	2	19	17	129	3,4	B
5	Appreciate they friend	6	14	10	8	96	2,4	C
Amount							559	
Average							14,7	B

Based on the results of the first cycle studies student learning outcomes in social studies learning through Budai obtained the following results:

Table 2. Student Learning Outcomes in Social Studies Learning Through Budai Cycle 1

No	Category	Achievement
1	Average	68,2
2	Lowes score	35
3	The highest score	90
4	Number of Students Learning Incomplete	10
5	Number of Students Study Completed	28
6	The percentage of Students not Completed	26,3%
7	Percentage Exhaustiveness	73,7%

Results of student religious character observation on the second cycle obtained a score of 591 and an average of 15.5 with a good category (B) as follows:

Table 3. The Observation Result of Religious Attitude Cycle 2

No	Indicator	Level				Amount	Average	Category
		1	2	3	4			
1	Pray before and after lesson	0	7	28	3	110	2,9	B
2	Read "Juz Amma" before starting lesson	0	5	15	18	127	3,3	B
3	Clean and dirty appearance	0	11	19	8	111	2,9	B
4	Courteous to teachers	0	1	13	24	137	3,6	A
5	Appreciate they friend	1	13	17	7	106	2,8	B
Amount							591	
Average							15,5	B

Based on the results of the second cycle studies student learning outcomes in social studies learning through Budai obtained the following results:

Tabel 4. Student Learning Outcomes in Social Studies Learning through Budai Cycle 2

No	Category	Achievement
1	Average	73,7
2	Lowes score	55
3	The highest score	100
4	Number of Students Learning Incomplete	8
5	Number of Students Study Completed	30
6	The percentage of Students not Completed	21,1%
7	Prosestase Exhaustiveness	78,9%

Results of student activity observation in the third cycle obtained a score of 643 and an average of 17 with excellent category (A) as follows:

Table 5. The Observation Result of Religious Attitude Cycle 3

No	Indicator	Level				Amount	Average	Category
		1	2	3	4			
1	Pray before and after lesson	0	3	29	6	117	3,1	B
2	Read "Juz Amma" before starting lesson	0	2	11	25	136	3,6	A
3	Clean and dirty appearance	0	5	20	13	122	3,2	B
4	Courteous to teachers	0	1	6	31	144	3,8	A
5	Appreciate they friend	0	6	16	16	124	3,3	B
Amount							643	
Average							17	A

Based on the results of the third cycle studies student learning outcomes in social studies learning through Budai obtained the following results:

Table 6. The Observation Result of Religious Attitude Cycle 3

No	Category	Achievement
1	Average	77,8
2	Lowes score	100
3	The highest score	66
4	Number of Students Learning Incomplete	3
5	Number of Students Study Completed	35
6	The percentage of Students not Completed	7,9%
7	Prosestase Exhaustiveness	92,1%

CONCLUSION

Conclusions that can be drawn from the result of the research and discussion in this study are as follow. The results showed an increase in religious character and student achievement in the first cycle obtained a score of 14.7 in both categories, the second cycle increased to 15.5 in both categories, and the third cycle increased to 17 with very good category. The percentage of completeness of student learning outcomes first cycle of 73.7%, the second

cycle increased to 78.9%, and the third cycle increased to 92.1%. Concluded application Budai based learning can improve the character of the religious and student achievement in SDN 02 Temulus.

REFERENCES

1. S. Arikunto. 2010. *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.
2. Kemendikbud. 2013. *Panduan Penilaian Kompetensi Sikap*. Jakarta: Kemandikbud.
3. Kemendiknas. 2006. *Silabus KTSP*. Jakarta: Kemendiknas.
4. Kemendiknas. 2011. *Panduan Pelaksanaan Pendidikan Karakter*. Jakarta: Balitbang Puskur.
5. T. Lickona. 1991. *Educating For Character*. New York: Bantam.
6. Luficha. 2012. *Prestasi Belajar*. <http://ggugutlufichasepti.blogspot.com/>. (diunduh 20 Mei 2015).
7. Marvin, B. 2005. *What Works In Character Education: A research-driven guide for educators*. St Louis: University of Missouri.
8. E. Poerwanti. dkk. 2008. *Asesmen Pembelajaran SD*. Jakarta: Dikti.
9. D. Saryono. 2010. *Penyusunan Rencana Tindakan Implementasi Pendidikan Karakter Bangsa di Sekolah*. Makalah Training of Trainers Pengintegrasian Pendidikan Budaya dan Karakter Bangsa dalam Pembelajaran, Dinas Pendidikan Provinsi Jawa Timur.
10. A. Suprijono. 2009. *Cooperative Learning*. Yogyakarta: Pustaka Pelajar.
11. F. Susan., et.al .2004. *The Impact of Character Education Curricula on Youth Educators*. *Journal of Leadership Education* Vol. 3.Issue 3.
12. Suyanto. 2009. *Urgensi Pendidikan Karakter*. Jakarta: Direktorat Jenderal Manajemen Pendidikan Dasar dan Menengah.
Undang-undang Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional dan Undang-undang Nomor 14 Tahun 2005 tentang Guru dan Dosen. 2008. Jakarta: Diperbanyak oleh Visimedia.
13. Unissula. 2005. *Budaya Akademik Islam (BudAI)*. <https://www.youtube.com/watch?v=uoLeuyxYOhI>. (diunduh 4 Januari 2014).

Science and Character in The Form of Children's Literature

Erna Noviyanti

*Elementary School Teacher Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: ernanoviyanti@gmail.com

Abstract. Indonesian students' science literacy skills are below the average score of the International and the characteristics of the people do not show good attitude. Therefore, the need for the concept of scientific payloads and educated characters in the form of children's literature. With the aim of literary readings were read at the same time children can foster science literacy of children and provide a good example of character. After reviewing the theory of literature, science, and character, there linkage relationship of these three components, namely (1) the science of character: learning objectives of science is not only oriented to the concept, but on values (attitude) and scientific attitude; (2) the character of science: the character values foster scientific attitude of science in dealing with problems relating to science; (3) the literary character: the message implicit or explicit in the reading of literature can change the way of thinking to make sense of life and the life (human values); (4) the character of the literature: the specific character can produce produce a particular work; (5) science to literature: science coverage inspire the imagination to create works of literature; (6) literature with science: shoring imagination when conceptualizing a hypothesis in scientific methods to deliver important discoveries in human life, designing a strategy, vision and the ability to predict the future accurately. With the inter-relationship between literature, science, and it can be arranged readings characters of children's literature that includes the science of character. For example: short stories for children.

INTRODUCTION

Teachers in the teaching of materials science in primary school coverage is still theoretical and less material associate with the application of the concept in daily life in the development of technology, society, and environment. IPA material is deemed a collection of theories to memorize it. In addition, the multidimensional crisis at the root of the problems caused by the decline in moral quality.

Those problems have an impact on students' science literacy achievement Indonesia grade 8 and grade 9 on the assessment by TIMSS and PISA. Reports PISA study in 2012 demonstrated the ability of students' science literacy and Indonesia ranked 64th out of 65 countries with achieving a score of 382, and the average score is 501 PISA 2012 (OECH, PISA 2012 Database). The report is not much different from the results of TIMSS 2011 study, students' science literacy Indonesia was ranked 40th out of 42 countries with achieving a score of 406. The score is still below the average score is 500. International (Overview TIMSS and PIRLS 2011 Achievement). It can be concluded that the science learning goals have not been met. Given these problems, the need for cultivation of scientific literacy for learning since elementary school to cultivate the "seeds of scientific literacy" in students.

To overcome this, the need for a concept that can contain materials science and characterless. Given that children are interested in the story, then the reading of children's literature can be an option to load the material science of character.

DISCUSSION

Subjects of Natural Science Elementary School / Islamic Elementary Schools

According to the Department of Education cited by Zubaedi (2012: 292) the purpose of science is a demand to meet the needs of society according era. In the meantime, the purpose of natural science or so-called science is growing, especially in the three aspects of the nature of science, the process, product, and attitude. Product science, refers to a set of knowledge of facts, concepts, principles, theories, and laws. The process refers to the process of science-search process conducted by experts of science called the science as the process of inquiry by using scientific methods and process skills. The attitude of science, scientists need to have a scientific attitude of science (scientific attitudes), so that the results were achieved as expected. The attitude among others: the objective of the

facts or reality, open, diligent and patient in solving the problem, always wanted to know, in collaboration with others, etc.). Scientific applications, refer to the axiological dimension of science as a science, ie the application of scientific knowledge in everyday life.

Science Literacy

Science literacy according to the National Science Education Standards cited by Adisendjaja (2008: 4) was "... knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity. It also includes specific types of abilities ". Scientific literacy is the knowledge and understanding of the concepts and processes of science that allows a person to make decisions, participate in state and culture, and economic productivity. It also includes specific capabilities they have.

Character Building

Character education implies that an effort designed to increase the values of the characters to develop positive personality by example, study, and practice so that it becomes social behavior as a part of life. Character values can not be selected to be implemented in all schools in one particular event. Based on the discussions carried out by the minister was quoted as saying by Samani and Hariyanto (2012: 134), agreed that in the implementation of character education in Indonesia to pick develop the core values of character. The core values are shown in Figure 2.1 below.

	Brain	Heart
Personal	SMART	HONEST
Social	STRONG	CARES

Figure 2.1 Core Values Character

Fourth core character values include careful though and if thought to be reviewed personally and socially is honest, intelligent, caring, and resilient. Core character education in schools built on an ongoing basis through the example of learning. Modeling is presented through the stories of children are expected to absorb the moral values that there be a study to be lived and understood, then put into practice in the form of good behavior for themselves and others.

Children's Literature Nonfiction

Books from various disciplines, such as natural science, social science, sports, arts and culture, and other written and packaged according to the tastes of children will be reading nonfiction literary worth. Lukens was quoted by Nurgiyanto (2005: 372), classifies the reading nonfiction children into two categories: books and biographical information.

This study focused on materials science or natural science, it is discussed in this nonfiction reading is a book that contains information of various things, events, or anything that presents information and facts. Books that are nonfiction subgenre of children's literature, its shape can be written in the style of a children's story, so the goal of providing "lessons" remained there and packaged in appropriate light reading child's developmental level.

In compiling the book information by Nurgiyantoro (2005: 375) need to consider several things, among others: the form of the narrative, the accuracy and coverage of facts, illustrations, and tone.

Linkage Relationship Between Science, Character, and Literature

After reviewing the theory of literature, science, and character, researchers found relationship of these three components. Linkage relationship three components are presented in Figure 2.2 below.

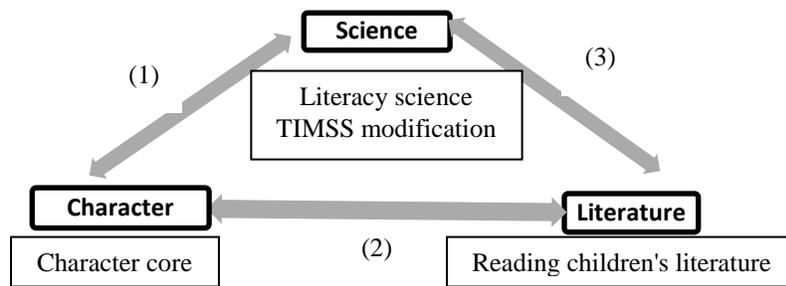


Figure 2.2 Linkage Relationship Between Science, Character, and Literature

Information:

(1) Character → science

Character honest, curious, confident, disciplined, responsible for fostering scientific attitude of science in addressing the development and application of biotechnology that are useful to people's lives.

Science → characters

People who are accustomed to thinking how science (through scientific activities) can develop the character as man of science by taking a parable of teaching materials. The purpose of learning science is not only oriented to the concept, but on values and the scientific attitude.

(2) Literature → characters

Implicit or explicit message can change the way of thinking to make sense of life and the life (human values).

Example: the revelation Fuad Hasan (Education from 1985 to 1993) which states that if war should collect a thousand writers to regulate war strategy. So that will not terjadiperang, there is peace.

Characters → literary

People can produce a specific character to produce a particular work.

(3) Science → literature

Scope of science to inspire the imagination to create a work of literature.

literary → science

To sustain the imagination when conceptualizing a hypothesis in scientific methods to deliver important discoveries in human life, designing a strategy, vision and the ability to predict the future accurately. (Example: the inventor Einstein's theory of relativity; inventor of the heliocentric theory; aircraft; air balloons, etc.)

CONCLUSION

There keterkaithubungan between literature, science, and the characters, namely (1) the science of character; (2) the character of science; (3) the literary character; (4) the character of the literature; (5) science and literature; (6) literature with science. With the linkpagerelationship between literature, science, and it can be arranged readings characters of children's literature that includes the science of character.

REFERENCE

1. Adisendjaja, Y. A. 2008. Analisis Buku Ajar Biologi SMA Kelas X di Kota Bandung Berdasarkan Literasi Sains. Bandung: UPI
2. Ardy, N. W. 2013. Membumikan Pendidikan Karakter di SD. Yogyakarta: Ar-Ruzz.
3. Chiappetta, E. L., Fillman, D. A., & Sethna, G. H. 1991. "A Quantitative Analysis of High School Chemistry Textbooks for Scientific Literacy Themes and Expository Learning Aids". Journal of research in science teaching. 28 (10): 939-951.

4. IEA. 2011. TIMSS and Pirls, Science Achievement Eight Grade. Lynch School of Education, Boston College. Tersedia: timssandpirls.bc.edu/data-release-2011/pdf/Overview-TIMSS-and-PIRLS-2011-Achievement.pdf. Selasa, 3 Desember 2013. 08.40 am.
5. Mariana, I. M. A. 2009. Hakikat IPA dan Pendidikan IPA. Bandung: PPPPTK IPA
6. Mundilarto. 2013. "Membangun Karakter Melalui Pembelajaran Sains". Jurnal Pendidikan Karakter Tahun III No. 2. Yogyakarta: UNY
7. Nurgiyanto, B. 2005. Sastra Anak: Pengantar Pemahaman Dunia Anak. Yogyakarta: UGM Press
8. OECD. 2014. PISA 2012 Result in Focus: What 15-Year-olds know and what they can do with what they know. Tersedia: www.oecd.org/pisa/keyfindings/pisa-2012-results.htm (4 Agustus 2014).
9. Prastowo, A. 2012. Panduan Kreatif Membuat Bahan Ajar Inovatif. Yogyakarta: Diva Press.
10. Samani, M. & Hariyanto. 2012. Pendidikan Karakter. Bandung: Rosdakarya
11. Schroeder, M., Mckeough, A., Graham, S., Stock, H., & Bisanz, G. 2008. "The Contribution of Trade Books to Early Science Literacy: In and Out of School". Journal University of Calgary, Alberta, Canada. Res Sci Educ 39: 231-250
12. Setiawati, I. K. 2013. "Pembuatan Buku Cerita IPA yang Mengintegrasikan Materi Kebencanaan Alam untuk Meningkatkan Literasi Membaca dan Pembentukan Karakter". JPII 2 (2): 129-135.
13. Zubaedi. 2012. Desain Pendidikan Karakter: Konsep dan Aplikasinya dalam Lembaga Pendidikan. Jakarta: Kencana

Cooperative Learning Type Group Investigation with Scientific Approach to Improve Problem Solving Ability In Elementary School

Nuhyal Ulia

*Elementary School Teacher Education, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: nuhyal22@gmail.com

Abstract. This study aims to: (1) determine the characteristics of mathematics learning Group Investigation model with scientific approach, (2) develop a valid learning device, (3) test the practicality, and (4) test the effectiveness. The study refers to the model development Plomp: (1) Preliminary Investigation, (2) design, (3) realization, (4) testing, evaluation, and revision. First prototype validated and revised according to input into second prototype. Validator then tested in a trial class. Device trials conducted in elementary school in V grade. The data is taken from sheet validation, observations, questionnaires, tests, and processed with the thoroughness of testing, test regression effect, comparisons, test of the improvement of problem solving ability. The results showed: (1) syllabus score of 4,28; lesson plan 4,41; student worksheet 4,09; student book 4,52; problem solving ability test 4,16 in the range of 1–5 showed that it was already categorized valid, (2) the effectiveness of the implementation of learning characterized by : (a) learners who value the problem solving more than 75 (minimum thoroughness criteria) reached 95.8%, (b) self-reliance and activity of 89.6% effect on the ability of solving problem (c) the average problem solving ability of Group Investigation Saintific Approach class was 85,70 greater than the control class was 63,11, and (d) problem solving ability of students in Group Investigation Saintific Approach class increased 61,8%.

INTRODUCTION

Math is important both as a tool, as a science (for scientists), as a mentor mindset as well as forming attitudes (Rusefendi, 2006). Once the importance of mathematics, it is of course a challenge for teachers to teach mathematics in the classroom. Based on the report *The Trends in International Mathematics and Science Study* (TIMSS) 2007 stated that the mathematics achievement Indonesia ranks 36th out of 49 countries with an average score of 405 and is far below the international average score of 500 (Tjalla, 2010), while of the report note that the TIMSS 2011 mathematics achievement of learners Indonesia was ranked 38th out of 42 countries with an average score dropped to 386 (Mullis *et al.*, 2012). The Study results of *The Programme for International Student Assessment* (PISA) 2012 stated that the mathematical abilities of learners Indonesia was ranked 64th out of 65 countries with an average score of 375 (OECD, 2013). The study results of the TIMSS and PISA suggests that learners Indonesia has a low ability to answer the questions of international standards, especially in mathematical problem solving ability. These weaknesses arise due to the learning of mathematics learners are unfamiliar resolve non-routine problems that challenge so that learners think.

In general, in elementary schools shows that the learning of mathematics given classically through lectures without looking at the possibility of applying other models in accordance with the material that will be taught to lead learners are less active to follow the lessons delivered teachers, learners are not interested in taking lessons, and in the absence awareness of the importance of math (Ardiawan, 2013: 2). Resulting in learners do not understand the lessons and ultimately rely on teachers and their friends. It is one of the low independence of learners and will result in lower math skills learners. As research conducted by Feza (2012: 62) conclude that there are two factors that

hampered the learning of mathematics, namely the knowledge of teachers and teaching strategies that are not relevant.

In the course of learning, independence is crucial because independence is the personal attitude that is required by every individual. According Sumarmo (2006: 5) with independence, learners tend to learn better, be able to monitor, evaluate, and adjust the learning effectively, saving time efficiently, will be able to steer and control yourself in thinking and acting, and does not feel dependent on others emotionally.

Research conducted by Stillman and Galbraith (Rochmad, 2004: 8) concludes that the learning model is required procedures to facilitate the performance of learners in solving problems. Therefore, in achieving the goal of developing problem solving skills, the teacher of mathematics also need to select the model or approach appropriate learning. The use of the model or the lack of proper learning approaches can lead to boredom, lack of understanding which ultimately decrease the activity and independence of students in learning.

Scientific approach or scientific approach is now beginning to be applied to the new curriculum. This approach leads to 5M is watching, ask, Trying, Rework / Processing, Presenting / Publish (Kemendikbud, 2013). 5M into use in curriculum in 2013 because the students considered not sufficiently active in the teaching-learning process.

Cooperative Model Type Investigation Group is one type of cooperative learning model that combines small groups with a number of 4-6 people. Each member of heterogeneous groups according to the level of achievement, gender and ethnicity. In the learning of students will follow several stages, Grouping, planning, investigation, organizing, presenting and evaluating (Sharan & Sharan, 1990). In the learning model of Group Investigation teacher can increase the activity of the students so as to encourage students to express their ideas and also can increase the independence of learners.

Talmagae and Hart (1977) suggested that the class atmosphere investigations encourage students to want to explore and deepen their way of thinking to find a variety of alternative thinking, analyzed the data, and learn to accept the input of others or the environment so that teachers feel that the class is familiar, both among learners and between teachers and learners. Based on these studies it can be concluded on learning investigations are phases that will explore the activity of learners and encourage independence of students in learning while Fraiser, et al (1989) noted that many educators agree that changes in the learning environment in line with expectations of learners will affect the increase learning outcomes of students. Thus with the learning environment that stimulate the activity and independence of learners will be able to influence the improvement of student learning outcomes.

Development of the learning device is expected to deliver learners to achieve minimum value stipulated mastery learning, improving learning outcomes of students in this case problem solving skills, foster activity and increase the independence of learners during the learning of mathematics in particular.

The purpose of this study was to (1) determine the characteristics of mathematics learning Group Investigation model approach to scientific, (2) developing the teaching of mathematical model of Group Investigation approach is scientifically valid, (3) test the practicality of the mathematics model of Group Investigation approach to scientific, and (4) to test the effectiveness of mathematics teaching model of Group Investigation scientific approach .

RESEARCH METHODS

This study included in this type of research development, namely the development of the research study of mathematics. Learning tools developed include syllabi, lesson plans, wokrsheet, teaching materials, and test problem-solving abilities. This study uses a model of software development learning design Plomp with four stages, namely: 1) the preliminary investigation stage, 2) stage of planning (design), 3) the realization phase (construction), and 4) the stage of testing, evaluation, and revision. This research trial conducted on students in V grade elementary school. The experimental class students will be asked to provide a response to the learning tools that have been tested.

Validation data analysis experts and practitioners using the average to obtain the validity of the study before it is implemented. Effectiveness analysis using the average of completeness of test, test of proportions, comparisons, regression, and testing the normalized gain. Average of completeness of test to determine the achievement of minimum completeness criteria (KKM) that has been determined is equal to 75. The proportion test to determine at least 75% of students scored minimal problem-solving ability test 75. The average difference for comparing the problem-solving abilities of participants students taught by cooperative model type Group Investigation Scientific approach with learners who are taught expository models. Normality and homogeneity test conducted as a prerequisite test. Regression test to determine the effect of independence and activities of learners towards problem

solving abilities. To determine the increase problem solving skills and increase independence of the experimental class and the control based on the value calculated using the normalized gain (g) (Hake, 1998).

RESULTS AND DISCUSSION

Results of the validation of learning tools developed by the cooperative model of type Group Investigation Scientific approach as follows:

Table 1. the result of the validation of learning tools

No	Instrumen	V1	V2	V3	V4	V5	Rata2	Kriteria
1	Syllabus	4.08	4.62	3.77	4.15	4.77	4.28	Very good
2	Lesson Plan	4.00	4.71	3.79	4.88	4.67	4.41	Very good
3	Student Book	4.05	4.85	4.00	4.80	4.90	4.52	Very good
4	Student Worksheet	4.00	4.20	3.87	4.07	4.33	4.09	Good
5	PSAT	4.00	4.45	3.55	4.45	4.36	4.16	Good
Average							4,29	Very good

Test the validity of test items were problem-solving ability that consists of 10 questions about the essay with 8 valid, a high level of reliability is $r_{11} = 0,827$ that is the level of difficulty 2 about the difficulty level of easy, 3 items with the category of difficulty, and 3 items with a moderate level of difficulty. The ability of teachers to manage learning observed by two observers, the overall value of the average teacher's ability to manage learning is 4.04 including good categories. The average response of the students to the learning tools developed and the learning model used is 4.51 and included in good category, meaning it can be said the response was positive learners.

Results normality test classes taught by cooperative model type Group Investigation Scientific approach and classes taught by the normal distribution model of expository dalah with $\text{sig} = 0.200$. Based on the homogeneity test both classes derived from a homogeneous class with $\text{sig} = 0.617$.

Based on experiment can be concluded, 1) the average results of PSAT learners experimental class has exceeded KKM, 2) more than 75% of learners experimental class scored problem solving ability at least 75 and 3) problem-solving ability of students taught by cooperative model type Group Investigation Scientific approach better than students taught by expository models.

Based on the results of test calculations influence of independent variables on the dependent variable was obtained $R^2 = 0.896 = 89.6\%$ while the regression equation obtained was $Y = -22.250 + 0.666 X_1 + 0,634X_2$. X_1 variable states of activity, X_2 declared independence, and the variable Y represents problem-solving abilities. Meaning of the regression equation is that each additional variable X_1 for one unit, it will add to the value of 0.666 PSAT and any additions X_2 for one unit, there will be additional PSAT value of 0.634.

Results of analysis of test increase in the experimental class obtained average value is 0.618, which means an increase in problem solving experimental class students are in the category of medium and test analysis results obtained control class increase the average value is 0.25, meaning that an increase in the ability of solving problem learners control class is at a low category. Based Gain increasing criteria, test the problem solving ability of students is said to increase, if the criterion is the value of Gain on minimal medium category. quality improvement of the independence of learners class Scientific Group Investigation approach amounted to 58.8% and 16.5% expository classes. And if based on the interpretation criteria proposed by Hake gain, the index gain independence learners Scientific Investigation Group classes medium and low Expository classes.

Based comparative test obtained that an average increase problem-solving ability of students taught by cooperative model type Group Investigation Scientific approach better than students taught by expository models.

Achievement of learners problem solving ability is not independent of the developed learning tools and learning model used. The average achievement of value-class problem-solving capabilities experiments that is equal to 85.70 statistically it can be said that the experimental class problem-solving ability is better than the control class that is empirically gained an average of 63.11. The average difference problem-solving abilities of learners experimental

class and control class occurs because of the different treatment in the learning process. Learning in the classroom learning using the experimental model of cooperative GI, where this model emphasizes active learners in the learning process, to train students to be more independent and can boost problem-solving abilities.

This finding is not surprising, when one considers that GI cooperative learning model is a model of group learning, with students in the group are encouraged to interact and learn together to improve the understanding of each. The tools used to encourage such interaction is material or a challenging problem, and forms of interaction in question is a discussion, ask each other questions and express opinions, it is sufficient reasoned if the cooperative model is able to develop problem-solving abilities of learners, is superior to conventional models. The use of this learning model illustrates the difference between the problem solving ability of the experimental class and the control class Circle materials. These results concur with those of Zacharias, et al (2013) showed that cooperative learning produces higher mathematics achievement than traditional teaching methods.

Linearity regression showed there is an significant effect on the independence and activity of learners towards problem solving abilities. If the activity is high then the learning achievement will also be high. This is in line with research from Nataria (2010) which states that the positive influence the activity of learners with their learning achievement. As well as students who have a high learning independence tend to have a high learning results as well. This is in line with the results of research Hapsari and Main (2013: 162-163) showed that independence contributed to mathematics learning outcomes. Independent learning is one of the factors that comes from learners that affect mathematics learning outcomes. Learners who have high motivation to learn to be more confident in achieving learning outcomes in mathematics. This is confirmed by research Gyasi (2013), the study found that many students believe in their own abilities, they are working hard to learn at home so that they understand the math very well.

Gain calculation results of the test showed that both classes increased, improved problem-solving abilities experimental class with an average of 0.618 and a control class with an average increase of 0.25. This increase occurred due to differences in the experimental class are treated using cooperative learning model type Group Investigation with Scientific approach. This is in accordance with the opinion of Munandar (2004: 12) that the optimal development of problem solving skills are closely related to teaching. Improved problem solving ability of students to the role of learning tools are developed and applied learning models in the learning process. Teaching materials and other learning tools designed to enhance the problem solving ability of students, especially in the matter Circle. Results of this increase is in line with research conducted by Musriandi (2013) which concluded that the ability of solving mathematical learners acquire learning model mathematics type of group investigation better than learners who obtain conventional learning and there is also an increase in the ability of solving mathematical problems, especially on the matter circle.

CONCLUSION

Learning tools developed by the cooperative model of type Group Investigation Scientific approach is valid. Valid learning tools that have been developed are supported by research data validator validation of experts and practitioners. Learning tools developed is practical, it is seen in the positive response of the students and the teacher's ability to manage the type of cooperative learning model approach Scientific Investigation Group. Learning mathematics by implementing cooperative model of type Group Investigation approach Scientific is effective, because it meets the following criteria: (1) obtaining an average score of problem-solving ability of students who exceed the KKM 75 and more than 75% of all students in the experimental class reaches a value KKM, (2) there are significant differences between the classes taught by the cooperative model of type Group Investigation approach Scientific and classes taught by models expository, meaning that the results TKPM learners in materials Circle, (3) there is influence between independence and activity learners together on problem-solving ability, and (4) an increase in the problem solving ability of students in the experimental class with the criteria modest increase and improvement of problem solving ability of students in the control class kriteria low increase.

REFERENCES

1. Feza-Piyose, N. 2012. "Language: A Cultural Capital For Conceptualizing Mathematicss Knowledge. Human Sciences Research Council, South Africa". *International Electronic Journal of Mathematicss Education*. Vol. 7, No. 2, pp. 67-79.
2. Fraser, B.J., Malone, J.A & Neale, J.M. 1989. "Assessing and improving the psychological environment of mathematics classrooms." *Journal of research in mathematics education*, 20, 191-201.
3. Gyasi, W. K. 2013. "Impact of Effective Communication on Mathematics Education in Ghanaian Senior High Schools – Teacher’s Role." *Asian Journal of Humanities and Social Studies*", Volume 1 No. 1. Hal 25-26.
4. Hake, R.R.1998. "Interactive-Engagement Versus Tradisional Methods; A. Six-Thousand-Student Survey of Mechanics Tes Data for Introductory Physics Course". *American Association of Physis Teacher*. 66(1) 64-74.
5. Hapsari, S. A dan Utama. 2103. "Kontribusi Kemandirian Terhadap Hasil Belajar Matematika Ditinjau dari Fasilitas Belajar dan Jarak Tempat Tinggal Siswa Smk". *Makalah*. Disampaikan Pada Seminar Nasional Pendidikan Matematika Surakarta, 15 Mei 2013.
6. Kemendikbud. 2013. "*Pendekatan & Startegi pembelajaran*"(Bahan Ajar Diklat guru Dalam Rangka Implementasi Kurikulum 2013). Jakarta: Kementerian Pendidikan dan Kebudayaan.
7. Mullis, I.V.S., Martin, M.O., dan Foy, P. 2007. *PIRLS 2006: International report*. Chetsnut Hill, MA: IEA.
8. Munandar, U. 2004. *Pengembangan Kreativitas Anak Berbakat*. Jakarta: Rineka Cipta.
9. Musriandi, R. 2013. "Model pembelajaran matematika tipe group investigation untuk meningkatkan kemampuan pemecahan masalah matematis dan self-concept peserta didik MTs". *Tesis*. UPI: Bandung
10. Nataria, D.O.2010. "Pengembangan Perangkat Pembelajaran Investigasi Kelompok dengan Pendekatan Realistik berbantuan Edge-CD interaktif pada materi segi empat kelas VII". *Tesis*. Semarang: Pascasarjana UNNES
11. OECD. 2013. *Pisa 2012 Results In Focus*. Paris, France: OECD. Tersedia di <http://www.oecd.org/pisa>. Di akses 10 Maret 2014.
12. Rochmad. 2004. "Faktor-Faktor yang Mempengaruhi dalam Memecahkan Masalah Matematika". *Makalah*. Seminar Nasional Kontribusi Matematika dalam Pengembangan Potensi Daerah: Pendidikan, Industri dan Sistem Informasi di UNSUD Purwokerto.
13. Russeffendi, E.T. 2006. *Pengantar kepada Membantu Guru Mengembangkan Kompetensinya dalam Pengajaran Matematika untuk Meningkatkan CBSA*. Bandung: TARSITO.
14. Sharan, Y & Sharon, S. 1990. "Group investigation expands cooperative learning. *Educational leadership*". 47 (4), 17-21.
15. Sharon, V. 2012. "The Roles They Play: Prospective Elementary Teachers and a Problem-Solving Task". *The Mathematics Educator* Vol. 22, No. 1, 17–
16. Sumarmo, U. 2006. "Berfikir Matematik Tingkat Tinggi: Apa, Mengapa, dan Bagaimnana Dikembangkan pada Peserta didik Sekolah Menengah dan Mahapeserta didik Calon Guru". *Makalah*. Disampaikan pada Seminar Pendidikan Matematika di Jurusan Matematika FMIPA Universitas Padjadjaran, Tanggal 22 April 2006.
17. Talmage, H & Hart, A. 1977. "Investigative teaching og mathematics and its effect on classroom learning environment". *Journal for research in mathematics education*, 8,345-356.
18. Tjalla, A. 2010. *Potret Mutu Pendidikan Indonesia Ditinjau dari Hasil-hasil Studi Internasional*. Tersedia di <http://pustaka.ut.ac.id/pdfartikel/TIG601.pdf>. Diakses 5 Januari 2014.
19. Zakaria, E, et al. 2013. "Effect of Cooperative Learning on Secondary School Students’ Mathematics Achievement". *Creative Education*, Volume 4 No. 2. Hal. 98-99

Surrealism Text Drama Indonesia in *Kapai Kapai*

Turahmat

*Indonesia Language and Literature Department, Faculty of Teacher Training and Education,
Sultan Agung Islamic University*

Corresponding author: lintangsasta@unissula.ac.id

Abstract. Surrealism will not be complete if it only meant as a stream. Surrealism must also be interpreted as an ideology. As an ideology, then there must be a value that will be delivered. These values are highly dependent on the social conditions surrounding culture. Then it becomes less precise when surrealism Indonesia equated with European surrealism. This study aims to find a formula typical surrealism Indonesia in a play *Kapai Kapai*. Hermeneutic method with a grand theory of surrealism used to look for hidden meanings that show characteristics typical of surrealism Indonesia. The results showed that there is a very big difference between the text of Surrealism European drama with drama Indonesia surrealism text in text *Kapai Kapai* drama.

INTRODUCTION

Issues that arise in the Indonesian literary criticism is the use of inequality literary theories that serve as a reference, point of view, or starting point, with the condition of locality Indonesiaan. Indonesian local wisdom sometimes not necessarily be overcome by the theories of western literature. For example, in literature, meaning conservation is different from the meaning of green Satra. An analysis of the female-typical-Indonesia, certainly can not be done with the theory of feminism, because there is very noticeable difference between women in Indonesia with European women. Likewise with surrealism.

Surrealism, is a school of art and literature that explored and described the nature of dreams and the subconscious mind through the creation of visual art works, poetry, and film. Surrealism was launched when the French writer Andre Breton wrote the first manifesto of surrealism. The most important contribution of the surreal is the discovery of a new artistic technique which is connected to the subconscious mind. The Surrealist let his thoughts flow freely into the pages of paper without trying to set it up, so that the dream that they rewrite it could present an honest and candid.

Tracing its origin, surrealism becomes difficult to apply in a play. How could create a play on the situation of trance, the subconscious. If the poem, is still possible, but in the play, is clearly not possible, because there are grooves that must be adhered to. Therefore we need a serious thought to formulate the nature of surrealism typical of Indonesia.

Drama has a system, conventions, rules and regulations, or construction, which allows autonomous literary work. In view of Chomsky (1964: 105), an autonomous means a set of statements that elaborasinya (though risky) could help himself formulate a better description of the object, namely a set of internally coherent proposition. However, the autonomous nature of the drama can never reveal the full meaning if it is not linked to the social, political, and cultural surrounding. Ratna (2004: 334) even stated that the relationship of literature in society, both as negation and innovation, as well as an affirmation intrinsic relationship.

Drama has two different dimensions, namely literary dimension and the dimension of the performing arts. This is because the purpose of writing the drama does not just stop at the stage of disclosure of events to be enjoyed artistically imaginative by readers, but also to be enjoyed in a staging by the appearance of motion and behavior of concrete that can be seen in a show (Hasanuddin, 1996: 1).

Drama in literary dimension is one of a kind piece of literature that depicts the life of the community by featuring disputes and emotions through imposition or dialog. Drama in this dimension is often called a drama or a drama

script text that can be aligned with the poetry and prose. So henceforth, drama is drama in this research is in the area of literature, which is also called a play or drama text.

While the drama in the dimension of the performing arts is the kind of performances that combine various elements such as role playing, illustration, music, lighting, stage design, makeup, and fashion. By watching the drama performances, the audience as if viewed *kahidupan* and events in the community. According Suharianto (2005: 76), this happens because the drama is a portrait of human life colorful.

Effort to dig surrealism in *Kapai Kapai* this is a proof of the imbalances that occur in the world of drama, both performing arts domain and the domain of literature. Efforts to formulate the text of Surrealism typical Indonesian drama is also unlikely stripped Indonesiaan wealth locality. The research problem is; how surrealism in drama *Kapai Kapai* by Arifin C. Noer?

RESEARCH METHODS

The research method is a way of seeking the truth and the principles of natural causes or human society based on specific disciplines (MONE 2008: 565). In line with the opinion of Usman and Akbar (2009: 41) research method is a procedure or a way to know something is done through systematic measures. The approach used in this study are mimetic approach using surrealism study. Mimetic approach is an approach to literature that examines the literary works in conjunction with the social reality of the community (Abrams, 1981).

The procedure consisted of three stages, ie the stage prior to the study, the implementation phase of the study and after the study phase. At the stage prior to the study, research steps are 1) to study literature related to research; 2) identify problems; 3) restricting the problem; and 4) establish a focus problem. At the stage of research, the research steps, namely 1) the collection of data and data sources; 2) processing and meaning of data; and 3) examination of the validity of data. At the stage after the study, the steps are: 1) drawing conclusions; 2) the preparation of research reports.

Data used in this study is qualitative data. Qualitative data is data that is expressed in the form of sentences, words, phrases, and images or photos (Sugiyono, 2008: 3). In this study, the type of data in the form of words, sentence, or phrase in the text of drama *Kapai Kapai* Arifin C. Noer works allegedly charged the value of surrealism. Sources of data in this research is divided into two, namely primary data sources and secondary data sources. The primary data source used is the text of drama *Kapai Kapai* by Arifin C. Noer. Secondary data sources used are articles, journals, books, previous studies, as well as other *reversensi* are still relevant to this study.

Mechanical engineering procurement data is done with documentation or technical literature through techniques of content analysis (assessment of contents). According Host (in Moleong 2010: 220) study of the content is whatever technique is used to draw conclusions through the effort to find the characteristics of a message, conducted objectively and systematically. Data collection procedures were carried out through the following stages: a) the study of literature; b) review of documents; c) recording data in the data card; d) classification data.

Data analysis was carried out by phases: first, do readings as readings based heuristic linguistic structures / systems based on first-rate convention and literary conventions (Pradopo 1994: 109). Furthermore, the data are analyzed and interpreted through the study of hermeneutics. Do understanding in interpreting the text, the deepening of the categories of text in function of hermeneutics *distansiasi / jail*. A function a positive and productive jail in the center of the historicity of human experience, including: 1) the realization of language as discourse, 2) the realization of discourse as a work of structured, 3) relationships speech with the words in the discourse and in the works of discourse, 4) works discourse as a projection of the world, and 5) the discourse and discourse as mediation work of self-understanding.

Content analysis in this study include descriptive analysis and inferential analysis. Descriptive analysis conducted on the words that allegedly contains conventions of surrealism. Or purport inferential analysis conducted on data containing words surrealism convention. Data validity checking is necessary because, according Escarpit (2005: 28) literary fact can be revealed through the data in the study were interpreted using objective data types, obtained in the study of social structure into a container such literary fact. Examination of the data has been carried out by a repeat reading and ensured that no data is missed.

RESEARCH RESULT

Surrealism *Kapai Kapai* appears in several forms, namely naming characters, character dialogue, dialogue antartokoh, and wawancang. In naming the characters, selecting the name of The Dark, The Dark Forces, and the Thousand Months Shake-Shake clearly an unusual choice of name. Compare with the name Abu, Iyem, Mother, Moon, Employer, grandfather, Jin, daughter, or Prince. The first name is the name of a super realist when compared to the second name. There is a specific purpose why Arifin C Noer chose that name. Based on the study of hermeneutics, the names are unusual was chosen because it represents each character. The name represents the nature of Dark eg night, deserted, desolate, and dark. Likewise, the names of the others.

In addition to appearing in the name of the character, surrealism symptoms appear in the following dialog. ... Moon in the sky because of worry creased his face. The pool water was immediately frozen, all pale flower petals pressed lethargic (1970: 3). The quote is a dialogue between the leaders of the Abu by Emak. His mother reported that the full figures become wrinkled face with worry, pool water froze, and the flowers looked pale, drawn, pressed kelopaknya. Sebuah picture of the condition of nature is very unreasonable, the fact that exaggerated, or superrealis.

The following quote illustrates the condition of the princess along with the Prince. This quote still Emak Abu dialog. ... He was rolling along the Prince in a very long dream, in which a thousand months envelop both beautiful body was full of light (1970: 3). Symptoms surelisme looks at the depiction of the body of the prince and the princess were beautifully colored full of light because it covered a thousand months. An image that will only appear in a fairytale world.

Surrealism symptoms most commonly appear in Indonesia is closely related to the tradition, mythical, and mystical. Mythical world also appears in the following dialog Mother figure. ... When the horse is located at the entrance of the cave, all of a sudden a group of thick clouds surrounded the prince had been attacked. The prince now know that it was a cloudy ghosts (1970: 6). Traditions, myths and mystical is the local wisdom that can not be separated from Indonesia.

The following quote is also showing symptoms of Surrealism in the form of myth. ... With Mirror of Deception, nails and fangs that millions were instantly melt so the rain deraslah that now exist. So in the rain it was, the Prince held up the mirror and opened the cave door itself (1970: 6). Nails and canine numbering millions, and everything is sharp, sudden instantly melts. The cause of the melting of nails and canine is also unreasonable, a mirror trickery. If the cause of melting due to the exposure of larvae, for example, is still acceptable reasoning. But a mirror deceit, what is so special. In this section Arifin want to give a sense to us, that no matter how great the weapons possessed, how strong defenses built, and as good as any force supporting, eventually had to submit was the power of the mirror trickery, deception, tactics and deception.

Life's trials, narrowness, misery, and poverty often make a person berfikiran illogical, insane, or irrational. Many people end up believing things mystical and pesugihan due to economic pressure. It also appears in the following passage. ... I need to store the Prophet Solomon. I want to buy Mirror of Deception (1970: 28). Abu figure is a figure with economic life which is too mediocre, and even tend to be less. When it rains dating, their homes should be flooded and the roof is also leaking. In the midst of this economic pressure, Abu started thinking illogical. He remembered his mother fairy tales in the past, that a person's happiness can be achieved if it has a mirror trickery. Prophet Solomon is the owner of the gimmick mirror that is located at the end of the world. Since then Abu determined to find and have a mirror trickery so that his life can be happy.

Incoherence event is one marker of the emergence of symptoms of Surrealism. The following incident is an occurrence that can not be accepted by the mind. ... Step aside or threw into the Indian ocean. Or do you want creamed for spit? Haha (1970: 29). Events threat to the Indian Ocean throwing an event that does not make sense. How can one throw another person without the aid of any tools into the Indian Ocean. So is the threat of crushing events were only conducted with spit on.

In addition to character dialogue, the symptoms of Surrealism also appears in the dialogue antartokoh. As seen in the following passage.

ABU: How can both continue to survive?

EMPLOYER: Abu!

EMAK: Thanks mirror trickery.

ABU: Thanks to the Mirror of Deception, Mak?

EMPLOYER: Abu!

EMAK: all thanks to Mirror of Deception (1970: 4).

Traditions, myths and mystical objects is a distinguishing feature of the eastern society with western society. Peoples of the eastern world, including Indonesia is a society which is still largely believe objects of mystical or magical objects. So do not be surprised if in Indonesia there are still many heirloom, or objects that are considered auspicious as stone that can cure the disease. Not infrequently, they found the offerings-offerings under the trees of the former worship at certain nights. This phenomenon is also raised by Arifin through a magical objects, mirrors trickery.

Narrated by Emak to Abu that mirrors trickery able to make a person happy. Abu who was a child asked his mother where he could buy the mirror trickery. By his mother submitted that the mirror can only be obtained at the shop of the Prophet Solomon.

ABU: Where mirror that can be purchased, Mak?

EMAK: Far far away in the world ... disebuah store owned by Prophet Solomon (1970: 4).

Emak answer is actually a mirror trickery marker that does not exist, because it can only be bought at the shop of the Prophet Solomon. In Islam the Prophet Solomon was one of the Prophet whose history must be known by the Muslims. And now the Prophet Solomon was dead. That means that the mirror trickery was actually never existed.

Surrealism is an event realist exaggerated. Speech, conversation, or dialogue is an event of realism, because it happens in the real in everyday life. But if the dialogue is delivered by inanimate objects, objects that should not be able to speak, then it is no longer a dialogue event realist events but events Surrealism. Events dialogue conducted by inanimate objects can be seen in the following passage.

ABU: Birds, where the world ends?

BIRD: Right there.

ABU: Frogs, where the world ends?

FROG: Right there.

ABU: Grass, he Which end of the world?

GRASS: Right there.

ABU: Dew, where the world ends?

Embun: Right there.

ABU: Water, where the world ends?

AIR: There. (All Laugh at Abu)

ABU: Stone, where the world ends?

STONE: Right there. (All Laugh at Abu)

ABU: jangkerik, where the world ends?

Jangkerik: Right there. (All Laugh at Abu)

ABU: Goat, where the world ends?

GOAT: Right there.

ABU: Goat, where are there?

GOAT: Right there.

ABU: Tree, where are there?

TREE: There (1970: 4)

Bodies were still believed auspicious ghaibnya force by a person is actually a form of inability to cope with threats from outside himself. For someone who is religious, inability to resist the threat from outside is usually Were Left to God. So in other words, the position of these magical objects equal footing with God. This can be seen in the following passage.

GRANDPA: All crosswords surely guessed by religion.

ABU: I do not need all of that. I need a Mirror of Deception.

GRANDPA: What is the Mirror of Deception?

ABU: Mirror of Deception is a deterrent any reinforcements. Rescuer every prince in a fairy tale of ancient (1970: 20)

Abu figures advised by Grandpa that can provide relief to a human being when experiencing grief, tragedy, and trial is God. And religious institutions provide a very important role in this activity. However figure Abu trust the power of the mirror trickery than the power of God.

Mistrust Abu figures to the strength of the Lord occurs due to the difficulty of life which he experienced. Through this event, Arifin being sarcastic we, as humans, that how quickly we despair over the disaster that we are facing. Often we feel that God is no longer dear to us. And not a few others, people do not feel pitied by God and menuhankan money. This can be seen in the following passage.

Iyem: We kill (Abu SPIT) We kill (Abu SPIT) We kill.

ABU: Who?

Iyem: Either (Iyem Spitting)

ABU: I? (Iyem Spit) You. We kill.

Iyem: Orok us just fine.

ABU: We must hold. At least let's just one more day of fasting.

Iyem: This is the fifth day. Hungry. Hungry. Hungry. Hungry.

ABU: Do not count.

Iyem: We kill (1970: 38)

Hardship experienced by Abu make it crazy. He had intended to kill her baby boy because he could not feed him. Even counted five days they did not eat.

The following excerpt shows symptoms of Surrealism in the form wawancang or user lakuan in the drama. ... THE DARK with his troops BELLS GOLD STRIKE HARD ONCE (1970: 16). The quote is a form of Surrealism in the form of character names. Dark figure is a form of Surrealism, because it is not known exactly what his name is.

Surrealism also appears in the portrayal of the atmosphere plays. Wawancang below illustrate the conditions experienced by Abu figures. ... MILLENNIUM ABU COMMANDING THE EMPLOYER. ABU SCREAMING AGAINST THE NECK. THOUSAND HANDS EMPLOYER IN THE HEAD OF ABU (1970: 16). In real life, a person may not be governed by a thousand employers. Nor could the hands of a thousand people were at the head of the Abu. This event is the depiction of Surrealism.

CONCLUSION

Surrealism in the drama *Kapai Kapai* work Arifin C. Noer is one manifestation of drama texts typical Indonesian homage to Surrealism. The form of Surrealism emerged in naming characters, dialogue or monologue of the characters, dialogue antartokoh or so-called dialogue alone, and the figure caption or wawancang lakuan. Surrealism typical Indonesia in *Kapai Kapai* characterized by the emergence of trust figures to tradition, fairy tales, religious, mythical, and mystical objects. A trait that is not found in the texts of European drama. These characteristics of both the wealth in the treasury Indonesiaan.

REFERENCES

1. Abrams, M.H. 1976. *The Mirror and The Lamp : Romantic Theory and The Critical Tradition*. New York: Holt, Rinehart and Winston.
2. Arikunto, Suharsimi. 2002. *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.
3. Barker, Chris. 2013. *Cultural Studies*. Terjemahan Nurhadi. Yogyakarta: Kreasi Wacana.
4. Bloom, Benjamin S., et al. (1981). *Evaluation to Improve Learning*. New York: McGraw Hill Book Company.
5. Bressler, Charles E. 1999. *Literary Criticism : An Introduction to Theory and Practice*. Second Edition. New Jersey: Prentice Hall, Upper Saddle River.
6. Cakir, Ismail. 2006. "Developing Cultural Awareness In Foreign Language Teaching." *Kirikkale University Turkey, Turkish Online Journal of Distance Education-TOJDE*, July 2006 ISSN 1302-6488 Volume: 7 Number: 3 Article: 12.
7. Cardullo, Robert. 2015. Experimental theatre in the twentieth century: avant-gardism, the absurd, and the postmodern. In *Journal Neohelicon* Volume 42, Issue 1 , pp 341-358. Online ISSN 1588-2810. Publisher Springer Netherlands.
8. Child, Peter and Roger Fowler. 2006. *The Routledge Dictionary of Literary Terms*. London and New York: Routledge.
9. Crystal, David. 2000. *New Perspectives of Language Study 1 : Stylistics*. University of Reading: Department of Linguistics Science.
10. Damono, Sapardi Djoko. 2002. *Pedoman Penelitian Sosiologi Sastra*. Jakarta: Pusat Bahasa.
11. Davies, Alan and Catherine Elder (Ed). 2006. *The Handbook of Applied Linguistics*. Australia: Blackwell Publishing.

12. Dimaculangan, Irish A. 2012. "Spirituality and Solidarity among De La Salle Schools in Region IV: Basis for Enhancing a Culture of Faith." *IAMURE International Journal of Literature, Philosophy and Religion is produced by IAMURE Multidisciplinary Research*, Vol. 2 March 2012.
13. Escarpit, Robert. 2005. *Sosiologi Sastra*. Terjemahan Ida Sundari. Jakarta: Yayasan Obor Indonesia.
14. Eyong, Charles Takoyoh, Millens Mufuaya and Irene Iwo Foy. 2013. "Literature and Culture. The Sustainability Connection." *Area Studies – Africa (Regional Sustainable Development Review)*, Vol. II, 2013.
15. Fabb, Nigel. 2003. "Linguistics and Literature". In Mark Arnoff and Janie Rees-Miller (Ed), *The Handbook of Linguistics*. USA: Blackwell Publisher.
16. Faruk. 2011. *Sastra dalam Masyarakat (Ter-) Multimedia (-kan): Implikasi Teoretik, Metodologis dan Edukasionalnya*. Yogyakarta: Pustaka Pelajar.
17. Faruk. 2012. *Pengantar Sosiologi Sastra*. Yogyakarta: Pustaka Pelajar.
18. Friedrich, Nietzsche 2001. *The Gay Science (edited by Bernard Williams)*. UK: Cambridge Press.
19. Geisler, Norman L. dan Williams D. Watkins. 1984. *Perspectives Understanding and Evaluating Today's World Views*. California: Here's Life Publishers.
20. Gyem, Kim Jang. 2013. "Identification of Values in Malay Short Stories." *Life Science Journal*, Vol 10, February 2013.
21. Jabrohim dkk. *Metodologi Penelitian Sastra*. Yogyakarta: Hanindita Graha Widia. 2001, h.13
22. Krippendorff, Klaus. (1980). *Content Analysis ; An Introduction to Its Methodology*. Beverly Hills-London: Sage Publications.
23. MacGregor, Geddes. 1960. *Introduction to Religious Philosophy*. London: Macmillan & CoLTD.
24. Mikics, David. 2007. *A New Handbook of Literary Term*. London: Yale University Press.
25. Musthafa, Bachrudin. 2008. *Teori dan Praktik Sastra Dalam Penelitian dan Pengajaran*. Jakarta: Cahaya Insan Sejahtera.
26. Nurgiyantoro, Burhan. 1995. *Teori Pengkajian Fiksi*. Yogyakarta: Gadjah Mada University Press.
27. Pradopo, Rachmat Djoko. 1994. *Prinsip-prinsip Kritik Sastra*. Yogyakarta: Gadjah Mada University Press.
28. Pradopo, Rachmat Djoko. 2003. *Beberapa Teori Sastra, Metode Kritik, dan Penerapannya*. Yogyakarta: Pustaka Pelajar.
29. Ratna, Nyoman Kutha. 2008. *Teori, Metode, dan Teknik Penelitian Sastra dari Strukturalisme sampai Postrukturalisme Perspektif Wacana Naratif*. Yogyakarta: Pustaka Pelajar.
30. Ricoeur, Paul. 2012. *Hermeneutika Ilmu Sosial*. Terjemahan Muhammad Syukri. Yogyakarta: Kreasi Wacana.
31. Ryan, Michael. 2011. *Teori Sastra Sebuah Pengantar Praktis*. Terjemahan Bethari Anissa Ismayasari. Yogyakarta: Jalasutra.
32. Sayuti, Suminto A. 2000. *Berkenalan dengan Prosa Fiksi*. Yogyakarta: Gama Media.
33. Shipley, Joseph T. 1979. *Dictionary of World Literature : Forms, Technique, Critics..* USA: Boston The Writer, Inc..
34. Simon, William & John H. Gagnon 1973. *The Social Sources of Human Sexuality*. USA: Transaction Publishers.
35. Siswanto, Wahyudi. 2008. *Pengantar Teori Sastra*. Jakarta: Grasindo
36. Stanton, Robert. 2007. *Teori Fiksi Robert Stanton*. Terjemahan Sugihastuti dan. Rossi Abi Al Irsyad. Yogyakarta: Pustaka Pelajar.
37. Wassenburg, Stephanie I. et al. 2015. Children's comprehension monitoring of multiple situational dimensions of a narrative. In Journal: *Reading and Writing*. October 2015, Volume 28, [Issue 8](#), pp 1203-1232
38. Wellek, Rene dan Austin Warren. 1989. *Teori Kesusastraan*. Diterjemahkan oleh Melani Budianta. Jakarta: Gramedia.
39. Zuhdi, Darmiyati. (1993). *Panduan Penelitian Analisis Konten*. Yogyakarta.

Side-Effects of Technology for Children's Development

Andarini Permata C

*Elementary School Teacher Education Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: andarinipermata@gmail.com

Abstract. Technology has become the important part of life. Many kinds of technology which are being a very helpful tools for human to communicate each other. Television, computer, smartphone, internet, chatting service, and social media are some of many technologies used by people everyday. These tools also become familiar things for children who live in this era. There are some negative side effects of technology if do not be used wisely, moreover for children who are not guided by adult when they are using these technology. Children still need to be guided when they are using those, especially some technology which is using internet, because children have not been aware of bad content that be able to be searched just by typing some keywords. So, parents and teacher of children under-middle school age have to be aware of this, and they should guide them supposed they are able to use internet and the other technology for a good purpose.

INTRODUCTION

Technology develops as the time going on, from the traditional to the modern one. Human tend to create something new and useful, just like the main purpose of the creating of technology: to help them in order to fulfill their needs, easier than before they develop the modern technology. Some of technologies used by people these days such as television, smartphone, internet, chatting services, internet-based social media, and many others. Those are technologies which have become the part of human's life. People can be easier to communicate and know each other even if they are in the far away country. Technology is not only used by adult people, but also children and adolescent. Because of technology does not only have a positive impact for human life, but also negative side effect, children and adolescent still need guidance from their parents and teachers supposed to prevent them for using it with bad purposes. They are also able to get the negative side-effects because they do not use it wisely.

CHILDREN AND TECHNOLOGY

Being active is an intuition for children. They are using physic in many activities compare to them who already reached adolescent or adult age. They like playing games which involve physics strength, such as hide and seek or doing some sports. It is a common thing for elementary school children. Like what Department of Health & Human Service of Victoria (2016) wrote on their website that children's job is to play, because they like to be active. Australia's Physical Activity Recommendations for 5-12 Year Olds also states that every day kids need to do at least 60 minutes of physical activity. Explain more, it is also written that there are many benefits of physical activity for children, such as:

1. improved cardiovascular fitness,
2. prevented children for being overweight,
3. helped kids to have sleep pattern better,
4. increased self-esteem and confidence,
5. improved concentration,
6. easier to relax,
7. helped kids to have strong bones and muscle,
8. improved physical development,
9. enhanced social skills.

In fact, the children nowadays are different from they are who lived few years ago when technology was not as modern as now. These days, technology and gadget have become an important part of human life, including youth

people. “For the past several decades, television has become a ubiquitous fixture and preferred activity in most occidental family environments” (Pagani, Fitzpatrick, Barnett, et al, 2010). But, many parents show poor factual knowledge and awareness of such existing guidelines. The American Academy of Pediatrics and the Canadian Society of Pediatrics stated “infants aged 0-2 years should not have any exposure to technology, 3-5 years be restricted to one hour per day, and 6-18 years restricted to 2 hours per day” (Relos, 2014). In fact, many parents still put television in the bedroom without knowing that it has bad effect for children’s development. Besides, many parents facilitate their children with smartphone and computer which are connected to internet.

These days, children and adolescents tend to stay at home watching television, playing game or chatting in social media with their own gadget. There are some reasons behind this, such as there is no more playground for children to play with their friends, or field for them to do some sport activity. Moreover, most of schools in Indonesia (especially in Java) are placed on the roadside or around the adjacent settlements. It causes the school does not have space enough for their schoolyard, so children are not able to play around freely. Furthermore, parents like to see their children watch television at home than let them doing outdoor activity because they can keep their eye to them while completing their chores (Dehghan, Akhtar-Danesh, & Merchant, 2005). These also become a reason why children tend to choose playing with the technology in their free time instead of playing actively with their friends.

As one of the technology used these days, internet has become a major necessities of life, even for young people. Internet is a fast way for finding information, doing business matters and connecting people by using social media or chatting apps. But if we rely on internet so much, we could be caught into internet addiction. Mazhari (2012) described internet addiction as “intense mental preoccupation with Internet use, compulsive Internet use, spending a lot of time on the Internet, inability in managing time spent on the Internet, considering the world without the Internet as boring, irritability in the case of being disturbed at the time of using the Internet, and decreased social relationships because of Internet use”. Children are persons who have not been able yet to control their desire when they like doing something. Parents have huge responsibility to help children in order to use internet for a good purpose, such as helping them in learning or doing some simple research when they are curious about something. But children must be taught that there are limitations on using internet, and they still need to be guided in order not to access some websites which contain bad influence for them such as pornography and violence.

The more kids spend their time in with modern technology, the more questions about the use of technology raise (Simufurosa, 2013: 1). And this will be affected children to get the side effect (Simufurosa, 2013: 1). parents should be aware of these side-effects so they can teach their children to manage the technology.

SIDE-EFFECTS OF TECHNOLOGY FOR CHILDREN’S PHYSICAL AND BEHAVIOUR DEVELOPMENT

Technology has a huge impact for human, particularly to make things easier to do and help people in the daily routine. Not only adult people, young people also feel the same thing. Technology (including gadget) has many advantage, such as: establishing and maintaining relationship among people (Hertlein & Ancheta, 2014); communication has also become cheaper, quicker, and more efficient; it makes the world closer together and brige the cultural gap (Kumar, 2014). However, there are many side-effect of technology if we could not control our self on using that. Asian Journal has released an article titled “Electronic gadgets should be banned for kids 12 and below, expert say” (Relos, 2014) that written “handheld devices (cell phones, tablets, electronic games) have dramatically increased the accessibility and usage of technology, especially by very young children” and we need to ban this before it’s too late.

Video Game or Media which Contain Violence

Children who played a lot of video games contained violence became more physically aggressive (Anderson, Sakamoto, Gentile, et.al, 2008). The Academies of Physicians, Pediatricians, Psychologist, and Psychiatrists have joined with the American Medical Association classify media violence as a public health risk because of its impact on child aggression (Rowan, 2010). This showed that games and media which contain violence have contribution on the changing of children’s behavior.

Beside, the violent media content also give some short-term and long-term effects (Huesmann, 2007). The short-term effects mostly due to:

1. *priming process — the external stimulus can be inherently linked to a cognition, when media violence primes aggressive concept, aggression is more likely;*

2. *arousal process — the violence stimulus can arouse aggressive behavior;*
3. *mimicry process — in recent years evidence has accumulated that human and primate young have an innate tendency to mimic whomever they observe.*

Huesmann (2007) also stated that long-term effects, seem to be due to:

1. *more lasting observational learning of cognitions and behaviors (i.e., imitation of behaviors) — during early, middle, and late childhood children encode in memory social scripts to guide behavior through observation of family, peers, community, and mass media. Consequently observed behaviors are imitated long after they are observed and children’s social cognitive schemas about the world around them also are elaborated;*
2. *activation and desensitization of emotional processes — Long-term socialization effects of the mass media are also quite likely increased by the way the mass media and video games affect emotions. Repeated exposures to emotionally activating media or video games can lead to habituation of certain natural emotional reactions. This process is called “desensitization.”*

Children who watch violence contains everyday will have a changing behaviour. They also will do it unconsciously as if it has been a habit.

Putting Television and Other Screens in Children’s Bedroom

Young people having a TV in the bedroom is common thing for these days. This makes the chance of TV hours for children has been increased (Swinburn & Shelly, 2008). Dietz and Gortmarker (1985) did some research about the relation between television and obesity of children and adolescents. The result of the study showed that increased television viewing could cause obesity and vice versa. The hours spent watching TV make children being passive and could reduce resting metabolic rate. Children and adolescent also eat snack and drinking while watching TV. Without doing any sports, this habit may cause the obesity of children.

Besides, the content of the TV program could influence children’s minds until they fall asleep. If they don’t do some physical activity, they could have troubled with their routine that will cause behavior problems (Susilawati & Rezkisari, 2016). Children and adolescent often check their gadget before sleep, whereas to chat with someone or just check the game they usually play. But researchers found that using a gadget for just two hours before sleep can cause sleep problems (Prigg, 2012). Watching television & using mobile phones and computers in bedrooms late night can cause sleep deprivation (Coughlan, 2013). Children naturally need more sleep than adult. They will have physic and concentration problem if they lack of sleep. So it could be a hidden factor in lowering a student’s achievement.

Using Technology (Cell Phone, Internet, iPads, Television, Laptop, etc) in a Long Time

Children’s brain has not developed completely. Using screens in a long time could have given more side effects for children than adult. The delay of children’s development can be caused by the overuse of technology (Rowan, 2010). Their development will not be the same as they who are limited in using those technologies. Spending time more than 2 hours in front of the screen can cause psychological difficulties, even if they are active children. Children who have been interviewed said they often become unhappy or down-hearted and they usually play by their self (Page, 2010). It is indicated that doing physical activity after that could not become a compensation for long hours of screen viewing. The effect can only be reduced by limiting children’s screen time.

Besides, the radiation exposures are higher for children than adults because children have thinner skulls, and their brains have higher water and higher ion (charged particle) content and might cause a greater risk for them (Rosenberg, 2013). Children’s brain development are influenced by environmental stimuli, and if they use technology out of appropriateness, it can cause decreasing attention, cognitive delays, vulnerable learning, impulsivity, decreasing self-regulate, e.g tantrums, impulsive, moody, and could not pay attention (Small & Vorgan, 2008; Liberatore, Rosario, Colon-De Marty, et.al, 2011; Dunkley, 2014). Woolaston (2013) wrote on her article that parents can detect whereas their children are starting to have technology addiction or not by knowing these 5 signs: 1) lack of interest in other activities, 2) constantly talking about or getting distracted by technology, 3) mood swings and argumentative behavior, 4) withdrawal symptoms, and 5) increase in lying or rise in devious behaviour.

According to some studies, internet overuse would bring some negative outcomes in sleep, physic, academic progress, and family relationships. “Eventually, all these issues can lead to various physical and psychiatric disorders such as low back pain, carpal tunnel syndrome, depression, anxiety, loneliness and low self-esteem” (Mazhari, 2012). In addition, internet addiction cause losing interest in other hobbies or never develop any others, and sometimes makes someone feel irritated, depressed or even physical shaking (Tsukayama, 2016).

This is very bad for children who are addicted on technology, whatever the reasons are (chatting, browsing, or playing online game). And if it happens in a long time, they are able to be an anti-social person who could socialize with their family, friends, or society.

SUMMARY

Technology gives many advantages, but also has some side-effects for human, including young people and children. If they are overdue in using technology or access some violence-content, they will get some side effect such as: being more aggressive; having sleep problem and mood disorder; not able to concentrate; having obesity, cognitive delay, low self-esteem, and tantrum; losing interest in other hobbies; feeling depressed and lonely; and they could be an anti-social person. As Rowan (2010) said “these ‘crimes of technology’ indicate that many children do not have the maturity or the parental guidance to use technology in a safe and responsible manner”.

Kids are in a phase which they mimic action of people around them. So, parents should be a good example in order to teach them how to control their self in using technology. There are some ways to do it: show the children that we also participate in physical activity, allow our child to choose what activity they want to do, give an understanding for children that there are the social benefits in doing physical activity, help kids to develop their skills by doing different physical activity, restrict ‘screen time’ to less than two hours per day, and turn the television off when the program is finished (Department of Health and Human Service of Victoria, 2016). Parents also need to guide their kids when they are watching television or access internet with computer or smart phone supposed not to search something with bad contains.

But if the children has been already addicted, Dr. Graham suggests that parents could do the 72 hours for digital detox. Initially they will show distresses and signs of withdrawal, much like any addict would feel. The challenge starts when we reintroduce technology back into their lives in a controlled manner, they need a balance of activities to help children including an increase of physical activity. parents should try to set down some 'compromise agreements', meaning families still spend time together. Perhaps there are no smartphones at meals, and the family have half a day together cyber-free over the weekend (Woollaston, 2013). This solution needs to do frequently and without any force. Parents need to choose an interesting physical activity (indoor or outdoor) so that the kids will enjoy it and forget about technology.

Technology is like a knife. We can use it in a good or bad purpose. Do not let technology control us, we are the one who need to control it. Never teach or forbid our children without giving any example. If we want our children use technology wisely, we need to do and show it first, so will them.

REFERENCES

1. C. A. Anderson, A. Sakamoto, D. A. Gentile, et al. “Longitudinal effects of violent video games on aggression in Japan and the United States,” in *Pediatrics Journal* (American Academy of Pediatrics, Grove Village, Illinois, 2008) pp. 1-21.
2. S. Coughlan. “Lack of sleep blights pupils’ education” in *BBC News* (8 May 2013), retrieved in <http://www.bbc.com/news/business-22209818>.
3. M. Dehghan, N. Akhtar-Danesh, and A. T. Merchant. “Childhood obesity, prevalence and prevention,” in *Nutrition Journal*, vol. 4, no.24.
4. Department of Health & Human Service of Victoria. “Children – keep them active,” in *Better Health Channel* (2016), retrieved in <https://www.betterhealth.vic.gov.au/health/healthyliving/children-keeping-them-active>.
5. W. H. Dietz and S. L. Gortmaker. “Do we fatten our children at the television set? Obesity and television viewing in children and adolescent” in *Pediatrics Journal*, vol. 75, no.5 (New England Medical Center and Department of Behavioral Science, Harvard School of Public Health, Boston, 1985) pp. 807-812.
6. V. L. Dunkley. “Gray matters: Too much screen time damages the brain,” in *Psychology Today* (27 Feb 2014), retrieved in <https://www.psychologytoday.com/blog/mental-wealth/201402/gray-matters-too-much-screen-time-damages-the-brain>.
7. K. M. Hertlein & K. Ancesta. “Advantages and Disadvantages of Technology in Relationships: Findings from an Open-Ended Survey” in *The Qualitative Report*, vol.19, no.22, pp.1-11.
8. L. R. Huesmann. “The impact of electronic media violence: Scientific theory and research,” in *J Adolesc Health*, Desember 2007; 41(6 Suppl 1), pp. 1-12.

9. M. P. Kumar. "Information technology: Roles, advantages, and disadvantages" in *International Journal of Advanced Research in Computer Science and Software Engineering*, vol.4, no.6, pp.1020-1024.
10. K. A. Liberatore, K. Rosario, L. N. Colon-De Marti, et. al. "Prevalence of Internet addiction in Latino adolescents with psychiatric diagnosis," in *Cyberpsychology Behavior Social Network*, vol.14, no.6, pp. 399-402.
11. S. Mazhari. "The Prevalence of Problematic Internet Use and the Related Factors in Medical Students, Kerman, Iran" in *Addict Health*, vol.4, no.3-4, pp. 87-94.
12. L. S. Pagani, C. Fitzpatrick, T. A. Barnett, et.al. "Prospective Associations Between Early Childhood Television Exposure and Academic, Psychosocial, and Physical Well-being by Middle Childhood," in *Arch Pediatr Adolesc Med*, 2010, 164(5), pp. 425-431.
13. A. Page. "Screen time linked to psychological problems in children," PEACH Project of Bristol University, 2010, retrieved in <http://www.bristol.ac.uk/sps/news/2010/107.html>.
14. M. Prigg. "Using mobile phones and tablets before bed could be affecting your sleep, warn scientists - and they say teens are most at risk," in *Daily Mail Online* (28 Agustus 2012), retrieved in <http://www.dailymail.co.uk/sciencetech/article-2194806/Using-mobile-phones-tablets-bed-affecting-sleep-warn-scientists.html#ixzz49IMnsK9k>.
15. G. S. Relos, "Electronic gadgets should be banned for kids 12 and below, expert says," in *Asian Journal* (12 March 2014), retrieved in <http://asianjournal.com/editorial/electronic-gadgets-should-be-banned-for-kids-12-and-below-experts-say/#sthash.BjpK1KRc.dpuf>
16. S. Rosenberg. "Cell phones and children: follow the precautionary road," in *Pediatric Nursing*, 2013, vol.39, no.2, pp. 65-70.
17. M. Simufurosa, "The impact of modern technology on the educational attainment of adolescent," in *International Journal of Education and Research*, Vol.1 No.9, September 2013, pp. 1-8.
18. G. Small & G. Vorgan. *iBrain – Surviving the technological alteration of the modern mind*. (Harper Collins Publishers , New York, 2008)
19. D. Susilowati and I. Rezkisari. "Ini alasan kamar anak harus bebas layar apapun," in *Republika Online* (9 Mei 2016), <http://www.republika.co.id/berita/gaya-hidup/parenting/16/05/09/o6vxx4328-ini-alasan-kamar-anak-harus-bebas-layar-apapun>.
20. B. Swinburn and A. Shelly. "Effect of TV time and other sedentary pursuits," in *International Journal of Obesity*, 2008, Vol. 32, pp. 132-136.
21. H. Tsukayama. "Many struggle with the dark side of technology: Internet addiction," in *The Washington Post* (20 May 2016), retrieved in https://www.washingtonpost.com/business/economy/for-many-young-americans-compulsive-internet-use-is-a-very-very-real-struggle/2016/05/20/be637a24-130d-11e6-8967-7ac733c56f12_story.html.
22. V. Woollaston. "The five signs your child is addicted to their iPad – and how to give them a 'digital detox'," in *Daily Mail Online* (30 Oktober 2013), retrieved in <http://www.dailymail.co.uk/sciencetech/article-2479109/The-signs-child-addicted-iPad--digital-detox.html>.

Utilization CD Learning to Improve Communication Skills Through Student Learning Mathematical Osborn

Nilu Ubaidah

*Mathematical Education Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: nilaubaidah@unissula.ac.id

Abstract. Osborn learning is a learning model by using the method or technique of brainstorming. Brainstorming technique is a technique for generating ideas that try to overcome all obstacles and criticism. This activity encourages the emergence of many ideas, including the idea of eccentric, wild and daring in the hope that the ideas can generate creative ideas, and can instill inhibition in creative thinking, because of the strange ideas that arise can shake the passion of student thinking. Evaluation of ideas not allowed, do not have any idea that important assessment must accommodate the idea as much as possible. This study reviews the use of learning through learning CD Osborn whether it can improve students' mathematical communication skills? To address this problem, the study was designed with classroom action research design and implemented in class X SMA N 1 Rowosari District of Rowosari Kendal. This study uses observation, questionnaires, test results of student learning as an instrument for data collection. From the results of this study found that (1) the application of measures by utilizing CD Osborn learning in mathematics learning can help improve students' mathematical communication. This can be seen in the average learning outcomes achieved by students. In the first cycle, the average results achieved at 68, 43. In the second cycle, the average learning outcomes achieved is 72.31. The average completeness of student learning outcomes in the classical style on the first cycle is 66.67% and the second cycle is 86.67%. The average performance of teachers in the first cycle of 2.65 and the second cycle of 3.35 also increased by 0.7. The average performance of students in the first cycle of 2.7 and the second cycle of 3.2. (2) Due to the performance of teachers and student performance, student activity in the learning process are included in the category of effective, student responses to learning is positive and completeness in classical Osborn reached then through learning by utilizing effective learning CD used in the lessons. Based on these findings, given some suggestions as follows; (1) for teachers of mathematics courses in order to apply learning by utilizing CD Osborn learning that can improve students' mathematical communication skills. (2) Teachers should create an atmosphere of fun math learning, dialogue and democratic.

INTRODUCTION

Osborn learning model is a model of learning by using a method or technique of brainstorming. According guntar (Afifah 2010) brainstorming technique is a technique for generating ideas that try to overcome all obstacles and criticism. This activity encourages the emergence of many ideas, including the idea of eccentric, wild and daring in the hope that the ideas can generate creative ideas. Taylor (Farhan, 2012) revealed that the inhibition brainstorming techniques can instill creative thinking, because of the strange ideas that arise can shake the passion of student thinking. Evaluation of ideas not allowed, do not have any idea that important assessment must accommodate the idea as much as possible (Alma, 2009).

The absence of adequate learning CD use in the learning process in accordance with the characteristics of an obstacle to students' mathematics teachers in implementing the learning in school. Learning CD have been selected for this medium has characteristics that can improve students' activeness to learn which among other shapes and attractive colors, make students interested in learning and most importantly be able to clarify the concept for students.

Communication is a human activity in conveying the message, either orally or in writing. According to the Indonesian big dictionary, communication is the sending and receiving of messages or news between two or more people so that the message in question can be understood (Language Centre Department of Education, 2005). At least we have to master the basic skills of the four types of communication, such as writing, read something (written

language), and hear, and speak (the language spoken) (Stephen, 2011: 25). In mathematics, communication is needed in view of mathematics in the learning process can not be separated from the languages of symbols. Mathematical communication skills (mathematical communication) in the learning of mathematics is very necessary to be developed. This is because through mathematical communication students can organize mathematical thinking both orally and in writing. Based on the mathematics curriculum, one math function is as a vehicle to develop the ability to communicate using numbers and symbols.

Along with that, according to Wahid (2012) with students' mathematical communication can also provide an appropriate response among students and media in the learning process. Given the importance of mathematical communication for students, teachers are expected to explain the material and make student learning activities lead to the development of mathematical communication. One indicator of mathematical communication abilities expressed by Sumarmo (2007) which describes the ideas, situations and relationships mathematical oral / written by real objects, charts, and diagrams as well as listen, discuss and write about mathematics

Mathematical communication ability of students is still low in learning, especially for math abstract. Based on the experience of researchers and interviews with teachers high school math in preliminary studies explain that the "attitude of the students are motivated to learn mathematics is less and tend to be lazy to learn mathematics in class" or quickly bored with the learning methods are applied, so that mathematical communication students is diminished, as learning does not work effectively. This contributed to the decline in student achievement both individually and classical. The decrease was due to the involvement of the students who lack the learning that takes place. In addition, students there tend to be individualistic but have good academic ability, so that students' learning attitudes towards learning less. The use of this learning method, the researchers expected to find a pattern that is more effective to know the various advantages and strengths of these learning methods, so the results can be applied to other learning conditions.

ASSESSING LIBRARY

Learning Osborn

Osborn learning model is a model of learning by using a method or technique of brainstorming. Brainstorming techniques popularized by Alex F. Osborn in his book *Applied Imagination*. The term brainstorming may be the term most commonly used, but also a technique that is not widely understood. People use the term brainstorming to generate new ideas or processes to solve problems.

Brainstorming techniques according guntar (2008) is a technique for generating ideas that try to overcome all obstacles and criticism. This activity encourages the emergence of many ideas, including the idea that eccentric, wild and daring in the hope that the ideas can generate creative ideas. Brainstorming is often used in discussion groups to solve the problem together. Brainstorming can also be used individually. The central concept of brainstorming is to postpone the decision. Four basic rules of brainstorming (Wikipedia) as follows.

1. Focus on quantity. Prevailing assumption here is that the more ideas the blaze, the possibility of the idea of the solution to be the greater problem.
2. Delays criticism. In brainstorming, criticism of the idea that appears to be delayed. Assessment is done at the end of the session, it is to make the students are free to bring a wide variety of ideas for the learning takes place.
3. Welcome to the idea that unusual. The unusual idea appears dismbut warmly. Could be, this unusual idea is a solution to the problems that will give a good perspective for the future.
4. Combine and improve ideas. Great ideas can be combined into a better idea.

Dahlan (2006) suggests the different stages of learning to begin brainstorming, among others.

1. Stage orientation. Teacher presents a problem or situation to students.
2. Phase analysis. Students detailing relevant materials on existing problems, in other words, students mengidentifikasi problem.
3. Stage hypothesis. Students are welcome to express their opinions on given situations or problems.
4. Stage incubation. Students work alone in the group to establish a framework of thinking.
5. Phase synthesis. Teachers create a class discussion, students were asked to express their opinions on a given issue, write down all of that opinion, and students are encouraged to think Which best opinion.
6. Step Verification. Teachers make the selection decisions on students' ideas expressed as the best problem-solving.

In implementing Osborn model of learning in the classroom, the teacher acts as a facilitator. Here are the steps that must be done.

1. a. Warm-up session, to open students' thinking so that in the critical-free environment.
2. b. Teacher describes the problem, and explain further if necessary.
3. c. The teacher asks the idea of students in the group on the resolution of problems that have been described.
4. d. If no idea that emerged, encouraging students to foster creativity.
5. e. Each of the students and teachers explain their ideas to accommodate these ideas.
6. f. In order to maintain the clarity of ideas, students can expand their ideas.
7. g. When time is up, the teacher organizing ideas based on the material of interest and encourage the implementation of discussion.
8. h. The ideas are categorized.
9. i. All ideas are reviewed, to ensure that every student understand these ideas.
10. j. Copying ideas and ideas that might not be the solution removed.
11. k. Teacher thank all students and appreciation for what they have done.

Thus creating a solution to a mathematical problem, in addition within the students a process of brainstorming.

Learning CD

Normality test results on a sample of 74 people using test Kolmogorof Smirnov (KS) aided SPSS with significance level of 5% obtained sig result of the calculation using SPSS produce the Sig. in Table Test of normality using Kolmogorof Smirnov of 0.200 or 20%. Skewness and kurtosis value in a row is -0.337 and 0.591. Because the value of sig count = $20\% > 5\%$ it can be concluded that the data included normal distribution. And because the value of skewness and kurtosis close to zero then the dependent variable data is homogeneous.

Simple linear regression test results obtained as follows:

1. cleanliness variables affect the learning achievement of 0.2%.
2. prayers variables affecting the learning achievement of 0.5%.
3. lifestyle variables affecting the learning achievement of 0.6%.
4. variable affecting the learning achievement of Islamic clothing by 0.5%.
5. The variable academic atmosphere affect the learning achievement of 0.2%.
6. exemplary variable affecting the learning achievement of 2.3%.
7. The six independent variables affecting the learning achievement of 5.7%.

Learning CD

We need to realize also that in general the students to think of things that are abstract. To bridge a teacher should think of ways of delivering effective order something delivered would be accepted easily by the students. For this thought is needed more tools in the form of "media or props" (Zaenuddin, 2010). Zaenuddin (2010) also narrated several roles props in learning when the review of the role of props in learning, especially mathematics were categorized into three main thing is to help the students' understanding, help associate the memory of students about concepts learned, and increase the interest and students' appreciation of the concepts learned.

One attempt to provide variety in terms of mathematics learning is to use mathematical learning media. Media (the plural of medium) is a channel for communication. Derived from the Latin word meaning "between". This term refers to something that carries information from the sender to the recipient update information. Sign in it include: movies, television, diagrams, printed material, computer, and instructors (Suherman et al, 2003: 238).

According Wibawanto (2004: 12) CD is a form of multimedia is a combination of several media text, images, video, and sound together in one single impression. Interactive means to mutually take action, inter-relationships, mutual active (Alwi, 2003: 438). So, learning CD is one of multimedia such as CDs containing text / numbers, pictures, and sound, so as to give a action / response, packaged and operated by the computer, and then can be used in the learning process in which involve students actively using CD the. Advantages include a learning CD users to interact with a computer program, gaining knowledge. The knowledge in question is the subject matter presented instructional CDs, and audio-visual display interesting (Beni, 2008: 1). This study uses a CD of learning in the learning process. Therefore, it can create a pleasant atmosphere in the classroom so as to make the students capable of grasping the concept of material submitted by both teachers and students not only imagine the concepts they are learning the material.

Mathematical Communications Capabilities

Communication or English communication comes from the Latin *communicatio*, and comes from the word that means the same. Then communication will occur during the similarity of meaning of what was said. Communication in general can be interpreted as a way to convey a message from the messenger to the message recipient to tell, opinion, or behavior, either orally, or through the media (Herdian, 2010). Therefore, when communicating to think about how to keep the message conveyed to others can be easily understood. According Elida (2012: 180) argues that *komunikasi* defined as a process of delivering a message from the sender to the receiver via a particular channel for a particular purpose. Mathematical communication is an important skill that should be owned by the students in learning mathematics. Students are able to express the mathematical ideas that come from argument to friends, teachers and others through the spoken and written language. Mathematical communication is also one of the goals of mathematics learning and become one of the standards of competence graduate school students from primary to secondary education. As stated in the National Education Act no.22 of 2006 on Graduation Competency Standards in mathematics are in full as follows:

1. Understand the concepts of mathematics, describes the relationship between concepts and apply concepts or algorithms in a flexible, accurate, efficient, and precise in troubleshooting.
2. Using the reasoning in the patterns and nature, perform mathematical manipulation in making generalizations, compile evidence, or explain mathematical ideas and statements.
3. Solve problems that include the ability to understand the problem, devised a mathematical model, solve the model, and interpret the obtained solution.
4. Communicate ideas with symbols, tables, diagrams, or other media.
5. Have respect for the usefulness of mathematics in life, which has

According to Eliot and Kenney (Sumarmo, 2013: 35) that the communication skills of mathematics among others, include the processes of mathematics as follows:

1. Declare a situation or a problem of mathematical or everyday life in the form of drawings, diagrams, language or mathematical symbols, or mathematical models.
2. Describe a mathematical idea by drawing, expression, or your own language, orally or in writing.
3. Make divulging the story berdasarkan pictures, diagrams, or mathematical models are given.
4. Prepare questions about the mathematical content provided.

While NCTM (Wijaya, 2012: 72) to formulate communication standards (communication Standard) to ensure the mathematics learning activities that are able to develop the ability of students to learn mathematics is as follows:

1. Develop and integrate mathematical thinking through communication.
2. Communicate mathematical thinking logically and systematically to all students, teachers, and others.
3. Analyze and evaluate the mathematical positioned slightly its estimate and others.
4. Using the language of mathematics to megekspresikan mathematical ideas precisely.

METHODS

Location Research

Classroom action research , entitled " Use of CD Learning to Improve Communication Skills Mathematical Osborn Students Through Education " was conducted in SMA N 1 Rowosari District of Rowosari Kendal .

Subject Research

The subjects were students of class X-4 SMA N 1 Rowosari District of Rowosari Kendal .

Data and Data Collection Method

Data types

1. Data on learning outcomes
2. Data on the performance of teachers in learning
3. Data on the performance of students in learning
4. Data on the activities of students in group discussions

Data Collection Tools

1. Formative tests
2. Teacher observation sheet
3. Student observation sheet
4. Group discussion activity observation sheet

DISCUSSION

Based on observations of teacher performance in cycle 1 and 2, ie on 1 cycle assessment results observation of the teacher's performance earned an average score of 2.65 with the performance criteria teacher in the well. The results of these assessments have not yet reached the target, so it should be a second cycle to achieve the desired targets. Based on observations of teacher performance in cycle 2, the result of observation of teacher performance appraisal obtained an average score of 3.35 with a teacher in the performance criteria very well. The results of these assessments have achieved the target of the indicators of success, so learning can be said to be complete and no further action needs to be held.

Based on observations of student performance in cycle 1 and 2 are in cycle 1 observation assessment of the performance of students obtained an average score of 2.7 with the criteria of good performance of students in learning. The results of these assessments have not yet reached the target, so it should be a second cycle to achieve the desired targets. Based on observations of student performance in cycle 2 observation of assessment of student performance earned an average score of 3.2 with performance criteria very good students in learning. The results of these assessments have achieved the target of the indicators of success, so learning can be said to be complete and no further action needs to be held.

Based on observations Discussion of group activity in cycle 1 and 2, ie on 1 cycle assessment results observation of group discussion activity obtained an average score of 2.50 with a group discussion activity criteria quite well. The results of these assessments have not yet reached the target, so it should be a second cycle to achieve the desired targets. Based on the observation group discussion activity in cycle 2, the results of observations assessment of the activity of the discussion group obtained an average score of 3.10 with the criteria of a good group discussion activities. The results of these assessments have achieved the target of the indicators of success, so learning can be said to be complete and no further action needs to be held.

In general, the process of learning that takes place in every cycle has been going well, as shown by all the stages in learning through Osbornsudah implemented.

From the above discussion shows that the indicators of success has been achieved. There is increased communication capabilities mathematical students in learning through learning activities that utilize learning CD Osborn, class X-4 SMA N 1 Rowosari District of Rowosari Kendal.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the research and discussion presented earlier, can be drawn the conclusion that through learning CD Osborn utilizing learning can improve students' mathematical communication skills

Recomendations

Based on the conclusions suggested that:

1. Osborn learning model that utilizes instructional CD can be used as an alternative in effecting the learning of mathematics in schools in order to improve students' mathematical communication skills.
2. Emphasize to students that every argument they put forward in learning activities there is always a good assessment of cognitive and affective.

REFERENCES

1. Afifah, L.N. (2010). Model Pembelajaran Osborn untuk Meningkatkan Kemampuan Pemecahan Masalah Matematis Siswa. Skripsi Pada FPMIPA UPI Bandung : tidak diterbitkan.
2. Alma, B. (2009). Guru Profesional (Menguasai Metode dan Terampil Mengajar). Bandung : Alfabeta.
3. Alwi, H. 2003. Kamus Besar Bahasa Indonesia. Jakarta: Balai Pustaka.
4. Beni, D. M. 2008. Perkembangan Multimedia dan CD Interaktif. Tersedia di [http:// deskomers01.com/?p=187](http://deskomers01.com/?p=187) (diunduh 30 september 2011).
5. Dahlan, A. (2006). Pengaruh Model Pembelajaran Osborn terhadap Kemampuan Pemahaman Matematik Siswa. Skripsi, tidak dipublikasikan. UPI.
6. Depdiknas. 2005. Penelitian Tindakan Kelas. Jakarta: Direktorat Jendral.
7. Depdiknas. 2005. Kamus Besar Bahasa Indonesia. Jakarta: Balai Pustaka. Pendidikan Dasar dan Menengah Umum.
8. Farhan. (2012). Pengertian Metode Pembelajaran Brainstorming. [Online]. Tersedia: <http://www.farhan-bjm.web.id>
9. Guntar, A. (2008). Definisi Masalah Dan Sasaran Dalam Pemecahan Masalah. Diakses tanggal 15 januari 2016 dari www.slideshare.net/.../pemecahan-masalah-pengambilan-keputusan.
10. Hamalik, O. 2001. Proses Belajar Mengajar. Jakarta: Bumi Aksara.
11. Nasution, S. 1982. Didaktik Asas-asas Mengajar. Jakarta: Bumi Aksara.
12. _____. 1992. Berbagai Pendekatan dalam Proses Belajar dan Mengajar. Jakarta: Bumi Aksara.
13. Nurhadi, 2000. Kontekstual dan Penerapan dalam KBK. Malang: Universitas Negeri Semarang.
14. Romadhina, Dian. 2007. Pengaruh Kemampuan Penalaran dan Kemampuan Komunikasi Matematik terhadap Kemampuan Menyelesaikan Soal Cerita pada Pokok Bahasan Bangun Ruang Sisi Lengkung Siswa Kelas IX SMP Negeri 29 Semarang melalui Model Pembelajaran Pemecahan Masalah. <http://digilib.unnes.ac.id/gsd/collect/skripsi/archives/HASHf1de/c0fe599> f.dir/doc.pdf, diakses tanggal 12 Maret 2015.
15. Silver and Smith. 1996. "Celebrating 50 Years of Reflective Practice: Versions of Creative Problem Solving". Journal of Creative Behavior, Volume 38 No.2. Hal. 1-27. ISSN 0022-0175.
16. Sugandi, A., dkk. 2004. Teori Pembelajaran. Semarang: UPT MKK UNNES.
17. Sugiyanto. 2010. Metode Penelitian Pendidikan. Bandung: Alfabeta.
18. Sugiyono. 1997. Metodologi Penelitian Administrasi. Yogyakarta: BPFPE-VII
19. Sugiyono. 2006. Statistika untuk Penelitian. Bandung: Alfabeta.
20. Suherman, E., dkk. 2003. Strategi Pembelajaran Matematika Kontemporer. Bandung: JICA IMSTEP Universitas Pendidikan Indonesia.
21. Supridjono, A. 2009. Matematika Gemar Berhitung 3B. Solo: PT Tiga Serangkai Pustaka Mandiri.
22. Suyitno, A. 2004. Dasar-dasar dan Proses Pembelajaran Matematika 1. Semarang: UNNES.
23. Tri Anni, C. dkk. 2004. Psikologi Belajar. Semarang: UPT MKK Universitas Negeri Semarang.
24. Wibawanto, H. 2004. Multimedia untuk Presentasi. Semarang: Laboratorium Komputer Pascasarjana Unnes.
25. Zaenuddin. 2010. Penggunaan Balok Garis pada Operasi Hitung Bilangan Bulat Bilangan Jurnal Pendidikan Batang Barkembang. <http://redaksi.jurnalpendidikan.blogspot.com/2010/03/penggunaan-balok-garis-bilangan-pada-bilangan-bulat.htm> (diunduh 22 Agustus 2010).

The Application of Role Play Method with Islamic Cultural Values in Civic Education Learning for the Fourth Grade Students at Karang Asem 01 Elementary School

Muhamad Afandi^{1 a)} and Sri Wahyuningsih^{2 b)}

¹*Elementary School Teacher Education Department, Faculty of Teacher Training and Education, Sultan Agung Islamic University*

²*English Education Department, Faculty of Tarbiyah, State Islamic College of Kudus*

^{a)} Corresponding author: fandi_pendas@yahoo.com

^{b)}sw_nyentrik@yahoo.com

Abstract. This study aims at implementing the role play method of Islamic cultural values in Civic Education learning at the elementary school. The subjects were students in the fourth grade elementary school of Karangasem 01 Sayung Demak, Central Java, with the number of 40 students consisting of 18 male students and 22 female students. This Classroom action research was conducted in two cycles. Each cycle consisted of two meetings, the first meeting comprised of a 2 hour lesson. The Procedures for implementing each cycle were planning, action, observation, and reflection. The data collection was obtained from the test and non test techniques. The technique of test was done through the evaluation sheet at the end of each cycle to determine the results of learning achievement and non test through observation sheet of students and teachers to determine the application of role play method of Islamic cultural values at elementary school. Based on the research, the results showed that the students' achievement was obtained by the average value of the first cycle 72.3 with the percentage of mastery learning 70% and the second cycle, the value of the average was 80.82 with the percentage of mastery learning 87.5%. Thus, it can be concluded that the application of the role play method of Islamic cultural values in Civic Education learning at elementary schools can improve the students' achievement.

INTRODUCTION

The learning process is an activity to implement an educational curriculum in order to achieve its intended purpose, namely the better change for the better in for the learners. According to Mulyasa (2011: 1) Learning is a complex process and involves various aspects are interrelated. Therefore, to create a creative learning and fun required a variety of skills. To achieve the goal of education, students interact with the learning environment regulated through the learning process. The focus of school learning activities is educators' interaction with learners in learning a subject matter that has been arranged in a curriculum. In the implementation of learning activities in addition to acquire the material, of course it is also necessary to know how the teaching material was delivered. In the process of learning will be established a communication between teachers and students, it will result in a significant change that has the position and role. Teachers occupy an important role as communicators conveying the messages and information to students in the form of knowledge, skills, and attitudes. Students as a communicant or recipient of the message, but in facts, students not only as a communicant but also required to participate actively in the learning process.

In the process of learning, a lack of motivation to the learners to develop thinking skills resulted in the learning process that tends to lead students just to memorize information from teachers. Students only memorize and hoard information that has been presented by the teacher. The ability of students to understand the acquired information was not related to everyday life and finally the students tend to be passive in the learning process in the classroom. It resulted in a lack of motivation in the learning process and a decline in students' achievement.

Based on the problems, in the process of learning the role of a teacher is very important in managing the class. Therefore, teachers in their duties should always understand and can apply the basic concepts of learning so that the success of the learning process can be done well.

This fact applies to all subjects including the subject of Civic Education. This subject has a wide range of material. This is a subject that focuses on the formation of citizens who understand and are able to implement rights and obligations to become Indonesian citizens who are intelligent, skilled, and characterized as mandated by Pancasila and the 1945 Constitution. At the level of elementary school, subjects of Civic Education become the basic foundation of the formation of students' character to be human based on Pancasila who are able to carry out the rights and obligations and become good Indonesian citizens and can live in the community. A subject of Civic Education is also designed to build and reflect the ability of students in public life that are always changing and evolving continuously. But the practice of learning Citizenship Education in Primary Schools still face a variety of issues that impact on unsatisfactory students' achievement. This is shown by the acquisition value of daily test of subjects Civic Education in the second semester of the fourth grade primary school Karangasem 01 in the school year 2014 / 2015. From the data value of daily tests, it is known that the ultimate value of civic education is 90 and the lowest score is 40. It is unsatisfactory because there are 13 students (52%) of the 25 students who scored below the minimum completeness criteria (KKM) on the subject of Civic Education that is 65.

Based on the interviews with teachers of the fourth grade elementary school Karangasem, it showed that there were problems or obstacles encountered in the learning process of Civic Education that was the material scope is very broad. It causes the students difficult to absorb the lessons because they are only required to memorize and recall the subject matter of Citizenship Education material without understanding the meaning and relation to the establishment of appropriate Indonesian citizens of Pancasila. Such conditions will make students feel bored and tired of the Citizenship Education material so that it will have an impact on the learning achievement has not reached a predetermined KKM.

From the observation, it was found that many students are passive and some of them are active in expressing their opinions. The interaction in the classroom was dominated by the teacher, as a result, students are being passive and not trained to ask questions, express opinions, and interact with friends. Not only on the activity of individuals, in the group of discussions, it was shown that not all the members join the discussion groups, they only rely on friends in one group to do the worksheets assigned by the teacher. It has shown that students still passive and lack of interaction with other students.

In connection with these problems, it should be sought so that the students are interested in participating in civic education lessons and required a more varied learning methods which can be a refreshing atmosphere of teaching and learning activities and provide an opportunity for students to be more active in the learning process.

Thus, to improve the learning achievement of Citizenship Education needs to be applied on learning methods which are fun and can make students interested to learn more about civics, and required learning methods that are more variable that can be refreshing atmosphere of teaching and learning activities and provide an opportunity for students to be more active in the learning process , If students are active in the learning process, they will be easy to follow lessons and can absorb the subject matter well.

Method of playing a role that belongs to the social learning approach can serve as innovation in solving the problems experienced by the fourth grade teacher at Karangasem 01 Elementary school. The selection of role-playing method because it is one of the teaching methods that can be used effectively in teaching. The application of the method can enable students to play a role in the learning process so that the potential that exists within the students will increase not only from the affective aspect but also cognitive and psychomotor of students will also increase. This method requires students to be active in the learning process which will motivate students to develop a spirit of learning that will impact on improving student achievement. This classroom action research applied learning methods of playing a role, because the method requires students will play a role more active in the learning process so that the learning environment will be more fun.

The formulation of the problem in this study is whether the method of playing the role with Islamic and academic culture can improve students' achievement in the subjects of Civics about globalization at Karang Asem 01 Elementary Schools in the fourth grade. The research objective of this classroom action research is improving learning achievement of students to the Citizenship Education in Schools materials globalization materials through role-play method aided by Islamic academic culture.

RESEARCH METHODOLOGY

Research Setting

The research was conducted in the second semester of the 2015/2016 academic year. The study was conducted in January-February 2016. The setting of research was in Karangasem 01 Elementary School Sayung Demak. This type of research is the Classroom Action Research. According Taniredja (2010: 15) classroom action research is one of the problem-solving strategies that utilize real action and process development capabilities in detecting and solving problems. Based on the opinions, the classroom action research was selected as the type of research because it can be a form of scrutiny to reflective learning activities in the form of actions which intentionally raised so as to improve practices in the learning process

Research Subjects

Subjects in the study of this classroom action research are the fourth grade students of Karang Asem 01 Elementary School, 40 students consisting of 18 male students and 22 female students.

Techniques of Data Collection

Data collection techniques describe changes that occur when an act of the study. Data collection techniques in this research are quantitative and qualitative data obtained from each cycle. In this study, quantitative data were obtained by measuring the level of mastery learning students while the qualitative data were obtained from observations of the activities of teachers and students' activity during the learning process. Two techniques used by researchers to collect data that were test and non-test techniques.

Data Analysis

To analyze the success rate or the percentage of successful students after the learning process of each cycle is done by giving an evaluation form about the written test at the end of the cycle. This analysis was calculated using simple statistics, namely: Researcher summation value obtained by the students, which is further divided by the number of students in the class.

Indicators of Success

The Indicators of success in the study of this classroom action research is: If the number of fourth grade students of Karangasem 01 Elementary School thoroughly succeeded as much as 85% by KKM predetermined ≥ 70 .

Research Procedure

This research is a classroom action research. The study was planned into two cycles, if it is not successful, it will be continued in the next cycle. This model used the model which was according to Kemmis and Mc Taggart using reflection spiral systems consisting of several cycles. The model Kemmis and Mc Taggart explained that in one cycle or round consists of four components: planning (planning), action (acting), observation (observing) and reflection (reflecting).

RESULTS AND DISCUSSION

The results

1. The results of the first cycle

Based on the research I cycle first meeting and the second meeting that the application of the method of playing the role of Islam in the academic culture aided learning Citizenship Education in primary schools should be continued in the second cycle because it has not reached an indicator of success in the study of classical completeness 85% by KKM 70. Shortcomings during learning process of the first cycle will be fixed on the second cycle while using the method of playing the role of assisted Islamic academic culture. Deficiencies that need to be fixed are as follows: From the observation of teacher activity, it was obtained a score of 40 with a value of 71.4% both criteria. The teacher is not maximized in applying the method of

playing the role assisted by the academic culture of Islam. From the observation of student activity, it was obtained a score of 27 with a percentage value of 67.5% with good criteria, but in answering the question of individual teachers is not visible. From the results of student achievement, it was found that in classical learning completeness reached 70%. But the results of the acquisition value gets highest and lowest values decreased, ie the highest value and lowest 90 50.

Efforts should be made to the next cycle so that an increase learning outcomes include: Strived for teachers only act as a facilitator, so that learning can be in accordance with the teaching methods play a role, so that students become more active in participating in learning activities. Teachers provide more intensive guidance to students with low learning achievement, so they do not miss the following study at the next meeting.

2. The results of the second cycle

Based on the results of research on the second cycle the first and the second meeting that the application of the method of playing the role of assisted Islamic academic culture in learning Citizenship Education in primary school, the material of globalization in the fourth grade of Karangasem 01 Elementary school have achieved success indicators of research as for the results of the second cycle as follows: The process of learning has already referred to the plan that has been designed. Records obtained in the second cycle, students are able to work with members of the group. The results of the observation by observers II to the activity of teacher implementation to apply the method to play a role with an average score of 88.39%, or in the category of "very good". This shows that good teachers had already implemented the actions in implementing learning through role-play method. This is because the teachers are really trying to implement the methods play a role. Citizenship Education Learning with the methods of playing a role aided Islamic academic culture had been implemented properly. Steps of instructional activities were carried out systematically. The results of formative tests showed that students achievement increased compared to the initial observation. Number of students pass the study in cycle II reached 87.5% that is able to achieve the targeted classical success criteria as much as 85%.

DISCUSSION

The Application of the role play method of Islamic in the academic culture in learning Citizenship Education in elementary school in fourth grade on materials globalization in Karangasem 01 Elementary School Sayung which has been conducted in two cycles has increased from cycle I to cycle II. In the first cycle, it was obtained the highest score of 90 and the lowest value of 55 with an average grade of 72.3. While on the second cycle increased with the acquisition of the highest value and the lowest value 95 55 with an average grade of 80.8. Besides the classical learning completeness of the first cycle that only gets 70% increased to 87.5% in the second cycle. An increasing students' achievement is also influenced by the activities of teachers and students during the learning process. In the first cycle of activity the teachers and students get good criteria while on the second cycle of activity of the teachers and students get very good criteria. So it can be concluded that increasing student achievement is influenced by the ability of teachers to teach and students' activity during the learning process.

Table 1. Summary of the Value Achievement

Learning Achievement	Cycle I	Cycle II
Succeed	28	35
Not Succeed	12	5
Number of Students	40	40
Average	72.3	80.8
Percentage of Success	70%	87.5%

While the result of increasing in the classical learning mastery of students can be seen in the figure below:

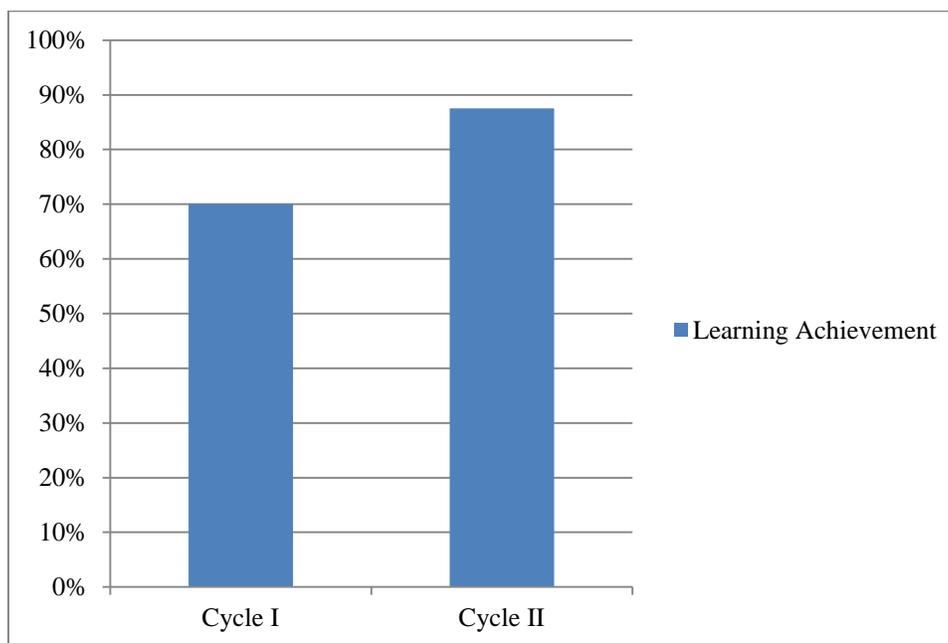


Figure 1. The Histogram of Students Learning Mastery

Based on the above picture, it can be seen an increase in students' mastery learning gradually. In the first cycle, it gained an average of 72.3 with mastery learning as much as 70% and from 40 number of students who succeeded as many as 28 students and didn't succeed 12 students, this means that achievement is still below the Minimum completeness Kriteria (KKM) as determined by Karangasem 1 Elementary school is 70, while in the second cycle was obtained by an average of 80.8% with learning completeness of 87.5% and from 40 number of students who completed a total of 35 students and who did not complete as many as five students, so this study was successful according to the indicator. This shows that from the first cycle to the second cycle student achievement increased and it meets the minimum completeness criteria (KKM) set by Karangasem 1 Elementary school Sayung that students pass the study if the scores ≥ 70 with classical completeness of 87.5% and 12.5% are still do not meet the KKM due to factors of children who did not master the material, the low intellectual level of the child makes it difficult to be understood so that it effects on student learning.

An increase in the classical learning completeness of students of the subject matter shows that by applying the method of learning to play the role of Islamic in the academic culture in Civics learning can improve students' achievement, so it shows that the subject matter has been able to achieve the expected success indicator.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research conducted during two cycles in Karangasem 1 Elementary School Sayung on the subjects of Civics on the globalization material, can be summed up as follows: the Method of role play assisted by Islamic academic culture can improve student achievement. This is evidenced by the increase in the percentage of mastery learning which reached 70% in the first cycle to 87.5% in the second cycle.

Researchers gave some suggestions as follows: In the teaching methods, playing a role requires considerable time, so it takes skill of teachers in organizing and dividing the time available so that learning activities can take place optimally. In using the method of playing the role, the dialogue should be adjusted according to the material that will be taught. Evaluation was given after playing the role should be adjusted to the scenario that was exhibited, and more creative teachers should ask the students so that students can be active in learning.

REFERENCES

1. Arifin, Z. (2009). Evaluation of Learning Principles, Techniques, Procedures. Bandung: Youth Rosdakarya.
2. Fathurrohman and Wuri Wuryandari. (2011). Citizenship Education Learning Primary Schools. Yogyakarta: Nuha Litera.
3. Mulyasa, E. (2006). Enhanced Curriculum Development Competence Standard and Basic Competence. Bandung: PT Youth Rosdakarya.
4. Purwanto, N. (2009). Principles and Techniques of Teaching Evaluation. Bandung: PT Youth Rosdakarya.
5. Sanjaya, W. (2009). Standard Process Oriented Learning Strategy Education. Jakarta: Kencana.
6. Sudjana, N. (2010). Teaching and Learning Outcomes Assessment. Bandung: PT Youth Rosdakarya.
7. Suyanto. (2009). Innovative Learning roam. Sidoarjo: Masmedia Buana Library.
8. Taniredja, T. (2010). Class Action Research for Teacher Professional Development. Bandung: Alfabeta.
9. Trianto. (2010). Designing Innovative-Progressive Learning Model: Concepts, Policy, and On Implementation of SBC. Jakarta: Kencana

Natural Science Concept Learning Through SETS Model for Developing Science Literacy

Arrofa Acesta

*Elementary School Teacher Education Department, Faculty of Teacher Training Education
University of Kuningan*

Corresponding author: arrofa_acesta@yahoo.com

Abstract: Natural Sciences is one of the subjects that are taught in the PGSD with the aim of finding out about the science related to the universe systematically and master of science is based on facts, concepts, principles, process discovery and has a scientific nature in everyday life. From the analysis of learning science at the Kuningan University PGSD approximately 72.8% (485 people) had a good value and approximately 27.1% (181) IPA value less good student. Thus the process still required improved understanding of students in the subject of science Efforts to improve the understanding can be done by using model SETS. (Science Environment Technology Society) SETS approach emphasizes the learner's learning to know, learning to do, learning to be, learning to live together. active student learning and faculty serves as a facilitator. The research method used in this study is a research and development

INTRODUCTION

Natural Sciences (IPA) is one of the subjects that are taught in the Program PGSD with the aim of finding out about the science related to the universe systematically and master of science is based on facts, concepts, principles, process discovery and has a scientific nature in everyday life. Natural Science is a science clumps that have special characteristics that natural phenomena are factual (factual) either reality (reality) or event (event) and causal relationships. (Asih, 2014).

Teaching and learning in higher education, in general, the students only expect information from lecturers without even trying to find information and learn on their own experiences. Though the time provided for the teaching and learning process is very short. Subject of Natural Sciences {IPA) received general terms with the concept, ranging from simple concepts to the more complex concept that requires a true understanding of the concepts that have been learned previously.

The number of concepts that the student should learn in a relatively short time to make the lessons learned are considered difficult, so most of the students just learning process is brief and practical that is by memorizing than to have to dig and find the concept itself from the basic concept that has been given by lecturers. Learning monotonous boring and students often become passive.

Minister of education and culture Regulation No. 49 of 2014 on the national standards of higher education, stating that the characteristics of interactive learning is holistic, integrative, scientific, contextual, thematic, effective, collaborative and learner-centered mahamahapeserta. (Permendikbud, 2014). The learning model SETS (Science Environment Technology Society) in accordance with the learning objectives in accordance with the Regulation of the Minister of the SETS is one concept of meaningful learning for students, because students are invited to directly study the science of the impact of technology on the environment, (Asih, 2014). Goal SETS teaching is how to make so that students can conduct an investigation to gain knowledge related to science, environment, technology and society are linked. In other words, students were taken on the atmosphere that is close to real life so it is expected to develop the knowledge they already have to be able to resolve the problems expected to arise around his life.

From the observation of learning science at the University Brass PGSD approximately 72.8% (485 people) had a good value and approximately 27.1% (181) IPA value less good student. Thus the process still required improved understanding on subjects mamahasiswa IPA. Efforts to improve the understanding can be done by using model SETS. Mahasiswauntuk SETS approach emphasizes on learning to know, learning to do, learning to be, learning to live together. mahamahasiswaaktif in learning and faculty serves as a facilitator.

Based on the above explanation, the authors are interested in developing a proposal entitled "Concepts membelajarkan IPA by Using Model SETS (Science Environment Technology Society) to Develop Science Literacy".

1. Concept Learning Success or failure of the learning process is determined in part by private educators and learners. Higher Education as an educational institution to help develop the potential of students through the learning process. Facilities, equipment, media, resources, and education personnel are facilitators who help, encourage and guide students in the learning process in order to achieve success in learning.
2. Learning is always associated with the changes, which include both individual and overall behavior that only happens on some aspects of the individual's personality. According Whiterington understanding of learning is "..... a change in personality, manifesting it self as a new pattern of responses roomates may be a skill, an attitude, a habit, an ability, or an understanding" (Learning is a change in personality, as dimanifestasikan in mastery-mastery change response patterns or new behavior that turns into a change of skills, attitudes, habits, abilities or understanding). While Winataputra (2000) states that, "Learning should allow changes in individual behavior, the change must be the fruit of experience, and the changes that occur in individual behavior".

The process of learning is directed towards a goal, a process done through an experience, see, observe and understand something that is studied to obtain results that are determined through guidance, explanations, help and encouragement of educators in teaching.

Teaching is something that causes students to learn and acquire the knowledge he had hoped, skills, and also good ways of life in society. Teaching is not just delivering course material, teaching is all activities and actions pursued by the lecturer to the learning process in accordance with what has been formulated. For that lecturers can facilitate the learning process. lecturer, mahamahasiswa and the subject matter as well as the media are the main elements that are directly involved in the learning process

3. Concepts IPA. Rosser stated that the concept is an abstraction that represents a class of objects, events, activities or relationships that have atribut-the same attributes (Dahar1989)

Understanding the concepts of Natural Sciences, (IPA) is a very important thing in learning science. The function of teaching them is to understand the concepts of science and interconnectedness and its application to solve problems in everyday life and technology, form positive attitudes towards science, which were interested to learn science more feeling of beauty and order behavior of the universe, the ability IPA explain natural events and implementation role in technology.

Klausmeier (Dahar, 1989) hypothesized that there are four levels of achievement concept which includes the level of concrete, the identity level, the level klasifikatori, and a formal level, the concepts taught in school in general meets the requirements set forth by Klaiusmeier, a description of the four levels of achievement of these concepts as follows:

- a. The level of Concrete

We can mention that one has reached a concept at the level of the concrete when the man knows a thing has faced before. A little boy who never get the chance to play with toys and she made the same response when he saw the game he again has reached the level of concrete. To achieve concrete concepts students must pay attention to it and be able to distinguish it from the stimuli in the environment.

- b. Level of Identity

Levels of identity a person would recognize an object at the time (1) if the person has spatial orientation (spatial orientation) different to that object and (2) if the object is determined by means of the senses (sensor modality) of different example yourself with a ball in a way touch the ball was not seen it, in addition to the three operations needed for the attainment of concrete that is: pay attention to discriminate and remember, the student must be able to hold a generalization to recognize two or more identical forms of the same object are members of the same class

- c. Level Klasifikatori (Clasifikatory)

At klasifikatori level, students get to know the equation (equivqlence) and two different instances of the same class. Although students were not able to determine criteria and determine the attributes that can represent concepts, it can classify examples and non-examples.

- d. Level Formal

To achieve the concept on a formal level, students should be able to determine the attributes that limit the concept. We can conclude that the student has reached a concept on a formal level, when

students were able to name the concept in attributes criteria, discriminate and member attributes that limit and evaluate and provide examples and non examples basis of the concept.

Mastery of science concepts can be shown in many ways, students master the concept of science can have a good understanding of the concept and be able to apply it in daily life. Flavel in Dahar (1989) stated that the understanding of the concepts can be divided into seven dimensions: 1) Attributes, every concept has different attributes. The attributes can be either physical or functional form, 2) Structure, affiliated or incorpora- Concerning the way of those attributes. There are three kinds of structures are recognized: The concept of conjunctive, the concept of disjunctive and relational concept, 3) abstraction, namely the concepts of visible and concrete, 4) Inclusiveness, (Inclusiveness) is shown in the examples involved in the concept, 5) Generality, which, when classified concepts may differ in position superordinal or subordinate, 6) accuracy, which is a concept as to whether there is a set of rules to distinguish examples of noncontoh that concept and 7) Strength (power), the strength of a concept defined by the extent to which people agree that it is an important concept

4. Approach Technology Environment Science Society (SETS)
SETS approach learning is learning that allows students to understand the interrelationships between science, thinking, environment, and society. How do students get to know the natural phenomenon came to be known as the science and they take the benefits to meet the ambitions of humanity in the form of technology to gain convenience or expediency in the process of individual and community life.

SETS approach in the discussion prioritize linkages between topics with the everyday life of students / learners, in the sense of taking and attention to the problems that exist in the environment that is directly in contact with them. In addition, students can also discuss current events contained in the media to become learning materials in order to find alternative solutions SETS noticed. Science teaching undertaken by teachers is generally in the form of learning in the classroom by using conventional methods, and the teacher is centered. Thus, more appropriately called the teaching, not learning because only move / transfer of knowledge from the teacher to the learner. Learning science attractively packaged based cooperative learning will produce different results with conventional and traditional methods, so that the output from the learning process of really good quality in terms kognitif, affective, and psychomotor.

Approach SETS (Science, Environment, Technology, and Social) can be an alternative in science learning. SETS able to develop an approach to materials science subjects by connecting how to use science in the form of technology in meeting the needs of society require thinking as well as the implications on the environment both physically and mentally. Thus, SETS approach is expected to broaden the students understand the nature of science, environment, technology, and society, and how the development of science can affect the environment, technology, and society as a reciprocal (Binadja, A., 2010).

5. Science Literacy. Dimensions in science literacy.

Scientific literacy is one domain of PISA studies. In the context of PISA, science literacy is defined as the ability to use scientific knowledge, identify QUESTIONS and draw conclusions based on the evidence, in order to understand and make decisions regarding the nature and changes made to nature through human activity

The definition of scientific literacy is looked multidimensional scientific literacy, not only the understanding of scientific knowledge,. PISA 2000 and 2003 set three major dimensions of scientific literacy in the measurement, the competency / science process, content / knowledge of science and science application context. In the 2006 PISA science literacy development dimension into four dimensions, namely additional aspects of student attitudes to science

- a. Aspects of context

PISA assesses scientific knowledge relevant to science education curriculum in the participating countries without limit ourselves to the general aspects of the national curriculum of each country. PISA assessment is framed in general life situations are more extensive and not limited to life in school. Those items on the PISA assessment focuses on the situation related to the individual, families and groups of individuals (personal), related to the community (social), as well as related to the life of a cross-country (global). Context PISA cover the areas of application of science in setting personal, social and global, namely: (1) Health; (2) natural resources; (3) the quality of the environment; (4) hazard; (5) the development of cutting-edge science and technology.

b. Aspects of content

Content science refers to the key concepts of the science needed to understand natural phenomena and changes made to nature through human activity. In this regard, PISA does not specifically limit the scope of science content in the knowledge that only the science curriculum, but also includes the knowledge obtained through sources other available information. Science content selection criteria are as follows:

- 1) Relevant to the real situation,
- 2) is an important knowledge that long-term use Based on these criteria, then
- 3) have the appropriate knowledge to understand the nature and meaning of experience in the context of personal, social and global, which is taken from the field of biology, physics, chemistry and earth science and space.

c. Aspects of Competence / Process

PISA looked at science education serves to prepare future citizens, that citizens are able to participate in society increasingly influenced by the progress of science and technology. Therefore, science education should develop students' ability to understand the nature of science, scientific procedures, as well as the strengths and limitations of science.

Students need to understand how scientists retrieve data and propose science-explanation explanation of the phenomena of nature, get to know the main characteristics of scientific investigation, as well as the types of answers that can be expected from science.

PISA set three aspects of the competency component / process following science in the assessment of scientific literacy, that is, identifying scientific questions, explaining phenomena scientifically and using scientific evidence. Cognitive processes involved in science competencies include inductive reasoning / deductive reasoning, critical thinking and integrated, changing representation, construct explanations based on data, using a model of thinking and using mathematics. To build the capacity of scientific inquiry on self-learners, which is based on logic, reasoning and critical analysis, the competence of science in PISA are divided into the following three aspects:

1) Identify scientific questions

Scientific questions are questions that demand answers based on scientific evidence, which also includes also recognize questions that may be investigated scientifically in a given situation, seek information and identify key words and get to know the features of scientific inquiry, for example, what things should be compared, what variables which must be changed and controlled, what additional information is needed or what action should be done so that relevant data can be collected.

2) Explaining phenomena scientifically

These competencies include Applying knowledge of science in a given situation, describing the phenomenon, predicting the change, recognition and identification of description, explanation and prediction accordingly.

3) Using scientific evidence

These competencies demanded mahasiswa maknai scientific findings as evidence for a conclusion. It also said the evidence and the decision with the words, diagrams or other representations. In other words, students should be able to describe clear and logical relationship between evidence and conclusions or decisions.

4) Aspects of Attitude

To help students gain knowledge of engineering and science, main purpose of science education is to help students develop student interest in science and support scientific investigations. Attitudes to science plays an important role in decision science students to develop their knowledge further, pursue a career in science, and using concepts and scientific methods in their lives. By doing so, the view will PISA science ability not only proficiency in science, as well as how their properties will be science. The ability of a person of science in which includes certain attitudes, such as trust, motivated, self-understanding, and values.

Science Literacy Rate

Scientific literacy can be developed through discourse in textbooks or textbook science. In the examples given problem in one part of the textbook or textbooks can be known dimensions measured in the questions that accompany the text and learning activities. Special literacy in PISA with three dimensions indeed have high demands in the matter-because. Each question represents a three-dimensional (example-process-context).

There are two things needed to be considered in assessing the level of scientific literacy learners. First, the assessment of student's scientific literacy does not intended to distinguish a person's literacy or not. Second, the achievement of scientific literacy is a continuous process and continue to continue to grow throughout human life. Thus, science literacy assessment for learning in schools only see the "seeds of literacy" in self-learners, not an absolute measure of science and technology literacy learners.

Scientific literacy can be divided into three levels. First, functional literacy which refers to a person's ability to relate to basic human needs such as food, health and protection. Second, civic literacy which refers to a person's ability to participate wisely in the social field on issues related to science and technology, the Third, which covers the cultural literacy awareness in the scientific endeavor and the perception that science is a major intellectual activity.

More details in the assessment of scientific literacy distinguished several levels in science literacy is more suited assessed and applied during learning because of its simplicity to be applied to instructional purposes. Several levels of instructional question is (a) scientific literacy (b) nominal scientific literacy (c) functional scientific literacy (d) conceptual scientific literacy (e) multidimensional scientific literacy. Whether or not students reach the highest level of scientific literacy depend on interesting topics of their interest. Attitude aspect added to the scientific literacy domain, and suggested the need to measure the ability to use scientific knowledge in analyzing texts or articles. (Elsy Zuriyani, 2016)

REFERENCES

1. Asih, Widi Wisudawati 2014. Metodologi Pembelajaran IPA, Bumi Aksara, Jakarta
2. Binadja. 2010. *Pendekatan Bervisi SETS*. (online) <http://www.penulislepas.com.print>. diakses tanggal: 28 Pebruari 2016
3. Dahar, Ratna Wilis, 1989, *Teori-Teori Belajar*, Jakarta, Erlangga
4. Nusa putra, 2013, *Reasearch & Developmmet*, PT Rajagrafindo, Jakarta
5. Peraturan menteri pendidikan dan kebudayaan no 49 tahun 2014 tentang standar nasional pendidikan tinggi
6. Suparman Atwi, 2014, *Desain Instruksional Modern*, PT Erlangga Jakarta
7. Sutapa Panggung, 2013, *Pengembangan Model Pembelajaran Pendidikan Jasmani Berbasis Kinestetik Untuk Anak Prasekolah*. Disertasi, Universitas Negeri Yogyakarta
8. Wahab.AA (2009) , *Metode dan model model Mengajar IPS Alfaeta*, Bandung
9. Wiranataputra, Udin S (2000) *Strategi Belajar Mengajar*, Universitas Terbuka Jakarta
10. Yeni Hendrayani, 2011. *Pengaruh Pembelajaran IPA Terpadu Terhadap Pengembangan Literasi Sains MahamahasiswaSMPN 3 Cimahi dan SMPN 1*
11. Zuryani, Elzy, *Literasi Sain Pendidikan*, Kemenag. go.id/file di akses 13 Maret 2016

Strengthening Strategies Language Learning and Insightful Indonesian Literature Budai Assisted Android

Leli Nisfi Setiana ^{a)} and Aida Azizah ^{b)}

*Indonesian Language and Literature Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

^{a)}Corresponding author: lelisetiana@unissula.ac.id

^{b)}aidaazizah@unissula.ac.id

Abstract: Developments in the field of information, which grew rapidly in the 20th century, bringing changes in the learning activities are no exception in learning Indonesian language and literature. The phenomenon would provide fresh air primarily on the use of instructional media as a strategy to generate a quality learning materials Indonesian language and literature. The strategy can be applied in teaching Indonesian language and literature materials produce a lot of material that can be applied assisted android. As an example of the strategy of writing scientific papers and dramatic performances that are likely requires publication via android, so that students can work *terterima* in the wider community through android application. So that they are easy to access whenever and wherever they are. To achieve this would need a sophisticated learning strategy that is based learning strategies BuDAI. BuDAI based strategies that have been implemented in Unissula since 2005 as the center of Islamic education culture that is composed of four pillars. The fourth pillar is the movement of the prayers, the movement of Muslim dress, *thaharah* movement. Implementation of strategies learning Indonesian language and literature based on the three pillars of BuDAI assisted android would be able to appreciate the work of students in terms of both *rukhiyah* and mastery of science and technology on the basis of Islamic values. Thus, the application of learning strategies based language and literature *Indoneisa* BuDAI assisted android will make the results of the empirical, qualified and capable of competitiveness along with the times.

INTRODUCTION

The term learning strategies stated various types of learning activities, such as the Discussion of the group, reading, case studies, worksheets, and group project collaboration. A series of good learning materials consist of a lot of strategies and procedures that are generally used by teachers on students. When designing learning, it is important to develop learning strategies used. It allows knowledge to facilitate the learning process. educational strategies at Sultan Agung Islamic University Academic formulated by the name of Islamic Culture (Budai), which essentially contains *ruhiyah* and strengthening science and technology. The reinforcement *ruhiyah* is strengthening faith, worship, and morals are packaged in civilizing movement which includes movement of the prayers, the movement of Islamic dress, *thaharah* movement, movement exemplary hospitality Islamic movement, and movement quality of life. While the strengthening of science and technology consists of *iqra* spirit, developing science and technology on the basis of Islamic values, Islamic Society, and appreciation of science and technology. The challenges faced by lecturers in learning language and literature at the present era has undergone many updates that should be able to produce a good presentation of learning materials between teachers and students. *Sekait* with these conditions, it is necessary the development of the atmosphere in the world of education that is largely influenced by the development of technology. One form of technology that is allowed to be applied in a learning strategy is android application.

DISCUSSION

Strengthening the Learning Strategies of Language and Literature Indonesia Insightful Budai

In the context of learning, the strategy is intended as a lecturer efforts in creating an environment system that allows the learning process so that the learning objectives that have been formulated to be achieved and effective. Therefore, a teacher is required to have the ability to manage the general components of learning so intertwined relationship between components of learning intended function. Strategy means the selection pattern learning activities being taken to achieve the objectives effectively. To carry out the task in a professional manner, lecturer requires insight steady about the possibilities of learning strategies teaching appropriate to the learning objectives that have been formulated, both in terms of the effects of instructional, learning objectives are formulated explicitly in the learning process, and in terms of the effect Bridesmaids for example, the ability of critical thinking, creativity, openness after students attend small group discussions in the learning process (Sabri, 2007: 1) .Uno (2008: 1) express some opinions of experts about learning strategies as follows. a) The learning strategy can be defined as any activity that is chosen, namely to provide facilities or assistance to students towards achieving specific learning objectives (Kozna, 1989). b) The learning strategy is a means chosen by the teacher to deliver instructional methods in a particular learning environment. Learning strategy shall include the nature of the scope and sequence of learning activities that can provide the experience of learners (Gerlack and Ely, 1980). c) The learning strategy, consisting of all the components of learning materials and procedures or stages of learning activities / or used by the teacher in order to help learners achieve specific learning goals. Learning strategy is not just limited to the procedure or the stages of learning, but also includes material settings or learning program package will be presented to the learner (Dick and Carey, 1990). d) The learning strategy is the choice of a variety of specific types of exercises that correspond to the learning objectives to be achieved. Any behavior that is expected to be achieved by learners in learning activities should be practiced (Groppper, 1990). Based on expert opinions above with regard to the concept of learning strategies can be concluded that learning strategies are ways to be selected and used by teachers to deliver learning materials that will allow learners to receive and understand the learning materials, which ultimately learning objectives can be mastered in end of the lesson (Uno, 2008: 2).

BudAI

"Building a Generation Khaira Ummah" became a central theme in the education movement Sultan Agung Islamic University (Unissula). While the Budaya Akademik Islami (BudAI) which was declared on August 18, 2005 is as educational strategy. With the great theme, then our education paradigm changed completely, that we must return to education on the basis of values, the values of Islam. This means that we must build a new paradigm in our education. The new paradigm requires developing science and technology to carry out the reconstruction of the science on the basis of Islamic values so that future development direction of science in accordance with the values of Islam. This is motivated condition of education in Indonesia is practically increasingly materialistic and have resulted in the destruction of the morals of the nation. In practice, our current educational purposes only emphasis on the mastery of science and technology and skill, education and even more are expected to produce graduates ready to work, so that character education is almost untouched. To that end, at the Islamic University of Sultan Agung (Unissula) has determined that the main task of education is to give birth "Generation Khaira Ummah" the best generation potensikan God is able to lead the world. For the next generation, as mentioned, it is operationally education is educating people taqwa, highly knowledgeable and congregation through the Budaya Akademik Islami (BudAI).

If we look at both of these can be obtained a conclusion that language learning strategies and literature must contain a description of the methods / procedures and techniques used during the learning process. In other words, learning strategies have a broader meaning than the methods and techniques. That is, methods / procedures and techniques of learning is part of the learning strategy. Sekait with reinforcement learning strategy insightful Budai, then it should be the implementation of learning the language and literature instill the values contained in the strategy of education Cultural Academic Islami (Budai), namely strengthening ruhiyah is the strengthening of faith, worship and morality are packed in motion acculturation that includes prayer movement congregation, the movement of Islamic dress, thaharah movement, the movement pattern, the friendliness of the Islamic movement, and movement quality of life. While the strengthening of science and technology consists of spirit iqra, develop science and technology on the basis of Islamic values, Islamic Learning Society, and appreciation of science and

technology. Thus creating the strengthening of the values of Islamic education in the application of learning strategies language and literature.

Android Apps For Education

Android is a Linux-based operating system, which belong to the open source operating system designed for mobile devices with touch-screen smart phones and tablets, for example. What is meant by open open source operating system that is an operating system with open source that allows the user to develop it openly. It offers a great opportunity for application developers and makers of applications. Android was originally a specially designed operating system for smart phones and tablets, developed also be additional applications on televisions, game consoles, digital cameras, and other electronic devices. Android is open has prompted the emergence of a large number of the application developer community to use open source code as the basis for the project of making applications, by adding new features for advanced users or operate Android on the device which was officially released by using another operating system. Android applications for education include 1) Words, Words, Words is a free application vocabulary. Words, Words, Words can be used such as using flashcards to familiarize yourself with words, or with a model of the quiz. Applications Words, Words, Words can be applied in teaching language and literature, for example in the matter of diction and writing poetry. 2) Grace includes a new application, released in March 2013 by Mobispectra Technologies. We can arrange all educational videos into one place through the application of Grace. Grace applications can be implemented as a language and literature learning strategies eg on practical learning to speak and study drama.

The advantage of using these applications in addition to being a learning strategy is that we can open the videos in the app quickly. If normally you will be directed to the outside when the couple will open a YouTube video, it is not so with Grace. Application Grace plays your video through the YouTube application, but embedded into the application Grace. So make sure you have installed the app on your Android device. It also allows you to open Wikipedia in the application to find relevant information quickly. The use of Android as a learning strategy can be maximized and truly support the learning process. Additionally, lecturers should also be able to overcome the negative impact of the use of Android as a learning medium, for example by monitoring the students to use existing applications on Android through Budai insight that the goals do not go off into an undesirable direction and corresponding values of Islamic education. By doing so, learning objectives can be achieved and the learning process will not be interrupted. A teacher also should do a combination of the models of teaching that remain creative.

CONCLUSION

The importance of utilizing technology weapons development to promote education of our country. Must be very clever to choose the media that will be used in accordance with the purpose of learning. strategy should be able to create or make the learning itself not only as consumers. Lecturers should be able to maximize the use of Android in learning as well as teacher or teaching calaon we have to study the information and communication technologies so that we do not miss the very rapid development.

REFERENCES

1. Amadi, Mukhsin. 1990. *Strategi Belajar Mengajar Keterampilan Berbahasa dan Apresiasi Sastra*. Malang: YA3 Esten
2. Calkins, L. M. 1983. *Lesson from a Child: on the Teaching and Learning of Writing*. Portsmouth, NH: Heinemann.
3. Calkins, L. M. 1986. *The Art of Teaching Writing*. Portsmouth, NH: Heinemann.
4. Mohamad, Nuridin dan Hamzah B. Uno. 2011. *Belajar dengan Pendekatan Pembelajaran, Aktif, Inovatif, Lingkungan, Kreatif, Efektif, Menarik*. Jakarta: Bumi Aksara.
5. Palmer, B.C., et. al. 1994. *Developing Cultural Literacy through the Writing Process*. Boston: Allyn and Bacon.
6. Tony. 2012. 5 Aplikasi Android buat Belajar Pelajaran Sekolah.<http://www.aplikanologi.com/edukasi/5-aplikasi-android-buat-belajar-pelajaran-sekolah/>. Diunduh tanggal 20 September 2016.
7. Unisula.<http://unisula.ac.id/budaya-akademik-islami-budai/> diakses pada hari Kamis 20 Mei 2016.

Problematika Penggunaan Estetika Bahasa Pada Model Publikasi Wacana Iklan Politik Pilkada

Fahrudin Eko Hardiyanto

*Dosen Tetap Universitas Pekalongan
Mahasiswa Program Doktor Prodi Ilmu Pendidikan Bahasa Indonesia PPs Unnes*

Corresponding author: fahrudineko@gmail.com

PROLOG

Bahasa memiliki makna yang sangat penting dan strategis dalam dunia politik. Bahasa menjadi alat dan sarana yang efektif untuk menanamkan konsepsi ideologis dan kepentingan-kepentingan politik lainnya, alat untuk dapat merebut dan mendapatkan, serta mempertahankan sebuah jabatan dan kekuasaan. Bahasa dimanfaatkan untuk meraih simpati, menarik perhatian, dan membangun persepsi publik terhadap suatu ide, pemikiran, dan topik sebuah persoalan. Selain itu melalui bahasa pula dapat dimanfaatkan untuk menggerakkan massa, dan mengubah pola pemikiran masyarakat.

Berbagai kepentingan politik yang berkaitan dengan peran strategis bahasa dapat diwujudkan melalui aneka ragam bentuk, salah satunya adalah model iklan kampanye politik. Menurut Simamora (2014:3), dalam dunia politik bahasa digunakan sebagai sarana politik. Melalui bahasa para politisi menyampaikan aspirasi, visi dan misi mereka kepada masyarakat. Bahasa politik adalah bahasa yang digunakan sebagai alat politik, misalnya bahasa-bahasa slogan atau propaganda, bahasa pejabat-pejabat pemerintah dalam berpidato atau bahasa yang digunakan dalam pidato-pidato pemimpin partai dan tulisan-tulisan yang berbau politik yang tentu saja semua bahasa yang digunakan itu mengandung maksud atau tujuan.

Bahasa propaganda digunakan para politisi untuk mempengaruhi, membujuk dan meyakini dengan menggunakan kata-kata atau pesan yang mempesona yang dapat menarik simpati dan empati khalayak sehingga mau mengikuti apa yang diharapkan para propagandis. Bahasa propaganda merupakan bahasa yang digunakan propagandis sebagai alat propaganda dalam berpolitik. Mereka menggunakan bahasa propaganda dalam bentuk persuasi untuk mempengaruhi masyarakat. Para politisi menggunakan bahasa sebagai media utama untuk menyampaikan pesan propaganda kepada masyarakat luas. Tanpa adanya bahasa, pesan propaganda tidak dapat disampaikan para propagandis kepada publik atau pihak yang menerima pesan. Melalui bahasa para kandidat atau caleg dapat mempengaruhi atau membujuk masyarakat dengan pesan-pesan yang disampaikan secara tertulis maupun lisan. Slogan para caleg atau kandidat disampaikan kepada masyarakat dengan menggunakan bahasa sebagai medianya. Bahasa yang digunakan berbentuk wacana, yakni tulis. Wacana tulis dapat berbentuk baliho, spanduk, dan Koran atau selebaran lainnya. Wacana iklan sangat menarik untuk dibaca, dipahami dan bentuknya persuasi sehingga iklan dapat mempengaruhi pikiran masyarakat. Hal tersebut terdapat pada wacana iklan pemilihan Bupati/Wakil Bupati, dan Walikota/Wakil Walikota di Jawa Tengah tahun 2015. Wacana yang disampaikan para caleg atau kandidat dalam iklan tersebut terkandung kebijakan-kebijakan politik yang mampu merangsang respons masyarakat.

Maryani (2014:2) memaparkan bahwa iklan politik adalah semua bentuk aktivitas untuk menghadirkan dan mempromosikan individu maupun partai mereka, secara nonpersonal melalui media yang dibayar oleh sponsor tertentu, berisikan muatan-muatan politik, seperti berisikan profil pribadi tokoh elit partai tersebut yang nantinya akan membangun minat pilih masyarakat akan diberikan kepada calon tersebut yang lebih dikenal masyarakat sehingga nantinya suara atau hak pilih masyarakat tersebut diberikan kepada orang yang sering melihat iklan tersebut.

Pilkada yang sangat strategis nilainya, diharapkan mampu berdampak positif dan juga strategis dalam melahirkan atmosfer yang kondusif, sehat, dan edukatif dalam kaitannya dengan misi pembangunan nilai-nilai edukasi dan menguatkan karakteristik yang mulia dalam kehidupan bermasyarakat, berbangsa, dan bernegara.

Melalui pemanfaatan bahasa dalam iklan politik diharapkan mampu mengontrol dan mengendalikan masyarakat dari sikap-sikap destruktif baik yang berwujud verbal, yaitu masalah-masalah yang terjadi dalam masyarakat yang bersumber dari ucapan dan atau tulisan, maupun yang berwujud non-verbal yaitu tindakan fisik yang kerap juga dipicu oleh penggunaan bahasa yang tidak sesuai dengan moralitas, etika, dan tata karma dalam suatu masyarakat.

Realitas Empirik

Sebagai salah satu dari pilar demokrasi, partai politik memiliki tugas yang mulia dalam momentum Pilkada khususnya untuk ikut membangun kondusifitas masyarakat dan mengedukasi masyarakat melalui pilihan sikap bahasa yang digunakan sebagai media komunikasi dengan masyarakat, baik langsung maupun melalui media kampanye (media massa cetak dan elektronik). Meskipun pada realitasnya, partai politik dan unsur yang terlibat dalam proses Pilkada kerap kali mengabaikan misi ini. Masih banyak kita jumpai pilihan bahasa iklan politik bersifat destruktif, tidak mendidik masyarakat, dan cenderung memicu konflik horizontal karena saling serang atau terlalu menonjolkan kelompoknya sendiri atas nama tujuan politik dengan cara membenarkan semua cara untuk meraih tujuan. Pada aspek diatas, penggunaan bahasa sebagai media komunikasi menjadi persoalan. Komunikasi politik selalu terkait dengan penggunaan bahasa yang mengarah pada penyampaian pesan, himbauan, harapan, permintaan, dan keinginan untuk pengaruh mempengaruhi (Hardiyanto,

Proses politik pengaruh mempengaruhi dalam iklan kampanye Pilkada juga tidak terlepas dari adanya kamufas politik. Politik tidak lagi dimaknai sebagai sarana untuk mewujudkan kebaikan bersama namun dipraktikkan sebagai usaha untuk meraih kekuasaan semata dengan jalan mengintervensi dan memanipulasi. Misi edukasi dan pencerahan masyarakat, sama seperti ungkapan jauh panggang dari api. Misi mendidik masyarakat kurang mampu direalisasikan oleh kekuatan politik, dan justru sebaliknya, politik ikut berkontribusi menciptakan istilah dan ungkapan dengan pilihan kata yang kurang santun, kasar, destruktif, dan berpotensi menjadi hal ikhwal terjadinya konflik di masyarakat.

Bahasa menunjukkan cerminan pribadi seseorang. Karakter, watak, atau pribadi seseorang dapat diidentifikasi dari perkataan yang ia ucapkan. Penggunaan bahasa yang lemah lembut, sopan, santun, sistematis, teratur, jelas, dan lugas mencerminkan pribadi penuturnya berbudi. Sebaliknya, melalui penggunaan bahasa yang sarkasme, menghujat, memaki, memfitnah, mendiskreditkan, memprovokasi, mengejek, atau melecehkan, akan mencitrakan pribadi yang tak berbudi. Tepatlah bunyi peribahasa, "bahasa menunjukkan bangsa". Tingkat peradaban dan jati diri bangsa, yang didalamnya terdapat karakteristik keramahan, bersahabat, santun, damai, dan menyenangkan dapat dibangun dan ditampilkan melalui bahasa. Ataupun sebaliknya, sikap bahasa politik dalam masyarakat yang gemar menebar bibit-bibit kebencian, menebar permusuhan, suka menyakiti, bersikap arogan, dan hanya ingin menang sendiri. Semuanya dapat tercermin pula dari penggunaan bahasa dalam kehidupan masyarakat tersebut.

Hardiyanto, (2015) memaparkan bahwa. pada aspek penggunaan bahasa dalam kegiatan iklan dan atau kampanye, dapat dikaitkan dengan kajian mengenai kesantunan bahasa, kepentingan politik, dan hubungannya dengan pembangunan karakter masyarakat melalui bahasa politik tersebut. Dalam hal kesantunan berbahasa, iklan kampanye Pilkada sering menampilkan ajakan yang kurang persuasif. Mengajak namun ada unsur mengejeknya, menyudutkan dan menyerang pihak lain. Beberapa jenis ajakan pada tuturan bahasa iklan politik yaitu adanya kesantunan memohon, kesantunan menyerukan, kesantunan membujuk, dan juga kesantunan dalam merayu. Namun pada kenyataannya, ragam bahasa dengan pendekatan kesantunan memohon, menyerukan, membujuk, ataupun merayu jarang sekali kita jumpai sebagai konten atau isi pada bahasa iklan atau kampanye Pilkada.

Ragam yang kerap muncul dan turut membentuk karakter masyarakat adalah adanya ragam bahasa pencitraan dalam iklan kampanye Pilkada. Para politikus atau calon dalam Pilkada sangat berkepentingan untuk membentuk citra politik melalui komunikasi melalui iklan dan kampanye yang seolah-olah dapat menjawab kebutuhan dan harapan serta tantangan yang rakyat hadapi. Misalnya bahwa kesulitan ekonomi akan diatasi ketika dia terpilihserta membangkitkan citra dengan masa depan yang lebih baik bagi rakyat.

Etika dalam Media Kampanye

Penggunaan estetika bahasa pada model publikasi wacana iklan politik pilkada kerap kali memunculkan banyak masalah. diantaranya adanya iklan politik kampanye pilkada dalam bentuk pemasangan spanduk/baliho kampanye yang tidak santun, melanggar norma, destruktif, kampanye hitam, jauh dari nilai edukasi dan sejenisnya. dari aspek penggunaan bahasalah kerap kali pelanggaran tersebut terjadi

Komisi Pemilihan Umum (KPU) menerbitkan Peraturan KPU No 7 Tahun 2015 tentang Kampanye Pemilihan Gubernur dan Wakil Gubernur, Bupati dan Wakil Bupati/Walikota dan Wakil Walikota, mengatur mekanisme pemasangan alat peraga kampanye pada Pilkada 2015

Materi Kampanye sebagaimana dimaksud dalam Pasal 14 ayat (1) PKPU tersebut, disampaikan dengan cara:

1. Sopan, yaitu menggunakan bahasa atau kalimat yang santun dan pantas ditampilkan kepada umum;
2. Tertib, yaitu tidak mengganggu kepentingan umum;
3. Edukatif/mendidik, yaitu memberikan informasi yang bermanfaat dan mencerahkan Pemilih;
4. Bijak dan beradab, yaitu tidak menyerang pribadi, kelompok, golongan atau Pasangan Calon lain; dan
5. Tidak bersifat provokatif.

EPILOG

Pada aspek penggunaan bahasa dalam kegiatan iklan dan atau kampanye, menurut Hardiyanto (2016) menyatakan bahwa penggunaan bahasa dapat dikaitkan dengan kajian mengenai kesantunan bahasa, kepentingan politik, dan hubungannya dengan pembangunan karakter masyarakat melalui bahasa politik tersebut. Dalam hal kesantunan berbahasa, iklan kampanye Pilkada sering menampilkan ajakan yang kurang persuasif. Mengajak namun ada unsur mengejeknya, menyudutkan dan menyerang pihak lain. Beberapa jenis ajakan pada tuturan bahasa iklan politik yaitu adanya kesantunan memohon, kesantunan menyerukan, kesantunan membujuk, dan juga kesantunan dalam merayu. Namun pada kenyataannya, ragam bahasa dengan pendekatan kesantunan memohon, menyerukan, membujuk, ataupun merayu jarang sekali kita jumpai sebagai konten atau isi pada bahasa iklan atau kampanye Pilkada.

DAFTAR PUSTAKA

1. Hardiyanto, Fahrudin Eko. 2015. Nilai Edukasi Bahasa dan Pembangunan Karakter Masyarakat Melalui Iklan Politik Pilkada 2015 (sebuah kajian polisosiolinguistik). Artikel PIBSI XXXVII.
2. Hardiyanto, Fahrudin Eko. 2016. Retorika Estetis Pada Iklan Politik Pilkada 2015 (Sebuah Alternatif Model Pendidikan Karakter Politik Humanis) Artikel Seminar Nasional PPs Unnes, 2016.
3. Peraturan KPU No 7 Tahun 2015 tentang Kampanye Pemilihan Gubernur dan Wakil Gubernur, Bupati dan Wakil Bupati/Walikota dan Wakil Walikota
4. Simamora, Cut Medi Yanti. 2014. Penggunaan Bahasa Propaganda dalam Wacana Iklan Politik Pemilihan Caleg 2014 (Kajian Semiotik).
5. Maryani. 2014. Kesantunan Bahasa Iklan Politik pada Slogan Caleg DPRD dalam Spanduk Pemilu 2013-2014 di Kota Surakarta. Skripsi. UM Surakarta

Improvement Students PGSD of Scientific Attitude Through Applying Model in Learning Inquiry Laboratory

Mahmud Alpusari^{1 a)} and Riki Apriyandi Putra^{2 b)}

¹*Elementary School Teacher Department, Faculty of Teacher Training and Education, University of Riau*

²*Biology Education Department, Faculty of Teacher Training and Education, University of Riau*

^{a)} Corresponding author: Mahmud_131079@yahoo.co.id

^{b)} apriyandi.riki@yahoo.com

Abstract. This research is aim to know the influence applying model in learning inkuiry laboratory toward scientific attitude of students teacher elementary school. The subject of this research is the students of program teacher learning of elementary school (PGSD) who take this subject basic concept sains 2 (IPA 2) with the total students that become sample a lot of fourty seven 47 person (in one class), with used purposive sampling. The scientific attitude to the questionnaire and concept of mastery students is selected by instrument test. The result of this research show increased scientific attitude of the average of the positive responses of the greatest value is an indicator prioritizes evidence "of 3.73 and indicators that increase the value of small, is 0.86 an indicator of" positive attitudes towards failure. The result of this research show that happen significant improvement with the total N-gain is 0,68 (in the middle category). All of the whole students very happy and like in model applying in learning inkuiry laboratory, because they can to help in get Scientific Attitude, knowledge about concepts sains.

INTRODUCTION

SCIENCE is a set of systematically arranged knowledge about nature. The development of the SCIENCE is not only indicated by a set of facts, but it can also give rise to the scientific method and scientific attitudes (Setiyaningrum, 2013). SCIENCE has correlation with how to find out about nature systematically, so that the SCIENCE is not just mastery of a set of knowledge in the form of facts, concepts, or principles, but also is a process of discovery. The SCIENCE is also very instrumental in the survival of the human being, therefore, the concept of the SCIENCE as early as possible must be mastered by every people, especially learners (students), as well as teachers candidate, and teachers.

The students that will be a teacher candidate for the future must be provided by various skills, such as the scientific attitude, science generic skill, concept mastery, and thinking skills. The reason why the scientific attitude is important for teacher candidates is because the scientific attitude is a combination of a number of mental habits, or a tendency to react consistently innovative in a certain way or in extreme situations. Habits or tendencies include accuracy, intellectual honesty, openness of mind, critical mind, and the habit of looking for the truth of the relationship of cause and effect. The scientific attitude is an attitude which really needed and there must be inside of every person, especially a scientists. The scientific attitude is the early foundation in learning process, so that the process of that will be controlled in accordance with the rules or conditions. The scientific attitude could not be seen as a thing that must be adhered to or obeyed, but rather something to be there inside and living. The position of the scientific attitude in learning starts is from the beginning to the end of the learning process.

We need to understand the meaning of attitude first before we understanding the concept of scientific attitude. Thurstone, Likert, and Osgood (Azwar, 2009:4-5) explains that the attitude is a form of evaluation or the reaction of feeling. The intended feeling is in favor or partiality (favorable) or feeling of not supporting or impartial (unfavorable) on those objects. Azwar (2009:23-24) and Sudjana (2011:80) explained that the attitude consists of three mutually supportive components, namely: (a) the cognitive component contains the perceptions, beliefs, and individual-owned stereotype about something; (b) affective component, which is the individual's feelings towards the object of the attitude and emotional aspects are concerned; and (c) the component conative, which is a particular aspect of the tendency to behave in accordance with the attitude that is owned by someone.

The scientific attitude is a combination of a number of mental habits, or a tendency to react consistently in a certain way that innovative or in extreme situations. Habits or tendencies include accuracy, intellectual honesty, openness of mind, critical mind, and the habit of looking for the truth of the relationship of cause and effect. These habits are important in everyday life that leads us to think, and the habit is not only for scientists but for everyone (Sekar, 2013). Therefore, as early as possible the scientific attitude began to introduced and conditioned on learners. Kartiasa (1980 in Anwar, h., 2009) explains that at the primary level , the scientific attitude focused on perseverance, openness, a willingness to consider the evidence, and a willingness to distinguish the fact with opinion.

According to Carin & Sund (1997) in Science for All Americans: Project 2061 there are some attitudes and values that can be grown through scientific work, namely: (1) foster curiosity (being curious) in understanding the world around him, (2) giving priority to evidence, (3) sceptical, (4) willing to accept differences, (5) can work together (cooperative); (6) a positive attitude towards failure. All kinds of scientific attitude has put forth some experts can never be perfectly realized if not supported by the role of educators (lecturers or teachers). Harlen (1992:97) argues that in order to grow the students ' scientific attitude, there are three types of major role of lecturer namely: shows an example, providing reinforcement with praise and approval, and provides an opportunity to develop attitudes.

The scientific attitude could not be seen as a thing that must be adhered to or obeyed, but rather something to be there inside and living. The position of the scientific attitude in learning starts from the beginning to the end of the learning process, for example in carrying out practical work, students already have to come on time (discipline), honest in carrying out practical work and the data, meticulously observed, be skeptical of something and must be proven first, and think forward and able to cooperate with others. The explanation above confirms that the scientific attitude is crucial to anyone and will be used wherever we are, and the scientific attitude is expected to always flow in man.

Learning Inquiri laboratory model is a model of learning which are able to stimulate the creation and development of a deep curiosity related to what they wants to be known, which accompanied by the proof through practical activities. Learning inquiri laboratory can allow students to establish empirically law based on measurements of the variables. The purpose of the learning inquiri laboratory is to provide a structured experience to students through the science inquiri. Inquiri laboratory is also a motor in examining natural phenomena as well as the initial key in understanding the nature of SCIENCE. It was concluded that the inquiri laboratory is a learning strategies which are able to stimulate learners to be active during the learning process, creates the depth curiosity and sense of enthusiasm toward something, brings out the flavor didn't believe (skeptical) with anything without any scientific proof and can develop various competencies.

The naming of inquiri laboratory according to experts are various, some say as a learning approach and other say as a model of learning. In this research, researchers put inquiri the laboratory as a model of learning, which refers to the learning model designed by son (2015), which consists of:

1. Introduction: the philosophical explanations of the basic concept of the SCIENCE 2, as well as the working step.
2. Submission of Questions: bring up the student's critical question (problem) that associated with the subject matter that was made for the object of research
3. Prove: the basic concepts of SCIENCE 2 based on inquiri laboratory implemented per-package or structured (theory + practical for one subject and the implementation of the practical work done outside the class time)
4. Elaboration: do the elaboration of results (practical) which associated with an existing theory/concept
5. Discussion: do the discussion between lecturer and student related to the elaboration results which they have used to do in the form of a report

The application of the inquiri laboratory has many benefits in science, including the following: can increase the motivation, scientific attitude, critical thinking skills, and students master the concepts on Invertebrate Zoology (son, 2015), can allow students to learn and gain experience directly, such as the scientists (Opara, 2011), can increase student understanding and attitudes about science and influence them on how the science was taught well (Tessier , 2010), and can increase the scientific skills and thinking skills students (Birkett, 2009).

The explanation above asserts the interconnectedness of the problems in the field, with major components that must be provided to the prospective students of primary school teachers, as well as solutions that can be used in addressing these problems, everything is combined in a inquiri learning-based laboratory. Therefore, required a research to find out if Inquiri learning laboratory models can improve The Elementary School Teacher Education Program (PGSD) students ' scientific attitude after implementing such models?

RESULTS AND DISCUSSION

The Result of students scientific attitudes research

The interconnectedness application of the Inquiry learning laboratory models towards students scientific attitude can be seen from the analysis data of student's scientific attitude scale before and after implementation, presented in table 1.

Table 1. Summary of the results of the analysis data of student's scientific attitude before and after the application of the Inquiry Learning Laboratory models

No	Indicator	Item Number		Before (Pretest)		After (Posttest)	
		Per. Positive	Per. Negative	Response			
				Positive %	Negative %	Positive %	Negative %
1	Foster curiosity (being curious)	1	-	100	-	97,87	2,13
		2	-	100	-	100	-
		-	3	100	-	97,87	2,13
		-	4	89,36	10,64	93,62	6,38
		-	5	78,72	21,28	93,62	6,38
2	Giving priority to evidence	6	-	95,74	4,26	97,87	2,13
		7	-	82,98	17,02	93,62	6,38
		-	8	40,42	59,58	23,41	76,59
3	Sceptical	-	9	6,38	93,62	25,53	74,47
		10	-	85,11	14,89	82,98	17,02
		11	-	2,13	97,87	8,51	91,49
4	Willing to accept differences	-	12	95,74	4,26	95,74	4,26
		13	-	95,74	4,26	93,62	6,38
		14	-	91,48	8,52	100	-
		-	15	100	-	100	-
5	can work together (cooperative);	-	16	78,72	21,28	80,85	19,15
		-	17	93,62	6,38	95,74	4,26
		-	18	95,74	4,26	95,74	4,26
		19	-	89,36	10,64	93,62	6,38
6	a positive attitude towards failure	20	-	95,74	4,26	95,74	4,26
		-	21	4,26	95,74	4,26	95,74
		-	22	63,83	36,17	63,83	36,17
		23	-	70,21	29,79	74,47	25,53
		24	-	97,87	2,13	97,87	2,13
		25	-	100	-	100	-

The changes of students' scientific attitude before and after the application of the Learning Inquiry laboratory models tend to be positive. Students already have high self-confidence against the results they get, it is not easy to believe against something before the scientifically proven or the emergence of a deep curiosity, and seek the truth if the results they found incompatible with the theory/concept. As a whole can be interpreted that the application of the Learning Inquiry Laboratory models favored by students, can assist them in gaining knowledge and mastery of the concepts of SCIENCE, as well as scientific change in attitude can lead to a positive one. For more details can be seen in table 2.

Table 2. The improvement of students scientific attitude

No	Indicator	Item Number		Before (pretest)		After (posttest)		Descriptio (Positive Feedback)
		Per. Positive	Per. Negative	Average				
				Positive Respons	Negative Response	Positive Respon	Negativ e	

				e (%)	(%)	se (%)	Response (%)	
1	Foster curiosity (being curious)	1	-	93,62	6,38	96,60	3,40	increased by 2,98
		2	-					
		-	3					
		-	4					
		-	5					
2	Giving priority to evidence	6	-	56,38	43,62	60,11	39,89	Increased by 3,73
		7	-					
		-	8					
		-	9					
3	Sceptical	10	-	60,99	39,01	62,41	37,59	Increased by 1,42
		11	-					
		-	12					
4	Willing to accept differences	13	-	91,49	8,51	93,62	6,38	Increased by 2,13
		14	-					
		-	15					
		-	16					
5	Can work together (cooperative);	-	17	93,62	6,38	95,21	4,79	Increased by 1,59
		-	18					
		19	-					
		20	-					
6	A positive attitude towards failure	-	21	67,23	32,77	68,09	31,91	Increased by 0,86
		-	22					
		23	-					
		24	-					
		25	-					

Based on table 2. It can be explained that all indicators has increased. The the greatest value in the positive response is an indicator of "giving priority to evidence" of 3.73 and smallest increase of indicator i.e. 0.86 is an indicator of "positive attitude towards failure". Those results indicated that students start enjoying the activities of inquiri, which is expected to become a common thing in themselves, so that in the future will be created by young scientists and their scientific attitude is positive, so the results or processes that they do can be beneficial for the life of all beings that exist on this earth.

DISCUSSION

SCIENCE is a branch of science that studies about natural phenomena that are arranged through the stages of scientific method that is typical-specifically, a systematic, formulated in General, characterized by the presence of the use of the scientific method, accompanied by the positive scientific attitude, so it will give the creation of the scientific products (facts, concepts, principles, laws, as well as model). The study about the science of the SCIENCE was done early on, ranging from small (education in the family) to adulthood (a unit of education). According to Ali, et al. (2013) education the SCIENCE is expected to become a vehicle for learners to learn ourselves and the natural surroundings, as well as the prospect of further development in applying them in everyday life. The process of learning the SCIENCE emphasizes on granting of direct experience to develop competence in order to explore and understand the natural surroundings scientifically.

Education of SCIENCE are transformed into various forms subjects. One of the subject that has studied is the basic concept of SCIENCE 2, which is an major advanced subject for all students of undergraduate of Elementary School Teacher Education Program (PGSD), this subject provide the students for SCIENCE in SD. This subject is difficult because it contains the latin terms, abstract, and has a lot of essential concepts, which requires an appropriate strategy to be able to learn it. Based on the data analysis, the use of the Inquiry learning laboratory models can enhance student to mastery the concepts and change in a positive attitude of students of PGSD on subject basic concepts of SCIENCE 2, for more details will be discussed here.

The improvement of students scientific attitude

The scientific attitude is the attitude of a scientists during the process of research/experimentation, which is a tendency and readiness in response (Putera and Redjeki, 2013). The scientific attitude is also a person's predisposition to act in solving a problem. The scientific attitude could not be formed for granted without any learning activities. Learning activities not only in class, but can also be done in the laboratory through practical work. Carin and Sund (1997:14) divides the scientific attitude into 6 sections, namely (a) fostering curiosity; (b) give priority to the evidence; (c) be skeptical; (d) willing to accept differences; (e) can work together (cooperative); (f) a positive attitude towards failure.

Based on the analysis of the data, it can be concluded that the application of the Inquiry learning laboratory models can improve scientific attitude of undergraduate students of Elementary School Teacher Education Program (PGSD) on the basic concept of SCIENCE 2. The analysis of positive response rate data shows that students increased at each of the indicators with the interval value of 0.86-3.73. The greatest value of improvement occur on indicators "give priority to evidence" about 3.73 and the smallest about 0.86 is an indicator of "positive attitude towards failure".

The high increase of value in the indicators of " give priority to evidence " caused by the applied learning models. Inquiry learning laboratory model aims to direct students to do inquiry, find out as many information related to the concepts that will be studied independently as well as in groups. This model also makes the students like a scientist, which performs any related proofs the concepts of SCIENCE, such as evidentiary the stimulation point of *mimosa pudica*, find the place of klitelum on earthworms, and respiration in plants. Treatment that is given to students, gradually will become a habit. The application of this model is not merely directs students to prove the concept, but also instilled in students to always bring up the critical questions, making it appear the curiosity to prove it. Such treatment led to an increase in the indicator "give priority to the evidence".

The other indicators that also experienced an improvement is an indicator of "positive attitude towards failure" even the value is small. The low value of the indicator "positive attitude towards failure" caused by the main purpose of the student does not give priority to mastery the concept, and prefer to earn good score. However, if someone prefer score, then they will be difficult to accept a failure. Russell and Weaver (2008) added that weakness in practical activity caused by the purpose of the student is just to completed the practical activity, rather than to an understanding of the theories provided.

Inquiry learning laboratory model directed the students to master the concept and don't fear failure, if it is done appropriately. Other causes can be seen from the tendency of students who are not happy when they get different results with existing theory, rather they prefer to do the practical orientation of the proved and not found. The practical orientation of the only proven known by the ekspositori practical or conventional practical or verifikatif practical.

According to Domin (1999) that the verifikatif practical gives little opportunity for students to consider the principles and concepts which applied in practical activities. Cartrette and Miller (2013) also says that teaching ekspositori is a practical activity to verify scientific facts that have been introduced in the class by the lecturer. Ekspositori practical consist of pralab activities in the form of detailed explanations, continue by doing the procedure step by step, noting the data, and answer questions postlab (Tsaparlis and Gorezi, 2007). Usually the lecturer and students already know the final results of the practical teaching activities undertaken before. The results obtained from practical activities compared to the expected results. So, students don't get the challenges in predicting the results of practical work. This type of practical work, also known by the traditional practical or verification (Domin, 1999). This type of teaching is most popular and most often used in Indonesia.

CONCLUSION

Conclusions

Based on the data analysis result of research and discussion, then conclude that the application of the Inquiry learning laboratory model led to a change in positive scientific attitude of students for each indicators. The greatest value of positive response is an indicator of "giving priority to evidence" about 3.73 and the smalles value about 0.86 is an indicator of "positive attitude towards failure". Overall the students greatly enjoyed the pleasure and love the implementation of Inquiry learning laboratory model, because it can help them in improving scientific attitude and assist them in gaining knowledge and mastery the concepts of the SCIENCE.

Suggestions

Based on the results of research and some of the findings obtained in this research, then here are some suggestions as follows:

1. Inquiry Learning Laboratory Model is very effective in training the various competencies of the students, for example, communicating in writing competence, mastery in using the international reference (foreign language), etc.
2. Lecturer preferably as early as possible to apply learning models Inquiry for each subject of practical and applying that model to measure a wide range of skills or abilities.
3. Inquiry Learning Laboratory Model can be used as input for the university, thus it will give development or innovation in learning strategies.

REFERENCES

1. Ali., Suastra., dan Sudiatmika. (2013). Pengelolaan Pembelajaran IPA Ditinjau dari Hakikat Sains pada SMP di Kabupaten Lombok Timur. *e-Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi IPA*. 3, 2013.
2. Anwar, Herson. (2009). Penilaian Sikap Ilmiah dalam Pembelajaran Sains. *Jurnal Pelangi Ilmu*. 2, (5).
3. Azwar, S. (2009). *Sikap Manusia Teori dan Pengukurannya*. Yogyakarta: Pustaka Pelajar.
4. Birkett, M.A. (2009). Every cell counts: an inquiry-based approach to address a novel research question in an undergraduate neuroscience lab. *The Journal of Undergraduate Neuroscience Education (JUNE)*. 7, (2), A53-A64.
5. Carin, A. dan Sund R.B. (1997). *Teaching Science Through Discovery*. Columbus, Ohio: Merrill Publishing Company.
6. Cartrette, D. P. and Miller, M. L. (2013). "Purposeful Design of Formal Laboratory Instruction as a Springboard to Research Participation". *Journal of Chemical Education*. 90, (2), 171-177.
7. Domin, D.S. (1999). "A review of laboratory instruction styles". *Journal of Chemical Education*. 76, (4), 543-547.
8. Harlen, W. (1992). *The Teaching of Science: Studies in Primary Education*. London: David Fulton Publishers.
9. Opara, J. A. (2011). Inquiry method and student academic achievement in biology: lessons and policy implications. *American-Eurasian Journal of Scientific Research*. 6, (1), 28-31.
10. Putra, R.A. (2015). *Pengembangan Program Perkuliahan Zoologi Invertebrata Berbasis Inkuiri Laboratorium untuk Meningkatkan Keterampilan Berpikir Kritis dan Sikap Ilmiah Mahasiswa Calon Guru Biologi. Disertasi Program Doktor Sekolah Pascasarjana*. Universitas Pendidikan Indonesia, Bandung.
11. Putra, R. A. dan Redjeki, S. (2013). Analisis sikap ilmiah mahasiswa terhadap perkuliahan sistematika invertebrata berbasis inkuiri laboratorium. Dalam Prosiding Seminar Nasional "Arah Pendidikan MIPA Masa Depan; Antara Harapan dan Kenyataan", FKIP Universitas Mataram, Mataram.
12. Russell, C. B. dan Weaver, G. C. (2008). "Student perceptions of the purpose and function of the laboratory in science: agrounded theory study". *International Journal for the Scholarship of Teaching and Learning*. 2, (2), 1-14.
13. Sekar, P. (2013). The scientific attitude and reasoning ability of biology and computer group students. *Indian Journal of Applied Research*. 3, (8).
14. Setyaningrum, R. (2013). Pembuatan Media Pembelajaran Ilmu Pengetahuan Alam untuk Kelas VIII (delapan) Sistem Pencernaan Manusia pada Sekolah Menengah Negeri 2 Geyer Kabupaten Grobogan. *Seminar Riset Unggulan Nasional Informatika dan Komputer FTI UNSA 2013*. 2(1), Maret 2013.
15. Sudjana, N. (2011). *Penilaian Hasil Proses Belajar Mengajar*. Bandung: PT. Remaja Rosdakarya.
16. Tessier, J. (2010). An inquiry-based biology laboratory improves preservice elementary teachers' attitudes about science. *Journal of College Science Teaching*.
17. Tsaparlis, G. and Gorezi, M. (2007). "Addition of a Project-Based Component to a Conventional Expository Physical Chemistry Laboratory". *Journal of Chemical Education*. 84, (4), 668-670.

Improving Education Services for Supporting National Education Index Improvement: Perspective Leadership and Entrepreneurship

Rida Fironika Kusumadewi

*Elementary School Teacher Education Department, Faculty of Teacher Training and Education
Sultan Agung Islamic University*

Corresponding author: ridafkd@unissula.ac.id

Abstract. Educational service is a sub system of community service. Where education services not be separated from the quality of education to support the improvement of national education graduation index. Cause of failure in the quality of service in five gaps between customer and provider perceptions that from the gap in terms of: (1) between expected and perceived service management user expectations, (2) between quality of service and user perception, (3) among the result of service delivery and service quality specifications, (4) among the result of service delivery and external communication user value, (5) between perceived service and expected. For the necessary quality of service to the school community especially the quality of teachers when teaching, that will create the leadership and entrepreneurship is to improve the quality of Service of teaching through the use of methods and media training teaching. Channeled through the training, then the index will increase graduation achievement.

INTRODUCTION

In the era of globalization , education is one of the most important means of providing qualified human resources to bring meaningful change to the nation . Observing educational services , primarily educational services to students still raises problems . Therefore, in order to provide the best , it is necessary to increase educational services .

In conducting the educational services it can not be separated by the word of " quality and satisfaction " is often heard , and embedded in the mind of each person or institution .¹ Dabholkar, et al. (2000) for example, constructs that service quality is an antecedent to customer satisfaction. Thus the level of service quality is predicted to affect the level of satisfaction. In the context of educational institutions, students also have expectations about the quality of services. Service quality educational institutions which a student is feeling psikologs students after students receive the services. If the perceived quality of service, it will bring a sense of satisfaction. Thus the level of service quality predicted effect on customer satisfaction and the quality of education. The ministry is not good will affect the quality of education. Poor quality of education is not only related to the achievement of graduation index alone, but is also evident from the behavior of school services to students. Service to students needs to be improved by way of example through service teachers through intensive training how to transform existing teaching methods and teachers can use the medium of instruction well. By going through the training it is expected that students will graduate competence index maximum. So that services do schools can support an increase in the index of the national education leader and entrepreneur perspectives.

Measures of education is its success gave birth to a human who has the ability that can improve the quality of life (increased income and purchasing power , improve health , and various dimensions of life that shows kebermutuan human life and dignity in order to realize national goals (as outlined in the preamble of the 1945 Constitution) . " Indeed, every institution and level of education serves to develop capabilities " (Soedijarto , 2000 , hlm.81) . the

¹ Dabholkar, P.A.C.D. Shepherd, and D.I. Thorpe (2000), "A comprehensive framework for service quality: an investigation of critical conceptual and measurement issues through a longitudinal study", *Journal of Retailing*, Vol. 76. No.2.p.139-73.

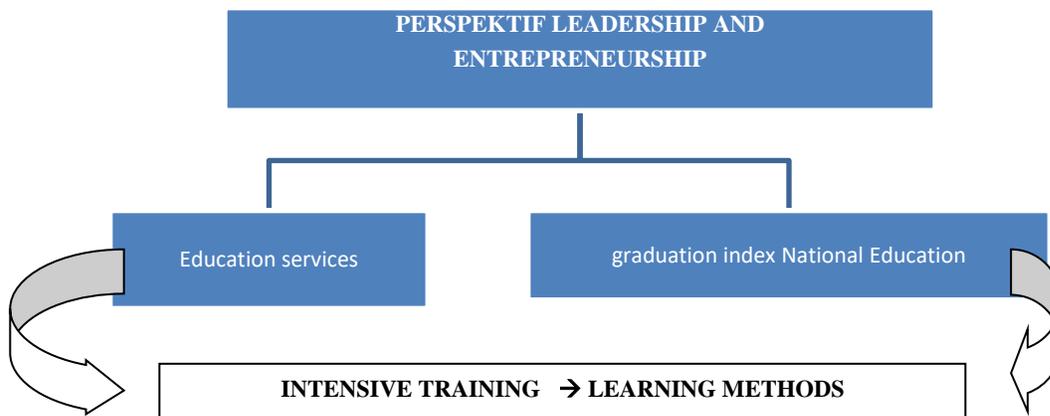
basic problem that we need to examine further is how national education may actually serves to develop skills, values , attitudes and behavior in accordance with the demands community in its development in the era of globalization so as to improve educational services to support the increase in the index of the national education leader and entrepreneur perspectives.

Based on the above , it will be carried out research with a focus of research : (1) How are Junior high school principal Christian Saws in the improvement of educational services for students to support the increase in the index of the national education perspective of leadership and entrepreneurship , (2) what factors are supportive and in an effort to hamper the implementation of basic education services for students .

While the purpose of this study were (1) to describe the efforts of principals smp Christian saws in the improvement of educational services for students to support the increase in the index of the national education perspective of leadership and entrepreneurship , (2) describe the factors that support and hinder the efforts of the service implementation basic education for students .

MODEL RESEARCH

From the description of improving educational services to support the improvement of national education index : the perspective of leadership and entrepreneurship are as follows :



RESEARCH METHODS

Respondents were teachers SMP Saws good Christian teachers who have remained and teachers are still paid an honorarium. The method used in the case study of Christian junior Saws with a qualitative approach . While the data used comes from the people , and events . The process of data collection is done by in-depth interviews , observation and document analysis .

With qualitative research approach , the researchers were able to directly observe what is happening in the school, and what will be done in realizing the vision and mission of the school that will be able meningkatkan education services to support the promotion of national education index : the perspective of leadership and entrepreneurship.

Please note that the vision of Christian Saws SMP is to have knowledge and skills based on faith and piety to God . As well as one of the visions of SMP KRISTEN SAWS is to increase graduation standards and improve the quality of institutions and school management . Of the vision and mission that is to the school it is necessary to

support the factors in improving education services to support the enhancement of national education index : the perspective of leadership and entrepreneurship .

RESEARCH FINDINGS

From the observation that the leadership of Dan entrepreneurship The ADA in junior high school Christian Saws Still Not Appear . Individual OR ANY singer because each teacher Lack Of Understanding the meaning of leadership and entrepreneuship . The APA so that the teacher - teachers do hearts Serving Students Still Not A maximum , so yet can support an increase in junior high school graduation index Christian Saws . The following is a singer of the chart ABOUT Graduate From last 3 years at junior Christian Saws

Table.1: Data Graduation Last 3 Years in SMP Kristen Gergaji

school year	Graduation		the average value "UN"		Students Are Continuing To SMA/MA/SMK	
	Count	Target	Result	Target	Account	Target
2011/2012	85	94,44	6,40	100	15	74
2012/2013	83	96,51	19,6	100	7	78
2013/2014	68`	100	100	100		

Tabel.2 Data Admission in SMP Kriten Gergaji:

School Year	Account received	registration number	the ratio of the received and registration
2012/2013	86	105	105
2013/2014	54	85	85
2014/2015	39	53	53

From the data tables (1) and (2) above outlined that over the years the ratio Graduation Junior K Saws experience penurunan So the interest of the community to go to school is very minimal , and this causes that the percentage of enrollment or new admissions from year to year is decreased (table.2) . Graduation rates and reduced public interest tersebutm school is because the level of services to students during the learning process less than the maximum . Methods and teaching media in teaching and still appear normal .

²Zeithaml (1990) identify the causes of failure in the quality of services in five gaps between customer perception and providers that form a gap in terms of: (1) between the expected services and management perception user expectations ; (2) the quality of service and user perceptions; (3) the results of service delivery and service quality specifications ; (4) the results of service delivery and value for external communication users ; and (5) between perceived service and expected.

Indicators measure of a quality of service by Zeitharml can be described in 10 basic dimensions, which are summarized into five dimensions measurements and gives the impression that the 10 dimensions of the original are overlapping each other, so Parasuraman has made a scale multiitem named service quality / serqual (Shahin, 2009). According to Parasuraman, there are five dimensions of service quality (serqual), namely: (1) The tangible dimension (tangibles), to measure the appearance of physical facilities, equipment, employees and means of communication; (2) the dimensions of reliability (reliability), to measure the company's ability to provide the right services and reliable; (3) The dimensions of responsiveness (responsivenesssss), showed a willingness to help and provide services to customers quickly; (4) dimensions guarantee (assurance), to measure the ability and friendliness of employees and trustworthiness; and (5) the dimensions of empathy (empathy), to measure employees' understanding of the needs of customers as well as the attention given by the employee (Shahin, 2009).

³Slameto (1991) put forward the principles of teaching should be implemented as effectively as possible by educators, namely: (1) attention, teachers raise students' attention to the lessons given; (2) activity, teachers lead

² Zeitharml, V. A. 1990. *Delivering Service Quality: Balancing Customer Perceptions and Expectations*. New York: The Free Press.

³ Slameto.1991.*Belajar dan factor-faktor yang mempengaruhinya*. Jakarta. Rineka Cipta.

students in the activity of thinking and acting; (3) apersepsi, teachers connect lessons are given with the knowledge that has been owned by the student or his experience; (4) demonstration, with the selection of the right media can help explain the lesson and also help students to form a correct understanding; (5) reps, which was always repeated lessons will give a clear response and not easily forgotten; (6) the correlation, to broaden the knowledge of students, teachers need to pay attention and think about the relationship between each lesson material; (7) concentration, business concentration causing lesson students gain direct experience, observing himself, to prepare and conclude knowledge; (8) socialization, work in groups can also improve their way of thinking so that they can solve problems better and smoothly; (9) individualization, the student is a unique individual beings, have distinctive differences, such as differences in intelligence, talents, hobbies behavior, temperament and demeanor, cultural background, socio-economic, and the state of his parents; and (10) the evaluation, describing the student's progress, achievement, words, and it can also be a feedback for improvement materials for teachers and students.

Use of Methods and Media Teaching .

Teaching aids or tools are any objects that are used to facilitate the teaching-learning process . Teaching aids or tools are classified : (1) props , the tools to clarify the delivery of materials such as Liquid Crystal Display ; and (2) a complementary teaching tool , namely the necessary tools for ongoing learning process , such as chalk . benches , and tables . Simple props can be distinguished by visual aids , props audio and audio - visual props . Each of these props has an intensity (the ability) to stimulate the emergence of a person's perception of students . While this method of teaching is the means used lecturer in establishing relations with students during the course of teaching (Sudjana 1999) , therefore the role of the teaching method as a tool to create teaching and learning process .

Education Services Expected by Students.

Educational institution is an institution that services one of which is the human element, in which the people in the institution's function is to educate a person or group of persons according to which it aspires. For it needs to be a very good quality of service and quality as well as professionals from humans who are in institutions. The existence of an educational services and qualified professionals conducted by the educational institution directly or indirectly affect the quality of education of students it produces.

Each of the students and parents of students will always expect a good service from the institution that entered her son, where with a good educational services students hope all the effort in attending educational institutions to run smoothly, on time, and the results can be applied, and practiced in the community.

Education Services Perceived by Students .

Educational services including a service and services can not be observed physically , but service can be felt , and good services and professional education will answer how much satisfaction can be achieved and felt by students. Inside dimensions of education services is closely related are the dimensions of equipment and facilities used as well as personnel and communication materials used is in conformity with the standards that have been applied and determined by the laws set forth by the state .

Their equipment and supporting facilities in educational institutions a complete and professional service it will be felt by students due to that all the activities and student assignments can be running and performing well and the results can be felt by the students themselves so students can immediately finish of school and can feel the results of his efforts to practice all the knowledge acquired in the educational institutions of learning in the community .

So that educational institutions can succeed and succeed and to produce students who are useful to society, then the most important here is the gap existing gap in educational institutions should minimize as small as possible so as not to interfere with the smooth teaching and learning process . With minimized slit / gap on factors educational services to students that will improve the quality and results of the learning process of their students , so that students will be more satisfied with what is expected and what is perceived and over time , and the gap will disappear by itself if the educational services be improved and repaired every time .

SUMMARY

Measures of education is its success gave birth to a human who has the ability that can improve the quality of life (increased income and purchasing power, improve health, and various dimensions of life that shows kebermanusiaan human life and dignity in order to realize national goals (as outlined in the preamble of the 1945 Constitution). to improve the quality of education should be to maximize the quality of the service, including: (1) between the expected services and management perception user expectations; (2) the quality of service and user perception; (3) the results of service delivery and the quality specifications of the service; (4) between the results of service delivery and value for external communications of users; and (5) between perceived service and expected.

REFERENCES

1. Aritonang, L., R. 2005. *Kepuasan Pelanggan*. Jakarta: Gramedia Pustaka Utama.
2. Ary, D., Jacobs, L. C., dan Razavieh, A. Tanpa tahun. *Pengantar Penelitian dalam Pendidikan*. Terjemahan oleh Arief Furchan. 1982. Surabaya: Usaha Nasional.
3. Blaikie, N. 2003. *Analyzing Quantitative Data from Description to Explanation*. London: Sage Publications.
4. Depdiknas. 2001. *Manajemen Peningkatan Mutu Berbasis Sekolah (Buku 1)*. Jakarta: Depdiknas.
5. Dewey, J. 2001. *Democracy and Education*. Pennsylvania: Pennsylvania State University.
6. Fiegenbaum, A., V. 1996. *Total Quality Control*. New York: McGraw-Hill Book.
7. Gunawan, I. 2010. *Hubungan Ketersediaan, Alokasi Penggunaan, dan Ketaatan Peraturan Penggunaan Dana dengan Mutu Pendidikan SMA Negeri Se-Kota Malang*. Tesis tidak diterbitkan. Banjarmasin: Program Pascasarjana Universitas Lambung Mangkurat.
8. Goetsch, D. L., dan Davis, S. 1994. *Introduction to Total Quality: Quality, Productivity, Competitiveness*. New Jersey: Prentice Hall Internasional, Inc.
9. Merylin, K. 2003. *Educational entrepreneurship and covisionary multysectorism.*: Guilbert Hentske.
10. Natalisa, D. 2007. Survey Kepuasan Pelanggan Program Studi Magister Manajemen Universitas Sriwijaya. *Jurnal Manajemen dan Bisnis Sriwijaya*, 5(9): 83 – 98.
11. Riduwan. 2006. *Metode dan Teknik Menyusun Tesis*. Bandung: Alfabeta.
12. Riduwan, dan Kuncoro, E. A. 2007. *Cara Menggunakan dan Memaknai Analisis Jalur (Path Analysis)*. Bandung: Alfabeta.
13. Shahin, A. 2009. *Servqual and Model of Service Quality Gaps: A Framework for Determining and Prioritizing Critical Factors in Delivering Quality Services*. Department of Management, University of Isfahan, Iran,
14. Slameto. 1991. *Belajar dan Faktor-Faktor yang Mempengaruhinya*. Jakarta: Rineka Cipta.
15. Surya, Mohamad. 2004. *Bunga Rampai: Guru dan Pendidikan*. Jakarta: Balai Pustaka
16. Syafaruddin. 2002. *Manajemen Mutu Terpadu dalam Pendidikan Konsep, Strategi, dan Aplikasi*. Jakarta: Gramedia Widiasarana Indonesia.
17. Usman, H. 2007. Peranan dan Fungsi Tenaga Administrasi Sekolah/Madrasah dan Upaya Mengefektifkannya. *Jurnal Tenaga Kependidikan*, 2(2):13-29.
18. Zeithaml, V. A. 1990. *Delivering Service Quality: Balancing Customer Perceptions and Expectations*. New York: The Free Press.

Improving Learning Participation of the Students of PGSD UMP on Civics Education Using Value Clarification Technique Through Charity

Aji Heru Muslim

*Elementary School Teacher Education Department, Faculty of Teacher Training and Education,
University of Muhammadiyah Purwokerto*

Corresponding author: ajiheru_muslim@yahoo.co.id

Abstract. This study aims to improve students' participation in the subject of Civics Education for SD using Value Clarification Technique through charity. This research is a classroom action research consisting of two cycles. The objects in this study were students of class A of the Fourth Semester in study program of Elementary School Teacher Training and Education of UMP with 50 students. The instruments used for collecting the data was by observation sheets for students' participation, the data analysis was presented in qualitative descriptive. Indicators in this study were seen from the increasing students' learning participation. The findings showed that the Value Clarification Technique through charity can improve students' participation in the subject of Civics Education of Elementary School. This can be proven by the increasing students' participation in learning as in the first cycle with a percentage score of 73.6% with good criteria and the second cycle with a percentage score of 83.75% with very good criteria. It showed that the Value Clarification Technique through Charity can improve students' participation reaching to 11.15% from the first cycle to the second cycle.

INTRODUCTION

One of learning subjects in Higher Education in PGSD Study Program UMP is learning civics education. Civics learning has an important role to form the nation's morale. Conceptually, learning civics has a significant meaning for the development of a nation that is instilling attitudes and behavior in everyday life based on the values of Pancasila as individuals and members of society.

From the observation of PGSD students, it was obtained that during the learning civics students' learning participation is still lacking. Thus, in the civics lecture, the lecturers simply transfer the materials without the active participation of students. According to Echols in Suryosubroto (2009: 293) the word participation is derived from of English "participation", which means taking part or indulgence. Meanwhile, according to the Sukidin (2002: 68) participation means the activities or circumstances taking part in an activity to achieve an optimal benefit. Then according Tannenbaun and Hanh (Sukidin, 2002: 159), participation serves as a member of the extent to involve themselves in activities and donate power and mind in the implementation of the activities.

Based on the problems mentioned above, the researchers were interested to conduct a research on the causes of the low participation of students' civics learning. The low participation of students was because not all students were able to comprehend and understand the lecture. Many of them got difficulty in understanding the lecture being delivered. Civics learning is one of the subjects that are considered difficult to be understood by the majority of PGSD students.

The factors of student characteristics and different abilities were less noticed by lecturers, they were actively enjoying teaching by explaining the material, but a student was a person who had individual characteristics and capabilities that still needed much to be developed. In formal education, lecturers were expected to be able to participate in order to achieve the goal of education through the learning process. In the process of teaching in faculty, it was required to be able to give attention to students as much as possible. It is a proven fact that in the learning process, there are always some students who need help both to comprehend learning materials and to overcome the difficulties of their learning.

Some lecturers in the learning process use lecturing method, the lecturers explain the subject matter through the presentation, students answer questions based on a given workout. It turned out to lead to students' boredom.

Lecture method also has the disadvantage, namely the lecturers do not involve students in the learning process, lecturers tend to only transfer the knowledge they have into students' thinking and students often only position themselves as children who do not know anything so they just wait for the material presented by the lecturers.

Therefore, students cannot participate in learning activities. Therefore, it would require efforts by using model study on Civics Education used by lecturers, so that it can affect the creation of learning success. Students can study actively, creatively, innovatively, and happily. Currently, there is a wide variety of development of active, creative, innovative and fun learning model that can be used almost in all lectures, especially Civics Education lecture. One of the learning models is VCT. In this research, this method was applied to PGSD students of fourth semester in civics learning. The VCT method emphasizes the student to be able to actively participate in building or finding his own knowledge through discovery or inquiry.

Value Clarification Technique (VCT) is a teaching method where teachers help students to set the value of a number of alternative choices they face value (Sudaryo, dkk.1991: 70). Meanwhile, according to Sanjaya (2006) in Taniredja (2011: 87-88) Mechanical Clarify Values or often abbreviated to VCT is the teaching techniques to help students in finding and determining a value which is considered good to face the problem through the process of analyzing the existing value embedded in students. So it was the teachers' efforts to shape a child (instilling values in children) where children determine their own values to be chosen. In this method, the teacher helps students to clarify the values he believes in, so that the student does not experience the value confusion or ambiguity. Thus this will help students to have a strong personality, not being apathy, not being inconsistent, without chaos values (Raths, LE., Harmin, M. and Simon, 1978: 7-8) in (Sudaryo, dkk.1991: 70).

Based on the background above, the researchers were interested to conduct research entitled: "Improving Learning Participation of The Students of PGSD UMP on Civics Education Using Value Clarification Technique through Charity". In accordance with the background and the problem limitation above, the answer of the main problems that must be found is whether or not teaching Civics using VCT learning strategies through Charity can improve students' participation.

RESEARCH METHODS

Data Source

The data sources in this Class Action Research were taken from the fourth semester students of PGSD class A. The source of data on student was used to obtain students' learning in the learning process.

Research Instruments

The research instrument was used for collecting the data in research, either learning instrument or data collection instruments. The research instrument was obtained through non-test. Non-test data collection instruments in this study were observation. Observation is an observation activities or data collection activities to capture how far the effects of the action have reached the target (Kusnandar, 2008: 143). The results are recorded in observation sheets filled out by observers at each end of the action.

Data Analysis

Quantitative descriptive analysis technique was used to analyze the collected data and to give a title to the variables examined in accordance with actual conditions. Data were analyzed including the observations of student participation in the learning process. Results of reflection on the first cycle are used to plan the activities in the next cycle, to determine the improvement of the students' learning participation.

Indicators of Success

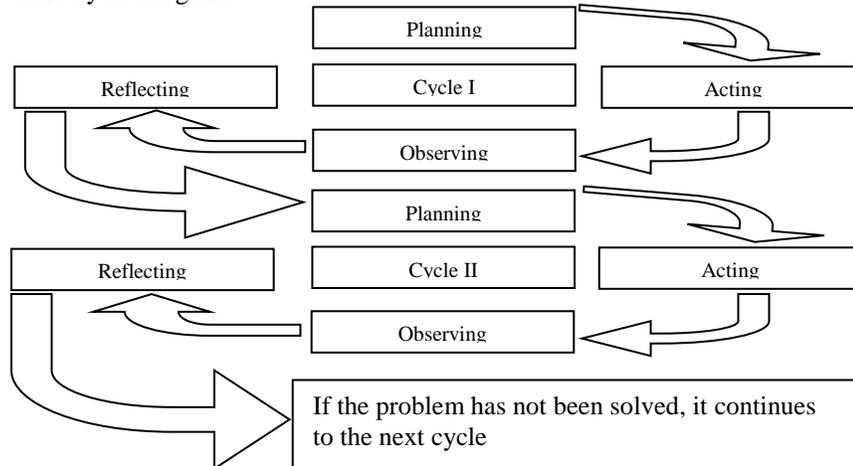
This classroom action research is said to be successful if there is an increase in the participation of student learning from the initial conditions, after learning using VCT models through charity, from civics lectures to the completion of the action. The detail of the success of this study is: "There is an increasing participation of students' learning in each cycle of at least 75% participation in very good criteria of participation."

Research Procedure

The implementation of this research consisted of several cycles, each cycle was held in 2 meetings and each meeting took 2 hour-lecture. Each cycle used the models of VCT through Charity. According Arikunto, et al (2008: 16) argues that each cycle consists of four stages or common phases, namely: a). The planning stage (Planing), b). Implementation of the action (Acting), c).Observation (Observing), c) Reflection (Reflecting).

As for the model and explanation for each stage depicted by the chart below

Figure1 : CAR Cycle Diagram



RESULT AND DISCUSSION

Research Result

Result of cycle I

a. Planning

The action planning implemented in the first cycle is as follows:

- 1) Creating a learning scenario with Value Clarification Technique (VCT) through charity.
- 2) Making learning media.
- 3) Determining the place for social activities (charity)
- 4) Developing observation sheets participation.

b. Results of Acting

Implementation of the action using a model of social action in the first cycle was conducted in two sessions. The first meeting was held on Friday, June 13, 2014 and the second meeting was held on Sunday, June 16, 2014.

The results of the first cycle of first meeting

Cycle 1 in the first meeting was held on Friday, June 13, 2014. The researchers carried out research activities in Semester IV student learning PGSD UMP class A in the subject of Civics Education in SD using Value Clarification Technique (VCT) through charity. Lecturer then opened the lecture by mentioning the learning objectives. Lecturer socialized the leaning models to clarify the value of VCT through charity and announced the division of the members of each group then the lecturer did the apperception, the lecturer delivered the material that would be discussed.

Lecturer delivered material by lecturing, questioning and answering. Lecturer presented problems such as social values to students for discussion. During the student discussion group, the lecturers guided students. Then, the lecturer called one of the groups randomly to answer questions. Students who were designated to answer questions were asked by the lecturer to stand in front of the class. Lecturer provided the opportunity for other groups to express a different opinion by appointing another number. Then lecturer guided students to conclude the discussions and concluded the material being studied and several students noted that conclusion, but there were also students who did not take notes. Lecturers gave students the opportunity to ask, but no student asked. Learning is completed, then a lecturer closed the learning civics lectures for SD.

The results of the first cycle of meeting 2

Cycle 1 of the second 2 meeting was held on Sunday, June 15, 2014. Researcher conducted the study to the Fourth Semester students of PGSD UMP class A in the subjects of Civics for SD. Lectures were fixedly held using Value Clarification Technique (VCT) through charity. The second meeting of the first cycle was conducted in QoriyahThoyibah mosque in Berkoh village. At this meeting the students were directly involved in social activities such as holding lectures were done by Mr. UstadSudiro, SH., LLM. and heavy meal distribution to local residents. This was done due to inculcate social values to students directly.

At the second meeting, the lecturer asked students or assigned students the activities related to social work had been done. Questions and answers would be used as material meeting at the next meeting. Lecturer guided students to make the subject matter and provided the opportunity for students to ask questions, and only a few students were asked anything related to charity. In the action process during the first cycle consisting of two meetings, the lecturer as an observer did an observations of students' participation during the teaching learning process. Observer observed students' participation during Civics for SD learning using Value Clarification Technique (VCT) through charity.

c. Result of Observation

In doing observation activities, the researcher was helped by a peer-researcher. The observer observed the students' participation by using the participation sheet provided.

Table I. The Recapitulation of Students' Participation in Cycle I

Code	Activity Indicator	The Total of P1+P2	Percentage
A	Delivering Question	275	68,75%
B	Delivering Opinion	296	74%
C	Delivering rebuttal	288	72%
D	Delivering answers	297	74,25%
E	Noting to the lecture	296	74%
Total		1452	
Percentage Value = $\frac{1452}{1000} \times 100 = 72,6\%$ Classically Participation			

From the observation of the first cycle class actions on participation using Value Clarification Technique (VCT) through Charity, it can be concluded that it was very good. Observation of students' participation can be categorized as excellent, it was proven by the average value of classically students' participation, reaching to 72,6% , however, it had not reached the determined indicator limit.

d. Results of Reflection

At the end of the first cycle, there was a reflection on the results of the action, from the assessment of students' participation, it could be seen the students who wanted to express their opinions during the learning process. This proved the average point of youth participation, reaching 72.6% in both categories, nevertheless it cannot be said to be complete. Therefore, there should be an effort to rectify these shortcomings. An Effort was needed to be done for the next cycle to give encouragement and motivation to the students so that students actually paid attention to the material, being dare to ask and express ideas and concepts. Besides, the lecturer should also provide easy problem to understand and also in accordance with the objectives will be achieved.

The Result of Action of Cycle II

a. Planning results

Planning that was implemented in the first cycle was as follows:

1. Making a scenario of Value Clarification Technique (VCT) through charity.
2. Making learning media.
3. Developing participation observation sheet.

b. Results of the Action

The implementation of the action by using Value Clarification Technique (VCT) through Social Activity in the second cycle was conducted in two sessions. First meeting was held on Monday, June 16, 2014 and the second meeting was held on Wednesday, June 18, 2014.

1. Results of Meeting 1 Cycle II

The First Meeting in the Second cycle was held on Monday, June 16, 2014. The researchers carried out research activities for the Fourth Semester of PGSD UMP class A in the subject of Civics Education in SD using Value Clarification Technique (VCT) through charity. Lecturer delivered the learning objectives. Lecturer gave the apperception or charity review events that had been implemented in the second meeting in the first cycle. At a meeting of the cycle of the lecturers delivered the learning objectives to be achieved. At the first meeting, the lecturer delivered material using PPT media, lectures and assignments. Students listened and understood the lecturer's explanation, but still lack of attention. In explanation, the lecturer also gave problems to students. After all groups had worked on the problems encountered at the meeting last week given by lecturer, lecturer called one of the groups randomly and stood in the group to try to resolve the related problem given by lecturer after social activities held at the Berkohmosque. Then the lecturer pointed to different groups to respond to the answers. Furthermore, the lecture appointed different groups to rebuttal each other.

2. Results of Meeting II Cycle II

The second meeting of Cycle II was held on Wednesday, June 18, 2014. Researcher conducted the study on the Fourth Semester Students of PGSD UMP class A on Civics Education for SD. Lecturer was still using Value Clarification Technique (VCT) through charity. The initial activity of lecturer was opening the lecture, then students sitting in groups according to the group. Furthermore, the lecturer did apperception first, asked students and associated the material that had been studied previously at the meeting, because the materials studied in the second meeting was still something to do. At this second meeting, the lecturers delivered the learning objectives to be achieved, but it was enough to motivate the students who had raising curiosity about the concepts that would be studied.

At the second meeting, the lecturer delivered material using PPT media, lectures and assignments. Students listened and understood the lecturer's explanation, but still there is a lack of attention. When explaining, the lecture also provided the problems. After all groups had worked on the problems encountered at the meeting last week given by lecturer, lecturers called one of the groups at random and stood in the group to try to clarify the value of the problems given by the lecturer. Then the lecturer pointed to different groups to respond or clarified different values. Furthermore the lecturer pointed different groups to answer the next question. Lecturer guided students to conclude the subject matter and provide the opportunity for students to ask questions, and only a few students asked. The implementation process during the second cycle consisted of two meetings, the lecturer as an observer observed the students' participation during the teaching learning process. Observer observed students' participation during the lecture of Civics Education for SD using techniques to clarify the value of VCT through charity.

c. The Result of observation

In doing observation activities, the researcher was helped by a peer-researcher. The observer observed the students' participation by using the participation sheet provided.

Table I. The Frequency Distribution of Students' Participation in Cycle I

Code	Activity Indicator	The Total of P1+P2	Percentage
A	Delivering Question	360	90%
B	Delivering Opinion	308	77%
C	Delivering rebuttal	324	81%
D	Delivering answers	333	83,25%
E	Noting to the lecture	350	97,5%
Total		1675	
Percentage Value = $\frac{1675}{1000} \times 100 = 83,75\%$ Classically Participation			

From the observation of the second cycle in class actions on participation using Value Clarification Technique (VCT) through Charity, it can be concluded that it was very good. Observation of students' participation can be categorized as excellent, it was proven by the average value of classically students' participation, reaching to 83,75% , therefore, the students' participation can be completed because it has reached the indicator had been determined.

d. Results of Reflection

At the end of the second cycle, the reflection was done after implementing actions with the following results: The assessment of students' participation has met an indicator of success in this study, so that the study can be stopped and been successful.

DISCUSSION

The data of Students' Learning Participation was obtained from observations conducted by the observer. Observations were made during the teaching learning process with the assistance of students' participation sheet which had been prepared beforehand. It was intended that the observer really knew the extent of students' participation in the following study inside and outside the classroom. The result showed that the results of student participation had improved from the first cycle to the second cycle. The percentage of the average value of the results of students' participation of class of the Fourth Semester of PGSD UMP can be seen in Table 3 below:

Table 3. The Improvement of Students' Participation

No	Cycle	Percentage of Participants
1	II	72,6
2	II	83,75

The table above shows a clear increase in the result of the participation of students in each cycle. The improving students' participation results were seen in the second cycle, which reached a percentage of 11.15%. To determine the improvement of each indicator on the outcome of the participation of students, it can be seen in figure 2 below:

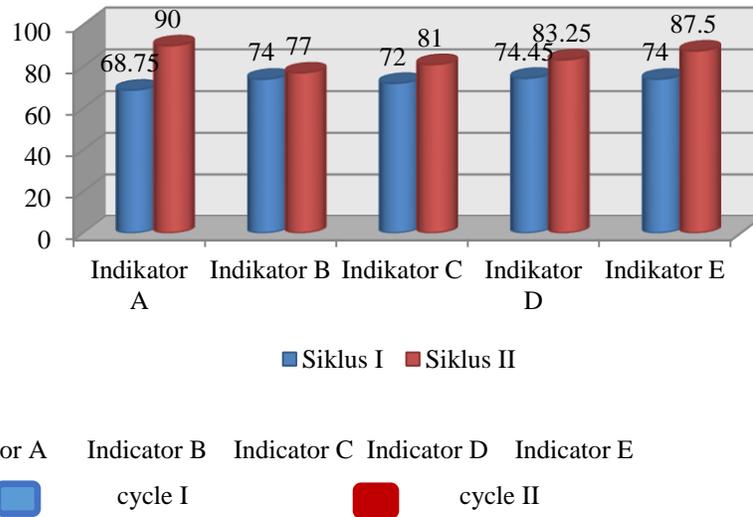


Figure 2: Histogram of the Improvement of Each Indicator on the Students' Participation

Note:

- Indicator A: Addressing questions
- Indicator B: Delivering the opinion
- Indicator C: Delivering disclaimer
- Indicator D: Delivering answers
- Indicator E: Noting lectures

On indicator A, student asking questions, the results showed an increase in good percentage reaching 21.25% from the first cycle to the second cycle. Indicator B that student expression, the results showed an increase in the percentage of the second cycle, which reached the percentage increase of 3%. Indicator C, students deliver rebuttal, these results indicate that the increase is quite good, reaching 9% in the second cycle. Indicator D is delivering answers, the results indicate the percentage increase of up to 9%. Indicators E is paying attention, the results show the increase in the percentage reached 13.5%. Based on these discussions, it can be concluded that learning to use Value Clarification Technique (VCT) through Charity can improve students' participation.

SUMMARY

Technology gives many advantages, but also has some side-effects for human, including young people and children. If they are overdue in using technology or access some violence-content, they will get some side effect such as: being more aggressive; having sleep problem and mood disorder; not able to concentrate; having obesity, cognitive delay, low self-esteem, and tantrum; losing interest in other hobbies; feeling depressed and lonely; and they could be an anti-social person. These “crimes of technology” indicate that many children do not have the maturity or the parental guidance to use technology in a safe and responsible manner (Rowan, 2010).

Kids are in a phase which they mimic action of people around them. So, parents should be a good example in order to teach them how to control their self in using technology. There are some ways to do it: show the children that we regularly participate in physical activity, allow our child to choose the type of activity they are interested in, promote acceptance of different bodyshape and ability levels, reinforce the social benefits of physical activity as well as the physical, help our children develop their skills and strategies for coping with different physical activity environments, restrict television watching and ‘screen time’ to less than two hours per day, and turn the television off when the program is finished (Department of Health and Human Service of Victoria, 2016). Parents also need to guide their kids when they are watching television or access internet with computer or smart phone supposed not to search something with bad contains.

But if the children has been already addicted, Dr. Graham suggests that parents could do the 72 hours for digital detox. Initially they will show distresses and signs of withdrawal, much like any addict would feel. The challenge starts when we reintroduce technology back into their lives in a controlled manner, they need a balance of activities to help children including an increase of physical activity. parents should try to set down some 'compromise agreements', meaning families still spend time together. Perhaps there are no smartphones at meals, and the family have half a day together cyber-free over the weekend (Woollaston, 2013). This solution needs to do frequently and without any force. Parents need to choose an interesting physical activity (indoor or outdoor) so that the kids will enjoy it and forget about technology.

Technology is like a knife. We can use it in a good or bad purpose. Do not let technology control us, we are the one who need to control it. Never teach or forbid our children without giving any example. If we want our children use technology wisely, we need to do and show it first, so will them.

REFERENCES

1. C. A. Anderson, A. Sakamoto, D. A. Gentile, et al. "Longitudinal effects of violent video games on aggression in Japan and the United States," in *Pediatrics Journal* (American Academy of Pediatrics, Grove Village, Illinois, 2008) pp. 1-21.
2. S. Coughlan. "Lack of sleep blights pupils' education" in *BBC News* (8 May 2013), retrieved in <http://www.bbc.com/news/business-22209818>.
3. M. Dehghan, N. Akhtar-Danesh, and A. T. Merchant. "Childhood obesity, prevalence and prevention," in *Nutrition Journal*, vol. 4, no.24.
4. Department of Health & Human Service of Victoria. "Children – keep them active," in *Better Health Channel* (2016), retrieved in <https://www.betterhealth.vic.gov.au/health/healthyliving/children-keeping-them-active>.
5. W. H. Dietz and S. L. Gortmaker. "Do we fatten our children at the television set? Obesity and television viewing in children and adolescent" in *Pediatrics Journal*, vol. 75, no.5 (New England Medical Center and Department of Behavioral Science, Harvard School of Public Health, Boston, 1985) pp. 807-812.
6. V. L. Dunkley. "Gray matters: Too much screen time damages the brain," in *Psychology Today* (27 Feb 2014), retrieved in <https://www.psychologytoday.com/blog/mental-wealth/201402/gray-matters-too-much-screen-time-damages-the-brain>.
7. K. M. Hertlein & K. Ancesta. "Advantages and Disadvantages of Technology in Relationships: Findings from an Open-Ended Survey" in *The Qualitative Report*, vol.19, no.22, pp.1-11.
8. L. R. Huesmann. "The impact of electronic media violence: Scientific theory and research," in *J Adolesc Health*, Desember 2007; 41(6 Suppl 1), pp. 1-12.
9. M. P. Kumar. "Information technology: Roles, advantages, and disadvantages" in *International Journal of Advanced Research in Computer Science and Software Engineering*, vol.4, no.6, pp.1020-1024.
10. K. A. Liberatore, K. Rosario, L. N. Colon-De Marti, et. al. "Prevalence of Internet addiction in Latino adolescents with psychiatric diagnosis," in *Cyberpsychology Behavior Social Network*, vol.14, no.6, pp. 399-402.
11. S. Mazhari. "The Prevalence of Problematic Internet Use and the Related Factors in Medical Students, Kerman, Iran" in *Addict Health*, vol.4, no.3-4, pp. 87-94.
12. L. S. Pagani, C. Fitzpatrick, T. A. Barnett, et.al. "Prospective Associations Between Early Childhood Television Exposure and Academic, Psychosocial, and Physical Well-being by Middle Childhood," in *Arch Pediatr Adolesc Med*, 2010, 164(5), pp. 425-431.
13. A. Page. "Screen time linked to psychological problems in children," PEACH Project of Bristol University, 2010, retrieved in <http://www.bristol.ac.uk/sps/news/2010/107.html>.
14. M. Prigg. "Using mobile phones and tablets before bed could be affecting your sleep, warn scientists - and they say teens are most at risk," in *Daily Mail Online* (28 Agustus 2012), retrieved in <http://www.dailymail.co.uk/sciencetech/article-2194806/Using-mobile-phones-tablets-bed-affecting-sleep-warn-scientists.html#ixzz49IMnsK9k>.
15. G. S. Relos, "Electronic gadgets should be banned for kids 12 and below, expert says," in *Asian Journal* (12 March 2014), retrieved in <http://asianjournal.com/editorial/electronic-gadgets-should-be-banned-for-kids-12-and-below-experts-say/#sthash.BjpK1KRc.dpuf>

16. S. Rosenberg. "Cell phones and children: follow the precautionary road," in *Pediatric Nursing*, 2013, vol.39, no.2, pp. 65-70.
17. M. Simufurosa, "The impact of modern technology on the educational attainment of adolescent," in *International Journal of Education and Research*, Vol.1 No.9, September 2013, pp. 1-8.
18. G. Small & G. Vorgan. *iBrain – Surviving the technological alteration of the modern mind*. (Harper Collins Publishers , New York, 2008)
19. D. Susilowati and I. Rezkisari. "Ini alasan kamar anak harus bebas layar apapun," in *Republika Online* (9 Mei 2016), <http://www.republika.co.id/berita/gaya-hidup/parenting/16/05/09/o6vxx4328-ini-alasan-kamar-anak-harus-bebas-layar-apapun>.
20. B. Swinburn and A. Shelly. "Effect of TV time and other sedentary pursuits," in *International Journal of Obesity*, 2008, Vol. 32, pp. 132-136.
21. H. Tsukayama. "Many struggle with the dark side of technology: Internet addiction," in *The Washington Post* (20 May 2016), retrieved in https://www.washingtonpost.com/business/economy/for-many-young-americans-compulsive-internet-use-is-a-very-very-real-struggle/2016/05/20/be637a24-130d-11e6-8967-7ac733c56f12_story.html.
22. V. Woollaston. "The five signs your child is addicted to their iPad – and how to give them a 'digital detox'," in *Daily Mail Online* (30 Oktober 2013), retrieved in <http://www.dailymail.co.uk/sciencetech/article-2479109/The-signs-child-addicted-iPad--digital-detox.html>.

Building Student's Character Through Students Development Manajement Based on Islamic Academic Culture

Nuridin

English Education Department, Faculty of Language, Sultan Agung Islamic University

Corresponding author: nuridin@unissula.ac.id

Abstract. Sultan Agung Islamic University (Unissula) has driven its vision being as a prominent university in raising khairaummah [the best] generation, disseminating science and technology based on Islamic values and building Islamic Civilization toward prosperous society blessed by Allah (Statute of UNISSULA, 2011). Unissula has been implementing Islamic Academic Culture as the implementation of the guidance of university student resulting the best generation. This research is aiming at: (1) finding management model of student guidance based on Islamic Academic Culture at Universitas Islam Sultan Agung, (2) developing management model of student guidance based on Islamic Academic Culture with quality management, (3) finding respon from the Executive Board of Faculty and University which establish student guidance. This *R & D* research conducted at Universitas Islam Sultan Agung. The population of research is the board of student, Vice Dean on Academic and Student Affair, Vice Rector on Student Affair and Islamic Values Implementation. The data collected through interview, questionair and documentation. Analysis of content validation conducted with expert judgment. Validation conducted through Focus Group Discussion. The data is analysed by descriptive analysis, and T-test. The result of research shows that: (1) factual model which has been established by UNISSULA in guiding students based on three manual resources in its management, vision-mission of UNISSULA, Strategic Plan of UNISSULA, Islamic Academic Culture values. The programmes of student guidance generally conducted through the phase, the first phase conducted for fresh students through Pekan Ta'aruf [Orientation Week], the second phase conducted for enrolling students through tutorial, intellectual, leadership, entrepreneurship and interest and talent development programme. The third phase conducted for fresh graduated-student before commencement through provisioning programme: (2) the respon of the executive boards toward quality management model on guiding student based on Islamic Academic Culture is in the high category, both the concept of reliable vision, mission, elaboration of student guidance model, student guidance programme and quality procedure of student guidance: (3) model of quality management is effectively used in the management of student guidance based on Islamic Academic Culture.

INTRODUCTION

Genealogy education is started from a philosophy about the importance of human beings who have manners or good manners and develop the potential to create a system of civilized life. This is important because the basic objective of Islamic education is to introduce people to the purpose of life that is to know God and how to worship Him (Khalili, 2014: 55).

Nevertheless, the influence of westernization science has turned the main orientation of the education to the goals that are mere materialist so that the application of science is separated from God (Khalili, 2014: 55).

Though the practitioners of higher education in Western universities themselves have much to complain of concern for the modern Western educational system. Prof. Harry Lewis, a professor at Harvard for 32 years and served as Dean of Harvard College for 8 years (1995-2003), for example, expressed concern about this in his book, *Excellence Without a Soul : How a Great University Forgot Education* (2006:1). According to him, the education system has made a big mistake (moral errors) which diminishes the moral-spiritual side of people. This mistake is reflected clearly in a serious loss of moral vision, which results in education be without the spirit (soulless education).

Self-criticism has also been done by some Western scholars before, such as Sir Walter Moberly in his book *The Crisis in the University*, which was published in 1949; and Christopher Dawson in his book, *The Crisis of Western Education*, in 1961.

At the level of concern reality, there are many events in the world of education. Delinquency students showed significant escalation from year to year (Nasikhah, 2013:2).

The survey results of the National Narcotics Agency (BNN) in 2011 showed from 100 students, there are two people who have tried to use drugs, one of which became regular abusers. Furthermore, from the 1,000 schoolchildren/students are predicted that there are about four people instead of injecting addicts and three injectors (BNN, 2011:8).

Research conducted by Simbolon (2012) in a boarding college in Singapore shows that there are the data ranges from one to two cases of violence in the hostel each semester, the number of perpetrators of bullying range from one to eight people.

Based on the grand design that was developed in the pattern of development of student affairs, psychological and socio-cultural character formation in the individual is a function of the overall potential of the human individual (cognitive, affective, conative, and psychomotor) in the context of social interaction of cultural (in the family, school and community) and last a lifetime. Configuring the characters in the context of the totality of social and cultural psychological processes can be grouped into four. There are heart movement, thought movement, as well as sports and kinesthetic though the feeling and intention (Ministry of National Education, 2010)

The grand design requires ongoing educational process that is integrally able to develop the full potential of human beings. So that education which is based on a vision that is based on religious values are important because education is a process of learning to live with governance habituation-value to be true. While the source of truth comes from values contained in religion (Anwar, 2010:1)

Sultan Agung Islamic University (Unissula) is a university based on religion. As a faith-based university, Unissula has formulated a vision to become a leading Islamic university in building a generation of *Khaira Ummah*, which develops science and technology on the basis of Islamic values and Islamic civilization, builds toward a prosperous community that is blessed by Allah in the framework of *rahmatan lil a'lamin* (Statute Unissula, 2011). In order to realize this vision, Unissula have implemented Islamic Academic Culture as a base the educational process, including in coaching students.

However, in practice, there are weaknesses in the coaching process. Profile student has not demonstrated the ideal profile as a student at the Islamic Academic Culture guidance. Sholihah research results, et al (2014) showed that the implementation of an Islamic Academic Culture Sultan Agung Islamic University still needs improvement because there are still many deficiencies in almost all aspects.

Research conducted by Ronto (2009) showed that the Islamic Academic Culture in Unissula has not yet fully implemented. Implementation of Islamic Academic Culture is more dominant in the movement group prayers, Islamic dress, and a clean environment movement. While the implementation of Islamic Academic Culture on aspects such as the spirit of the improvement of science such as iqra (reading), Islamic Learning Society and appreciation of science has not appeared seriousness in implementation.

Therefore, the necessary integrated quality management for a commitment student development based Islamic Academic Culture is getting stronger, a coaching program can run consistently and continuously with the processes of mentoring for students, and the process of student development based Islamic Academic Culture has quality standards so that the implementation can be programmed periodically and continuously.

THEORETICAL FRAMEWORK

Quality Management

Integrated quality management is a practical and strategic approach in running the organization that focuses on the needs of customers and clients with the purpose of seeking better results. It can be understood as a philosophy of continuous improvement to organizational goals can be achieved by involving all components within the organization (Salis, 2008:76)

Integrated quality management is not a set of rigid rules and regulations and must be followed, but rather a set of procedures and processes to improve performance and to enhance the quality of work. The point is to align their

efforts in a way that people who are involved in the organization to face his task with vigor and participate in improving the implementation of the work (Soegito, 2010:41).

The concept of integrated quality management emphasizes continuous improvement to meet customer satisfaction. Organizations that embrace the concept of quality management view quality as something defined by their customers. Educational institutions are positioned as services institution or service industry members in accordance with the desired by service customers (Salis, 2008:56). Customers are referred to internal customers (managers, teachers/faculty, staffs) and external customer community, government, industry).

Student Character Development

Mandated by Law No. 20 of 2003 on National Education System which formulate the functions and objectives of national education as follows:

" National education serves to develop the ability and character development and civilization of the nation's dignity in the context of the intellectual life of the nation, is aimed at developing students' potentials in order to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and responsible".

In the context of student guidance, mandated by Law No. 20 of 2003 is very clear that education is essentially to develop the potential of students that is based on faith and devotion, personality, character, and self-reliance. Thus, education has a strategic role in fostering and building the character of students . Therefore, students are the subject of students in higher education , then in order to achieve the required goals of national education student mentoring is supervising all activities of students as learners during the education process .

Student character development patterns require norms that guide the implementation of student development program. Referred norma can be seen in the following table:

No	Norma and Ethics	Commentary
1	The ethos of Learning and Teaching	a. Support opportunities for the development of intellectual, physical, social , moral and cultural whole man b. Encouraging research activities c. Encouraging creativity
2	The ethos of openness	a. Accommodating access to outstanding students b. Showing friendly behavior c. Showing good manners d. Enjoyable working
3	Ethos as Civil Society	a. To be responsible b. Fostering partnerships c. Fighting the highest standards in business d. Showing respect in interacting e. Fair treatment for all citizens of the campus
4	Ethos of Services	a. Offering academic activities were well organized b. Intensive and open communication c. Change and continuous improvement d. Offering a well-planned program and consistent
5	Productive Work ethic	a. Creating a campus environment that is conducive b. Supporting the effectiveness and efficiency c. Looking for the best quality in all aspects d. Increasing commitment to support intellectual development and produce quality education

Islamic Academic Culture

Islamic Academic Culture is civilizing the application of Islamic values in the overall life on campus, provided by all campus residents to achieve educational goals in Unissula (Supadie, 2008:53). Its implementation in the form of activity with Islamic values as the basis of the overall process of academic and non academic campus conducted jointly and seriously.

According to Unissula Institutions, Islamic Academic Culture generally covers two things, namely (1) the strengthening of science and technology and (2) strengthening *ruhiyah*. Strengthening science and technology is intended to be an important part of campus life. Through the Islamic Academic Culture, Unissula endeavors to improve the quality of science through the strengthening of science and technology. Strengthening science and technology can be carried out through the following four things:

1. The spirit of Iqra '
2. Developing Studies on Basic Values of Islam
3. Appreciation of Science
4. Establishing Islamic Learning Society

Strengthening *ruhiyah* is intended to faith and devotion and *akhlakul karimah* into the pillar that underlies someone in their studies and being able to put it into practice for the benefit of the world. Strengthening *ruhiyah* in Islamic Academic Culture include such things as the following:

1. Movement of prayer congregation
2. Movement of Islamic dress
3. Movement of *Thaharah*
4. Movement of Modeling
5. The hospitality of the Islamic Movement
6. Realizing movement of Noble Morals

METHODS

The Need of Data

Data Required	Data Source
Literature of student development and Islamic Academic Culture [Budaya Akademik Islami/ BudAI]	Articles in journals, scientific magazines, text books etc.
General data about UNISSULA	Profile UNISSULA
Implementation of student development program based on Islamic Academic Culture	Documentation, observation and in-depth interviews with respondents.

Respondents

Respondents in this study is Vice Rector III on Student Affairs, Vice Dean I on Academic and Student Affairs, Head of the Institute of Assessment and Application of Islamic Academic Culture [LPP BudAI], Head of Student and Alumni Bureau, Head of Student Affairs and Secretary of Vice Rector III on Student Affairs.

Data Collection

Collecting data in this study was conducted through interviews, observation, and questionnaire to the respondents and all those that have relevance in the process of student development based on Islamic Academic Culture.

Data Analysis

This analysis is used to analyze the data and information obtained from preliminary studies. The use of descriptive qualitative analysis aims at gaining an overview of the role of organizers and educators in the process of planning, implementation and evaluation of UNISSULA student development.

Results

The model of student development based on Islamic Academic Culture during the planning phase refers to Vision, Mission, Strategic Plan of UNISSULA and the values of Islamic Academic Culture. Organizing under the Vice Rector for Student Affairs and Application of Islamic Values which its development program is generally conducted in three stages, namely the initial stage as the fresh student, the development done through program of Orientation Week [Pekan *Ta'aruf*], the second stage as enrolling as students, the development done through tutorial program, intellectual program, leadership, entrepreneurship, and interests and talents development program. In the third stage, the development as students towards graduation carried through provisioning program.

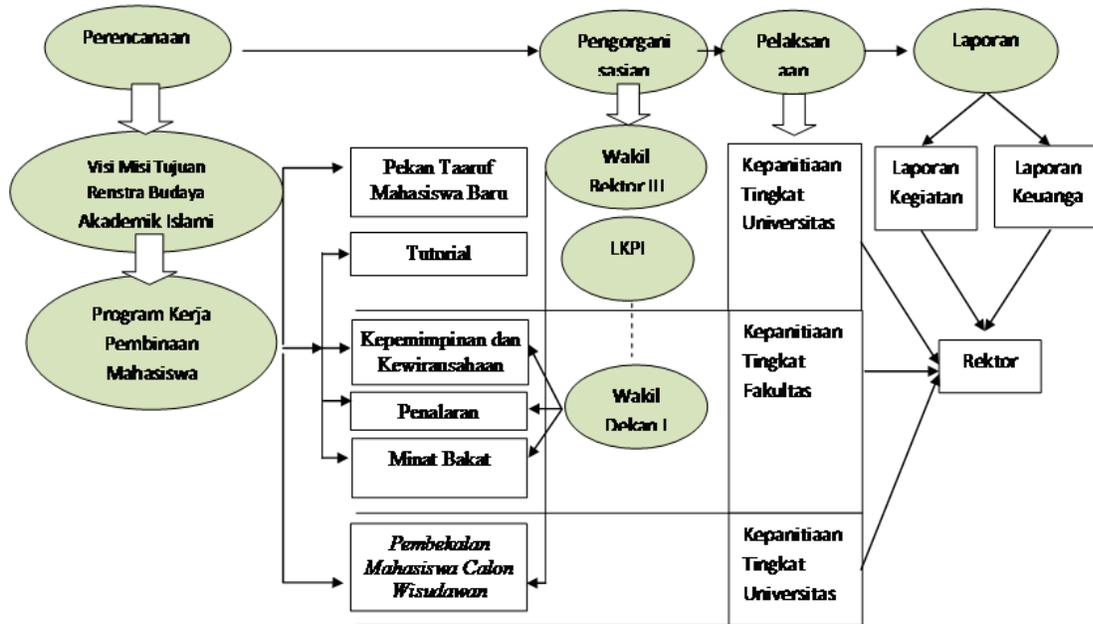


Figure 1 Management Model of Student Development

The trial models conducted using pre and post-test. After test conducted, the score generally increases. Score of pre-test in the planning stage is 29. After being given treatment using model, score of post-test is 33. In the organizing stage, score of pre-test is 23, then score of post-test reaches 30 after being given treatment using model.

In such case, score of pre-test in implementation stage is 33, then after being given treatment using model, score of post-test is 40. While score of pre-test in the evaluation stage is 23 then after being given treatment using model, score becomes 34. Score of pre-test in the procedure of quality is 29. After being given treatment using model, score of post-test is 31. Then, the difference of pre and post-test score can be seen in the Graph of Comparison of pre and post-test as follows:

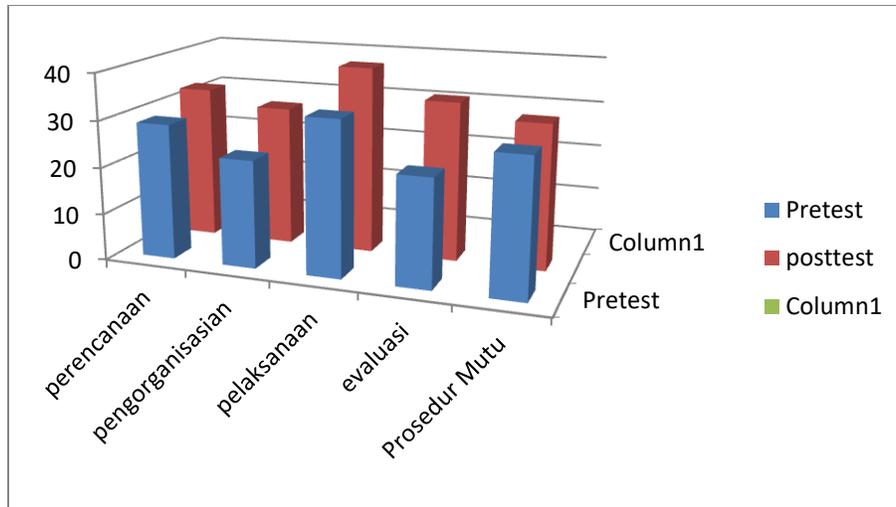


Figure 2 Graph of pre and post-test score

Figure 2 shows the difference score obtained before and after subjects of the study treated using model of student development management proposed by the researcher. It also shows the influence between before and after treatment in managing student development using student development management model developed by the researcher.

Model of student development management is proposed in accordance with Vision and Mission of UNISSULA. The effort to achieve Vision using Islamic Academic Culture as a base of student development has become consensus and commitment of values acknowledged together. Constructing value commitments together in accordance with the principles of value-based management as stated Robin (2007: 143) that the approach of value-based management is a management approach by establishing, promoting and practicing values acknowledged together in an organization. Acknowledge values act as milestones guidelines for action and managerial decisions.

Implementation of student development as the elaboration of development programs that have been implemented by UNISSULA started as fresh students starts the early days in campus through the program of Orientation Week [Pekan Ta'aruf]. Then it continues as the students entering the lecture started from the first and second semester required actively to participate the activities of Religious Tutorial. Then in the third semester until the time for graduation, they are deliberately given choices to follow the development activities in line with their own talents and interests. It eventually ends as students are required to retrace through provisioning program towards graduation. Management of student development comprehensively started from initial entry until graduation in line with the opinion of Qomar (2007: 141) that the management of learners is related to the management of learners ranging from initial entry until graduation from the institutions.

CONCLUSION

Based on data analysis and discussion in this study obtained some conclusions appropriate formulation of the problem as follows:

1. Factual model established by UNISSULA in student development based on the Strategic Plan of UNISSULA, and the values of the Islamic Cultural Academic through three stages of development; the first stages as fresh students, the development conducted through program of Orientation Week [Pekan Ta'aruf]. The second stage as enrolling student, the development conducted through tutorial program, intellectual activity, leadership, entrepreneurship and the development program of interests and talents. In the third stage, the development as students towards graduation conducted through provisioning program.
2. The development of factual model by drafting student development bases on Islamic Academic Culture referring to the Koran which is developed by outlining general analysis of student development issues, description of development of students' potential which is based on Islamic values contained in Koran as basic framework of student development, the elaboration of the main points of student development, description of the stages of student development as a reference framework appropriate stages of

- development capacity, the level of semester and the target achievement of development program and management scope that serves as a guide for the implementation of quality procedures.
3. Based on the results of test and development, Management Model of Student Development bases on Islamic Academic Culture proven that it has the effectiveness as a model of student development based on Islamic Academic Culture in efforts to improve the quality of students. Some efforts to improve the quality conducted through Orientation Week [Pekan Ta'aruf] as the early introduction program for informing academic life of campus and mapping potential students, religious tutorial program, leadership and entrepreneurship programs, program of interests and talents development and provisioning programs as the final program for students towards graduation.
 4. The Executive Board is in very high category responding the concept of conformity with Vision, Mission of UNISSULA, the values of the Islamic Academic Culture, Strategic Plan UNISSULA, systematic pattern and stages as well as the substance of the content and student development programs, practical application of the model in an effort to guide students and the effectiveness of the model to guide students.

REFERENCES

1. Anwar. Rofiq, , 2010, Risalah Bismillah Membangun Generasi Khaira Ummah, Unissula Press, Semarang
2. Badan Narkotika Nasional (BNN), Data Tindak Pidana Narkotika Jawa Tengah Tahun 2007-2011, www.bnn.go.id diunduh pada tanggal 7 Januari 2013
3. Badan Narkotika Nasional (BNN), Survey Nasional Perkembangan Penyalahgunaan dan Peredaran Gelap Narkotika Pada Kelompok Pelajar/Mahasiswa di Indonesia Tahun 2011, www.bnn.go.id diunduh pada tanggal 7 Januari 2013
4. Dawson, Christopher, 2010, The Crisis of Western Education, The Catholic University of America Press, Washington, D.C.
5. Departemen Agama Republik Indonesia, 2010, Alquran dan Terjemahnya, Semarang, PT. Karya Toha Putra
6. Direktorat Kelembagaan, Ditjen Dikti Depdiknas. (2006). POLBANGMAWA (Pola Pengembangan Kemahasiswaan). Jakarta.
7. Kemendiknas, 2010, Direktorat Kelembagaan, Ditjen Dikti Depdiknas. (2006). POLBANGMAWA (Pola Pengembangan Kemahasiswaan). Jakarta
8. Khalili, Hasib, 2014, Konsep al-Attas tentang Adab (Tawaran Paradigma Pendidikan), Jurnal Islamia, ISSN 1858-3245 Vol. IX No. 1 Maret 2014
9. Lewis, Harry, 2006, Excellence Without a Soul: How a Great University Forgot Education, Public Affairs,
10. Nasikhah, Durotun, 2013, Hubungan antara Tingkat Religiusitas dengan Perilaku Kenakalan Remaja pada Masa Remaja Awal, Jurnal Psikologi Pendidikan dan Perkembangan Volume 02, No. 01 Februari 2013, Universitas Airlangga, Surabaya
11. Qomar, Mujamil, 2007, Manajemen Pendidikan Islam, Penerbit Airlangga, Jakarta
12. Robbin dan Coulter. 2007. Manajemen (edisi kedelapan), PT Indeks, Jakarta
13. Ronto, 2009, Implementasi Budaya Akademik Islami (Studi Kasus di Universitas Islami Sultan Agung), Pasca Sarjana Institut agama Islam Negeri (IAIN) Walisongo, Semarang
14. Salis. Edward, 2008. Total Quality Management in Education. Alih Bahasa. Cetakan VIII. Penerbit IRCiSod. Jogjakarta
15. Simbolon, Mangadar. 2012. Perilaku Bullying pada Mahasiswa Berasrama, Jurnal Psikologi Vol. 39. No. 2. Desember 2012. https://www.google.co.id/?gws_rd=ssl#q=simbolon+penelitian+kekerasan+mahasiswa+di+asrama, diunduh pada tanggal 6 Oktober 2015
16. Sir Walter Moberly, 1949, The Crisis in the University, SCM Press Publisher, London, <https://www.questia.com/library/533242/the-crisis-in-the-university>, diunduh pada tanggal
17. Soegito, AT, 2011, Total Quality Management (TQM) di Perguruan Tinggi, UNNES Press, Semarang
18. Sholihah. Hidayatus. dkk. 2014. Laporan Observasi Pelaksanaan Budaya Akademik Islami di Universitas Islam Sultan Agung, Unissula Press. Semarang Supadie. Didiek. Achmad. dkk. 2008, Budaya Akademik Islami. Unissula Press. Semarang
19. Tim Penyusun Renstra Yayasan Badan Wakaf Sultan Agung (YBWSA), 2012, Statuta Unissula 2012, Semarang, Unissula Press

The Role of Mathematical Representation and Disposition in Improving Students' Mathematical Power

Imam Kusmaryono¹, Hardi Suyitno² and Dwijanto³

¹*Mathematics Education, Faculty of Teacher Training and Education, Sultan Agung Islamic University*

^{2,3}*Mathematics Education Department, Faculty of Mathematics and Science, Semarang State University*

Corresponding author: kusmaryono@unissula.ac.id

Abstract. The success of students in problem solving is highly dependent on the ability of students representing each developmental problems and a higher representation influenced by other representations. The aim of research to uncover and describe the capabilities and dispositions mathematical representation based on the students' mathematical power. The subjects were students (prospective teachers of mathematics) academic year 2015/2016 Mathematics Education Department, Sultan Agung Islamic University. The numbers of students in this study were 29 students. The data collection technique using a mathematical representation tests, mathematical disposition questionnaires and interviews. The study concluded that the representation is affected by the disposition of the mathematical aspects of a person, through a positive disposition will help increase students' understanding of mathematical concepts. Furthermore, the mathematical representation will improve communication skills, perform conjecture and troubleshooting. In general disposition and mathematical representation was instrumental in enhancing the competence of the students' mathematical power.

INTRODUCTION

Learning math is basically learning about the reason. Learning math is a learning activity or activity that emphasizes the aspects of reasoning. On learning of mathematics in schools students are trained to do reasoning, meaning that learning should involve students actively to reason, strengthen their understanding of mathematical concepts (Stacey, 2006). In the process of reasoning students will construct their own knowledge -stage thinking students.

Learning math is not just convey information, showing the formula and insists on the procedure of processing a matter of course, but teachers act as mediators and facilitators and assist students through the creation of conducive learning so that students actively and continuously construct his own knowledge to reason. Students not a photocopy of adults, what to think or rationalized by adults (teachers) can not directly forcibly transferred from the teacher to the student. Each student has a different way in the process of reasoning to construct knowledge, in other words the students had different levels of mathematical representation, between students and teachers and between students and other students. With regard this, teachers are expected to reduce plantings doctrines in mathematics. Problem-solving solutions no longer have to follow the procedure and should be done as exemplified by the teacher, because it would be possible settlement of problem solving can be through a variety of mathematical representations that can bring critical attitude and creative students.

Brenner (Neria & Amit, 2004) states that the success of students in problem solving is dependent upon the ability of students to represent a problem, such as constructing and using mathematical representations in the form of graphs, words, equations, tables and images or manipulation of symbols mathematical more. Hwang, et.al (2007), in a study entitled influence the ability of multiple representations and creativity to solving mathematical problems using multimedia whiteboard system. Research results showed that scores of students who use the formula better representation of the student using verbal representations and graphic images or symbols.

Fadillah (2010) revealed that "representations are expressions of ideas mathematically shown students as models or forms in lieu of a problem situation that is used to find the solution of a problem that is being faced as a result of the interpretation of the mind." The idea of a mathematical representation in Indonesia has been included in the objectives of learning mathematics in schools in Regulation No. 23 of 2006 (Depdiknas, 2007).

The survey results Trends International Mathematics and Science Study (TIMSS) in 2011 showed that the ability of students' mathematical representation of Indonesia is still low. Indonesia is ranked 38 of 42 countries

surveyed. This is because students in Indonesia are less accustomed to solve problems with such characteristics questions in TIMSS. Learning mathematics at school is not giving students the opportunity to present their own representation. Students are only used to do the questions are routine and imitate the teacher in solving the problem, so the ability of students to develop their ideas and express them in various forms of representation are underdeveloped. As a result, the ability of students' mathematical representation is low. Learning monotonous and conventional as it only focused on low-level thinking skills.

Conventional learning like this, certainly not in accordance with the objectives set curriculum of mathematics education in primary and secondary schools. The purpose of learning mathematics in primary education and secondary education is to prepare students to be able to face changing circumstances in life and in the world is always evolving, through the practice of acting on the basis of thinking logically, rationally, critically, careful, honest, efficient and effective (Puskur, 2006). In addition, students are expected to use mathematics and mindset of mathematics in everyday life, and in studying various scientific emphasizes on the structuring of reason and higher level thinking and forming student attitudes and skills in the application of mathematics.

Ability and skill mathematical representation is also indispensable for students and teachers in the learning of mathematics. Lack of ability and mathematical skills of the students can lead students toward mathematics disposition will also decrease. NCTM in Sumarmo (2002) defines the disposition of mathematics (mathematical disposition) as interest and appreciation for someone to mathematics , namely respect for the usefulness of mathematics in life, an attitude of curiosity, attention, and interest in studying mathematics, as well as a tenacious attitude and confidence in problem solving, Positive actions of students will be realized when they are always confident in dealing with mathematical problems, have high curiosity, diligent, and constantly reflect on the things that have been done (NCTM, 1989).

In mathematics, the disposition is one component that is essential for students (college students) for students accustomed to getting issues that require a positive attitude, desire, passion, and persistence as well as challenges to complete. Without a good mathematical disposition then students cannot achieve competence or mathematical prowess as expected. Disposition is defined as a tendency of students or individual students in mathematical looked positively or negatively (Kilpatric, Findel & Swaford, 2001). In simple, mathematical disposition can be regarded as the attitude, interest and motivation toward mathematics. A large study has proven that the disposition has a strong positive association with cognitive ability. Hudiono (2005) in his research on mathematics learning in junior high school teacher concluded that the lack of knowledge and habits students learn in the classroom in a conventional way has not been possible to develop student representation power optimally. Junaidi (2006), found the disposition has a strong positive relationship with solving ability mathematics at the primary level. Likewise, the effect of handling the disposition has a strong relationship with the mathematical skills of students of junior high schools (Shaban, 2009).

In addition to low-level mathematical thinking and high, students also need to be trained to think advanced, the students are trained to construct and create your own picture mathematical definition. Through constructing and find definitions or concepts in mathematics students are expected to develop other mathematical abilities, in terms NCTM the capability in question was referred to as a mathematical power process.

Basically, every student has the ability - and the ability and potential in him, including the ability mathematical power, but the level mathematical power which each student is different (Kusmaryono, 2015). Do mathematical power it? After reviewing the relevant literature, in this study mathematical power is defined as "the belief of individuals to use knowledge of the conceptual and operational within the framework of the content specified in a situation to solve problems using reasoning, communication and connections together" (Mandaci & Baki, 2010). Dimensi of mathematical representation of the mathematical power can be in the show as the picture below.

In Figure 1 below, it is understood, that the expected product are obtained when students utilize their knowledge of mathematics with math skills together within the framework of the specified contents are indicators of Mathematical Power.

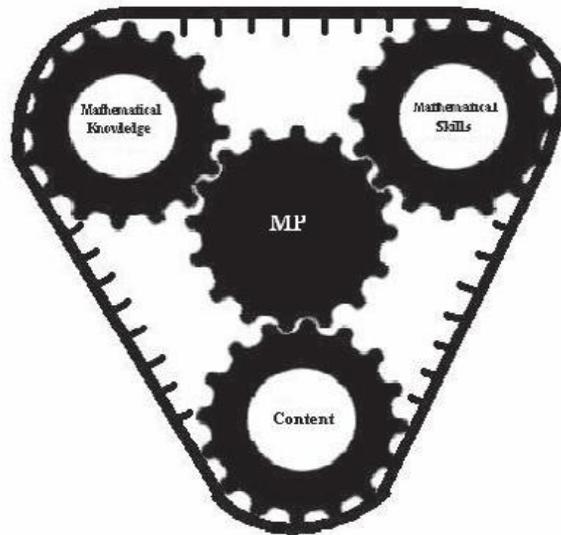


Figure 1. Mathematical Representation of Mathematical Power Dimensions (MP)

Do math including integrated and dynamic activities, such as discovery, exploration, conjecture, and understand the evidence. In this case it is clear that this attitude, the general target primary and secondary education programs related to learning mathematics throughout the world is to develop Mathematical Power.

NCTM (2000) states, the power of mathematics includes the ability to explore, construct a conjecture; and provide a reason logically; the ability to solve non-routine problems; communicate ideas about mathematics and using mathematics as a communication tool; connect ideas in mathematics, between mathematics and other intellectual activities. As an implication, the power of mathematics is an ability that needs to be owned by the students who study mathematics at any school level, as has been recommended by the NCTM (Sharon L., Charlene. E. & Denisse, R. 1997). Therefore how mathematics should be implemented to cultivate the students' mathematical power (Kusmaryono, 2016).

The results of the study Dharma et. al. (2013) showed that the realistic mathematics education more effective in improving understanding of the concept and power of mathematics students. It is important to note that in each of their learning (students) need to be encouraged to discuss their processes in order to improve understanding, gain new insights and can communicate their ideas (Thompson, 2008). This idea is based on the fact that mathematics is more than a collection of concepts and skills that must be mastered. These include methods of inquiry and reasoning, communication, and the notion of context. Mathematical power also served to spur the success of the appreciation of the complexity of students in interdisciplinary studies (Mueller and Lourdes, 2005). In addition, for each individual involves the development of personal confidence (NCTM, 1989; Baroody, 2000). In the principles and standards of school mathematics (NCTM), namely the principle of learning (Learning Principles), emphasizing the students' activity to build new knowledge from experience and knowledge, so that students must learn to math with a true understanding. As stated Bodner (1986): "... knowledge is constructed as the learner Strives to organize his or her experience in terms of preexisting mental structures". Thus, mathematics is a process of acquiring knowledge that is created or performed by the students themselves through the transformation of the experience of individual students.

We know that, in mathematical knowledge that leads to mathematical power, requires the ability to use information to think creatively and to formulate, solve, and reflect critically on issues (NCTM.2000). Consistent with constructivist theories and supporting evidence, NCTM (1989; 1991) has recommended shifting from traditional instructional approaches toward a better approach encourages children math power. Aspects of capabilities contained in the power of mathematics is part of mathematical high-level thinking skills. Therefore develop students' mathematical power starts from the level of young people has become an important goal of the present study of mathematics (Philips & Anderson, 1993; NCTM, 1989; Diezman, 2005).

The assessment of students with a mathematical measure of how much information they have to enter their level of ability and willingness to use, implement, and communicate that information. Marjolijn.P, et.al. (2009), confirmed that the suspect with the true reason is the mathematical thinking process using Mathematical Power. So

in this assessment should examine the extent to which students have been integrated and make informed, whether they can apply them to situations that require reasoning, and whether they can use math to communicate their ideas (NCTM, 2000). From the above set , researchers interested in conducting research to determine the role of representation and disposition mathematical ability of students to improve student math on math problem solving .

RESEARCH METHODS

The study was conducted with survey approach and the research method used is descriptive method. The purpose of this study was to look for information in a way to reveal and describe the capabilities and dispositions mathematical representation based on the power of mathematics students. The research subject chosen was a student (prospective teachers of mathematics) odd semester academic year 2015/2016 on Mathematics Education Department, Sultan Agung Islamic University. The numbers of students in this study were 29 students. The data collection technique was performed under measurement techniques in the form of mathematical representation ability tests, questionnaires regarding the disposition of mathematical and semi-structured interviews. The results of tests the ability of a mathematical representation is expressed in the form of scores and classified based on the level of students. Here is presented a mathematical representation indicator.

Table 3.1 Indicators Mathematical Representation

No.	Representation	Forms of operational
1	Visual representation	Using visual representations to solve problems Make a picture to clarify issues and facilitate the results
2	Representation or mathematical expression	Creating a mathematical model of the equation or other representation given Solving problems involving mathematical expression
3	Words or written text	Writing interpretation of a representation Answering questions by using words or written text

Acquisition of data to measure the ability of a mathematical representation, then performed the scoring as follows :

Table 3.2 Rubric Scoring Ability Mathematical Representation

Score	Explanation ability mathematical representation
0	No answer , if there is only shows the lack of knowledge about the concept that the information provided does not mean anything
1	only there is an explanation of what is known, what is being asked only
2	There are very few explanations, diagrams or drawings and mathematical models are correct
3	Mathematically plausible explanation, but only partially complete and correct , diagram depicts the picture is less complete and correct, while finding a mathematical model correctly, but wrong in getting solutions
4	Mathematically plausible explanation and clear, though not arranged logically or there is a little mistake, depicting diagrams or drawings are complete and correct and find a mathematical model correctly, then perform calculations or get in a logical and complete solutions
5	Mathematically plausible explanation and clear, arranged logically or not there is an error, depicts diagrams or drawings are complete and correct and find a mathematical model correctly, then perform calculations or get in a logical and complete solutions

Furthermore, for the purpose of clarifying the mathematical representation of the quality of students, the score changed in terms of percentage and is categorized as follows:

Table 3.3 Quality of Mathematical Representation

Score Value (In percentage)	Quality Ability Representation
$90\% \leq \text{Value} \leq 100\%$	very good
$75\% \leq \text{Value} < 90\%$	Good
$55\% \leq \text{Value} < 75\%$	Enough
$40\% \leq \text{Value} < 55\%$	Less
$\text{Value} < 40\%$	Very less

Questionnaires given to students at the beginning of the study, a questionnaire technique is used to obtain data on student mathematical disposition, consisting of: 12 positive statements and 12 negative statement following the disposition indicator mathematically as follows: (a) Confidence in solving mathematical problems; (b) Communicating mathematical ideas and try an alternative method of resolving the conflict; (c) persistent in math homework; (d) Interested, curious and creative in mathematics activities; (e) to appreciate the role of mathematical tools and languages; (f) Share your opinion with other people .

This section presents the questionnaire scoring criteria mathematical dispositions that are classified following the table below:

Table 3.4 Criteria Level Mathematical Dispositions

Range of Scores (%)	Criteria Disposition Mathematically
76 to 100	High
51 to 75	Enough
26 to 50	Low
0 to 25	Very Low

After students take the test the ability of a mathematical representation , some students have conducted interviews with the aim to gain more in-depth information about the mathematical representation , disposition and power of mathematics and mathematical difficulties - difficulties experienced by students for taking the test .

RESULT AND DISCUSSION

The results of tests the ability of a mathematical representation of each student can be classified by aspects of mathematical representation (enactive, iconic, symbolic), the level of students' abilities and inclinations mathematical power students are presented in the following table.

Table 4.1 Results of Student Mathematical Representation

Ability student	Aspects of Mathematical Representation			Mathematical Power (MP)
	Enactive	Iconic	Symbolic	
High	---	High	Very High	MP – High
Enough	---	High	High	MP – High
Low	Enough	Low	Enough	MP - Enough

Achievement indicators mathematical disposition through a questionnaire given to students, obtained the following data.

Table 4.2 Disposition Mathematical Achievement Indicators

Kemampuan Mahasiswa	Total Score	Percentage	Criteria
Top group (high)	364	75%	High
Central Group (medium)	1.182	77%	High
Bottom group (low)	583	76%	High
Total Score	2129	76%	High

Based on the test results the mathematical representation in Table 4.1, the achievement indicators questionnaire and analysis result disposition mathematical research , it is known that all student ability level low, medium and high overall had an average high mathematical disposition . The ability of representation in terms of the ability of students the results are different. Students with a high capacity amounted to 5 students, mathematical representation of test results on the student group is obtained 1 students were in the category of iconic high and 4 students were in the category of very high symbolic .

While the average power of mathematics (mathematical power) is at a high level . In the group of top level mathematical power reaches a high level, this seems on the ability of students in terms of preparing a conjecture, investigation and exploration and come to understand the evidence. On top of this group indicates that the disposition of high mathematical achievement that indicator amounted to 75 % has an important role in the mathematical representation. Based on the results of interviews with students, disposition and student high mathematical representation can help increase power mathematical ability of students .

Students with moderate ability dispositions totaling 16 students have high mathematical achievement indicator with a score of 77%. The results of tests on a mathematical representation of this middle group of students obtained 10 students were in the category of iconic high and 6 students were in the category of high symbolic. While the average power of mathematics (mathematical power) is at a high level. Students in the group of top and middle (highly skilled and are) no longer depends on thinking enactive but is in conformity with the cognitive development that is iconic and symbolic thinking.

Students with low ability were 8 students have a high mathematical disposition with a score of 76% achievement indicator. The test results on student mathematical representation under the group acquired two students were in the category enactive, two students have low iconic representation and two students were in the category of symbolic medium. For the average ability of mathematics (mathematical power) are at moderate levels. At the bottom of this group, two students have engaged in representing the shape of the iconic and symbolic. Students' cognitive development is still dependent on something real (iconic). Of course, at this stage the student must immediately release the ways of thinking that are iconic, because science is accepted at the college level are more iconic and symbolic.

Student (prospective teachers of mathematics education) at the time of the interview revealed that Bony and Nurul has a mathematical disposition more productive than David and Siti. Interestingly, when the students were asked to recall the experience of the importance of mathematics in life, they consistently choose the experience that happened when they were in elementary school. His interest in mathematics in primary school classrooms may serve to reinforce the idea that mathematical disposition formed at the beginning of one's school career. While David and Siti, saw mathematics as a positive disposition, especially as a way to create a bond between friends experiences for

sharing and discussing, so that adds to the spirit of learning mathematics. It can be said that the experience of the individual person will establish a mathematical disposition someone (Feldhaus, 2014).

The tendency of a mathematical representation of students in this study is a mathematical representation of iconic and symbolic aspects of the most widely selected students in a math problem. Based on the results of student mathematical disposition questionnaire both at the top, middle and bottom have a high mathematical disposition. Students are required to be able to analyze the problem, collect the appropriate information and connect with their ideas, and then present their thoughts in the form of images or mathematical expressions, and finally found the solution of the given problem. Such activities can improve students' mathematical representation.

Based on the results of interviews with students, disposition and student high mathematical representation can help increase power mathematical ability of students. This is consistent with the statement Hudiono (2005) states that "In view of Bruner, enactive, iconic and symbolic, related to the mental development of a person, and any developments higher representation influenced by other representations. "

CONCLUSION

Based on the test results of a mathematical representation, disposition questionnaires and interviews with student teachers of mathematics education, disposition and student high mathematical representation can help increase power mathematical ability of students. This parallels the view Bruner (Hudiono, 2005) that the representation (enactive, iconic, symbolic) are associated with a person's mental development, and any developments higher representation influenced by other representations. "

Representation also indirectly influenced by the mathematical aspects of a person's disposition, through positive disposition will help increase students' understanding of mathematical concepts. Furthermore, the mathematical representation will improve communication skills, perform conjecture and troubleshooting. In general disposition and mathematical representation was instrumental in enhancing the competence of mathematical power of students. Therefore, teachers or lecturers need to find the right way to be a member of space to expand the representation of students in mathematics learning by interactive learning and problem-based.

REFERENCE

1. Adisendjaja, Y. A. 2008. Analisis Buku Ajar Biologi SMA Kelas X di Kota Bandung Berdasarkan Literasi Sains. Bandung: UPI
2. Ardy, N. W. 2013. Membumikan Pendidikan Karakter di SD. Yogyakarta: Ar-Ruzz.
3. Chiappetta, E. L., Fillman, D. A., & Sethna, G. H. 1991. "A Quantitative Analysis of High School Chemistry Textbooks for Scientific Literacy Themes and Expository Learning Aids". *Journal of research in science teaching*. 28 (10): 939-951.
4. IEA. 2011. TIMSS and Pirls, Science Achievement Eight Grade. Lynch School of Education, Boston College. Tersedia: timssandpirls.bc.edu/data-release-2011/pdf/Overview-TIMSS-and-PIRLS-2011-Achievement.pdf. Selasa, 3 Desember 2013. 08.40 am.
5. Mariana, I. M. A. 2009. Hakikat IPA dan Pendidikan IPA. Bandung: PPPPTK IPA
6. Mundilarto. 2013. "Membangun Karakter Melalui Pembelajaran Sains". *Jurnal Pendidikan Karakter Tahun III No. 2*. Yogyakarta: UNY
7. Nurgiyanto, B. 2005. Sastra Anak: Pengantar Pemahaman Dunia Anak. Yogyakarta: UGM Press
8. OECD. 2014. PISA 2012 Result in Focus: What 15-Year-olds know and what they can do with what they know. Tersedia: www.oecd.org/pisa/keyfindings/pisa-2012-results.htm (4 Agustus 2014).
9. Prastowo, A. 2012. Panduan Kreatif Membuat Bahan Ajar Inovatif. Yogyakarta: Diva Press.
10. Samani, M. & Hariyanto. 2012. Pendidikan Karakter. Bandung: Rosdakarya
11. Schroeder, M., Mckeough, A., Graham, S., Stock, H., & Bisanz, G. 2008. "The Contribution of Trade Books to Early Science Literacy: In and Out of School". *Journal University of Calgary, Alberta, Canada. Res Sci Educ* 39: 231-250
12. Setiawati, I. K. 2013. "Pembuatan Buku Cerita IPA yang Mengintegrasikan Materi Kebencanaan Alam untuk Meningkatkan Literasi Membaca dan Pembentukan Karakter". *JPII 2 (2)*: 129-135.

13. Zubaedi. 2012. *Desain Pendidikan Karakter: Konsep dan Aplikasinya dalam Lembaga Pendidikan*. Jakarta: Kencana
14. Baroody. J Arthur. Does Mathematics Instruction for 3- to 5-Year Olds Really Make Sense? Research in Review article for Young Children. *Journal of the National Association for the Education of Young Children*. University of Illinois at Urbana-Champaign. 2000.
15. Bodner, G.M. Constructivism: A theory of knowlwdge. *Journal of Chemical Education*. Volume 63 (10).1986
16. Depdiknas. 2007. *Kajian Kebijakan Kurikulum Mata Pelajaran Matematika*. Jakarta: Depdiknas Badan Penelitian dan Pengembangan Pusat Kurikulum. 2007.
17. Dharma I. N., & Sadra, I. W. Pengaruh Pendidikan Matematika Realistik Terhadap Pemahaman Konsep dan Daya Matematika Di Tinjau Dari Pengetahuan Awal Siswa SMP Nasional Plus Jembatan Budaya. *Jurnal Pendidikan Matematika*, 2013. 2. pasca.undiksha.ac.id
18. Diezmann, C. M. Challenging mathematically gifted primary students. *Australasian Journal of Gifted Education*, 14(1), 2005. 50–57. From Retrieved 2 April 2009.
19. Fadillah, Syarifah Alhadad. Upgrading Multiple Representation Mathematically, Mathematical Problem Solving and Self Esteem junior high school students through the Learning Approach Open Ended. *Disertasi UPI*. Bandung. 2010.
20. Feldhaus, C. A. What are they thinking? An examination of the mathematical disposition of preservice elementary school teachers. *Paper presented at the American Mathematical Society-Mathematics Association of America Joint Mathematics Meetings*, San Francisco, CA. Januari 2010.
21. Feldhaus, C.A. How Pre Service Elementary School Teachers' Mathematical Dispositions are Influenced by School Mathematics. University of Northern Iowa USA . *American International Journal of Research Kontemporer Vol. 4, No. 6; Juni 2014* pp.91 – 97
22. Hudiono, Bambang. Peran Pembelajaran Diskursus Multi Representasi Terhadap Pengembangan Kemampuan Matematik dan Daya Representasi pada Siswa SLTP. *Disertasi UPI Bandung*. 2005.
23. Hwang, et al. Multiple Representation Skills and Creativity Effects on Mathematical Problem Solving using a Multimedia Whiteboard System. *Educational Technology & Society*. Volume 10(2), 200. pp. 191-212.
24. Kusmaryono, Imam & Suyitno, Hardi. Mathematical Power's Description of Students in Grade 4th Based on The Theory of Constructivism. *International Journal of Education and Research Australia*. Volume 3 No. 2. 2015. Pp. 299 – 310, Februari 2015. ISSN: 2201-6333 (Print) ISSN: 2201-6740 (Online). <http://www.ijern.com>
25. Kusmaryono, Imam & Suyitno, Hardi. The Effect of Constructivist Learning Using Scientific Approach on Mathematical Power and Conceptual Understanding of Elementary Schools Grade IV. *Journal of Physics: Conference Series* 693 (2016) 012019 Published under licence by IOP Publishing Ltd. Online 7 Maret 2016. Availabel: iopscience.org/1742-6596/693/1.
26. Mandaci, Sahin and Baki, Adnan,. A New Model to Assess Mathematical Power. *Procedia Social and Behavioral Sciences Journal* Vol. 9. 2010. Elsevier Ltd. Available online: <http://www.sciencedirect.com/.../S1877-042810024419>
27. Marjolijn Peltenburg, et.al. "Mathematical power of special-needs pupils: AnICT-based dynamic assessment format to reveal weak pupils' learning potential" . *British Journal of Educational Technology Vol 40 No 2, 2009 p.273–284* doi:10.1111/j.1467-8535.2008.00917.x
28. Mueller, Mary and Lourdes Z. Mitchel. Building Mathematical Power: Why Change is So Difficult. *International Journal for mathematics teaching and learning*. ISSN. 1473-0111 . 2005. This journal is indexed in both [ERIC](http://eric.ed.gov/) and [EBSCO](http://www.ebsco.com/). www.cimt.plymouth.ac.uk/journal/mueller.pdf
29. *National Council of Teachers of Mathematics' (NCTM). Curriculum and Evaluation Standards for School Mathematics: A Vision of mathematical Power and Appreciation for All*. http://www.sde.ct.gov/sde/lib/.../mathgd_chpt1.pdf. 1989.
30. *National Council of Teachers of Mathematics' (NCTM). Professional Standards for Teaching Mathematics. 1991*.
31. National Council of Teachers of Mathematics'. *Principles and Standards for School Mathematics*, Evaluation: Standard K-4 Mathematical Power. 2000a.
32. National Council of Teachers of Mathematics' ..*Principles and Standards for School Mathematics*, Evaluation : Standard K-8 Mathematical Power. 2000b.
33. National Council of Teachers of Mathematics'(NCTM). *Mathematical Power for all Students K-12* . [http://fcit.usf.edu/math/.../math power/mathpowr.html](http://fcit.usf.edu/math/.../math%20power/mathpowr.html). 2000c.

34. Neria, D. & Amit, M. Students Preference of Non-Algebraic Representations in Mathematical Communication. Proceedings of the 28th Conference of the International Group for the Psychology of Mathematical Education, 2004. Vol. 3, 2004. pp. 409 – 416.
35. Phillips E. & Ann Anderson. Article. “Developing mathematical power: A case study”. *Journal of Early Development and Care* . [Volume.96](#)(1),1993. Pp. 135-146. 1993. DOI: 10.1080/0300443930960111. Published online: 07 July 2006. Available at.
36. Sharon L. Senk, Charlene E. Beckmann, and Denisse R. Thompson, Assessment and Grading in High School Mathematics Classrooms. *Journal for Research in Mathematics Education*. 1997. Available at:
37. <http://math.coe.uga.edu/olive/.../JRME1997-03-187a.p>
38. Stacey, Kaye.. The place of problem solving in contemporary mathematics curriculum documents. *Journal of Mathematical Behavior* . Volume 24, 2005. pp 341 – 350.
39. Stacey, Kaye. [what is mathematical thinking and why is it important?](#) . *Journal of Mathematical Behavior* 24, [ww.criced.tsukuba.ac.jp/math/.../Kaye%20Stace..2006](http://www.criced.tsukuba.ac.jp/math/.../Kaye%20Stace..2006).
40. Sumarmo, U. *Daya dan Disposisi Matematik: Apa, Mengapa dan Bagaimana Dikembangkan pada Siswa Sekolah Dasar dan Menengah*. Makalah disajikan pada Seminar Sehari di Jurusan Matematika ITB, Oktober 2002.
41. Syaban, Mumun. Menumbuhkembangkan Daya dan Disposisi Matematis Siswa Sekolah Menengah Atas Melalui Pembelajaran Investigasi. *Jurnal Educationist*. ISSN. 1907- 8838 Vol. III No. 2 Juli 2009. Hal. 129 - 236
42. Thompson, Tony. Mathematics Teachers’ Interpretation of Higher Order Thinking In Bloom Taxonomy, *International Electronic Journal of Mathematics Education* Volume 3, Number 2, July 2008 tersedia di www.iejme.com. 2008.

Development of Instructional Materials Comic Science To Increase Achievement Student in grade IV Elementary School

Yunita Sari

*Elementary School Teacher Education Departement, Faculty of Teacher Training and Education,
Sultan Agung Islamic University*

Corresponding author: yunitasari493@yahoo.com

Abstract. The phenomenon that occurs in primary school including science teaching materials that used are less interesting and the students have trouble to understand material which presented in the science teaching materials used at schools. The aim of this study is to get a picture of the characteristics, validity, effectiveness, and convenience products comic which are developed in science learning at fourth grade of elementary school. Subject trials in this development research is 4th grade of SDN Beji 03 with 18 students. The design of products test that used in the development of comic as teaching materials is pretest-posttest control group design. Tools developed include: syllabus, lesson plans, Comics Natural Sciences and Learning Achievement Test. Data obtained through observation sheets and study achievement test. The result was processed descriptively, using test of thoroughness, comparative tests and improvement test to determine the effectiveness of learning. The result of the implementation of this tool showed: (1) the average value of learning achievement test of the experimental class is 81.9, better than minimum thoroughness criteria which is 75, (2) the average value of the experimental class is 81.91 better than the average of control class which is 69.30 (3) the result of improvement of learning achievement in experimental class is 0.573 and 0.299 in control class. The results of this study concluded that the instructional materials of science comic is worth to be used in learning, and also the application of instructional materials of science comic can increase the learning achievement of science.

PRELIMINARY

Teaching material is any good material information, tools, and text systematically arranged, the figures show full of competencies that will be used learners and are used in the learning process with the aim of planning and implementation of learning reviewers. Pannen (2001) reveals that the teaching materials are substances or materials arranged in a systematic lessons, used by teachers and learners in the learning process. Miharsi (2010: 7) states comic is a form of visual communication memeiliki power to convey information in a popular and easy to understand. Collaboration between the text and images that compose the plot is a comic force. Pictures make the story become easily absorbed. Task making comics into easily understandable and storylines make the message or information to be conveyed will be easy to follow and remember. They are also said to be effective graphical media to convey the message because of the power of language and written language pictures owned (Kusrianto, 2007: 186). Problem often encountered in primary school children in learning science is the use of media that is less attractive to students and the learning does not always use the media. Media that there are a limited nature make students lazy learning. The use of teaching materials less attractive and Limited makes students lazy reading.

Subjects in primary school consists of several subjects, one of which is the Natural Sciences (IPA). IPA can be viewed in terms of products, processes and terms of developing an attitude of learning means IPA has the dimensions of the process, the dimensions of the results (products) and the dimensions of scientific attitude. All three of these dimensions are interrelated. This means that the process of teaching and learning science should be able to provide science learning to meet the three-dimensional IPA, teachers must also be capable of designing science learning with teaching materials, media, devices, methods and learning strategies that play an important role in children's education learning packages that appeal to children given that children just love things that are interesting, especially at the elementary school age children.

Teaching materials have a central position in the process of learning component leads all forms of learning activities to achieve the objectives set in the curriculum adopted. In the absence of teaching materials, the process of

learning that occurs will not be optimal. The presence or absence of teachers, teaching materials will be the core of the learning process so that teaching material should receive special attention for teachers.

Learning should be presented using a learning has allure for children and using an approach that can bring the three dimensions of IPA. By applying the things that are near and preferably students, one of them by using teaching materials komik. Komik a unique teaching materials, linking text and images in creative forms. Comics is a medium that could attract all the attention of people of all ages, especially children because it has excess power that is attractive and easy to understand. Comics can be used as teaching materials in primary school classroom because of the high level to attract the attention of students. berisa comic stories and pictures. It is highly compatible with a penchant high-level elementary school students who love the story and the pictures.

Being one interesting thing when learning science teaching materials presented in the form of comics that are favored children. So as to improve student learning outcomes and unlock the value of IPA dimension that can cause a sense of love in the hearts of children towards learning science.

Based on observations in the field as well as reviewing results from various sources on relevant interesting learning process for students, the authors chose to conduct research entitled "Development of Instructional Materials Comic IPA To Increase Student Achievement Class IV Elementary School.

Based on the background of the above problems will be further described in the form of questions were more detailed and fundamental as follows:

6. How does the product characteristics of teaching materials developed in the comic science learning about the parts of a plant in the fourth grade of primary school?
7. Is the product effective comic teaching materials to improve student achievement in Class IV primary school?
8. Is the product development of teaching materials comics practical use of students in science learning about the parts of a plant in Class IV primary school?

Based on the formula above problems, the objectives of this study are as follows:

9. Get an overview of product characteristics comic teaching materials developed in science teaching in the fourth grade of elementary school.
10. Get a picture of the product development of teaching materials comics can improve the effectiveness of learning science in the fourth grade of elementary school.
11. Get an overview practicality of the product development of teaching materials in science teaching comics in the fourth grade of primary school

LITERATURE REVIEW

Prastowo (2012: 17) says that the teaching materials are all good material information, tools, and text systematically arranged, the figures show full of competencies to be mastered and used learners in the learning process with the aim of planning a nd review of the implementation of learning. The purpose of making material at least there are four main things that surrounded him, namely: assist learners in helping things, providing various types of teaching materials so as to prevent the onset of boredom learners, facilitate learners in implementing the learning so that learning becomes more attractive

Natural Sciences (hereinafter referred to as IPA) is a translation of the English word "Natural Science" briefly often called "science". Natural natural means, in touch with nature or concerned with nature. "Science" means science pengetahuan. Jadi natural science (IPA) or Science can literally be called a science about the universe. Webster's New Logiate Dictionary (Yuliantiningsih, 2008: 2) are listed defines science as follows: "Science the broad field of human knowledge, acquired by systematic observation an experiment, and explained by means of rules, laws, principles, theories, and hyopheses." That natural science is a broad human knowledge, which is obtained by means of systematic observations and experiments, and explained with the help of rules, laws, principles, theories, and hypotheses.

Comic in this study was developed with several stages of determining the storyline comics, determine the character of the comic, making conversation in the comics, drawing manually using a pencil, then thickened by using a drawing pen, bold images with drawing pen, scanned images, obtained an image with format JPEG. Images that have been scanned, colored using photoshop program on a computer.

RESEARCH METHODS

This research is the development or Research and Development (R and D). In this study used this type of research development to produce teaching materials developed ajar. Bahan is comic ipa teaching material about the parts of a plant for the fourth grade students of primary school

The research was conducted in the development of SD Negeri Beji 03 Class IV Semester 1, located at Jalan Raya Beji Gang Rajawali Batang. Subjek District Subdistrict Write trials are elementary school students were 18 male students with as many as 10 men and women students as many as 8 people.

This study aims to produce teaching materials comics ipa for fourth grade students of primary school. This study used a design research and development with a ten-step implementation refers to the theories Borg and Gall (Borg and Gall in Sukmadinata, 2012: 169) with steps to implement the following research: (1) research and data collection (research and information collecting), (2) planning (planning), which is preparing a research plan, formulate particles of matter in detail that supports the achievement of objectives and compiling teaching materials comics ipa, (3) development of a draft product (develop preliminary from of product), which is developing a tool for measuring the success and expert test material, (4) a field trial early (preliminary field testing), (5) revise the results of trials (main product revision), (6) the trial court (main field testing), (7) a revision of the product results field test (operational product revision), (8) the implementation of the test field (operational field testing), (9) the improvement of the final product (final product revision), (10) the dissemination and implementation (desimination and implemantion).

Types of data collected from this study is derived from the data analysis needs, the data validitias and efficacy data. First, the analysis of data obtained from the response needs of teachers and students at the start of the study. Both the validity of the data obtained from the teaching materials expert review by providing input for the improvement of teaching materials before being tested cobakan. Ketiga, the data obtained from the effectiveness of teaching materials learning outcome siswa. Instrumen collecting data in this study, among others, sheets questionnaire needs, validation sheet material teaching, sheet questionnaire to evaluate the response of students, sheets of test.

RESULTS AND DISCUSSION

This research is the development or Research and Development (R and D), which adopted a development model Borg and Gall to produce teaching materials comics about parts of a plant in the fourth grade primary school. Teaching materials developed in this study is a comic that is tailored to real conditions in a neighborhood of students, using language that is easily understood, the storyline and the material containing elements of the process of science, community learning, and assessment. This comic is combined with the phenomenon of everyday life that are often faced by students, using a figure of speech personification of making the story seem more alive and served with a full warna. produk generated is expected to provide pencerahhan and student learning experience fun, easy for students to understand the material and as needed students. Therefore in this section will be presented the results at every stage of the development of teaching materials comics. Test the validity of the items was done using the formula product moment correlation. Based on the analysis of the 30 questions contained 25 questions about the valid and invalid 5. Problems that are used as a matter of valid field test to see student achievement that is taught by the learning device developed. Based on the results of the 30 items of reliability test results obtained $r_{11} = 0.831$, it is interpreted that the items are reliable which has a degree of reliability tinggi. Berdasarkan calculation results about the level of difficulty of 30 TPB obtained 7 questions including about 23 sedangkan criteria including criteria. The average percentage score student responses was 84.6% and included in both categories, meaning that it can be said that the students' response was positive.

In testing for normality used SPSS version 16, the Kolmogorov-Smirnov test of normality Based Test-Smirnova kolmogrov column indicates that the Sig. = 0.053. This means that the learning achievement IPAsiswa experimental class and control distribution normal. Uji this homogeneity using Levene's test in SPSS version 16, showed sig. column Levene's Test for Equality of Variances amounted to 0.653. This means that the variance of learning achievement IPAkelas experimental and control classes equal or completeness homogen. Uji average is used to determine the achievement of learning achievement IPAsiswa eksperimensesuai class standard sebesar 75 statutes. Based on the output, indicates the value t by 8056. This means that the learning achievement of the experimental class IPAsiswa more than the average set which is equal to 75

Test performed to determine the proportion of student success experimental class and control class qualified in the classical mastery learning, ie 80% of students achieving mastery of the value of individual value $z_{hit} = 1.829$. Z_{hit} value = 1.829 compared with $z_{0,05} = 1.645$ obtained results $z_{hitung} = 1.829 > z_{0,05} = 1.645$. Based on the criteria for acceptance and rejection of the hypothesis that $z_{hitung} = 1.829 > z_{0,05}$ reject $H_0 = 1.645$, which means more than 80% of the experimental class students who have learning achievement in science at least 75

This comparative test was used to compare students' learning achievement IPA experimental class and control class. As the result of homogeneity test to see $sig = 0.653$ in the column Levene's Test for Equality of Variances known that both science learning achievement data variance is homogeneous. This means that means learning achievement grade science students experiment better than the control class science learning achievement. This is supported by the acquisition of the average learning achievement grade science students experiment is 81.91 greater than the average learning achievement grade science students that controls 69.30.

Science learning achievement of students in this study were analyzed based on the average value of Gain normalized. The results of test analysis the increase in the experimental class obtained average value is 0.573, which means an increase learning achievement grade science students experiment in middle category and the results of test analysis class increase control obtained average value is 0.299, which means an increase learning achievement grade science students control are in the low category. Based on the criteria Gain increase, student science learning achievement test is said to be increased, if kriterian Gain value in the category sedang. Persentase minimum average score of student response was 86.37% and included in both categories, meaning that it can be said that the response of the students in the test class field trials were positive. An average score of 4 responses of teachers in the field trials was 3.70 and included in both categories, meaning that it can be said that the response of teachers to a device developed is positive.

DISCUSSION

IPA is a learning process that seeks to solve the problem through observation and description of the human mind. Studying IPA means to solve and find out why and how it happened. The learning activities are generally rely on teachers and books as learning resources. But textbooks that exists today is precisely the book verbalistic. So as to make the students bored with the sentences used rigid and uncommunicative.

Information obtained from public primary schools Beji 03 is that in the process of learning in the classroom has been equipped with teaching materials for students in the form of textbooks, but teachers difficulties in applying them in the classroom. Teachers tend to use textbooks that are informative and less interesting so that students are less motivated to read and develop their knowledge. In addition, the structure and the contents are still monotonous, namely the concept of less material and practice questions too difficult.

Teaching materials are used generally still informative to not bring about an environment that allows students to develop the ability of thinking itself, like a guide book that tends to be less difficult contextual and language understood by the student. This causes students' difficulties in understanding the concepts being studied. Besides textbooks in the schools are also generally limited jumlahnya. Strategi to overcome these problems by researching the development of a science teaching materials that can be used by teachers and students in the learning process Plant parts.

Comic instructional media is one example of this kind of visual learning media. Comics are picture books usually contain fiction, which is a cartoon character in the comic. Therefore, children prefer to read comics than read a book pelajaran. Komik is a unique medium to combine text and images in a creative form. Teachers can use the comics effectively in an effort to generate interest in reading, develop vocabulary and skills. This is supported by the facts that occurred on the field itself that the primary school age children are very fond of comics.

In general application of comics as a medium of learning is by explaining material through comics, but will be better when the material explain each student having their books so that they can be easier to understand the material. In addition, students will also be interested to read these materials because they have a curiosity about the end of the story. Which in turn can increase students' cognitive.

Indicators of successful use teaching materials which are first comic of mastery learning students. Mastery learning students in the experimental class is seen from the thoroughness of the study the average and the percentage proportion of students completeness. The result of the calculation of the average completeness shows that learning achievement grade science students experiment more than the average population assumptions set forth which is equal to 75, with the average of 81.91 empirical results of calculations using the classical completeness proportion proportions test showed that over 80% of students experimental class have learning achievement IPA has reached a

specified standard, with classical completeness of 90.91%. Based on these two things can be concluded that the mastery learning students taught using instructional materials comics on the material Plant parts has been reached.

Based on the analysis of different test average learning achievement between grade science class eksperimentendangan control, it was concluded that the average achievement of learning achievement scores IPA kelas 81,91 yang experiment that statistically can be said that the science learning achievement experimental class is better than the control class that empirical earned an average of \$ 69.30. This difference can not be separated from the application of teaching materials comics are applied in the experimental class that can help students to more easily understand the material parts of plants that diajarkan. Hasil peningkatankelas experimental test analysis obtained average value is 0.573, which means an increase learning achievement grade science students experiments are in the moderate category and test analysis results obtained control peningkatankelas average value is 0.299, which means an increase learning achievement control grade science students are in the low category. Based on the criteria Gain increase, student science learning achievement test is said to be increased, if kriterian Gain values that are in the category of minimal medium.

The completeness of student achievement that reached KKM, achievement of students in the experimental class than students in the control class, increase learning achievement of 80% or more students gave a positive response indicates that the successful development of indicators of comic science to students from fourth grade on the material The parts of the plants were reached.

CONCLUSION

Implementation of IPA comic teaching materials about the parts of plants are practical, because it meets the criteria score student responses is 3.78 which proves that the student's response was positive. Learning by applying the teaching materials comics science to students from the fourth grade primary school is effective, because it meets the following criteria: (1) obtaining a score of student achievement that surpasses the KKM 75 and more than 80% of all students in the experimental class reached the KKM, (2) there are significant differences between the classes taught by comic IPA and classes taught by the conventional model, meaning that the results of TPB material or parts of plants in the experimental class is better than the control class.

REFERENCES

1. Arikunto, S. 2002. *Prosedur Penelitian Suatu Pendekatan praktik*. Jakarta: Rineka Cipta.
2. Hariyanto. 2011. *Sains untuk sekolah dasar kelas IV*. Jakarta : Erlangga
3. Hobri. 2009. *Metodologi Penelitian Pengembangan (Development Research) (Aplikasi Pada Penelitian Pendidikan Matematika)*. Universitas Jember : Program Pendidikan Matematika FKIP.
4. Maharsi, I., 2011. *Komik Dunia Kreatif Tanpa Batas*. Yogyakarta: Kata Buku
5. Masdiono, T. 1998. *Empat Belas Jurus Membuat Komik*. Jakarta: Creative Media Jakarta.
6. Pannen, P. & Purwanto. 2011. *Penulisan bahan Ajar*. Jakarta: Pusat Antar Universitas untuk Peningkatan dan Pengembangan Aktivitas Intruksional Ditjen Dikti Dikdas.
7. Prastowo, A. 2012. *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Jogjakarta. DIVA Press
8. Purwanto, D., & Yuliani. 2013. "Pengembangan Media Komik IPA Terpadu Tema Pencemaran Air Sebagai Media Pembelajaran untuk Siswa SMP Kelas VII". *Jurnal Pendidikan Sains e-Pensa*. 1(01), 71-76.
9. Rositawaty, S & Aris, M. 2008, *Senang Belajar Ilmu Pengetahuan Alam Untuk Kelas IV sekolah dasar*. Solo : Tiga Serangkai Risaka Mandiri
10. Sudjana. 2002. *Metode Statistika*. Bandung: Tarsito.
11. Sudjana, N. 2005. *Dasar – Dasar Proses Belajar Mengajar*. Bandung: Sinar Baru.
12. Sudjana, N., & Rivai, A. 2010. *Media Pengajaran "Penggunaan dan Pembuatannya"*. Bandung: Sinar Baru Algesindo.
13. Sudjana, N. 2011. *Penilaian Hasil Proses Belajar Mengajar*. Bandung: Rosdakarya.
14. Sugiyono. 2010. *Metode Penelitian Pendidikan Kuantitatif, Kualitatif, dan R & D*. Bandung: Alfabeta
15. Sukestiyarno, 2012. *Olah Data Penelitian Berbantuan SPSS*. Semarang: Universitas Negeri Semarang
16. Sulistyorini, S & Supartono. 2007. *Model IPA di Sekolah Dasar dan Penerapannya dalam KTSP*. Yogyakarta: Tiara Wacana

Material Selection Overlay Road To Climate Change Resilient

Abdul Rohman^{1,a)}

¹⁾*The study program of Statistics, University of Muhammadiyah Semarang*

^{a)} Corresponding author: rohmanbangdull@gmail.com

Abstract .Background of Management and maintenance of asphalt concrete roads is an important part in the retention function of the road. The influence of rain and temperatures decrease the carrying capacity of the road. The problem of how the influence of heating and soaking the asphalt concrete mix. **Objectives** Knowing the value of the stability of the mixture of fatigue pekerasan 60/70 pen bitumen, asphalt and bitumen emulsion polymer to a long warming and immersion. **Methods** Experimental laboratory methods to a comparative study with the durability of asphalt material laston aus AC-WC layer using 60/70 pen bitumen, bitumen and polymer modified asphalt emulsion and compare the value of stability after standard soaking, soaking after a short heating temperature of 850C for 2 days, soaking with long heating 850C temperature for 5 days. **Results** showed Optimum Asphalt Content (KAO) at the highest emulsified asphalt concrete by 9.5% with a value of 445 kg stability. **Conclusion** The stability value decreases with increasing soaking time.

INTRODUCTION

Road is important for distributing goods and people. It is a transportation facility to connect between regions. Environment factors give some effects toward the damage of road pavement surfaces, one of them is rainy season. The rain causes soaked road and that make road getting damaged faster. Another factor is the increasing temperature that can affect the solidity of asphalt concrete pavement mix.

The changes in Indonesian climate create some impacts such as the increasing of rainfall and air temperature that directly give impact toward highway surfaces. The more frequent and deeper soaked by rain, the road will get brittle due to the reduction of asphalt adhesion feature. The increasing of temperature will make pavement mix become plastically and flexible, so the pavement mix will get bleeding and have faster aging. The routine maintenance is done by giving common additional layer using overlay in order to keep and maintain the quality of the road and also to anticipate the early damage on the surface area. Wearing course is the top surface that directly gets impact from the wheel burden, the rain, the solar thermal and also the surrounded environment. Wearing course mix which mostly used is the hot-mix asphalt (HMA), warm-mix asphalt (WMA), and cold-mix asphalt (CMA).

Commonly, HMA characteristic has a better engineering property, but it is not environmental friendly because its process needs more energy and also releases more CO₂ emission. On the other hand, CMA is well-known as a environmental friendly mix because the process is easier and also consume less energy and also it does not release much CO₂, but its engineering property is low ⁴⁾. It needs to find out the proper overlay material selection for flexible pavement (HMA, CMA, WMA) that can stand from climate changes (dampness and temperature). This research is held on PU Bina Marga laboratory, Madiun Region.

RESEARCH METHOD

This experimental research is a laboratory research, that is to compare the material durability AC-WC(asphalt concrete-wearing course) mix, which used for overlay using 3 kinds of mixture : hot mix with 60/70 pen bitumen binder, warm mix with modification polymer bitumen binder and cold mix pavement with emulsion asphalt binder. The testing method of this research refers to the Bina Marga, Standar Nasional Indonesia, SK-SNI (Indonesian National Standard), The General Specification for Course and Bridge Sector and also AASHTO (American Association of State Highway and Transportation Official). This research was held on PU Bina Marga Laboratory, Caruban Madiun.

The data analysis was taken from the observation and examination, started from the asphalt concrete mix design, testing the basic material quality of aggregate and asphalt, making the tested material using marshall method. This research also wants to find out the characteristic of asphalt concrete in standard condition, the durability of asphalt concrete mix in soaked condition and the durability of soaked asphalt concrete mix after getting heated. After that, it will be formulized into some criteria based on theory to find the stability value and melting values of asphalt concrete mix in standard condition. It will be compared between standard condition and the condition after getting soaked. The soaking condition was divided into two process; soaked in standard condition and soaked in aging condition for each kinds of asphalt concrete pavement mix.

Figures 1

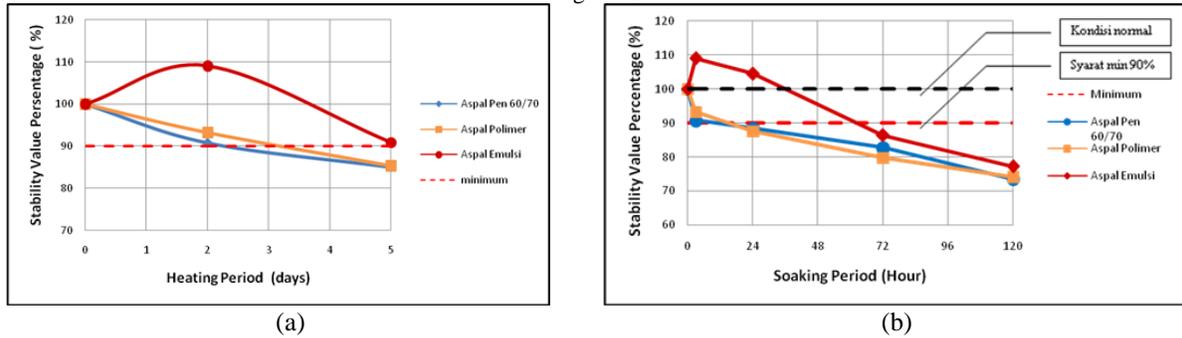


Figure 1(a) The relation of the Marshall stability value percentage toward the Heating Period. The flow value of three kind mixes have increased from the standard condition because the heating process causes the evaporation of the asphalt. The lowest flow level is 3,07 and the highest flow level is 3,50.

Figure 1(b) The stability value percentage toward the soaking period in STOA Condition From picture 2.

Figures 2

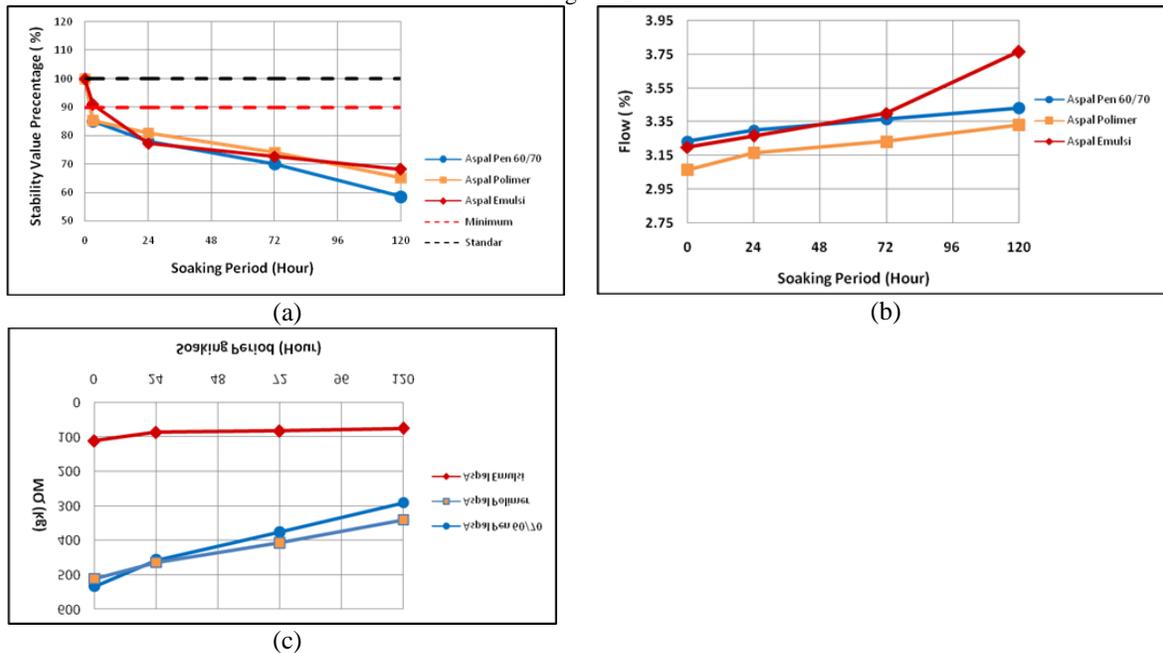


Figure 2(a) Stability Value Percentage toward Soaking Period in LTOA Condition.

Figure 2(b) Flow value toward the Soaking Period in LTOA condition.

Figure 2(c) MQ toward the Soaking Period in LTOA condition.

DISCUSSION

Heating or aging process in asphalt concrete mix causes the liquid part or asphalt part (maltenes) in asphalt concrete mix evaporates. In short period of heating, it causes the stability value of emulsion concrete asphalt increase, since there was an emulsion process, where water and liquid part of malteness evaporate. Therefore, maltenes will fulfill the space left by water pore and it makes its characteristic become more stable and sticky. From the previous research about water influence toward the durability of cold asphalt concrete mix, the evaporation in the heating process can increase the stability values.

The stability value of emulsion asphalt increases from 9% or 445kg into 486, whereas 60/70 pen bitumen mix decreases into 9% and polymer modified bitumen decreases into 7%. The stability value of emulsion asphalt concrete gets increasing stability value because of the heating process that causes the evaporation of the rest water in asphalt concrete mix. On the other hand, 60/70 pen bitumen concrete mix and polymer modification bitumen value decrease steadily because of the maltenes evaporation which result in weathering happens and asphalt concrete gets brittle⁷⁾. In long period heating, the stability value of three mixture declines sharply from the standard condition, emulsion asphalt concrete becoming 91%, 60/70 pen bitumen concrete and polymer modification bitumen concrete becoming 85% from the normal condition. The stability values of the three mixtures are still above the required standard, 800kg and 300kg for emulsion asphalt. Heating results in brittleness that caused the reduction of cohesion power in the asphalt concrete mix. Therefore, the road will soon get damage due to water reaction from the soaking. The three asphalt concrete mixtures have decreased their stability value in line with the soaking period⁶⁾. Short aging affect on the increasing of stability value in asphalt emulsion, which make the asphalt more resistant in the soaking condition. Polymer modified bitumen concrete and 60/70 pen pertamina have decreased its stability value due to the brittleness of short aging since both mixtures cannot stand of heating and its stability value decreases due to the soaking period⁸⁾.

The flow value decreases in line with its stability value that causes MQ value in long aging soaking condition decrease. The solidity and flexibility of emulsion asphalt are more stable⁴⁾. The aging process influences the Marshall Quotient polymer modification asphalt and 60/70 pen pertamina bitumen. The three mixtures have increased their flow value. The rise of the flow value and the fall of stability value, affect the Marshall Quotient. It indicates that the solidity and flexibility of asphalt concrete mixture are better than asphalt polymer modification and 60/70 pen bitumen. The soaking period affects the reduction of stability value of long aging asphalt concrete mixture compared to normal soaking period with short heating. Marshall stability values in a long aging period of the three mixture experience a faster reduction on stability value. In 30 minutes soaking condition, the reduction stability value process of emulsion asphalt concrete decrease 9% to be 91%, polymer bitumen concrete mix and 60/70 pen bitumen concrete decrease 15% to be 85%, but all of the three kind mixes can still keep the stability above 80%.

The stability values get more reduction at 24 hours, 72 hours and 120 hours soaking period. At 24 hours until 120 hours soaking period, the stability value of polymer bitumen concrete declines sharply from 81% to 65%, emulsion asphalt concrete from 77% to 68%, and 60/70 pen pertamina bitumen concrete from 78 to 59% or from 1376kg to be 1032 kg. The influence of long heating process accelerate the weathering of asphalt concrete, so it will loss adhesion power which makes asphalt concrete will easily absorb water and the stability of asphalt concrete mix will get declining sharply. The flow value of asphalt concrete after getting long aging and soaking is higher than the flow value of asphalt concrete in standard condition. It is caused by the heating process that will be followed by aging. The process stability value reduction is also caused by the increasing of flow value in all kinds of pavement mixes.

CONCLUSION

The stability value of the three asphalt concrete mixture will decline due to the heating and soaking. The longer the heating process, the sooner it get water infiltration because of the soaking. Therefore, asphalt concrete will get reduction stability value due to weathering.

REFERENCES

1. Hadi, M.Y, 2003, *Permeabilitas dan Pengaruhnya Terhadap Durabilitas Campuran Beraspal*, Makalah Konferensi Nasional Teknik Jalan ke-7 Himpunan Pengembangan Jalan Indonesia, Jakarta.
2. **Caldwell**, dkk, 2004: *The Potential Impacts of Climate Change on Transportation Climate Change Impact on the United States Report*.
3. Sukirman S, 1993, *Perkerasan Lentur Jalan Raya*, Nova, Bandung.
4. Fatmawati, L, 2013. *Karakteristik Marshall Dalam Aspal Campuran Panas AC-WC Terhadap Variasi Temperatur Perendaman*, Jurnal Wahana Teknik Sipil Vol. 18 No. 2
5. AASHTO, (1993), *Guide For Design of Pavement Structure*, Washington DC.
6. Nagara, C, 2002. *Pengaruh Air Terhadap Durabilitas beton Aspal Campuran Dingin Menggunakan Aspal Emulsi*, Thesis Institut Teknologi Bandung
7. Mulyawan I,W., 2011. *Analisis Karakteristik dan Peningkatan Stabilitas Campuran Aspal Emulsi Dingin (caed)*. Hasil Penelitian Thesis Universitas Udayana Bali.
8. Tahir, A dan Setyawan A, 2009, *Kinerja Durabilitas Campuran Beton Aspal Ditinjau dari Faktor Variasi Suhu Pematatan dan Lama Perendaman*, Jurnal Smartek, Vol.7, No.1.
9. RSNI M-01-2003. *Metode Pengujian Campuran Beraspal Panas dengan Alat Marshall*: Badan Standarisasi Nasional.

Influential Correlation Factor Of The Iva Test Result Towards The Woman Prisoners Of Ii A Class In Semarang

Agustin Rahmawati^{1,a)}, and Lia Mulyanti^{2,b)}

¹ *Nursing and Health Science Faculty, Universitas Muhammadiyah Semarang*

^{a)} Corresponding author: agustinrahmawati87@gmail.com

^{b)} liantyshojie@yahoo.co.id

Abstract. Cervix cancer is number one killing disease among women. Since 2008-2014, Central Java especially Semarang is the second highest prevalence of cervix cancer. Actually the early cervix cancer detection could be conducted through IVA test, because this sort of test is relatively fast and accurate in only one visit and treatment. Woman prisoners are groups of nondependent person and vulnerable in case of reproduction system. According to the observation, the excessive prisoners and lack of officers would limit health/medical access to its inhabitants. This study employed analytic correlation design by using 44 woman prisoners in prison of IIA class in Semarang. Besides the data was analyzed using SPSS for windows. The result of the study showed that 29.5% women were positively infected (by positive result of IVA test). In other hand, there were 52.3% women having sexual intercourse less than 20 years old, 65.9% women having sexual partner. Besides, 52.3% women experienced douching vagina, 59.1% women were multiparity obstetric, and 77.3% women did not have any cancer history in their family. Conclusion: There is relatively influential correlation between the age of first time having sexual intercourse, numbers of sexual partners, and obstetric history towards the result of IVA test.

INTORODUCTION

Cervix cancer is the number one killing disease among women which also has the highest relative frequency of 25.6% in Indonesia (Bustan, 2007). According to the Jateng Profiles (2012) the prevalence of cervix cancer in Central Java during 2008 – 2012 was the number two higher after breast cancer, with the dissemination of 2,259 cases of cervix cancer (24.2%), 4,206 cases of breast cancer (45.02%), 2,755 cases of liver cancer, and 2,121 cases of lung cancer (22.7%).

The earlier detection of cervix cancer using IVA method has been developed since 2007, applying the standardized workshop that produce competent medical workers to implement earlier detection using IVA test. If someone's result of IVA test is positive if there exist pre-cancer lesions which actually can be cured by Kriotheraphy. In fact, by 2014 this test had been conducted in at least 19 Regencies/Municipalities especially for women aged 30-50 years old (Profile of Central Java Health Department, 2014). The percentage of positive IVA test and lumps taken from the examination in Hospitals were 3.83%. Generally, woman prisoners give the contribution by 5% of all the prisoners and has tendency of improving rapidly, especially in countries with high-level consumption of drugs. In 2005, it is the fact that more than half millions of prisoners were women and girls. Ironically, we can say that at least 1.5 million people will be imprisoned every year (UNODC, 2008).

RESEARCH METHOD

This study employed analytic design with cross sectional approach. The population used in this study was 375 woman prisoners in LP Class IIA Semarang. The sampling was taken by 10-15% total population using random sampling. From that sampling, there existed 44 respondents in this study. This study conducted in March 2016. It also emphasized the etiquette of informed consent, confidentiality, anonymity and advantage as well. The data was also analyzed using chi square with the degree of trust of 95% ($\alpha=0.05$). Writers used SPPS to analyze the data and conduct the statistic analysis. While the writer used questionnaire to measure dependent and independent variable.

RESULT AND DISCUSSION

The characteristic of woman prisoners in LP Class II Semarang can be examined by age, education and duration of living in prison (LP). The average age of its inhabitant is 34 years old, with the youngest is 19 years old and the oldest is 51 years old. In other hand, most of people in the prison are 56.8% passed from Senior High School, 18.2% university graduated, 15.9% passed from Junior High School, 4.5% passed from Elementary School, and 4.5% uneducated. The duration of being imprisoned are also various, the shortest is 1 month and the longest is 48 months.

IVA TEST RESULT

Table 1. The Distribution of IVA test Result of Woman Prisoners in LP Class II Semarang

Hasil IVA test	Frequency (n)	Percentage (%)
Positive	13	29,5
Negative	31	70,5
Total	44	100

Table 1 showed that majority of respondent (70.5%) were negative by IVA test and 29.5% respondents were positive. This also illustrated that there were a lot of influential factors in the result of IVA test. The variable that influence the result were the age of first sexual intercourse, numbers of sexual partners, obstetric history, sexual cancer history, and genital care (the use of genital soap).

SEXUAL BEHAVIOR

Perilaku Seksual	Frequency (n)	Percentage (%)
Age of first sexual intercourse		
<20 years old	23	52,3
≥20 years	21	47,7
Partner Seksual		
Single Partner	29	65,9
Multipartner	15	34,1
Total	44	100

Table 2 showed that the average age of first sexual intercourse less than 20 years were 52.3%. Besides, 65.9% respondents owned one sexual partner while 34.1% were having sexual intercourse with more than one partners (multi sexual partners).

In identifying the distribution of IVA test based on the age of first sexual intercourse and numbers of sexual partners, it could be translated into this following table:

Table 3. The Distribution of IVA test result based on the Age of First Sexual Intercourse and Sexual Partners of Woman Prisoners in LP Class II Semarang

Age of first sexual intercourse	IVA Test result			
	Positive		Negative	
	Amount	%	Amount	%
<20 years	10	43,5	13	56,5
≥20 years	3	14,3	18	85,7
<i>p value = 0,034</i>				
Singlepartner	4	13,8	25	86,2
Multipartner	9	60	6	40
<i>P value = 0,001</i>				

Table 3 showed that 43.5% of women having their first sexual intercourse at the age of less than 20 years old and 60% of multi partners women were IVA test positive. IVA test negative found in those who have their first sexual intercourse at the age of more than 20 years old (85.7%) and own one partner only (86.2%). The data then, were analyzed using statistic test with the significant degree of 5% on the age of first sexual intercourse and the IVA test

result ($p < 0.05$). This illustrated that there was correlation between the age of first sexual intercourse of woman prisoners in LP Class II Semarang and IVA test result.

VAGINAL DOUCHING BEHAVIOUR

Table 4. the distribution of Vagina Douching Behaviour of Woman Prisoners in LP Class II Semarang

Pencucian Vagina	Frekuensi (n)	Persentase (%)
Melakukan <i>douching</i> vagina	23	52,3
Tidak melakukan <i>douching</i> vagina	21	47,7
Total	44	100

Tabel 4 showed that 52.3% woman prisoners experienced vaginal douching. The media used for applying vaginal douching could be observed by this following:

Table 5. The distribution of Vaginal Douching of woman prisoners in LP Class IIA Semarang

Media Pencucian Vagina	Frekuensi (n)	Persentase (%)
Sabun khusus kewanitaan	4	17,4
Sabun sirih	10	43,5
Betadine /albothyl	3	13
Sabun mandi	4	17,4
Pasta gigi	2	8,7
Total	23	100

Table 5 showed that most respondent apply traditional woman soap for vaginal douching (43.5%), 17.4% women applied vaginal cleanser product, 17.4% women used body soap, 13% women used betadine/albothyl, and 8.7% women used toothpaste for washing their genital area.

Table below is illustrated to identify the IVA test result based on vaginal douching behavior:

Table 6. The distribution of IVA test result based on vaginal douching behavior of women prisoners in LP Class II Semarang

Perilaku Pencucian Vagina	Hasil IVA test			
	Positif		Negatif	
	Jumlah	%	Jumlah	%
Melakukan	5	21,7	18	78,3
Tidak melakukan	8	38,1	13	61,9

p value = 0,235

The result showed that IVA test positive in respondents who applying vaginal douching as much 21.7% while women who regularly do the vaginal douching (78.3%) found that their IVA test negative. Statistic test with significant level of 5% on the vaginal douching behavior and IVA test were 0.235 ($p > 0.05$). This depicted that there is no significant correlation between vaginal douching behavior and IVA test result of woman prisoners in LP Class II Semarang.

OBSTETRIC HISTORY

Table 7. the distribution of Obstetric history of woman prisoners in LP Class II Semarang

Riwayat Obstetri	Frekuensi (n)	Persentase (%)
Primiparitas	18	40,9
Multiparitas	26	59,1
Total	44	100

Table 7 showed that 59.1% respondents owned multi parity history, with the average 2 delivery times. It was started by women who never deliver a baby to those who experienced up to 5 delivery times.

This following table would identify the distribution of IVA test result based on obstetric history of woman prisoners in Class II Semarang:

Table 8 The distribution of IVA test result based on obstetric history of woman prisoners in class II Semarang

Riwayat Obstetri	Hasil IVA test			
	Positif		Negatif	
	Jumlah	%	Jumlah	%
Primiparitas	2	11,1	16	88,9
Multiparitas	11	42,3	15	57,7
<i>p value = 0,026</i>				

The percentage of IVA test positive found mostly in women who experienced multi parity obstetric (42.3%), while IVA test negative found in women who experienced prim parity (88.9%). The score of p 0.026 showed that there was significant correlation between obstetric histories of woman prisoners.

Cancer History in Family

Table 9. The distribution of Cancer History in Family of Woman Prisoners in LP Class II Semarang

Riwayat Kanker dalam Keluarga	Frekuensi (n)	Persentase (%)
Mempunyai riwayat	10	22,7
Tidak mempunyai riwayat	34	77,3
Total	44	100

Table 9 showed that 77.3% respondent have no cancer history in their family. Whereas, the average history of those who own cancer history was 11.4% cervix cancer, 4.5% breast cancer, 6.8% another cancer (mioma, brain cancer, lung cancer). While to identify the distribution of IVA test based on the obstetric, it could be described by this following table:

Table 10 The distribution of IVA test result based on the Cancer History in Family of woman prisoners in LP Class II Semarang

Jumlah Partner Seksual	Hasil IVA test			
	Positif		Negatif	
	Jumlah	%	Jumlah	%
Mempunyai riwayat	3	30	7	70
Tidak mempunyai riwayat	10	29,4	24	70,6
<i>p value = 0,971</i>				

IVA test positive in 30% respondents who have the history of cervix cancer in their family, while IVA test negative found in 70.6% respondents who do not have the history of cancer in their family. Score of p 0.971 depicted that there was no significant correlation between cancer history in the family and IVA test.

CONCLUSION

1. 70.5% respondent were IVA test negative, 52.3% women less than 20 years old have already had their first sexual intercourse, 65.9% women owned more than one sexual partners, 52.3% women applied vaginal douching, 59.1% women were multi parity, and 77,3% women did not have the cancer history in their family.
2. There was significant correlation between age of first sexual intercourse, numbers of sexual partners and IVA test.

REFERENCES

1. M.N. Bustan, Epidemiologi Penyakit Tidak Menular, (Rineka Cipta, Jakarta, 2007).
2. Dinas Kesehatan Provinsi Jawa Tengah. Profil Kesehatan Provinsi Jawa Tengah. (Dinkes Prov Jateng, 2012).
3. Dinas Kesehatan Provinsi Jawa Tengah. Profil Kesehatan Provinsi Jawa Tengah. (Dinkes Prov Jateng, 2014).
4. Dinas Kesehatan Kota Semarang. Profil Kesehatan Kota Semarang. (DKK Semarang, 2014).
5. Andrew Coyle, A Human Rights Approach to Prison Management. Handbook for prison staff; International Centre for Prison Studies; King's College London. (2002).
6. UNODC, Women Health in Prison. WHO Regional Office for Europe, (2009).
7. Plugge E. and al., The health of women in prison; Study Findings. Dept. of Public Health. Oxford University, (2006).
8. UNODC, Perempuan dan HIV dalam Lingkungan Lapas. (2008)
9. Handayani. Y, "Pemenuhan atas hak narapidana wanita di Lapas Kelas II Kota Tangerang," thesis, Universitas Indonesia , 2012.

Control of Lipid Profile on Diabetes Mellitus Animal Models With Watercress and Black Rice Bran

Agustin Syamsianah^{1,a)}, Herlisa Anggraini^{2,b)}

¹Nutrition Science Study Program, University of Muhammadiyah Semarang

²Health Analysts Study Program, University of Muhammadiyah Semarang

^{a)} Corresponding author: goustin.gz@unimus.ac.id

^{b)}herlisa@unimus.ac.id

Abstract. Fluctuations of blood glucose levels in people with diabetes is a major cause of developing complications from hyperglycemia ability to form the free radicals. Hyperglycemia condition that causes glucose autooxidation, protein glycation, and polyol pathway activation so as to accelerate the formation of reactive oxygen compounds, further increasing the modification of proteins, lipids, and DNA in various tissues. Various studies have been done, but they rarely take advantage of local foodstuffs as a functional food therapy. Raw foods contain a powerful antioxidant that is a combination of watercress and black rice bran. This study aimed to analyze the effect of functional food supplements to changes in the lipid profile of experimental animals. The results showed that levels of total cholesterol and triglyceride levels decreased significantly after being given the supplement. There is a significant increase in HDL levels in experimental animals after supplementation for 4 weeks, however, supplementation is not significant effect on LDL levels decrease.

INTRODUCTION

The costs of health services, including those for medicating degenerative diseases, are very expensive, so people tend to prevent or cure diseases by minimizing the consumption of medicine. This situation happens because the price of medicine is unreachable to buy for many people. And, it gets worse due to the improving knowledge on bad effects of consuming medicine in long periods. Therefore, people mostly consume natural medicine, whether in forms of food, drink, *jamu* or herbal drink, herbal medicine or food supplement to cure the diseases.

Food or drink consumed for the components are useful for health, but not categorized as either medicine or *jamu*, is called functional food or drink. The ingredients of functional food are mostly from vegetable materials, usually used for they contain active substances that can resist the progressivity of a disease. Nowadays, one of diseases with increasing numbers of patients and that is able to cause complication if suffered in long period is Diabetes Mellitus (DM).

Diabetes Mellitus (DM) is a metabolic disorder with high prevalence or mortality. IDF (International Diabetes Foundation) data shows that in 2003, the number of patients of DM type 1 and 2 was 194 million people worldwide and will increase up to 334 million people by 2025 (Wild et al, 2004). The Glucose level in the blood of DM a patient that keeps higher than the normal limit will cause hyperglycemia. This condition can create glucose autooxidation, protein glycation, and also polyol pathway activation, which then can accelerate the formation of reactive oxygen compounds that increase the modifications of protein, lipid and DNA in various body tissues. Consequently, there is an imbalance between the protective antioxidant and free radical production, which finally results in the oxidative stress. The antioxidant imbalance can be decreased by consuming food that is source of antioxidant.

Natural antioxidants can be obtained from vegetable foodstuffs, e.g. watercress and the residue of washing rice called black rice bran. Both are rich of vitamins, minerals and bioactive substances. Thus, they have strong antioxidant effects. One of antioxidant types related to DM is *anthocyanin*. Anthocyanin is a substance with high antioxidant activities that functions as the predator for free radicals and has potency to destroy metals. Another function of anthocyanin is that it is thought to be able to decrease oxidative stress that can destruct tissues, so it can keep the function of β cells and protect the progression of insulin resistance in the body of a DM patient.

Watercress contains vitamin A, vitamin B, vitamin C, vitamin E, vitamin K, folic acid, calcium, magnesium, phosphor, potassium, sodium, and also some bioactive substances such as beta carotene, lutein, and *zeaxanthine* (Hollman PC, Katan MB, 1999 : Hertog MG, Kromhout D, Aravanis C, et al., 1995.; Song, Yiqing. Manson, Joann E. Buring, et al., 2005.; Anjaneyulu, M., Chopra, K., Kaur, Indupal I., 2003. ; Kwon O, Eck P, et al., 2007). The black rice bran contains various nutrients and bioactive substances, such as vitamin B, vitamin E, folic acid, zinc, iron, metal, copper, selenium, manganese, *polyphenol* and *anthocyanin*.

Natural antioxidants can be obtained from vegetable foodstuffs, e.g. watercress and the residue of washing rice called black rice bran. Both are rich of vitamins, minerals and bioactive substances. Thus, they have strong antioxidant effects. The result of a research done by Syamsianah and Anggraini (2014) shows that watercress contains C vitamin (29.17 mg/100g), magnesium (2706,22 mg/kg), iron substance (127, 35 mg/kg), zinc (73,33 mg/kg), and some bioactive substances such as carotene (470,34 mg/g) and quercetin (107,11 mg/kg). The research on a diabetic mouse induced streptozotozin concludes that quercetin is potential to be used as antidepressant for DM patients. Besides, it can reduce glucose absorption in the small intestine (Anjaneyulu, et al., 2003.; Kwon, et al., 2007).

Another kind of antioxidant substances related to the DM disease is anthocyanin, which is thought to be able to reduce oxidative stress that can destruct cells so that it can protect function of β cells and protects the progression of insulin resistance in the body of a DM patient. Besides containing anthocyanin (630,38 mg/100g), black rice bran also contains various kinds of nutrients, such as vitamin C (41,29 mg/100g), zinc (77,34 mg/kg), and iron as much as 102,04 mg/kg (Syamsianah and Anggraini, 2014). Setiawan and Suhartono (2005) states that vitamin C can play a role as the inhibitor of aldose reductase enzyme in the mechanism of DM.

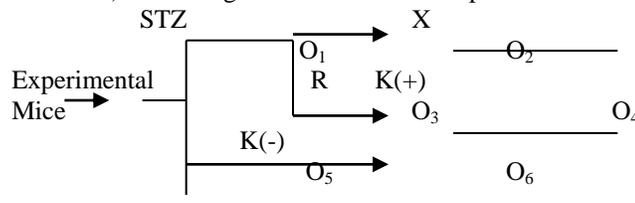
The composition of C vitamin, zinc, Magnesium and quercetin active substance get the highest increase when the two kinds of food, i.e. watercress and black rice bran, are mixed in vitalar in accordance with the same ratio. This is proven in the research conducted by Syamsiana and Anggraini (2014) that the mixture of 1 portion of watercress and 1 portion of black rice bran part (1 : 1) contains vitamin C (83,17mg/100g), zinc (99,43 mg/kg), magnesium (3767,10 mg/kg) and quercetin 9217,85 mg/kg) higher than the mixture of both with the ratio of either 1 : 2 or 2 : 1.

Referring to the research, some research on animals needs to be conducted in order to examine the effectiveness of anti-hyperglycemia functional food supplement as a preventive effort toward the increase of oxidative stress caused by the fluctuation of blood glucose level in a DM patient.

RESEARCH METHOD

1. Research Type and Design

The type of the research is experimental research with Randomized Pretest- Posttest Control Group Design (Campbell, et al. 1963). The design of the research is explained as follow:



Picture 2. Research Design

Explanation:

O_{1,3,5} = Lipid Profile before Treatment

O_{2,4,6} = Lipid Profile after treatment

X = The functional food giving

K(+) = Positive control, induced by STZ (65mg/kg BB) + Nicotinamide (230mg/kg BB) and given by standard food.

K(-) = Negative control, mice given standard food.

a. Populations and Experimental Animal Samples

The population of the research is Male Wistar mice, 3-4 months, with weight 200-300 grams. The samples of the research are divided into 3 groups and the first group is given a treatment, the second group is determined as the positive control group, and the last group is the negative control group.

The determination of the research samples refer to the WHO standard (1993), which says that research samples for animals need minimally 5 animals. Therefore, this research uses 7 mice for each group as the samples, either for the treatment group or control group. The technique of sample taking uses random sampling technique.

The criterion of sampling inclusion is determined by considering some aspects, such as: (1). Weight; the weights of the mice are between 200-300 grams and the weights must be still around 200-300 grams before getting treatment or not having weight loss. (2). Body condition; the samples must be in healthy conditions and they must not show abnormal anatomies, (3). Blood glucose level; blood glucose level in normal condition is around 80 – 120 mg/dl, blood glucose level on fasting time <110mg/dl, blood glucose level on fasting time after induction STZ \geq 200mg/dl. The Sampling exclusion criteria are: (1). The mice get sick during the research, (2). The mice die when the research is ongoing.

b. Data Analysis

Data analysis in this research is done univariately and bivariately. Univariate analysis is used to describe mean, median and standard deviation score from the investigated variable which is lipid profile data including total cholesterol level, triglyceride, HDL, and LDL.

Bivariate analysis is used to examine the influence of the functional food feeding toward lipid profile used the *T-test* statistic. The lipid profile difference for each treatment is analyzed through an *Independent Sample-Test*. A *Paired-T test* is conducted to analyze the difference of lipid profile before and after giving functional food to each treatment group in order to test the effect of functional food to the lipid profile of the experimental animals.

THE RESULT AND DISCUSSION OF RESEARCH

The Lipid Profile of the Experimental Animals

The analysis of lipid profile is conducted at the beginning and the end of the treatment, including the total cholesterol level, triglyceride level, HDL level and LDL level. The result of the lipid profile analysis is shown in Tables 2, 3, 4, and 5.

The Total Cholesterol Level

The cholesterol levels of the experimental animals increase, whereas the cholesterol levels of the DM experimental animals given functional food decrease down to 111 mg/dl. The result of the statistical test using Paired T-test shows that there is a significant difference between the total cholesterol level before treatment and that after treatment of the DM experimental animals given functional food during 4 weeks ($p=0,008$). The statistical test of the *Independent T-test* shows the difference of total cholesterol level between the DM experimental animals DM given standard food and the DM experimental animals given functional food ($p=0,000$). The mean score of the total cholesterol level is shown in Table 2.

Table 1. The mean of the Total Cholesterol Level Before and After Treatment

Treatment Group	Pre-Treatment Cholesterol (mg/dl)	Post-treatment Cholesterol (mg/dl)	Cholesterol Difference Total (mg/dl)
K-1 (normal, healthy)	106,6 \pm 2,7	104,8 \pm 2,0	-1,8 \pm 4,0
K-2 (DM type2)	233,0 \pm 5,2	239,9 \pm 10,6	6,9 \pm 14,7
P-3 (functional food)	242,8 \pm 8,6	131,8 \pm 3,2	-111,0 \pm 7,3

The Triglyceride Level

The Triglyceride levels of the experimental animals DM given standard food increase during the research, whereas the triglyceride levels of the experimental animals given functional food during 4 weeks reduce down to

56.3 mg/dl. The explanation of the triglyceride levels of the experimental animals is shown in Table 3. The statistical analysis shows that there is a significant difference in triglyceride level after getting treatment ($p=0,012$) between the DM experimental animals given standard food and the DM experimental animals given functional food.

Table 2. The mean of the Triglyceride Level Before and After Treatment

Treatment Group	Pre-Treatment TG (mg/dl)	Post-Treatment TG (mg/dl)	TG Difference (mg/dl)
K-1 (normal, healthy)	71,0±2,3	67,6±4,2	-3,3±4,9
K-2 (DM type 2)	133,3±3,9	138,1±8,0	4,7±9,6
P-3 (functional food)	136,7±10,0	80,4±3,7	-56,3±8,6

The HDL Level

The HDL levels of the DM experimental animals given standard food increase a little bit during the research, whereas the experimental animals given functional food during 4 weeks increase up to 53, 9 mg/dl. The explanation of the triglyceride levels of the experimental animals is shown in Table 4.

Table 3. The Mean of HDL Level Before and After Treatment

Treatment Group	Pre-Treatment HDL (mg/dl)	Post-Treatment HDL (mg/dl)	HDL Difference (mg/dl)
K-1 (normal, healthy)	44,7±2,2	41,9±1,0	-2,8±2,9
K-2 (DM type 2)	17,5±1,9	20,9±1,9	3,4±3,0
P-3 (Functional Food)	17,5±1,8	71,4±3,5	53,9±3,6

The result of the statistical test using Paired T-test shows that there is a significant difference of HDL levels before and after treatment for the DM experimental animals given functional food during 4 weeks ($p=0,001$). *T-test Independent Sample Statistical test* shows the difference of HDL levels after treatment between the DM experimental animals only given standard food and the DM experimental animals given functional food ($p=0,000$).

The LDL Level

The LDL levels of the DM experimental animals given standard food increase during the research, whereas the animals given functional food during 4 weeks reduce 9,9 mg/dl. The description of the triglyceride levels of the experimental animals is shown in Table 5.

Table 4. The Mean of the LDL Level Before and After Treatment

Treatment Group	Pre-Treatment LDL (mg/dl)	Post-Treatment LDL (mg/dl)	LDL Difference (mg/dl)
K-1 (Normal, Healthy)	59,6±2,9	59,4±5,7	-2,0±7,3

K-2 (DM type 2)	89,0±2,5	108,6±9,4	19,6±11,3
P-3 (Functional Food)	88,5±6,2	78,6±4,7	-9,9±5,7

The statistical analysis shows that a significant difference occurs in LDL level after getting treatment ($p=0,000$) between the DM experimental animals given standard food and the DM experimental animals given functional food. However, the difference of the LDL levels before and after getting treatment in the DM experimental animals given functional food is not significant ($p=0,319$).

CONCLUSION

The formula of functional food made of watercress and black rice bran in accordance with the same composition ratio between both materials is able to reduce the blood glucose level, total cholesterol level, triglyceride level and LDL level of the DM experimental animals. The real effect is also shown by the increase of the HDL levels of the DM experimental animals after getting functional food.

ACKNOWLEDGEMENT

Writer wants to thank to Direktorat Penelitian dan Pengabdian Kepada Masyarakat, Dirjen Dikti Kementerian Pendidikan dan Kebudayaan that has given financial support to conduct this research. Thank you to Kopertis Wilayah VI Jawa Tengah that has facilitated for the continuity of this research. The same acknowledgement is also for LPPM UNIMUS which has given motivation so that the research can be accomplished as expected.

REFERENCES

1. American Diabetes Association (ADA). 2008. Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care*. (31), 1, Januari, 2008.
2. Anjaneyulu, M. , Chopra, K., Kaur, Indupal I. 2003. Antidepressant Activity of Quercetin, a Bioflavonoid, in Streptozotocin-Induced Diabetic Mice. *Journal of Medicinal Food*. December, 6(4): 391-395
3. Asadi, M.S., Mirvaghefi, A.R, Nematollahi, M.A, Banaee, M., Ahmadi K. 2012. Effects of Watercress (*Nasturtium officinale*) extract on Selected Immunological Parameters of Rainbow Trout (*Oncorhynchus mykiss*). *Open Veterinary Journal* Vol.2: 32-39
4. Campbell, Donald T., J.C.Stanley. 1963. *Experimental and Quasi-experimental Designs for Research*. Rand Mc Nally College Publishing Company, Chicago. p.145-170
5. Kwon O, Eck P, Chen S, Corpe CP, Lee JH, Kruhlak M, and Levine M. 2007. Inhibition of the Intestinal Glucose Transporter GLUT2 by Flavonoids. *FASEB J* 21 : 366-377
6. Lim, Siong-Il, Lee Boo-Yong. 2010. Anti Diabetic Effect Using Rice Bran and Soybean as the Main Ingredient by *Bacillus* sp. *J.Korean Soc.Appl.Biol.Chem*. 53(2), 222-229.
7. Manaf, A. 2010. *Comprehensive Treatment on Type 2 Diabetes Mellitus for Delaying Cardiovascular Complication*. Fakultas Kedokteran Universitas Andalas. Padang
8. Min, B, McClung, A.M, Green, B.G., Chen, M-H. 2012. Rice Bran Phytonutrients and Their Application as Natural Antioxidants in a Food System. USDA-ARS Rice Research Unit, Beaumont, TX, USDA-ARS National Rice Research Center, Stuttgart, AR, USDA-ARS National Aquaculture Research Center, Stuttgart.
9. Mughtadi, D. 2012. *Pangan Fungsional & Senyawa Bioaktif*. Alfabeta, Bandung.
10. Ozen, T. 2009. Investigation of Antioxidant Properties of *Nasturtium officinale* (Watercress) Leaf Extracts. *Acta Poloniae Pharmaceutica – Drug Research*, Vol. 66 No. 2 pp. 187-193. ISSN 0001-6837. Polish Pharmaceutical Society.
11. Ryan, E.P. 2011. Bioactive Food Components and Health Properties of Rice Bran. *JAVMA*, March.Vol.238 (5).
12. Setiawan, B., Suhartono, E. 2005. Stres Oksidatif dan Peran Antioksidan pada Diabetes Melitus. *Majalah Kedokteran Indonesia*. Pebruari; 55(2)

13. Shahrokhi, N, Hadad, M.K, Keshavarzi, Z, Shabani, M. 2009. Effects of Water Cress on Glucose and Lipid Plasma in Streptozotocin Induced Diabetic Rats. *Pak J Physiol*; 5(2). <http://www.pps.org.pk/PJP/5-2/Shahrokhi.pdf>.
14. Soeyono, S. 2007. Menyeimbangkan Radikal Bebas dan Antioksidan. *Semijurnal Farmasi dan Kedokteran* no. 41, Tahun V, Juli 2007.
15. Syamsianah, A. dan Anggraini, H. 2014. Vitaral Mix sebagai Makanan Formula Anti Hiperglikemia. Laporan Hasil Penelitian Hibah Bersaing Tahun ke-1 dari rencana 2 tahun. Lembaga Penelitian dan Pengabdian Pada Masyarakat. Universitas Muhammadiyah Semarang.
16. Szablewski, L. 2011. *Glucose, Homeostasis & Insulin Resistance*. Bentham e Books. Medical University of Warsaw Poland. ISBN: 978-1-60805-189-2
17. WHO. 1993. *Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicine*. Manila.
18. WHO. 2006. *Definition, Diagnosis and Classification of Diabetes Mellitus and its Complications. Report of a WHO Consultation. Part 1 : Diagnosis and Classification of Diabetes Mellitus*. World Health Organization. Department of Noncommunicable Disease Surveillance.
19. Wild, S., Roglic, D., Green, A., Sicree, R., King, H. 2004. Global Prevalence of Diabetes. Estimates for the year 2000 and projections for 2030. *Diabetes Care*, Volume 27, Number 5, May.
20. Yoshimura, Y., Zaima, N., Moriyama, T., kawamura, Y. 2012. Different Localization Patterns of Anthocyanin Species in the Pericarp of Black Rice Revealed by Imaging Mass Spectrometry. *PLoS ONE*. February 2012 Volume 7 Issue 2 e31285.

The function of Extract Curcuma (*Curcuma xanthorrhiza* Roxb) In Restoring Hemoglobin, erythrocyte and hematocrit On Soccer Athlete

Ali Rosidi^{1,a)}

¹ Nutrition Studies Program, Faculty of Nursing and Health, Universitas Muhammadiyah Semarang

^{a)} Corresponding author: alirhesa@yahoo.co.id

Abstract. The purpose of this study is to determine the effect of giving *temulawak* (*Curcuma Xanthorrhiza Roxb*) in athletes after having running activity 5000 meters toward hemoglobin, erythrocyte and hematocrit level. The research design is double blind randomized controlled trial. The subjects were 35 male football athletes from PPLP (Centre for Education and Training Student) Salatiga, Central Java. The subjects were divided into 5 group with different treatments; group I giving *temulawak* extract capsule containing curcumin (ETKK) 250 mg / day, group II ETKK 500 mg / day, group III ETKK750 mg / day, group IV were given multivitamin and mineral (MVM) capsules per day (beta carotene 5000 UI, Vitamin E 200 UI, Vitamin C 500 mg, 15 mg zinc, selenium 50 mcg) and group V were given placebo while the capsule were given for 21 days. The giving of *temulawak* extract (*Curcuma xanthorrhiza* Roxb) gave no effect on the improvement of hemoglobin levels, eritrosit and hematocrit in athletes after having 5000 meters running test.

INTRODUCTION

The improvement of the use of oxygen, especially on performed by contraction muscle, causes the improvement of electron leakage of mitochondria that will become ROS (Reactive Oxygen Species) (Clarkson 2000; Sauza 2005). Generally, 2-5% of oxygen used in metabolism process is changed into superoxide ion, so that a heavy physical exercise is able to cause the improvement of free radical production (Chevion 2003). Oxidative stress caused by heavy physical exercise induces erythrocyte damage and reduction of hemoglobin level (Senturk dkk. 2001). The damage of erythrocyte effects on age of erythrocytes, in which the age of erythrocytes is normally 120 days. So if the production of hydrogen peroxide still continues, it causes anemia because of the damage of erythrocytes. Anemia results the lack of oxygen transportation to cell. It gives effect to metabolism of cell, therefore the cell is not able to make any regeneration (Guyton; 2002). The function of erythrocyte is as oxygen carrier that carries the oxygen through all body's tissue. Haemoglobin, that binds the oxygen, is the inside part of erythrocyte. Haemoglobin carries the oxygen from the lung, and then the oxygen is released when the erythrocyte passes the capillaries.

In normal condition, the form of free radicals is balanced with the form of endogenous antioxidants. Body has protection mechanism that neutralize the free radicals by producing endogenous antioxidants, such as SOD (superoxide dismutase), GPx (glutathion peroxide), and catalase. Body is not able to produce antioxidants, so that the body needs exogenous antioxidants from outside of the body. Exogenous antioxidants include vitamin E, vitamin A, vitamin C, Cu, ZN, Mn (Gordong 1994; Simajuntak 2007; Winarsi 2011).

Temulawak (*Curcuma xanthorrhiza roxb*) is one of medicinal plants that contains with efficacious active ingredients as antioxidants. The study result shows that bioactive substances contained in *temulawak* rhizome include kurkumin (Kunchandy and Rao 1990 ; Tonnesen and Greenhill1992), demetoksikurkumin and bisdemetoksikurkumin (Tonnesen and Greenhill 1992). Another study indicates that active ingredients of kurkuminoid found in *temulawak* has higher antioxidants effectivity than kurkumin, demetoksikurkumin and bisdemetoksikurkumin (Sutrisno dkk. 2008). The purpose of this research is to study the effect of giving *temulawak* (*Curcuma Xanthorrhiza Roxb*) in athletes after having 5000 meters-running activity toward the level of hemoglobin, erythrocyte and hematocrit.

METHOD

The research design used was double blind randomized controlled trial. The subjects were 35 male football athletes from PPLP (Centre for Education and Training Student) Salatiga, Central Java. The subjects were divided into 5 groups with different treatments; group I was given *temulawak* extract capsule containing curcumin (ETKK) 250 mg / day, group II was given ETKK 500 mg / day, group III was given ETKK750 mg / day, group IV was given multivitamin and mineral (MVM) capsules per day (beta carotene 5000 UI, Vitamin E 200 UI, Vitamin C 500 mg, 15 mg zinc, selenium 50 mcg) and group V was given placebo while the capsule were given for 21 days. The giving of *temulawak* extract (*Curcuma xanthorrhiza* Roxb) gives no effect on the improvement of hemoglobin levels, eritrit and hematocrit in athletes after having 5000 meters running test. The research was conducted in Pusat Pendidikan dan Latihan Pelajar Olahraga (Centre for Students Education and Training) Salatiga Central Java. The intervention of *temulawak* extract capsule was given for 21 (twenty one) days. Physical activity was tested with 5000-metres of fast running. This research has been approved by ethical clearance approval issued by Health Ethics Committee Faculty of Medical Diponegoro University Semarang No. 214/EC/FK/RSDK/2012.

RESULT

Haemoglobin (Hb), Hematocrit (Ht) and Erythrocyte

Generally, after the intervention, the mean of haemoglobin level reduces as $0,13 \pm 0,69$ g/dL (1,2-1,8 g/dL). The mean of haemoglobin level on treatment group with ETKK 250 mg and 750 mg increases as $0,16 \pm 0,56$ g/dL and $0,10 \pm 1,00$ g/dL respectively. The reduction of the average of haemoglobin level found on treatment groups with MVM 250 mg, ETKK 500 mg and placebo are $0,58 \pm 0,73$ g/dL, $0,51 \pm 0,58$ g/dL, $0,34 \pm 0,36$ g/dL respectively. The result of anova test of those groups are not significantly different ($p > 0,05$).

After the intervention, the treatment group that have the reduction of the average of hematocrit level are group of placebo, group of MVM 500 mg and ETKK 500 mg as $1,23 \pm 1,30\%$, $1,23 \pm 1,30\%$ and $0,11 \pm 5,06\%$ of each. The treatment group with TTK 750 mg and treatment group ETKK 250 mg have the increase of the average of hematocrit level as much as $0,74 \pm 3,17\%$ and $0,39 \pm 1,85\%$ respectively. After performing the anova test, there is no significant difference on those five of treatment groups ($p > 0,05$).

The average number of erythrocytes found is decline after the intervention as $0,06 \pm 0,24$ million u/L (0,44-0,65 million u/L). The average number of erythrocytes that have increased is only found on the treatment group with ETKK 750 mg as much as $0,05 \pm 0,38$ million u/L. The reductions of the average number of erythrocytes of the treatment group with ETKK 500 mg, placebo, MVM and ETKK 200 mg are $0,16 \pm 0,23$ million u/L, $0,09 \pm 0,19$ million u/L, $0,07 \pm 0,21$ million u/L, $0,01 \pm 0,16$ million u/L respectively. The result of anova test of those groups are not significantly different ($p > 0,05$).

TABLE 1. The mean of Haemoglobin, Hematocrit, Erythrocyte Level Based on The Treatment Group Before and After Intervention

Haemoglobin Level (g/dL)	Placebo	ETKK250 mg	ETKK500 mg	ETKK750 mg	MVM	p
Before	13,99±1,01	15,36±0,83	14,86±0,84	14,29±0,91	14,24±0,74	0,045
After	13,64±0,84	15,51±0,72	14,34±0,63	14,39±1,35	14,19±0,99	0,015
Difference	-0,34±0,36	0,16±0,56	-0,51±0,58	0,10±1,00	-0,58±0,73	0,302
Hematocrit Level (%)						
Before	43,21±2,85	46,17±2,53	44,71±2,06	43,91±1,68	44,43±0,70	0,133
After	41,98±2,61	46,57±2,12	44,60±4,73	44,66±3,29	43,76±2,05	0,123
Difference	-1,23±1,30	0,39±1,85	-0,11±5,06	0,74±3,17	-0,67±1,64	0,729
Number of Erythrocyte (million u/L)						
Before	5,21±0,56	5,25±0,32	5,11±0,32	5,30±0,46	5,46±0,59	0,708
After	5,13±0,53	5,24±0,29	4,94±0,19	5,34±0,45	5,39±0,53	0,300
Difference	-0,09±0,19	-0,01±0,16	-0,16±0,23	0,05±0,38	-0,07±0,21	0,580

There is no alteration of the proportion of haemoglobin level before and after intervention on all group of treatment. After performing intervention, the proportion of haemoglobin level which experience anemia on group of MVM treatment and group of placebo are one athlete (14,3%) of each group. The result of fisher's exact test shows that there is no difference of the proportion of haemoglobin level on all group of treatment ($p > 0,05$).

When the proportion of hematocrit level is compared to the hematocrit level before conducting intervention, its proportion is slightly difference on the group with MVM treatment. Before intervention, there is 1 (one) athlete (14,3%), however no athlete is found after the intervention. The result of fisher's exact test indicates that there is no different of the number of erythrocytes on all groups with treatment ($p>0,05$).

TABLE 2. Classification of Haemoglobin Level Based on The Group of Treatment Before and After The Intervention.

Haemoglobin Level	Plascbo		ETKK 250 mg		ETKK 500 mg		ETKK750 mg		MVM		p
	n	%	n	%	n	%	n	%	n	%	
Before											1,00
Anemia	1	14,3	0	0	0	0	0	0	1	14,3	
Normal	6	85,7	7	100	7	100	7	100	6	85,7	
After											1,00
Anemia	1	14,3	0	0	0	0	0	0	1	14,3	
Normal	6	85,7	7	100	7	100	7	100	6	85,7	
Hematocrit Level											
Before											1,00
Low	1	14,3	0	0	0	0	0	0	1	14,3	
Normal	6	85,7	6	85,7	7	100	7	100	6	85,7	
High	0	0	1	14,3	0	0	0	0	0	0	
After											1,00
Low	1	14,3	0	0	0	0	0	0	0	0	
Normal	6	85,7	6	85,7	6	85,7	6	100	7	100	
High	0	0	1	14,3	1	14,3	1	14,3	0	0	
Number of Erythrocyte											
Before											1,00
Low	1	14,3	0	0	0	0	0	0	0	0	
Normal	5	71,4	6	85,7	6	85,7	5	71,4	6	85,7	
High	1	14,3	1	14,3	1	14,3	2	28,6	1	14,3	
After											0,948
Low	1	14,3	0	0	0	0	0	0	0	0	
Normal	5	71,4	6	85,7	7	100	6	85,7	6	85,7	
High	1	14,3	1	14,3	0	0	1	14,3	1	14,3	

Mean Corpuscular Volume(MCV), Mean Corpuscular Hemoglobin(MCH), Mean Corpuscular Hemoglobin Concentration(MCHC)

After the intervention, the treatment groups have the reduction of average value of MCV on MVM and placebo as $0,33\pm 0,25$ fL and $0,06\pm 0,74$ fL of each of them. The highest improvement of the MCV value as $0,43\pm 0,56$ fL is found on the group of 750 mg ETKK treatment. The result of anova test tells that there is no distinction on average difference of MCV value on those five of treatment groups ($p>0,05$). The average value of MCH has decreased after the intervention on the group with ETKK 500 mg treatment, the group of ETKK 750 mg treatment and the group of MVM treatment as $1,00\pm 0,29$ pg/sel, $0,10\pm 0,35$ pg/sel dan $0,09\pm 0,16$ pg/sel. The highest improvement as much as $0,06\pm 0,30$ pg/sel is found on the treatment group with ETKK 250 mg. The anova test indicates that there is no distinction on average difference of MCV value on those five of treatment groups ($p>0,05$). The difference average of MCHC value has decreased by $0,03\pm 0,36$ g/dL ($0,90-0,80$ g/dL). The average value of MCHC has reduced by $0,29\pm 0,38$ g/dL dan $0,07\pm 0,45$ g/dL respectively on the group with ETKK 750 mg treatment and the group with ETKK 500 mg treatment. The increase of the average value of MCHC on the group of ETKK 250 mg treatment, placebo, and MVM severally are $0,13\pm 0,40$ g/dL, $0,06\pm 0,24$ g/dL, and $0,03\pm 0,21$ g/dL. The result of anova test points that there is no distinction on average difference of MCHC value on those five of treatment groups ($p>0,05$).

TABLE 3. The Average Value of MCV, MCH, MCHC Based on The Treatment Group Before and After The Intervention

MCV Value (fL)	Placebo	ETKK250 mg	ETKK500 mg	ETKK750 mg	MVM	p
Before	83,43±6,34	88,04±3,52	87,63±2,85	83,30±5,71	82,11±8,29	0,206
After	83,37±5,80	88,04±3,75	87,63±2,96	83,73±5,92	81,79±8,14	0,175
Difference	-0,06±0,74	0,00±0,84	0,00±0,46	0,43±0,56	-0,33±0,25	0,255

MCHC Value (g/dL)						
Before	26,99±2,24	29,30±1,23	29,13±1,28	27,09±2,23	26,66±3,42	0,084
After	26,99±2,19	29,36±1,37	29,03±1,09	26,99±2,14	26,57±3,37	0,064
Difference	0,00±0,28	0,06±0,30	-1,00±0,29	-0,10±0,35	-0,09±0,16	0,776
Value MCHC (g/dL)						
Before	32,36±0,60	33,26±0,38	33,20±0,59	32,50±0,96	32,37±1,18	0,087
After	32,41±0,69	33,39±0,67	33,13±0,49	32,21±0,70	32,40±1,21	0,034
Difference	0,06±0,24	0,13±0,40	-0,07±0,45	-0,29±0,38	0,03±0,21	0,236

Based on the limitation of normal MCV value as 80 – 100 fL, normal MCH value is 28– 34 pg/ sel and normal MCHC value is 32 – 36 g/dL (Kemenkes 2011), the proportion description of MCV, MCH and MCHC category accordingly can be seen on Table 4.

TABLE 4. Classification of MCV, MCH, MCHC Value Based on The Treatment Group Before and After the Intervention.

Classification of MCV Value	Placebo		ETKK 250 mg		ETKK 500 mg		ETKK750 mg		MVM		p
	n	%	n	%	n	%	n	%	n	%	
Before											0,771
Microcytic	1	14,3	0	0	0	0	2	28,6	1	14,3	
Normositik	6	85,7	7	100	7	100	5	71,4	6	85,7	
After											0,771
Microcytic	1	14,3	0	0	0	0	2	28,6	1	14,3	
Normositik	6	85,7	7	100	7	100	5	71,4	6	85,7	
Classification of MCH Value											
Before											0,170
Hipokromik	4	57,1	1	14,3	1	14,3	4	57,1	4	57,1	
Normokromik	3	42,9	6	85,7	6	85,7	3	42,9	3	42,9	
After											0,143
Hipokromik	5	71,4	2	28,6	1	14,3	4	57,1	5	71,4	
Normokromik	2	28,6	5	71,4	6	85,7	3	42,9	2	28,6	
Classification of MCHC Value											
Before											0,297
Low	4	57,1	1	14,3	1	14,3	4	57,1	4	57,1	
Normal	3	42,9	6	85,7	6	85,7	3	42,9	3	42,9	
After											0,240
Low	2	28,6	0	0	0	0	3	42,9	1	14,3	
Normal	5	71,4	7	100	7	100	4	57,1	6	85,7	

After performing the intervention, there is no alteration on the proportion of MCV. The *fisher's exact test* indicates that there is no significant difference on MCV proportion of those treatment groups before and after the intervention ($p>0,05$). There is prevalence hipokromik as much as 4 (four) athletes (42,9%) found in each treatment group of placebo, ETKK 750 mg and MVM; while, the MCHC value proportion in low category on the treatment groups of ETKK 250 mg and ETKK 500 mg are 14,3% of each of them. The *fisher's exact test* shows that there is no significant difference on MCV proportion of those treatment groups before and after the intervention ($p>0,05$). The value of MCHC in low category is not found on the treatment groups of ETKK 250 mg and ETKK 500 mg; however the result of fisher's exact test indicates that there is no difference on MCV proportion of those treatment groups before and after the intervention ($p>0,05$).

DISCUSSION

Haemoglobin (Hb)

The average level of haemoglobin found in the treatment groups of ETKK 250 mg and 750 mg increases severally as 0,16±0,56 g/dL and 0,10±1,00 g/dL. In line with the research conducted by Sutamik (2007) that tells that the give of *temulawak* extract (*Curcuma xanthorrhiza Roxb.*) is able to improve the level of haemoglobin on the blood of female strain wistar rats (*Rattus norvegicus*) that be given with lead nitrate solution ($Pb(NO_3)_2$). The research performed by Sugiharto shows that the give of *temulawak* rhizome infusion together with the give of

solution lead $[(PbNO_3)_2]$ is able to prevent the reduction of Haemoglobin level of the rats. Nevertheless, the treatment groups of MVM, ETKK 500 mg and placebo have had the reduction of the average level of haemoglobin (Δ level of haemoglobin) as much as $0,58 \pm 0,73$ g/dL, $0,51 \pm 0,58$ g/dL, $0,34 \pm 0,36$ g/dL respectively. The average level of haemoglobin before the intervention is $10,70 \pm 0,48$ g/dl and the average level of haemoglobin after the intervention is $9,40 \pm 0,67$ g/dl.

Hematocrit (Ht)

After the intervention, the treatment groups that have had the reduction of average level of hematocrit are placebo, MVM and ETKK 500 mg as much as $1,23 \pm 1,30\%$, $1,23 \pm 1,30\%$ and $0,11 \pm 5,06\%$. The research performed by Bahri dkk. (2012) toward the athletics athletes after running for an hour shows the reduction of hematocrit level either on the control or treatment groups (coconut water, sugar and supplement).

The treatment groups with ETKK 750 mg and ETKK 250 mg have the improvement of average level of hematocrit as $0,74 \pm 3,17\%$ and $0,39 \pm 1,85\%$. The research performed by Senturk dkk (2004) that involved the trained-male students and untrained-male students of Akdeniz University, Antalya, Turki indicates that there is an improvement of level of hematocrit on both trained-male students and untrained-male students after having maximal physical exercise and giving Vitamin A (β -carotene 50 mg/day), vitamin C (ascorbic acid 1000 mg/day), and vitamin E (α -tocopherol 800 mg/day). Sugiarto research (2003) shows that the give of 20% temulawak rhizome infusion is able to improve hematocrit level on rats (*Rattus norvegicus*) after being given the solution of inorganic lead.

Erythrocyte

The average amount of erythrocytes is increase only on the treatment group with ETKK 750 mg as much as $0,05 \pm 0,38$ million u/L. The research done by Sugiharto (2004) that gave 20% temulawak rhizome infusion and 0,5 ml $(PbNO_3)_2$ 50 ppm shows that a slight improvement of average amount of erythrocytes as $4,65 \pm 0,14$ million u/L compares to the group of control as $4,60 \pm 0,13$ million u/L. However, the give of 20% temulawak rhizome infusion and 0,5 ml $(PbNO_3)_2$ 50 ppm have the improvement of average amount of erythrocytes as $4,65 \pm 0,14$ million u/L compares to the group of control as $4,60 \pm 0,13$ million u/L. Djojoseowarno and Sjarief research (2002) tells that there is an improvement of average amount of erythrocytes from 5,65 million u/L to 7,93 million u/L after having physical activity on the administration male employees.

The treatment groups with ETKK 500 mg, placebo, MVM and ETKK 250 mg have the decrease of average amount of erythrocytes respectively are $0,16 \pm 0,23$ million u/L, $0,09 \pm 0,19$ million u/L, $0,07 \pm 0,21$ million u/L, $0,01 \pm 0,16$ million u/L. In line with the research conducted by Silitonga (2011) indicates that there is the decrease of the amount of erythrocytes on the rats (*Rattus norvegicus*) that have been given the maximal physical activity and given *daun bangun-bangun* for 30 days compare to group of control.

Mean Corpuscular Volume (MCV), Mean Corpuscular Haemoglobin (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC)

After the intervention, the treatment groups that have the reduction of average value of MCV are MVM and placebo as much as $0,33 \pm 0,25$ fL and $0,06 \pm 0,74$ fL. Dallak (2012) performed the research that finds that there is the reduction of average value of MCV on male-Wistar rats after the intervention with vitamin E and vitamin C and been swam compares to the control group. The research done by Hossein and Monireh (2012) on the male-basketball athletes also indicates the decrease of average value of MCV from $91,17 \pm 1,94$ fL to $91,10 \pm 1,92$ fL after having the intervention of plyometric exercise program. However, the treatment group with ETKK 750 mg has the highest improvement of average value of MCV as $0,43 \pm 0,56$ fL. Wen et al (2007) shows that there is an improvement of average value of MCV from $90,00 \pm 4,36$ fL to $90,05 \pm 5,18$ fL on the basketball athletes after having the intervention by consuming purple sweet potato leaves (*Ipomoea batatas (L) Lam*). While, the research done by Vilela et al (2010) tells that there is a slight improvement of average value of MCV from $86,25 \pm 0,35$ fL to $86,29 \pm 0,35$ fL on the volunteers after the intervention with the extract of pequi fruit (*Caryocar brasiliense Camb*).

Based on the classification of MCV, there are micrositik category (<80 fL) and normositik category (80-100 fL) found on all treatment groups. The highest micrositik category is found on the treatment group with ETKK 750 mg as 2 athletes (28,6%). There is no athlete found in the treatment groups with ETKK 250 mg and ETKK 500 mg. The proportion of MCV does not change after getting the intervention. The anova test result indicates that there is no different on the difference of MCV value on those five of treatment groups ($p > 0,05$). It is not similar with the

result of Tanuja research (2011) that be conducted by giving the turmeric extract (*Curcuma Longa*) and 5 Gy of Gamma radiation to Swiss albino mice. This intervention gives the effect to MCV value.

CONCLUSION

The give of temulawak extract (*Curcuma xanthorrhiza Roxb*) does not give any effect to the improvement the level of haemoglobin, erythrocytes and hematocrit in athletes after having 5000 meters running test.

REFERENCES

1. Astuti ADW. Efektivitas Pemberian Ekstrak Jahe Merah (*Zingiber officinale roscoe varr Rubrum*) dalam Mengurangi Nyeri Otot pada Atlet Sepak Takraw. [Skripsi] Semarang : Program Studi Ilmu Gizi, Fakultas Kedokteran Universitas Diponegoro, 2011
2. Clarkson, Priscilla M, Thompson, HS, Antioxidants ; what role do they play in physical activity and health? American Journal of Clinical Nutrition, 2000 : 72(2): 637S-646S
3. Cooke M.B., E. Rybalka, C.G. Stathis, P.J. Cribb, and A. Hayes,. Whey Protein Isolate Attenuates Strength Decline after Eccentrically-Induced Muscle Damage in Healthy Individuals. Journal of the International Society of Sports Nutrition. 2010. Sep 22;7:30.
4. Departemen kesehatan RI. Pedoman Pengukuran Kesegaran Jasmani. Jakarta : Depkes, 1994.
5. Gordon I.. Functional Food, Food Design, Pharmafood. New York: Champman dan Hall. 1994.
6. Gunarsa SD. Psikologi untuk Keluarga. Jakarta: PT BPK Gunung Mulia. [WHO] World Health Organization. 2011. Adolescent. <http://www.who.int/> [2 Februari 2011].
7. Hussein H.K, Zinadah OAA. Antioxidant Effect of Curcumin Extracts in Induced Diabetic Wister Rats. International Journal of Zoological Research, 2010: 6: 266-276
8. Jawi IM, Suprpta DN, Arcana I N, Indrayani AW, Subawa AAN, Efek Antioksidan Ekstrak Air Ubijalar Ungu terhadap Darah dan Berbagai Organ Pada Mencit yang diberikan Beban Aktivitas Fisik Maksimal. Denpasar : Fakultas Kedokteran Udayana Denpasar Bali, 2006
9. Jayaprakasha, G. K., Rao, J. M. L., dan Sakariah, K. K. Chemistry and biological activities of *C. longa*. Trends in Food Science and Technology 2005 :16, 533-548.
10. [Kalpravidh RW](#), [Siritanaratkul N](#), [Insain P](#), [Charoensakdi R](#), [Panichkul N](#), [Hatairaktham S](#), [Srichairatanakool S](#), [Phisalaphong C](#), [Rachmilewitz E](#), [Fucharoen S](#). Improvement in oxidative stress and antioxidant parameters in beta-thalassemia/Hb E patients treated with curcuminoids. [Clin Biochem](#). 2010. Mar;43(4-5):424-9
11. Kim, JD, Carter, R.J. Yu, B.P. Influence of age, exercise and Dietary Restriction on Oxidative Stress in Rats. Aging Clin Exp Res. 1996: 8 : 123-129
12. Kunchandy E, Rao, MN. Oxygen radical scavenging activity of curcumin. International Journal of Pharmaceutics 1990: 58(Feb 21) : 237-240.
13. Mc Cord J.M., Fridovich, L. Superoxide dismutase. In Chemistry and Physics of lipid El Seiver Sc, Publ. Ireland Ltd.1969: 337-351
14. Murray, Robert K., Daryl K. Granner, dan Victor W. Rodwell (2009). Biokimia Harper Edisi 27. Jakarta : EGC
15. Pedersen BK, Hoffman-Goetz L. Exercise and the Immune System: Regulation, Integration, and Adaptation. Physiological Review. 2000: 80(3):1055-1081.
16. Rao, MNA. Antioxidant properties of curcumin. International symposium on curcimin phannacochemistry (ISCP) Yogyakarta : Fakultas Farmasi Universitas Gajah Mada bekerjasama dengan The Departement of Pharmacochemistry Vrije Universiteit Amsterdam, 1985
17. Rosidi A, Khomsan A, Setiawan B, Riyadi H, Briawan D. Effect of Temulawak (*Curcumin xanthorrhiza Roxb*) Extract on Reduction Of MDA (*Malondialdehyde*) Levels of Football Athletes. 2013. Pakistan Journal of Nutrition 12 (9): 842-850, 2013. ISSN 1680-5194
18. Sen, CK. Oxidants and antioxidants in exercise. Journal of Applied Physiology 1995 :79, 675-686.
19. Senturk, U. K., Gunduz, F., Kuru, O., Aktekin, M. R., Kipmen, D., Yalcin, O., Bor-Kucukatay, M., Yesilkaya, A. Baskurt, O. K.. Exercise-induced oxidative stress affects erythrocytes in sedentary rats but not latihan fisiktrained rats. J Appl Physiol, 2001: 91, 1999-2001.
20. Senturk, U. K., Gunduz, F., Kuru, O., Kocer, G., Ozkaya, Y. G., Yesilkaya, A., Bor-Kucukatay, M., Uyklu, M., Yalcin, O. Baskurt, O. K.. Exerciseinduced oxidative stress leads hemolysis in sedentary but not trained humans. J Appl Physiol, 2005: 99, 1434-41.

21. Setiawan, B. Ernawati,. Efek Proteksi dari Curcumin Terhadap Endothelim pada Stres (Protective Effects of Curcumin on Endothelial Cell in Stress). *Jurnal Ilmiah Kedokteran Wijaya Kusuma*. 2007 :Volume I, Nomor 1, Januari 2007
22. Simanjuntak K. Radikal Bebas dari Senyawa Toksik Karbon Tetraklorida (CCL4). *Bina Widya*. 2007.vol. 18 No. 01 25-31.
23. Sutrisno, D. Sukarianingsih, M. Saiful, A. Putrika, D. I. Kusumaningtyas. Curcuminoids from *Curcuma xanthorrhiza* Roxb: isolation, characterization, identification and analysis of antioxidant activity. *Proceeding of the first international symposium on temulawak*. Biopharmaca Research Center Bogor Agricultural University. 2008. p. 225-233
24. Tonnesen, HH.; Greenhill, JV. Studies on curcumin and curcuminoids. Part 22- curcumin as a reducing agent and as a radical scavenger. *International Journal of Pharmaceutics* 871992 : (Nov 10) : 79-87. Abstrak.
25. Winarsi H.. *Antioksidan Alami dan Radikal Bebas*. Kanisius : Yogyakarta, 2011

Rice Leaf Extract for Kidney Damage Prevention in Plumbum-Exposed Rats

Budi Santosa¹, Henna Ria Sunoko², Andri Sukeksi³

¹Health Analysis Study Program, Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang

²Pharmacy Division, RS. Dr. Kariadi/ Universitas Diponegoro Semarang

³Health Analysis Study Program, Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang

^a Corresponding author: budisantosa.unimus@gmail.com
budisantosa@unimus.ac.id

Abstract. Plumbum (Pb) is a heavy metal affecting renal tubular epithelial cells and causing necrosis. This study aimed to demonstrate the effectiveness of rice leaf extract in degeneration and necrosis prevention of renal tubule epithelium exposed to lead. Twenty eight rats were divided into a control and 3 treatment groups all exposed to Pb by 0.5 g/ kg/ day, but only the treatment groups had received rice leaf extract in varied doses for 8 weeks. Results from Kruskal-Wallis and spearman rho tests showed that the number of normal cells, degeneration and necrosis were significantly different (0.03; 0.05; 0.04) between control and treatment groups with a strong positive correlation of treatment ($r = 0.97$) in normal cells and a strong negative one in cell degeneration and necrosis. ($R = -0.92$ and $r = -0.93$). As conclusion, rice leaf extract showed ability in the prevention of kidney damage in rats exposed to lead.

INTRODUCTION

One of the most hazardous air pollutants is Plumbum (Pb) or lead, which could cause health problems and threaten life. The lead poisoning could be sourced from vegetables, batteries, paints, cosmetics, jewelry, children's toys, gasoline, etc. Several large cities, such as Jakarta, Bandung, Semarang, Surabaya, Medan, and several other cities have significant potential for the occurrence of Pb poisoning (Suherni, 2010). Health problems that could arise by this condition is the occurrence of degeneration and necrosis of renal tubular epithelial cells.

Toxication caused by Pb in the body affects various tissues and organs. The organs in the body being targeted by Pb toxication are the circulatory system, nervous system, kidneys, reproductive system, endocrine system, and heart. The mechanism of toxicity occurring in the organ due to absorption plumbum mostly in the depot of the bones and soft tissue, depending on how Pb is exposed and the affinity of tissues. Therefore, any part or organ attacked by Pb toxication will show different effects (Emmanuel S, et al, 2009)

According to Hariono (2005), oral administration of plumbum acetate by 0.5 g/ kg/ day in mice will cause the highest Pb accumulation in soft tissues such as the kidneys, liver, brain, lung, heart, muscle and testis, respectively. On the renal proximal tubular epithelial cells, degeneration, hyperplasia and cariomegali were visible at week 8th, showing the inclusion bodies in the cell nucleus.

When experiencing physiological stress or pathological stimuli, cells could adapt to new conditions and achieve going concern. If the adaptive ability is redundant, cells will undergo excessive injury. Within certain limits the condition is reversible and cell could go back to its original stable state. Severe or persistent stress causes irreversible injury and the affected cells will die (Richard N, Michel MD, Ramzi S, dkk.2003).

Cell degeneration is an event of morphological changes in cells due to injury, which could be reversible and irreversible. Reversible cell injury includes changes in the plasma membrane, mitochondrial changes, dilation of endoplasmic reticulum, and nuclear changes. The morphologic changes could be recognized by light microscope, by the presence of cell swelling and fat degeneration (Richard N, Michel MD, Ramzi S, dkk.2003).

The morphology of irreversible-necrosis cell injury shows sequence of morphologic changes that follow the death of cells in living tissue. Necrosis is macroscopic and histological correlation in cell death occurred in the environment of irreversible exogenous injury. The commonest manifestations are coagulated necrosis characterized by cell swelling, cytoplasmic protein denaturation and breakdown of cell organelles. In addition, necrosis also has

the characteristics of membrane protrusion accompanied by loss of membrane integrity, cell lysis and then swell, leaked lysosomes, huddled core, and occurred aggregation (Alberts B, Johnson A, Lewis J, et al, 2000).

Various efforts should be made to deal with lead poisoning, including the use of chelating substance. The chelating material has function to bind Pb by forming complex bonds, which are polar (hydrophilic) and which are removed from the body through the kidneys. According to Suaniti, the success rate of Pb toxicity decrease by EDTA chelating mechanism reached 4.91% and the administration could be done intravenously. The use of EDTA is therapeutic or curative and has not been maximal. Therefore, it is important to consider preventive measures to prevent the toxicity of Pb. (Suaniti NM, 2007).

Metallothionein protein is rich of sulfhydryl groups, which could be covalently bound to lead in tissues through blocking reaction, which later will enter detoxication process (Santosa B et al, 2013). Metallothionein protein is found in many plant-based ingredients including soy, rice, corn, and beans, either in the roots, stems, leaves, flowers, or fruit. The metallothionein protein content was the highest in rice leaves. (Santosa B, et al, 2015). Rice leaf extract administration should be investigated as an alternative preventive measures degeneration and necrosis of renal tubular epithelial cells.

A research conducted by Santosa et al on levels of metallothionein in vegetable materials consisting of soy, rice, corn, and beans, both in the roots, stems, leaves flowers, and fruit showed that the highest level of the protein was in rice leaves by 1.35 ng. Metallothionein level of 1.39 ng had been demonstrated to decrease significantly the number of basophilic stippling. (Santosa B, et al, 2014). The content of metallothionein protein in rice leaves needs to be studied as an alternative to prevent renal tubular epithelial cell damage in lead-exposed rats, which could be seen from number of cells undergoing degeneration and necrosis.

METHOD

Method used in this research was the *Randomized post test only control-group design*. Maintenance and animal interventions were conducted at the Laboratorium Penelitian dan Pengujian Terpadu (LPPT), Gadjah Mada University, Yogyakarta. Maintenance from selection until the treatment process had been conducted in 8 weeks.

Determination of the number of samples was done by using the formula as follows: $BS = (t - 1) (r - 1) \geq 15$. The number of mice used was 6 for each group (total = 3 treatment and 1 control group), so that the overall number of samples required in this study were 24 rats. One more rat was added to each group as a reserve to anticipate the possibility of dead rats, bringing the total of 28 rats *Rattus norvegicus* to be provided. All mice were male and aged 15 weeks.

To the 1st, 2nd, and 3th treatment group, rice leaf extract was given at a gradual dose of at 0.2, 0.4 and 0.8 ml/ day given through infusion, while the control group was not given the leaf extract of rice. The length of administration period of rice leaf extract was 8 weeks. Pb exposure was given to all groups, both the control and treatment groups, with a dose of 0.5 g/ kg/ bw/ day for 8 weeks at the same time with the supply of rice leaf extract.

On the last day of the 8-week period, the control and treatment groups were subjected to surgery after being killed by cervical dislocation. To determine the number of cells undergoing degeneration and necrosis, histological preparates were made from the renal organ with hematoxilin eosin staining. Differences in the amount of degeneration and necrosis between control and treatment groups were tested using one-way ANOVA and Spearman rho tests.

The study obtained ethical clearance from the ethics committee of FK Unisula Semarang referred by No.187/VIII/2014/Komisi Bioetik. Results of ethical clearance were notified to the head of the LPPT, Universitas Gadjah Mada, Yogyakarta and were approved for research implementation.

RESULTS

Degeneration dan necrosis of renal epithelial tubuls

The description of the presence of normal, degeneration and necrosis cells in the control and treatment groups (P1, P2, P3) is shown in Figure 1. In the control group, the presence of cell necrosis was seen in almost all of the visual field, and so the cell degeneration was, while the normal cells were very rarely found in the epithelium of the renal tubules. In contrast, in the treatment groups of P1, P2 and P3 respectively, the presence of cell necrosis followed by degeneration of cells decreased, while the presence of normal cells increased.

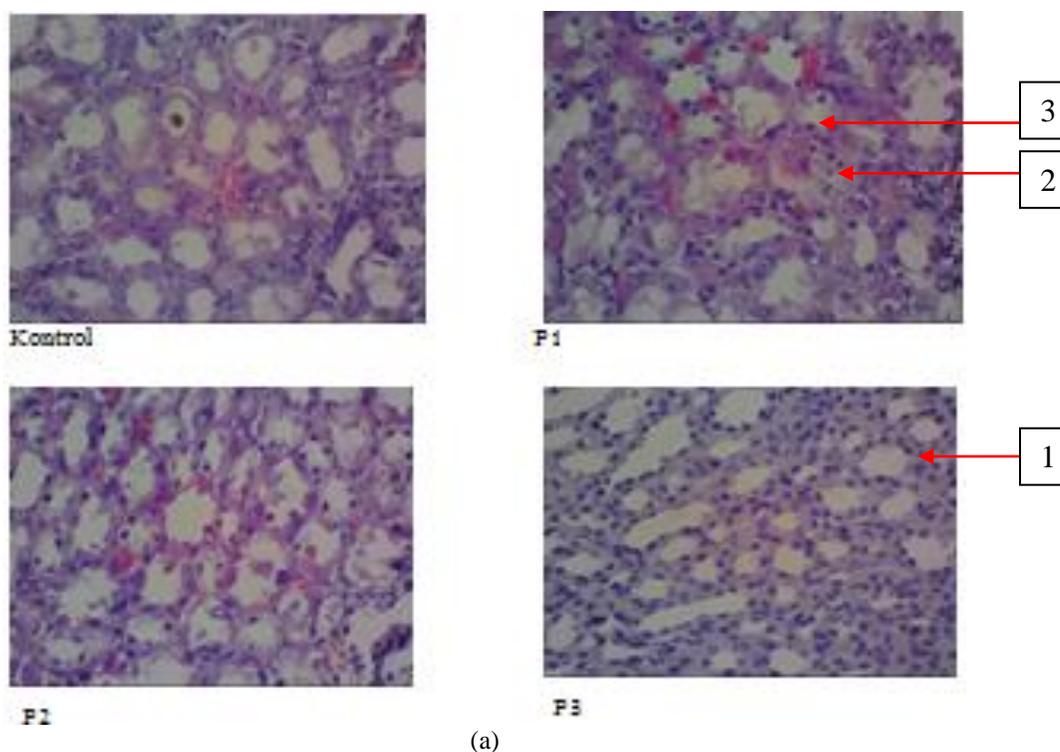


FIGURE 1. The presence of normal, degeneration and necrosis cells in the control and treatment groups (P1, P2, P3). Note: 1 normal cells, 2 degeneration, 3 necrosis

TABLE 1. Mean and *p* value of normal cells, degeneration and necrosis of renal tubules

Group	Normal		Degeneration		Necrosis	
	Rerata	<i>p</i>	Mean	<i>p</i>	Mean	<i>p</i>
Control	13±0,81	0,03	31,2±1,7	0,05	55,7±2,21	0,04
P1	17,5±0,57	r=0,9 7	28,7±1,25	r=- 0,92	53,7±1,7	r=-0,93
P2	29,7±0,95		27±1,41		43,2±0,5	
P3	63,2±1,7		16,7±0,95		21±1,41	

The determination of the *p* value mean of normal cells, degeneration and necrosis of renal tubules is shown in Table 2 where the average of normal cells increased the highest in the control group to the treatment group, where the lowest was in the control group but the highest in the treatment group (P3). In cells undergoing degeneration and necrosis, the decrease of cell number was in both control and treatment groups, where the highest was in the control group. Yet the lowest was in 3th treatment group (P3).

Based on Kruskal Wallis statistical test on normal, degeneration and necrosis cells, there were significant differences (0.03; 0.05; 0.04) between control and treatment groups (P1, P2, P3). Spearman rho test result showed that there was a strong positive correlation ($r = 0.97$) in normal cells, a strong negative correlation in cell degeneration and necrosis. ($R = -0.92$ and $r = -0.93$), meaning that the higher dose of the extract of rice leaves rice, the higher number of normal cells and the lower the number of cell degeneration and necrosis.

DISCUSSION

Morphology of cell degeneration could be seen by the presence of cytoplasmic swelling, which could be caused by cell injury. Plumbum (Pb) is a substance categorized as heavy metal, which could cause cell injury leading to

degeneration of renal tubular epithelial cells. Effect of rice leaf extract administration given by levels in the treatment groups of *Rattus norvegicus* rats exposed to Pb affected to total degeneration of tubular cells showed statistically significant differences proving that the content of metallothionein protein contained in rice leaf extract could reduce the impact of Pb exposure. In the degeneration event, cells could be returned to normal cells or progress to necrosis.

Cells tend to defend its immediate neighborhood and intracell within the range of physiological parameters, which are relatively narrow, where cells maintain normal homeostasis. When experiencing physiological stress or pathological stimuli, cells could adapt to new conditions and keep their survival. If excessive adaptation capability is redundant, the cells will undergo injury. Within a certain time limit cell injury is reversible and returned to its original stable condition. When severe stress persists, irreversible injury occurs and cell will die (necrosis) (Richard N, 2003).

The administration of rice leaf extract containing metallothionein, which was given in gradual level in the treatment groups indicated the decline of the number of renal tubular epithelial necrosis and could show statistically significant reduction of necrosis when compared between the control group and all of the treatment groups. The higher doses of rice leaf extract, the lower number of cells that undergo renal tubular necrosis. This possibly because concentration of metallothionein protein was influential binding Pb exposure, which in turn makes it easier to process detoxication. It was found that in the control group, the number of renal tubular necrosis epithelium was higher but then gradually decreased in the 1st, 2nd and 3th treatment. This result is in line with by results of research by Hariono, B (2005) showing that exposure of Pb by 0.5 g/ Kg/ BB/ oral/ day could increase the number of renal tubular epithelial cell necrosis. Research by Haribi R 2007 but using aluminum exposure showed similar renal tubular epithelial necrosis phenomenon.

CONCLUSION

Rice leaf extract is capable as the prevention of kidney damage in *Rattus norvegicus* rats exposed by Pb.

ACKNOWLEDGMENTS

The authors deeply thank to Directorate-General of the Department of Higher Education, Ministry of Education and Culture (Kemendikbud), for providing grant of this research.

REFERENCES

- 1 Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P,. Molecular Biology of The Cell. New York and London:2008;12:08.
- 2 Suherni. Lead poisoning in Indonesia. In: Robert A, O'Brien E, editors. The Global Lead Advice and Support (GLASS) provides information and referels on lead poisoning and lead contamination prevention and management. The LEAD Group Incorporated. Sydney: Australia;2010.p.1-16.
- 3 Emmanuel O, Adeolu A, Oyewo O, Ashamu EA, Ishola O.,Prevention of Renal Toxicity from Lead exposure by Oral Administration of *Lycopersicon esculentum*. Journal of Toxicology and Rnvironmental Health Sciences.2009(1)
- 4 Hariono B. Efek pemberian plumbum (timah hitam) pada tikus putih anorganik (*Rattus norvegicus*). J. Sain Vet. 2006;24(1):125-33
- 5 Suaniti NM. Pengaruh EDTA dalam Penentuan Kandungan Timbal dan Tembaga Pada Kerang Hijau (*Mytilus Viridis*). Ecotrophic. 2007;2(1):1-7.
- 6 Santosa B, Subagio HW, Suromo L, Sunoko HR. Zinc Supplementation Dosage Variations to *Metallothionein* Protein Level of *Rattus norvegicus*. Internat J of Sci and Eng.2013;5(2):15-17.
- 7 Santosa B, Subagio HW, Suromo L, Sunoko HR.Zinc supplementation decreases basophilic stippling in rats exposed to lead. Univ Med.2014;33(1):11-8.
- 8 Santosa B, Sunoko HR, Sukeksi A. Ekstrak Air Daun Padi Memperbaiki Hematopoesis pada Tikus yang Terpapaj Plumbum. MKB.2015; 47 (2) :84-90

- 9 Ibrahim NM, Eweis EA, Hossam SE, Yasmin EAM. Effect of lead acetate toxicity on experimental male albino rat. *Asian Pac J Trop Biomed.*2012:41-6.
- 10 Richard N, Michel MD, Ramzi S, Cotran,. *Jejas, Adaptasi dan Kematian Sel.* In: *Robins Pathologic Basic of Disease.* 7th ed. Alih Bahasa: Prasetyo A, Pendi UB, Priliono T. Vol1. Jakarta:EGC.2003:3-28

Introducing Indonesian Traditional Dance To Teach Indonesian Language For Foreign Speakers (Bipa) In Thailand

Dian Candra Prasetyanti^{1,a)}

¹⁾ Faculty of Foreign Language and Culture, University of Muhammadiyah Semarang

^{a)} Corresponding author: dian.candra@unimus.ac.id

Abstract. Teaching Indonesian language for foreign speakers at *Khon Kaen* University, Thailand. This was the first *Bahasa Indonesia* course in *Khon Kaen* University. Because the learners in this course never knew about *Bahasa Indonesia* before, so the teacher introduced them about Indonesian traditional dances. This was the best way to attract foreign learners about Indonesian culture and develop their character. They didn't only learn about Indonesian language, but also local culture. The learners in *Bahasa Indonesia* course were beginner level (A1) so the teacher chose *Denok* dance from Semarang and *Jaranan* dance from Central Java. Because the movements in both dances were also in basic level. The class consist of seven students, 3 boys and 4 girls, they are first and second year students. They came from different study programs, such as Nursing, Engineering, Spanish and Germany. The teacher taught *Denok* dance for the girls and *Jaranan* dance for the boys. They also learnt about the meaning of the lyric in these dances, the costumes that the teacher brought from Indonesia, such as *sampur*(shawl), *jarit*, *kebaya*, *tapih*, head band (*ikat kepala*) and how to use them, how to make *Jaranan* as the accessory to perform the dance. At the end of the course, they performed the dance on the stage and seen by many teachers and students in *Khon Kaen* University and the videos had been uploaded in YouTube.

INTRODUCTION

Thailand, officially The Kingdom of Thailand is a country at the center of the Indochinese peninsula in [Mainland Southeast Asia](#). There are around 13 universities from Southern, Bangkok, Northern, Northeastern of Thailand, which have been running a good range of Indonesian language class as an elective course. It was a good omen for Indonesia since its national language has a good place in other countries. Thailand is one of ASEAN Countries which regularly received SAME BIPA Program (Scheme of Academic Mobility and Exchange-*Bahasa Indonesia Penutur Asing*/ Indonesian language for foreign Speakers) from Indonesian Directorate of Higher Education every year. [Indonesia](#) and [Thailand](#) officially established diplomatic ties in 1950. In 2015, Indonesia and Thailand commemorated their 65th diplomatic relations. Both countries have many similar cultures as they share close relations for nearly two hundred years. King Rama II visited Indonesia, he brought back a story and as a result, several words from Indonesian language, or rather Java, were used in Thai language. Besides, both countries were under heavy Buddhist and Hindu influences, about 40% of both languages have traces of Bali and Sanskrit.

Khon Kaen University, the oldest and largest university in northeastern Thailand, which has 17 faculties and one of them is Faculty of Humanities and Social Sciences in 2015 had its first cooperation with the Indonesian Directorate of Higher Education, the program was SAME BIPA. This was the first class of Indonesian language for Foreign Speakers course, and had a positive response from students, lecturers and also Indonesian Embassy which facilitated this program. Teaching and Learning of Indonesian language for Foreign Speakers course conducted two times a week with duration 100 minutes in every meeting and had seven students. Teaching and Learning of Indonesian language for Foreign Speakers in Khon Kaen University had a unique characteristic because the students never knew about Bahasa Indonesia before and they were not only from the Faculty of Humanities and Social Sciences but also from other faculties such as Nursing and Engineering Faculty. It means that they were not only from language department but also from another department. It's very unique because they attracted with Indonesian language as their elective course.

Teaching and Learning Indonesian language for Foreign Speakers has different purposes because every student had a different motivation. The purpose of teaching and learning Indonesian language for foreign speakers is students are expected to communicate using Indonesian language in a proper way. This is related to culture in language substitution. Beside students' individual characteristic problem, culture problem is also mixed up with the Indonesian language for Foreign Speakers learning composition. Learners of Indonesian language for Foreign speakers should have certain characteristics, especially in 1) individual characteristics; 2) historical background; 3) level; 4) knowledge/skill; 5) interest; 6) learning purpose; 7) learning strategy, and 8) learning time.

Based on the learners' characteristics, introducing the local culture such as traditional dances in learning Indonesian language for Foreign Speakers will make them easy to understand Indonesian language and it is also become culture conservation and introducing Indonesian language through cultural material. The explanation about learning Indonesian language for Foreign Speakers in Thailand will be reviewed in this paper, introducing traditional dance to teach Indonesian language for foreign speakers.

DISCUSSION

Khon Kaen University established in 1966 and also the first university established in northeastern Thailand. It has 17 faculties and teaching Indonesian language for foreign speaker is in the Faculty of Humanities and Social Sciences (HUSO). This faculty has ASEAN Language Center (ALC) who offer elective courses in language such as Vietnamese, Lao, Khmer, Thai, and Indonesian language. The Indonesian language course has 3 credits in every semester and this is the beginner level. At the end of the course, they will have a certificate as a result that they had participated in this course.

The introductory language in this Indonesian language course is English, but the students have different level in English comprehension and they have different characteristics. It becomes a challenge for the lecturer to teach them, but as a whole the students have high enthusiasm to learn Indonesian language. The characteristics influenced to the material that they had learned. They need an interesting media to learn Indonesian language and lecturer/teacher must know about the advantages of the media that they choose. In learning Indonesian language for foreign speakers, media not only help in teaching and learning process, but also must have a cultural element so the students know about the culture of the language that they learn. Like kill two birds with one stone, giving material about Indonesian language for foreign speakers and also introducing Indonesian culture.

Indonesian traditional dance can be used as a media to teach Indonesian language and as an effort to introduce local culture. The student can learn about Indonesian vocabularies when they hear about the lyric of the song when they learnt Indonesian traditional dance. They also learnt about action verb in Indonesian language when the teacher taught them dancing. They learn about costume and accessories. Actually, they have a meeting twice a week, but because the lecturer and the students have an agreement to learn Indonesian traditional dances, so the teacher gave additional time 3 until four times a week. 2 meetings for theories and 1 until two meetings for learning dance. Since the students were at beginner level so the teacher also chose *Denok* dance from Semarang and *Jaranan* dance from Central Java. Because the movements in both dances were also in basic level. The class consist of seven students, 3 boys and 4 girls, the teacher taught *Denok* dance for the girls and *Jaranan* dance for the boys.

Teaching and learning process of Indonesian language for foreign speakers at Khon Kaen University with traditional dances as a media started with several steps, first the teacher wanted them to watch and listen carefully to the video. Second, the teacher introduced them with the main accessories in Indonesian traditional dance like *sampur* / shawl *jarit*, *kebaya*, *tapih*, head band (*ikat kepala*) and how to use them. Third, teaching them step by step in the movement of the dance, *gejug* (place the point sole of foot behind other foot, in cross position), *debeg* (stab the point sole of foot beside the other foot), *pacak gulu* (neck movement), etc. Forth, the students listen to the lyric and wrote as they have heard, then they find the meaning in dictionary. Fifth, the teacher and students had a discussion about the meaning of the lyric. Sixth, the teacher and the students make *jaranan* as the accessories of dancing because the teacher didn't bring them from Indonesia. Seventh, the teacher gave conclusion toward introducing Indonesian traditional dances in learning Indonesian language for foreign speakers. Seventh, learn *denok* and *jaranan* regularly every week. Eight, perform an art performance at the end of the course and the video had been uploaded in YouTube.

Beside taught them Indonesian traditional dance, the teacher also introduce them with other local cultures, such as told them some Indonesian traditional stories with cardboard puppets, introduce them several traditional games and play them together, learn about Indonesian currency and traditional costume, singing Indonesian song and how to make Indonesian food and beverage such as *pecel* (vegetables salad with peanut sauce) and *cendol* ice (small,

doughy rice-flour droplets ice). The teacher taught them local culture to the students in order to improve their knowledge about Indonesia, they not only learn about the language itself but also the culture. The teacher also gave cross cultural understanding to the students. Learning Indonesian language for foreign speaker in Thailand with traditional dances can make the learners interest, enjoy to study the language and also the culture.

CLOSING

Learning Indonesian language for foreign speakers in Thailand, especially at Khon Kaen University is an elective course with 3 credits in the Faculty of Humanities and Social Sciences. The learners have special characteristics, so from those characteristics, the teacher taught Indonesian traditional dances as an effort to introduce local culture. The teacher hopes that the students not only learn about Indonesian language itself but also the culture.

REFERENCES

1. CIA. *The world factbook East and Southeast Asia; Thailand Introduction*. <https://www.cia.gov>
2. Class Observation on August-December 2015.
3. Nuryani, Wenty Dra. 2004. *Diktat Teknik Tari*. Yogyakarta: Universitas Negeri Yogyakarta Press
4. Khon Kaen University. <https://m.kku.ac.th>
5. Leksono.R.2015. *Indonesia as a foreign language in Thailand*. Workshop BIPA in Bangkok 2015.www.academia.edu
6. Portal Kemlu.2015. *Closing Ceremony of Events in Commemoration of the 65th Anniversary of Indonesia-Thailand Relations*.. www.kemlu.go.id
7. Stern, H.H. 1983. *Fundamental Concepts of Language Teaching*. Oxford: Oxford University Press.

Effect of Fiber Volume Fraction Of Tensile Strength and Impact Strength biocomposite of Bacterial cellulose-Shellac

Dini Cahyandari¹⁾

¹⁾Lecture on Mechanical Engineering Department, Engineering Faculty, Universitas Muhammadiyah Semarang, Indonesia

^{a)}Corresponding author: dini@unimus.ac.id

Abstract. Composites materials usually consist of reinforcement or filler by glass or carbon fiber and the polymer matrix made of petroleum. These materials are not appropriate because it can't be degraded by environment and need a lot of energy to produce them. Their waste only can be burned to produce CO₂ and CO that caused global warming. Therefore research on biocomposites, that more environmental friendly are needed. The objective of this study is to investigate the effect of volume fraction of fiber on tensile and impact strength of bacterial cellulose fiber reinforced shellac biocomposites. This research is focus on biocomposites of bacterial cellulose and shellac. Bacterial cellulose is cellulose that produced from bacteria *Acetobacter Xylinum*. Medium that used in this research is tapioca water. Shellac is secretion of lac bug. Bacterial cellulose reinforced shellac biocomposites obtained by blending nata de cassava gel and shellac until become slurry. Volume fraction of bacterial cellulose are 0%, 30%, 50% and 60%. The result showed that the optimal tensile strength of biocomposites is the 60%. highest impact strength is obtained on 50% of bacterial cellulose.

INTRODUCTION

Since the mid-21st century, the demand for industrial materials stronger, stiffer, lighter and environmentally friendly growing. High demand for materials with better properties and environmentally friendly has prompted a broader research and development of composite material of nature both for reinforcement and matrix. This material has a low specific gravity but high specific strength and modulus. Biomatrix polymer composites are now widely used for aircraft, automotive, marine, infrastructure, industrial and military sports equipment.

At this time the composite material usually consists of reinforcement made from synthetic materials such as fiber glass or carbon fibers with a polymer matrix made from petroleum. Synthetic materials is very dangerous because the synthetic fibers can not be degraded by nature and at the time of the production process need lots of energy as well as disposal of waste produced many of exhaust gas in the form of CO₂ and CO which can degrade the quality of the environment by depleting ozone, more commonly known as the phenomenon of the greenhouse effect.

With these reasons it started a lot of research on composite materials diperkuat natural fibers with a matrix that is also of plants and animals or microbes. Natural fibers derived from plants are the main ingredients are cellulose and other ingredients are hemicellulose, lignin and pectin.

Cellulose is a biopolymer that availability is very abundant in the earth, known as the main component in plants. But cellulose is also an extracellular microbial polymers. Bacterial cellulose is a specific product of the primary metabolism. Cellulose synthesized by bacteria that comes from generation *Acetobacter*, *Rhizobium*, *Agrobacterium*, and *Sarcina*. Gram negative effective is acetic acid bacteria *Acetobacter xylinum* [1].

Bacterial cellulose has been applied as nata de coco, wound care products, and tissue engineering. Besides, the bacterial cellulose is also potentially as a reinforcement polymer to form the nanocomposite. Compared with cellulose fibers derived from plants, bacterial cellulose is characterized by high purity (for example, no lignin, hemicellulose or pectin fiber, as found in plants), high mechanical strength and structural mesh in three-dimensional nanometer-sized. Based on the characteristics, the cellulose bacteria became a potential candidate for the development of high-power nanocomposite [2].

This study uses a matrix of nature. At this time a lot of research that focuses on the study of the natural polymer material. Including the use of corn starch, PLA (polylactic acid), as well as other ingredients derived from nature.

Including natural polymers are shellac which is a secretion shellac louse [3]. Ticks are common in tree lak kosambi. Lak has been cultivated in Perhutani Probolinggo and in West Nusa Tenggara. At this time shellac used as coating materials in the furniture products, coatings on the drug-resistant typhoid gastric fluid. Until now there has been no research on the use of shellac as matrix biocomposite berpenguat bacterial cellulose.

The focus of this study is to examine the potential development of biocomposite material reinforced bacterial cellulose produced from food industry waste material in this case is the industrial wastewater cassava starch. With Shellac matrix that is the result of flea secretion shellac.

METHOD

1. Material

Materials used in this study was obtained from the bacterial cellulose gel nata de cassava which is fermented from tapioca water as shown on Figure 1.



Figure1. Nata De cassava

Nata de cassava to be used as composite materials do next in the surface treatment by soaking in a solution of 5% NaOH for one night [4], then in clean by washing them in running water for 6 hours. In order to be used as a reinforcement in biocomposites materials we then gel nata de cassava in the blender to obtain short cellulose fibers as shown in Figure 2.



Figure 2. Cellulose bacteria that have been blended



Figure 3. Short bacterial cellulose fibers

The next main ingredient is shellac. Shellac used in this study is shellac commonly used to coat furniture imported from India. Figure 4 is a shellac materials used.



Figure 4. Shellac powder

The basic ingredients shellac then dissolved in ethanol at a ratio of 1: 1 to obtain a solution shellac. This solution was allowed to stand for 24 hours to evaporate most of the ethanol content in order to obtain viscous solution as Figure 5.



Figure 5. Shellac solution

The solution is ready to use as a matrix material biocomposite bacterial cellulose-Shellac

2. Preparation of bacterial-cellulose biocomposite shellac

Biocomposites made with variations of the fiber fraction of 30%, 50% and 60%. in order to determine the effect of the amount of coating on the tensile strength of the resultant composite material (Figure 6).



Figure 6. A mixture of bacterial cellulose fiber-shellac with alcohol solvent

Manufacture of composites should pay attention to volume ratio, the fiber used will also be converted to a unit volume by taking into account the density of the cellulose fibers themselves.

Volume fraction is measured using mass data of fiber and fiber density. From this data will be obtained based on the volume fraction of the volume of the mold.



Figure 7. Bacterial cellulose fiber composite short-shellac

The first step to prepare base made of glass and then oiled nonstick liquid. Then enter the bacterial cellulose-shellac mixture into a mold as shown in Figure 6. then heated at a temperature of 1500 during 15 minutes (5). Then allowed to cool for further testing tensile and impact testing. Short fiber composites that have been printed and then ready to be used as a test specimen is shown in Figure 7.

3. Testing

Tensile test conducted by the ASTM D882 standard. Dimensions of tensile test length 55mm, 5mm width and thickness to adjust. Impact test using ASTM D-5941. Dimensional rectangular specimen with a length of 80 ± 0.2 mm, width 10 ± 0.2 mm and 4.0 ± 0.2 mm thick.

RESULTS AND DISCUSSION

Effect of short fiber volume fraction of the bacterial cellulose biocomposite tensile strength is shown in Figure 8. Proficiency level of image can be seen that the tensile strength of biocomposites increases with the increase of fiber fraction. The increase in tensile strength is probably due to a large smakin contact area between the fiber and the matrix. The tensile strength shellac without fiber reinforcement is 3 MPa, tensile strength fiber composite rose on the composition of 30% tensile strength of 4.89 MPa, whereas the fiber composition of 50% tensile strength of 6.57 MPa. The tensile strength fiber composite with a composition of 60% was 7.82 MPa, whereas the fiber composite with a composition of 7.55 MPa.

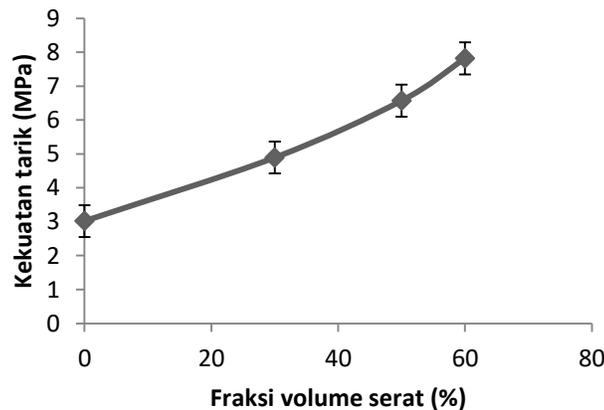


Figure 8. Effect of Volume Fraction of the tensile strength fiber composite

From Figure 8 shows that the highest tensile strength occurs in composites with a fiber composition of 60%.

Figure 8 is an optical observation bacterial cellulose fiber composite short-shellac the fiber composition of 30%. Areas that are white are bacterial cellulose fibers whereas dark colors are shellac.

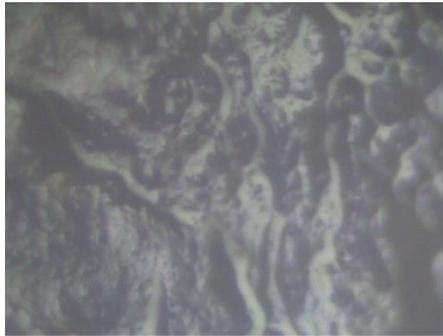


Figure 9. Optical observations of bacterial cellulose composite-fiber fraction shellac 30%

Figure 9 is an optical observation of bacterial cellulose fiber composite short-sirlak the fiber composition of 30%.

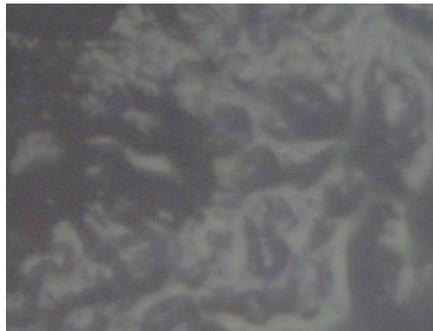


Figure 10. Optical observations of bacterial cellulose composite-fiber fraction shellac 50%

Figure 9 and Figure 10 shows the distribution of bacterial cellulose fibers in sirlak marked white area. Bacterial cellulose fibers in the composition to 50% greater than the composition 30. This situation is in line with the tensile strength fiber composites pensek bacterial cellulose-sirlak which shows its strength increases in the fiber composition of 50% compared to 30% of fiber composition.

Effect of fiber volume fraction of the impact strength are shown in Figure 11. In the fiber fraction of 30 percent of the impact strength of composite materials amounted to 0.00068 J / mm², while the fiber fraction of 50 percent impaknya price is 0.00127 J / mm² and the fiber fraction of 60 percent The impact of the price of 0.00067 J / mm².

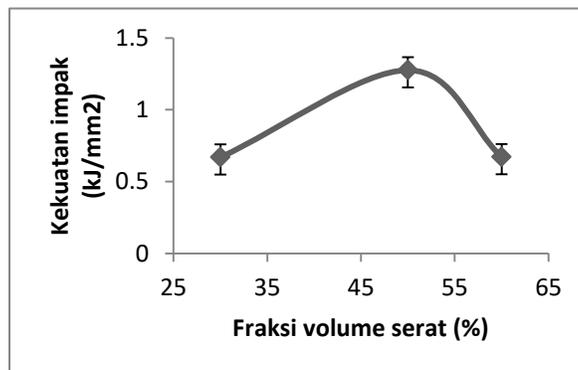


Figure 11. Effect of fiber volume fraction of the composite Impact Strength

Increased impact strength in fiber volume fraction of 0% to 50%. The tensile strength of biocomposites with the best in fiber volume fraction of 50%. Then the impact strength down to the fiber fraction of 60%.

CONCLUSION

The conclusion of this study are:

1. The tensile strength fiber composite short fiber fraction bacterial cellulose-best shellac is 60% fraction of the fiber with a tensile strength of 7.82 MPa.
2. Impact Strength is best to composites with fiber fraction of 50% amounting to 1.275 KJ / mm²

REFERENCE

- [1]. **Kuan Chen.** 2009., *Effect of different additives on bacterial cellulose production by Acetobacter xylinum and analysis of material property.* **Cheng,** , Cellulose, hal. 1033-1045.
- [2]. **Retegi, A.** 2010., *bactreial cellulose film with controlled mikrostruktire-mechanical property relationships.*, Cellulose, hal. 661-669.
- [3]. **Mujiono., 2010.,** *Rekayasa Biokomposit dari Sekresi Kutu Lak dan Serat Rami.* Yogyakarta : Seminar nasional Hasil-hasil Penelitian Teknologi, MIPA dan Pendidikan Vokasi
- [4]. **Dini dan Rohardjo, Heru., 2014.,** *Effects Of Surface Treatments On Nata De Cassava On The Tensile Strength and Morphology of Bacterial Cellulose.,* Yogyakarta : Trans Tech Publications, Switzerland, doi:10.4028/www.scientific.net/AMR.896.305.
- [5]. **Clareyna, Eqitha Dea., 2013.,** *Pembuatan dan Karakteristik Komposit Polimer Berpenguat Bagasse.* Surabaya : JURNAL TEKNIK POMITS, 2013, Vol. 2 no 2. 2337-3539.

Developing English for Nursing Materials Integrated With Task-Based Language Teaching (TBLT) and Soft-Skills

Dodi Mulyadi^{1 a)}, Dian Candra Prasetyanti^{2 b)}

^{1 2}*Faculty of foreign language and culture Universitas Muhammadiyah Semarang*

^{a)} Corresponding author: dodi@unimus.ac.id

^{b)} dian.candra@unimus.ac.id

Abstract. The ENP materials integrated with TBLT and soft-skills that suit the learner's interests and needs contributed to facilitate students' learning can prepare students for professional communication order to be ready in global competitive work. The research aimed to find out the existing ENP materials, to develop ENP Materials integrated with TBLT and soft-skills, and to know the effectiveness of implementing Developed ENP materials. The research employed R&D cycles including introductory phase, developing phase, testing and validating phase, and implementing phase. The data collecting techniques were validation sheet, test, observation and questionnaire. The results showed the developed ENP materials were valid, effective and practical. The validity was proved with validation mean of score were excellent and good category based on scoring rubrics. The effectiveness is proved by students' learning achievement test with mean score 79. The practicality is proved with student responses 80% who enjoyed to use the ENP materials in learning.

INTRODUCTION

English has been acknowledged by most countries in the world as an international language. Consequently, English has to be used in international communication both orally and in written communication, for general as well as specific needs. Therefore, people in countries where English is used as a second or foreign language have to learn it, if they want to be able to communicate internationally. Indonesia, where English is a foreign language, also has to teach the citizens especially the young generation to learn English.

English teachers usually teach their students by using available textbooks. However, such learning materials which are really suitable with the needs of the students are not always available. This condition should not discourage the teachers as far as they have the objective(s) of the teaching or are familiar with the need(s) of the students. By having the objectives of the teaching/learning or being familiar with the needs of the learners, the teachers can develop their own materials for the learners to achieve the objectives or to fulfill the needs of the learners.

Curriculum design brings up important issues to many teachers as course developers. Along with the development of various English courses, numerous textbooks to support the English courses are also under the main concern of course developers¹. Despite numerous textbooks outlining curriculum design strategies and processes to follow, many of the English courses do not address the specific needs of learners. Seeking and interpreting information about students' needs are the most important skills that a course developer must develop. Many problems in L2 classes arise as results of the teachers' lack of attention on learners' interests and teachers' ignorance of students as a source of essential information. Giving considerable attention to the process of designing and developing English course for a particular group will bring many advantages such as the availability of teaching materials which are suitable for learners' needs.

A language course design that best suits the learner's interests and needs would contribute to facilitate students' learning, including learners who learn English for specific purposes. The design of English for Specific Purposes (ESP) courses can prepare students for professional communication. ¹the ESP approach to language teaching is a response to a number of practical concerns: for instance, the need to prepare materials like textbooks to teach students who have already mastered general English but now need English for use in employment, in this situation, non-English background nurses. The nurses will study English in order to carry out a particular role, to communicate effectively with foreign patients.

In a nursing career, nurses provide education integrated with soft-skills that helps clients change lifelong habits. Soft skills are skills that involve the relationship between the individual and social. Soft skills can be defined as

personal behavior and interpersonal skills to develop and maximize human performance. ²the soft skills include personal, social behavior, communication, and self-management. They also involve self-awareness, confidence, awareness, adaptability, critical thinking, organizational awareness, attitude, initiative, empathy, confidence, integrity, self-control, leadership, problem solving, risk taking and time management. Nurses communicate with people under stress: clients, family and colleagues. Nurses deal with anger and depression, with dementia and psychosis, with joy and despair. Nurses return to school to specialize, write grants for research proposals, and become entrepreneurs. Nurses become administrators, leaders, case managers, infection control specialists, quality experts, and educators. Nurses cross international boundaries to share knowledge needed to promote worldwide health.

There are several English courses designed for the nursing field around the world. In Indonesia, the numbers of foreigners who come and live are increasing and English is needed; nurses are expected to be able to communicate with the patients (customers) in English. In order to do this, nurses must have the ability to communicate effectively with them and to deal with different situations that might arise.

Realizing the urgent needs of a potential health care staff, a curriculum of English for Nursing Purposes will be designed and developed for a group of nurses that are working in a large hospital. The role of an English for nursing curriculum is to bring to the nurses what they desperately need in real life. Curriculum planning can be seen as a systematic attempt by educationalists and teachers which include a focus on what educational purposes should be attained. Pragmatism focuses on real life experiences as the main source of knowledge and education ³. While some Indonesian nurses may already have general English ability, focusing on English for their specific situations is needed.

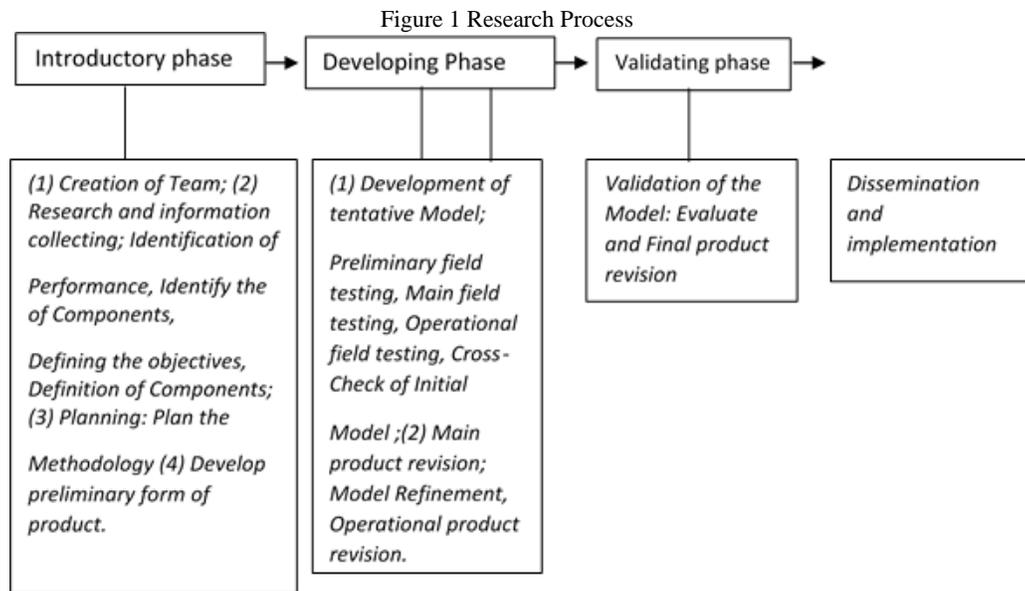
Difficulty with English is often cited as a factor that leads to Indonesian nurses' lack of confidence. Communication with patients from different cultures is often complicated by language differences. The developing model of materials designed for nurses and their special needs will help to build their confidence in talking with foreign clients. In conclusion, the Indonesian health care system needs nurses with the language ability and the cultural knowledge to meet the health care needs of foreign patients. Nurses need to be able to use English competently. Based on the facts outlined above, the researchers propose a developmental study on English for Nursing Purposes which starts with an observation on textbooks currently used and need analysis and ends with a new designed of English for nursing textbooks.

Based on the explanation above, the researcher tried to know to find out the validity, effectiveness of implementing the developed ENP materials toward students' English mastery, to know the students' responses related to use of Developed ENP materials dealing with practicality.

THE METHOD OF STUDY

Research was carried out through a number of phases to follow the development of ENP Handout model that was based on the stages of R & D cycles⁴, which included four phases including preliminary phase, the phase of model development, testing phase models and validation and implementation phase (Haryati 2012). ⁵The data collecting techniques were validation sheet, test, observation and questionnaire

The research was conducted on students of fourth semester study program of Nursing Faculty of Nursing and Health Sciences *Universitas Muhammadiyah* Semarang consisting of 75 students of the 2015/2016 academic. The steps of research can be seen in the figure 1.



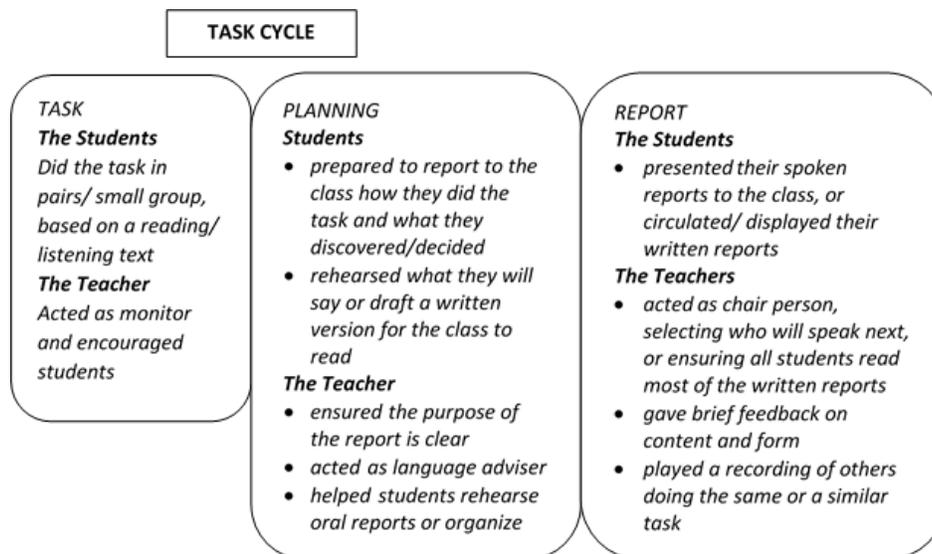
RESULTS AND DISCUSSION

This research has been conducted in undergraduate program of Nursing, Faculty of Nursing and Health, Muhammadiyah University of Semarang. The subjects were students of semester II in year 2016.

Research Implementation

The ENP handout that were validated was continued to tryout to experimental class. It included collecting data, observing students' activities dealing with soft-skills, collecting students' responses and students' learning achievements.

The implementation of ENP materials integrated to TBLT and Soft-skills are as follows:



The findings of Soft skills were involve self-awareness, confidence, adaptability, critical thinking, organizational awareness, initiative, integrity, self-control, leadership and problem solving

Results Validation Tool

The results of expert validation shows that the assessment scores and suggestions for improvement as the following Table 1.

Table 1. Validation Score of Teaching and Learning Instruments.

Component	Validator		Average Score	Maximum Score	Explanation
	1	2			
Handout of Developed ENP Materials	34	36	35	40	Very good and can be used without revision

Test of Mastery Learning Achievement

The data of student learning outcomes on materials Daily Communication in nursing contextual approach based on character education is presented in Table 2.

Tabel 2. The Test Analysis of Students' Learning Achievement

No.	Analysis	Control class		Experimental class	
		Pre test	Post Test	Pre test	Post Test
1.	Minimal score	36,67	46,67	30,00	70,00
2.	Maximal score	66,67	86,67	63,33	90,00
3.	Average score	59,07	72,22	49,81	79,07

The achievement of the experimental class who achieve a score ≥ 75 was 86%. Improving student learning outcomes indicated by the results of the analysis using N-gain showed that an increase in student learning outcomes for the control class is 0.29 (low category) and the experimental class of 0.58 (medium category). Practicality of teaching and learning instruments indicated by the results of student responses 80% were happy with the learning model applied.

CONCLUSION

The results showed the developed ENP materials were valid, effective and practical. The validity was proved with validation mean of score were excellent and good category based on scoring rubrics. The effectiveness is proved by students' learning achievement test with mean score 79. The practicality is proved with student responses 80% who enjoyed to use the ENP materials in learning. Based on the results and discussion that has been described can be concluded that the developed materials for ENP integrated with soft skills was significantly on student learning achievement and students' behavior.

REFERENCES

1. Freihat S, Al-makhzoomi K. An English for Specific Purposes (ESP) Course for Nursing Students in Jordan and the Role a Needs Analysis Played. *Int J Humanit Soc Sci.* 2012;2(7):129-145.
2. Klaus P. *The Hard Truth about Soft Skills.* New York: Harper Collins Publisher; 2007.
3. Nunan D. *Task-Based Language Teaching.* 1st ed. New York: Cambridge University Press; 2004.
4. Borg WR, Gall MD. *Educational Research: An Introduction.* 4th ed. New York: Longman; 1983.
5. Creswell J, Plano Clark V. *Designing and Conducting Mixed Methods Research.* 2nd ed. Thousand Oaks, CA: SAGE Publications, Inc.; 2010.
6. Hutchinson T, Waters A. 1991. *English for Specific Purposes A Learner-cantered Approach.* Cambridge University Press.
7. Pinter, A. 2006. *Teaching Young Language Learners.* Oxford: Oxford University Press.
8. Tomlinson, B. 1998. In Tomlinson, B. (Ed.), *Materials Development in Lan-guage Teaching.* Cambridge: Cambridge University Press.

The Effectiveness Of Cooperative Learning Type Team Assisted Individualization Based On Constructivism Toward Ability To Think Mathematically Creative Of Student

Dwi Sulistyarningsih^{1,a)}, Venissa Dian Mawarsari²⁾

¹ *Mathematics Education, University of Muhammadiyah Semarang*

^{a)}Corresponding author: dwisulis@unimus.ac.id

Abstract. Many students have difficulty and get low score in trigonometry. Some reason said this subject contains a lot of formulas and the teachers have not used the learning system that can make students more active. This study aims to determine the effectiveness of the implementation of cooperative learning type Team Assisted Individualization (TAI) based on constructivism toward students' ability to think trigonometry creatively. This study is an experimental study conducted at SMA Muhammadiyah 1 Semarang. Data collection technique is student activity observation and creative thinking ability tests of mathematical ability. The result shows classical completeness of creative thinking abilities of students reached 85.7%. Value of creative mathematical thinking skills (KBKM) was influenced by students' activity was 78.4% and the value of Mathematical Creative Thinking Skills test experimental class was better than the control class. It means that learning of mathematics trigonometry by applying the cooperative model type TAI constructivism based is more effective than learning by using conventional learning models.

INTRODUCTION

The learning result of Mathematics in Indonesia is very low, especially in Trigonometry. It can be seen from the Students' Mathematic Scores for Trigonometry in the National Exam that are very far from satisfactory. The bad habit of students who only memorize the Trigonometry formulas is one of the causes of the students' low scores in that material (Rusdi dkk. 2013).

An early observation on the senior high school students in Semarang shows that the students has an assumption that Mathematics is an uninteresting subject. The result of interviews with some mathematics teachers in Senior High Schools in Semarang shows is that trigonometry is a chapter where students always get scores under the Minimum Completeness Criterion (KKM).

The fact of this phenomenon is that the teacher does not apply a learning method that can make students active in constructing their knowledge. Furthermore, the learning method used doesn't sufficiently involves the students' active roles so that it hardly improve the mathematic creative thinking ability of the students. This condition is also supported by the students' condition itself, such as: the students could not answers some questions, give various interpretations on some case, find out some more comprehensive meanings toward some questions, and students organize creatively the available information using some particular strategies to find out some possibilities of solutions.

Such a fact needs the teacher's attention and creativity to use a learning method that can make students more active and also able to construct their thought, so they can get new ideas, thoughts, and also solutions to answer their problems. Constructivist-based learning ia a learning designed for students to be able to construct their thoughts. The theory of Constructivism states that learning, students should be given chances to formulate their own ideas, check new information with old rules, and then revise them in case that the rules are no more appropriate anymore and apply them in the learning either consciously or unconsciously (Triatno, 2009).

Learning using constructivist-based Team Assisted Individualization (TAI)-typed cooperative learning model is one of cooperative learning methods that can make students more active. According to Slavin (2010), in cooperative learning method, students is placed as subjects in the learning (student oriented). In the TAI-typed cooperative learning method, a smarter student is expected to be the tutor (peer tutor) individually of his/her friends

that has a low ability in understanding material. Therefore, in that group, there will be created the same understanding at the same level of knowledge about the material being learned.

A learning process using constructivist-based TAI-typed cooperative model is a learning method that is applied following through TAI steps and also it must contain important components of constructivism principles such as, situation, grouping, linking, asking, exhibition and reflection. This condition hopefully will make a learning process to be more effective. By using constructivist-based TAI-typed cooperative method, the teacher will create a learning process centered to the students, so it can increase the students' activities in the learning process and, as a result, it will increase also the ability of students' creative thinking in trigonometry.

RESEARCH METHOD

The type of this research is an experimental research, specifically quasi experimental type with nonequivalent control group design. The experimental subject is divided into two categories, such as control and experimental classes. In the control and experimental classes, they will get homogeneity test that aims to know the ability level of students from both of those classes. The class sampling is done using the random sampling system for the members of population are considered homogenous (Sugiyoko, 2009)

The analysis of the test items used is the tests of validity, reliability, difficulty level, and differentiating ability. The validity of the creative thinking ability test items is analyzed according to the product moment correlation formula (Arikunto, 2010). The reliability of the test instruments to know the constancy of test result. The reliability of the test instruments is calculated using the formula of Alpha (Arikunto, 2010), as below:

$$r_{11} = \left(\frac{n}{n-1} \right) \left(1 - \frac{\sum \sigma_i^2}{\sigma_i^2} \right)$$

r_{11} is the reliability calculated. $\sum \sigma_i^2$ is each item of the score variant amount and σ_i^2 is the total variant. Test Difficulty Level (DL) is interpreted in index form (arifin, 2009)) as follow.

$$TK = \frac{N_{gagal}}{N} \times 100\%$$

N_{gagal} is the failed test and N is the amount of the total test. Discrimination index (D) is calculated using the following formula (Depdiknas, 2008)

$$D = \frac{\text{Mean kelompok atas} - \text{Mean kelompok bawah}}{\text{Skor maksimum soal}}$$

The student activeness observation result analysis uses scoring criterion contained of 5 scores, score 1, score 2, score 3, score 4, and score 5. Student activeness is calculated accordance of formula :

$$\text{Skor rata-rata} = \frac{\text{Skor total}}{\text{Banyak butir pengamatan keaktifan siswa}}$$

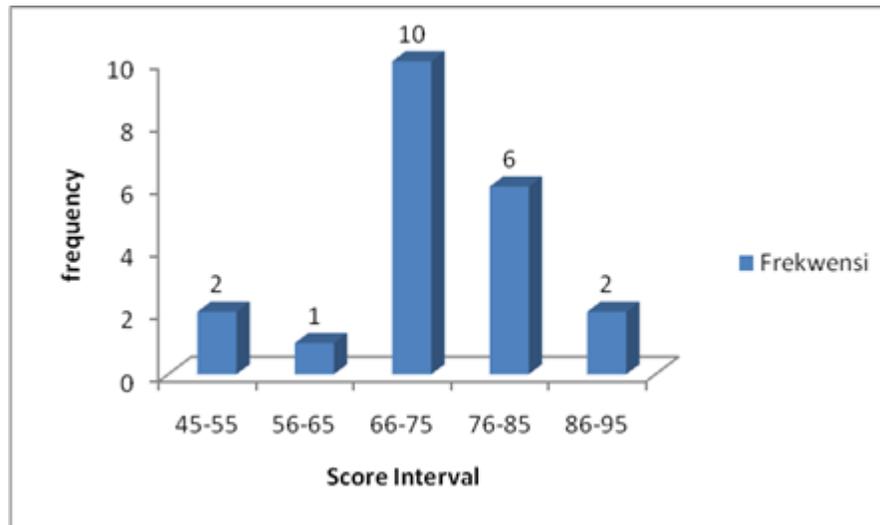
The data analysis on the effectiveness of the learning instruments includes of 3 tests, such as completeness test, influence test and comparison test. Individual completeness test is used to know whether the average ability of creative thinking in the experimental class for basic competency tested has reached the KKM score or not. The individual completeness is analyzed by one side average test using T test. On the other hand, the classical completeness uses one side proportion test. Free variable influence test of student activeness (X) toward bound variable of ability of creative thinking (Y) uses regression test with SPSS program. Comparison test is used to compare the average result of experimental class students' TKBK to the average result of control class students' TKBK. Variant similarity is tested first before choosing T formula. Comparison test analysis uses SPSS program.

The learning process can be said effective if the experimental class get a result according to three categories. First, student proportion must reach > KKM minimum score of 75%. Second, there is a positive influence of

activeness toward students' creative thinking ability. Third, TKBK average score of experimental class students is better than TKBK average of control class.

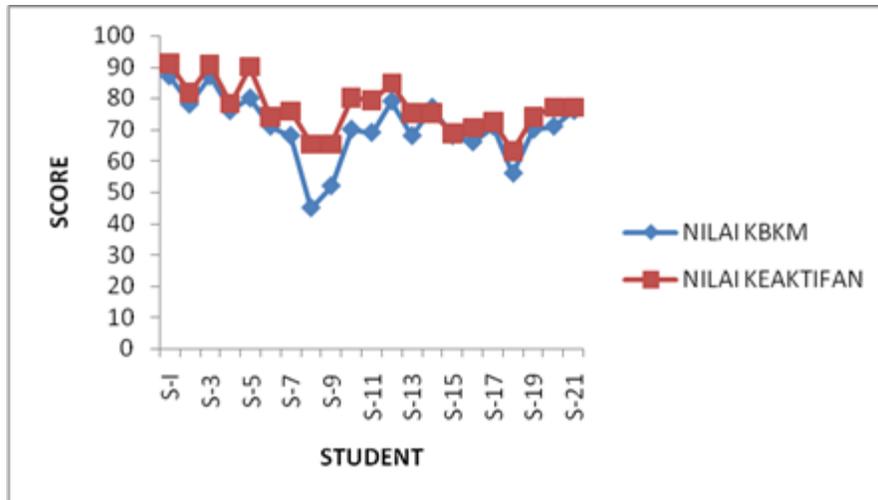
RESULT AND DISCUSSION

The test of learning instrument in the field shows that learning instrument produced have fulfilled effective criterion. Instrument effectiveness can be seen from the first individual completeness result according to the calculated result with one side test which is $t_{hitung} = 2.59$ score is higher than $t_{tabel} = 1.721$. It means the KBKM test score average of experimental student class reaches KKM. Meanwhile, the classical completeness using one side test is obtained $z_{hitung} = 1.13$ score which is higher than $z_{tabel} = 0.226$ score. As the result, H_0 has been refused and it has a meaning that student proportions who have got score >65 more than 75%. The result score of student creativity thinking test is served in table 2.



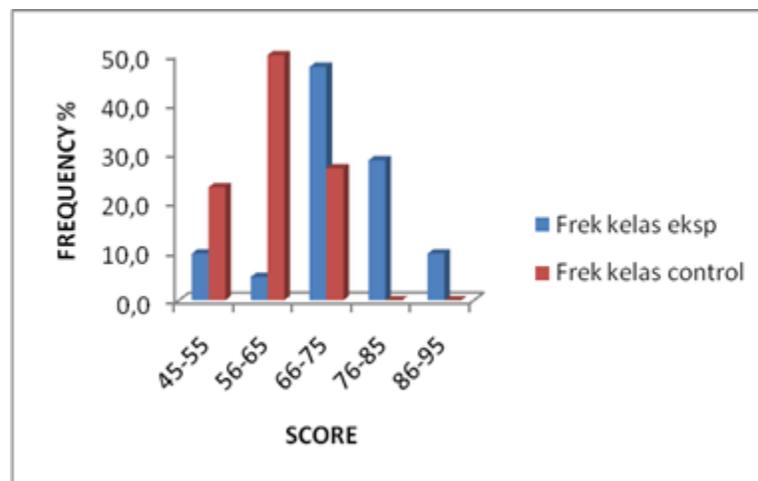
Picture 1. Mathematic Creative Thinking Ability Test Score

The test of students' activeness influence toward mathematic creative thinking ability is used simple regression test. The result obtained from linear regression test $Y = -17.112 + 1.145X$, has meaning that is every activeness variable addition (x) as big as one, so it will add KBKM test score (y) around 1.145. This calculation with distribution is obtained sig = 0.000= 0% score which is lesser than 5%. It means the student activeness influencing toward score test of student KBKM. The big of activeness influence toward KBKM is 78.4%. The students' activeness influence toward KBKM test is served in picture 3.



Picture 2. Student Effectiveness influence toward KBKM score.

The result of comparison test analysis is obtained sig score = 0.01 = 0.1% which is lesser than 5%, so H_0 is refused. It means both of the class have different KBKM test score average.



Picture 3. KBKM Score of Experimental and Control Class

The learning process effectiveness using TAI-typed cooperative model is applied by doing whether individual completeness test or classical completeness, influence test and comparison test. The learning result completeness test is measured by completeness test of student mathematic creative thinking ability. Individual completeness test is researched by using one side average test. Student mathematic creative thinking ability of experimental class reaches KKM and it means that experimental class reaches individual completeness. One side proportion test is done to find out classical completeness. The students' creative thinking ability is complete if the individuals' complete requirement is more than 75%. From 21 students, it results 18 (85.7%) who has passed the test with KKM 65, so the proportion of complete students is higher than 75%. The influence test shows that there is activeness influence toward mathematic creative thinking ability of the students. The comparison test result of the score of students' mathematic creative thinking with mathematic learning using constructivist-based TAI-typed cooperative model (average 70.7) is better than the class using conventional learning method (average 61.6).

CONCLUSION

In short, mathematic learning by using constructivist- based TAI-typed cooperative model is effective to be used to increase the creative thinking ability for trigonometry of the senior high school students of IPA XI. It can be seen from the completeness of KMBK classical test, which is 85.7%, and it shows that the students' activeness influence toward mathematic creative thinking ability is around 78.4%. The result of KBKM test shows that experimental class is better than control class.

REFERENCES

1. Arikunto, S. 2010. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
2. Arifin, Z. 2009. *Evaluasi Pembelajaran*. Bandung: Rosda Karya.
3. Rusdi, Maulidiya, D., dan Susanto, E. 2013. *Pembelajaran Inkuiri Pada Materi Trigonometri Untuk Meningkatkan Hasil Belajar Dan Aktifitas Siswa Kelas X₂ SMAN 1 Kota Bengkulu: Prosiding Semirata FMIPA Universitas Lampung, 2013*
4. Slavin. 2010. *Cooperatif Learning Theory*. Second Edition. Massachusetts: Allyn and Bacon Publisher.
5. Sugiyono. 2009. *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta
6. Trianto. 2009. *Mendesaian Model Pembelajaran Inovatif-Progresif*. Jakarta: Kencana Media Group

Support from Family , Health Worker and Elderly Hypertension Health Care Access In Controlling health

Edy Susanto^{1,a)}

¹ Study Program of S1 Nursing, Universitas Muhammadiyah Semarang.

^{a)} Corresponding author: soesantoedisoes@gmail.com

Abstract. The aim of this study is to determine the relationship between the support from family, health worker and Elderly Hypertension Health Care Access and the practice of patient health control in Kangkung Village, Demak by using cross sectional study approach. The number of samples was 285 respondents. The results shows that there is a relationship between the support from family, health worker and Elderly Hypertension Health Care Access and the practice of patient health control. High social support will make the elderly live more optimistically, more skilled in completing the needs of psychology, having a higher system, having lower anxiety, having higher interpersonal skills, and have ability to adapt to stress so that he is able to face and to solve his health problem and is able to perform optimally in his own health control. Access to health services has an important role in the effort of elderly hypertensive practices in controlling their health, the better access to health services, the better the health control practices.

INTRODUCTION

Hypertension is the main factor of cardiovascular diseases which cause the highest mortality Indonesia. Based on study data of Department of Health Republic of Indonesia in 2010, it showed that hypertension and cardiovascular disease are increasing about 10%, and probably increase by unhealthy lifestyle. High cost of Hypertension therapy, and the infrastructure, lack of safety facilities hypertension (Joewono, Boedi Soesetyo. 2009).

Hypertension is known as heterogeneous group of diseases, which can affect anyone of various age groups, the elderly are the most susceptible group to hypertension, as well as social and economic. The tendency of changing lifestyles as a result of urbanization, modernization and globalization led to a number of risk factors that can increase the morbidity of hypertension (Fadilah Supari, S. 2007).

Well-controlled hypertension patients in Indonesia is less than 10%, from 38.8% of elderly with hypertensive only 50% regularly (controlled hypertension) and only half of the control well (Sanjaya W. 2005). This is due to hypertension do not provide obvious symptoms so many people do not pay attention to a disease that is sometimes taken lightly by them, without realizing that this disease is more dangerous than other diseases such as abnormal blood vessels, heart (cardiovascular) and kidney disorders and most of patients come for treatment when vascular damage have been serious. That condition is in accordance with the character of hypertension as the silent killer.

Hypertension is actually a disease that can be prevented if risk factors can be controlled and have healthy behaviors which is activity that relates to effort to maintain and improve health (Arnilawaty et al. 2007). The number of hypertension in Demak were increasing in last 3 years, in 2012 were 989 cases (13,6), in 2013 were 1435 cases (16,5%) and in 2014 were 2737 (17,8%). These are the main health problems in elderly. Based on practice of nursing care conducted by the students of Nursing, University of Muhammadiyah Semarang in Puskesmas Mranggen in January-March 2014, there were only 46% elderly who do a routine check in health service from 310 elderly, the others couldn't do routine check because they didn't have money to routine check, feel averse due to be the family's responsibility, no one takes them to doctor because they live alone, think that the disease is not serious so no need to check up regularly (Tirtayasa GP 2007). A factor which caused in society is misconceptions about the illness. Many people thought that illness is when someone is unable to work and unable to get up from bed. (Notoatmodjo.S. 2005).

Someone will take preventive action depends on 2 outcomes or health belief; the perceived threat of illness or injury (perceived threat of injury or illness). If the perceived threat has increased, the prevention behaviors will also increase, an assessment of the perceived threat is based on a susceptibility to a disease (perceived susceptibility) and the severity of the perceived (perceived severity) and consideration of the advantages and disadvantages (benefits and costs) of behavior in an attempt to decide preventive action or not. The threat assessment and consideration of

gains and losses is influenced by demographic variables (education, knowledge, age and occupation) of individuals as well as instructions to behave (cues to action) alleged right to begin the process of behavior, which is derived from information or advice on health issues about hypertension (Notoatmodjo.S. 2005).

RESEARCH METHODS

This study is an explanatory research with cross sectional approach. The population in this study is all the elderly who suffer from hypertension, aged ≥ 60 years or older and live in the region of *Puskesmas* Mranggen on June to December 2015. The sample of study used total sampling that all the elderly who suffer from hypertension, aged ≥ 60 years or older and live in the region of *Puskesmas* Mranggen Demak, numbered 285 people.

Measuring instrument used in this study was a questionnaire in the form of written questions to uncover the independent variables: family support, support health workers, access to health services and dependentnya variable is the practice in controlling hypertension elderly's health. Analysis technique in this study used Chi Square with $\alpha = 0.05$

RESULTS AND DISCUSSION

Practice elderly in controlling health of hypertension has been good (69.1%), the bad control includes: they do not have exercise regularly, they are still smoking and non-diet as recommended, they consume alcoholic beverages.

The individual probably will take preventive measures depends on two outcome or health beliefs that the perceived threat of illness or injury (perceived threat of injury or illness) and consideration of the advantages and disadvantages (benefits and costs). The first assessment if the perceived threat increases, the prevention behaviors will also increase. Perceived threat assessment is based on the vulnerability and the perceived seriousness. The second assessment is a comparison between the advantages and disadvantages of conduct in an attempt to decide preventive action or not.

Support that has been done by the families in this study were mostly families have been making efforts to check condition / disease state, suggesting to pray, remind to always obey the doctor's advice, suggesting to adequate rest, and provide information about the disease. It gives an illustration that by good family support will encourage elderly hypertension to have good health practice as well ($p = 0.048$).

Humans as social beings can't live alone without help from others. Physical needs (clothing, food, housing), social needs (association, recognition, school, work) and psychic needs, including curiosity, a sense of security, a feeling of religiosity, could not be fulfilled without help of others. Moreover, if the person is facing problems, whether easy or serious. At moments like that, someone would seek social support from the people around them, so that they feel valued, cared for and in love (Khofifah, S.N. 2007).

Social support can be regarded as useful condition, giving help for individuals obtained from another person who can be trusted and as the availability and willingness of those means, which can be trusted to assist, encourage, receive, and keep individual (Kuntjoro, ZS 2002). From these circumstances, people will know that other people pay attention, respect, and love. Family is a source of social support for because in family created a relationship of mutual trust. Individuals as family members will make the family as a set of expectations, a story, ask, and issued complaints whenever an individual is experiencing problems (Walgito, 2003; Tirtayasa, G.P, 2007). According to Green's theory, social support is one factor that strengthens a person to perform a particular behavior (Notoatmodjo, 2003).

Family support includes emotional support, instrumental, information, and assessment (Budiman 2007). Emotional support involves physical strength and willingness to trust others so that the individuals became convinced that others are able to give love and affection to them, support Instrumental includes the provision of means to facilitate or help others as examples are tools, equipment, and other supporting facilities and includes provides time opportunity. Informative support includes giving information to solve personal problems by giving advices, supervision, and other information required by the individuals concerned as well as support in the form of ratings of social roles that include feedback, social comparison, and affirmation (approval).

Providing support to the elderly needs an understanding of the family about the perception of vulnerability, perceived severity, perceived benefits, perceived barriers, access to health services and availability as well as the accuracy / adequacy of such assistance for the elderly, so it doesn't make social support given are misunderstood and not targeted. If the elderly (for various reasons) are no longer able to understand the significance of social support, it is necessary not only social support but also service or social care completely (Suyanto, 2009).

The level of support from health workers are balanced which (51.2%) were good and (48.8%) were less. Health workers have given advice about illnesses suffered by the elderly, reminded to conduct periodic examination, taught how to care and advised to rest, while the less pointed than less attention to the health problems of elderly were they did not teach gymnastics, and rarely came in *posyandu* activity. Thus, better support of health workers to hypertension in the elderly will increase efforts to control hypertension elderly health ($p = 0.049$), then the ability to give support to elderly hypertensive to practice health control will also increase.

Social support has an important role to prevent health hazards (Budiman 2007), high social support will make the elderly more optimistic in facing today's life and future, more skilled in meeting the needs of psychology and has a higher system, as well as lower levels of anxiety, enhance interpersonal skills, have the ability to achieve what they want and be able to guide the elderly to adapt to stress that health problems facing can be resolved properly and is able to perform optimal health control practices.

Social support for the elderly is indispensable for the elderly themselves as long as they are still capable of understanding the meaning of social support such as an advocate / support of life, but the lives of the elderly often found that not all elderly people are able to understand their social support from others, so even though he has received social support but still A show of dissatisfaction, which is shown by way of grumbling, disappointed, upset and so forth. This can happen because of the support provided is not sufficient, the elderly feel no need to be assisted or worry too much emotionally so it does not pay attention to the support provided, the support provided is in accordance with what is required of elderly, a source of support setting a bad example for the elderly, as do or suggest unhealthy behaviors and too keep or not to support the elderly in doing something he wanted. This situation can disrupt health control practices that should be done by the elderly and causes the elderly to become dependent on others.

Level access health services are already suitable gain access to health care services properly, but there are still elderly hypertension that is not easy to get access to health care, they often got slow service, do not have access to cheap and do not have access continuously as long as required. Statistical test results found that there is no relationship between access services to elderly Hypertension practices in controlling health ($p = 0.026$)

Availability of facilities with good quality service will accelerate the realization degree of public health, by providing public health facility services evenly and affordable quality will improve public access to health care facilities. Availability of facilities must be supported by the availability of health personnel equitable and sufficient in number and have competence in the field. Currently the health facilities in the region work of *Puskemas* Mranggen there are health centers, community health clinic, village midwives, village health service, IHC, Center for treatment, maternity house, privately practicing midwives and physician private practice.

The use of health facilities by the elderly still have not been able to access it is because health care costs more expensive, on the other hand government subsidies for health care costs are very small at only 2-3% (Aflah, 2007). State Budget (APBN). According to WHO Indonesia is a country with the smallest health budge which is less than 2% of Gross Domestic Gross (GDB) in addition to Somalia (Prasad, 2007). Thus, the majority of health care costs (70%) borne by the public and 85% of these costs are paid directly by the people from their own pockets and only a small portion (approximately 15%) only paid through insurance. As a result, the community have to provide cash when they need health care and those who are not capable of providing cash, they will not access or obtain health care (Suhartini.2004).

Access to health services can be interpreted properly if there is not availability of health services is a continuous / continuous, so that if people need health services that they can use without a limited time, the ease and speed that people can immediately obtain service from personnel / health facilities, which in this case related to geographical aspects, mileage, ease of transport, level of difficulty of the terrain, health care costs are not burdensome / affordable to the public, especially for the poor and the quality aspect should consider the level of service excellence, means satisfying modalities ethical and established standards. Thus access to health services play an important role in the effort hypertensive in the elderly practices in controlling health, better access to health services will better the health control practices.

CONCLUSION

Based on the analysis of research data, it can be concluded that the majority of hypertension in the elderly control has been practicing good health, family support, health workers and good access. Family support and health care workers are high will make the elderly more optimistic in the face of today's life and future, so that the health problems being faced can be resolved properly and is able to perform optimal health control practices.

Family support and health care workers for the elderly are particularly necessary for the elderly. they are still able to understand the meaning of such support as an support / support of life, but not all elderly people are able to understand their support from others, so even though he had received some support but still show their dissatisfaction,

Puskesmas workers should be able to improve the quality of health care, home visits, health education, especially about the health benefits of controlling hypertension for the elderly and perform cross-sectoral cooperation in the implementation of an integrated program of coaching post (*Posbindu*) elderly.

Access to health services play an important role in the effort elderly hypertensive practices in controlling health, the better access to health services, the better the health control practices. There is a continuous availability of health services / continuous which is able to use health services without a limited time, the ease and speed that people can immediately obtain service from personnel / health facilities.

REFERENCES

1. Aflah,R. Kepuasan Pengunjung Usia Lanjut pada Pelayanan Pengobatan Puskesmas Kelurahan di Kotamadya Jakarta Timur (Tesis), 2007.
2. Armilawaty;Husnul Amalia; Ridwan Amiruddin . Hipertensi dan Faktor Risikonya Dalam Kajian Epidemiologi .Bagian Epidemiologi FKM UNHAS.2007
3. Budiman,N.A. Faktor-faktor yang berhubungan dengan praktik WPS Jalanan dalam upaya pencegahan HIVAIDS di Klaten, (Tesis).2007
4. Fadilah Supari. S. Prevalensi Hipertensi di Indonesia 17 – 21 %. [http:// www.madina-sk.com](http://www.madina-sk.com). 2007
5. Gayong W, F. Fisiologi kedokteran. Edisi 20. Alih bahasa: M. Djauhari W. Jakarta EGC. 2003.
6. Hidayat, A.Aziz Alimul.Metode Penelitian Kebidanan dan Teknik Analisis. Jakarta, Salemba Medika. 2007.
7. Joewono, Boedi Soesetyo. Permasalahan dan Penanggulangan Hipertensi di Indonesia masa kini dan masa mendatang, Email: Library@lib.unair.ac.idFaculty of Medical Airlangga University Created: 20-09-2009.
8. Khofifah,S.N. Analisis hubungan karakteristik keluarga dan karakteristik usia lanjut dengan kemampuan keluarga merawat usia lanjut di wilayah kecamatan Candi kabupaten Sidoarjo-Jatim (Tesis).2007
9. Kuntjoro,Z.S. Dukungan Sosial Pada Lansia, Jakarta, 2002
10. Notoatmodjo . S. Pengantar Pendidikan Kesehatan dan Ilmu Perilaku Kesehatan, Yogyakarta. Rineka Cipta. 2003.
11. -----, Promosi Kesehatan Teori dan Aplikasi, , PT. Rineka Cipta. Jakarta.2005
12. Prasetyo,A.2007. Faktor-faktor yang berhubungan dengan praktik petugas kusta dalam penemuan penderita baru kusta di Kabupaten Blora, (Tesis).
13. Puskesmas Mranggen Demak. 2009. Laporan SP2TP,
14. Sanjaya W, Alkatiri A. H. 2005. Current trends of treatment in hypertension. Cermin Dunia Kedokteran.
15. Suhartini.2004. Pengaruh faktor kesehatan, kondisi ekonomi dan kondisi sosial terhadap Kemandirian Orang Lanjut usia: studi Kasus di Kelurahan Jambangan (Tesis).
16. Suyatno.2009. Faktor-faktor yang berhubungan dengan Praktik Penderita Kusta dalam Pemanfaatan Kelompok Perawatan Diri Kusta di Puskesmas Kunduran Kabupaten Blora, (Tesis).
17. Tirtayasa,G.P, 2007. Hubungan kebiasaan hidup dan dukungan keluarga lansia dengan kejadian hipertensi di Puskesmas Rendang Karangasem Bali (Tesis) .
18. Walgito, Bimo. 2003 .Pengantar Psikologi Umum. Yogyakarta: Andi Offset.
19. World Health Organization. 2000. The World Health Report. Health Systems: Improving Performance. Geneva: WHO.

Implementation Of Learning Model "Local Tourism" Based Potential Of District Rembang

Eny Winaryati^{1,a)}, Akhmad Fathurohman^{2,b)}, Setia Iriyanto^{3,c)}, Sri Haryani⁴⁾

¹Department of Chemical Education, Universitas Muhammadiyah Semarang

² Faculty of Mathematics and Natural Sciences, Muhammadiyah Semarang

³Faculty of Economics, Universitas Muhammadiyah Semarang

a) Corresponding author: enywinaryati@unimus.ac.id

b) akhmadfathur@unimus.ac.id

Abstract. The curriculum at all levels and types of education developed in accordance with the principle of diversification of educational unit, the potential of the area, and learners. This is the basis for learning model "Local Attractions" was developed. The core of this model is, to optimize the function and role of the local potential areas for improvement of the quality of learning. Implementation of the above model implemented in elementary, secondary, vocational and high school in Rembang district. The purpose of this study was to test the effectiveness of the model, based on the data a positive impact on the improvement of learning. The effectiveness of data obtained through assessment: student and teacher responses associated with the feasibility models, teaching observation, interviews and evaluation of the implementation of the model in the field. Results of the study data showed that the model effectively used.

INTRODUCTION

Curriculum based on the principle of diversity of potential, and environmental characteristics of the area, as well as social and cultural conditions of local communities. The curriculum is expected shortly diversity to produce graduates who are relevant to the needs of regional development. A teacher in the learning process, are required to link with the natural environment, social environment, economic and socio-cultural environment, (Permendikbud No: 81A tahun 2013). The curriculum at all levels and types of education developed in accordance with the principle of diversification of the educational unit, the potential of the area, and students, (UU No.20 tahun 2003). Permendikbud 22, tahun 2006 confirmed that the curriculum should be based on the needs, the needs of learners and the environment, as well as the development of science, technology, and art.

Based on the above background, learning model "Local Tourism" developed. The core of this model is, optimize the function and role of local potential areas for improvement in the quality of learning. The potential of this area can be utilized as a laboratory and a learning resource. Each region has a different natural resources, and handling the problems require different solutions strategy.

The realization of the above concepts are arranged in a model " Local Tourism" (Eny Winaryati, 2009, 2010, 2014; Winaryati, E., Handarsari, E., & Faturrohman, A. 2012); Winaryati, E., Haryani, S., Iriyanto, S., & Faturrohman, 2015). Expectations of the implementation of this model is the same concern in local government, school, and community, to develop the potential of their respective regions. Learning through repetitive, are expected to bring strong fanaticism, the character will be formed, to foster a love of the existing potential of the region, bring creativity both on teachers and students, (Winaryati, E., Haryani, S., Iriyanto, S. , & Faturrohman, 2015b).

Design study model "Local Tourism" consists of two are: 1) the Local Tourism-Class: Class mounted posters and comes with potential product area. 2) local Tourism-information: learning about the potential of the local area that can be accessed via the web, (Winaryati, E., Iriyanto, S., & Faturrohman, A. (2013, 2013b). The aim of this study was test the effectiveness of the model, based on the data a positive impact on improving learning. Data obtained through evaluation of the effectiveness of: student and teacher on the implementation of the model, learning observation, interview and evaluation of the implementation of the model in the field.

METHODS

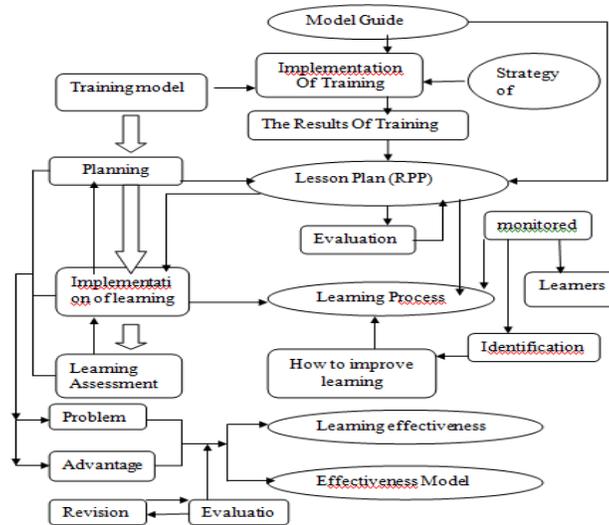
Implementation of the learning model "Local Tourism" developed through R & D. The subjects were: Elementary School, Middle School, High School and Vocational High School, with a wide range of subjects. The object of the study was the teachers and students. The approach of this research is quasi-experimental methods, using classes and class control treatment. Before learning begins rated Pree test and post-test learning by post. Data obtained through evaluation of the effectiveness of: student and teacher on the implementation of the model, learning observation, interview and evaluation of the implementation of the model in the field.

RESULTS AND DISCUSSION

a. Stages in the implementation phase.

The implementation phase learning model "Local Tourism" held at the Elementary School (SD), Junior High School (SMP), Vocational High Schools (SMK), and Senior High Schools (SMA). The implementation phase of a two-dimensional model: model development and evaluation dimension to the learning process. Network model implementation stages are as follows: (1) Training model "Local Tourism" on the teacher. Materials provided include: understanding the model, the purpose and objectives of the development model, theory of why the model developed, the syntax model, the development of devices based learning model "Local Tourism". (2) Presentation devices based learning model "Local Tourism" by the teacher. (3) The implementation of learning by teachers in the classroom by using quasi-experimental research. (4) Evaluation of program implementation model "Local Tourism" based on local potential.

Post teacher training activities are: (1) Preparation of model-based learning plan "Local Tourism" based Regional Potential. (2) Implement the model through teaching and learning activities in the classroom / outside the classroom according to the syntax shown in the model guide learning model "Local Tourism". (3) Observing the learning process model "Local Tourism" by the teacher colleagues. (4) Students respond or respond in relation to the learning model "Local Tourism" based on local potential. (5) Teachers assessed at Pree test, post-test and during the learning process. (6) To evaluate the implementation of the model in the field. The detailed steps are:



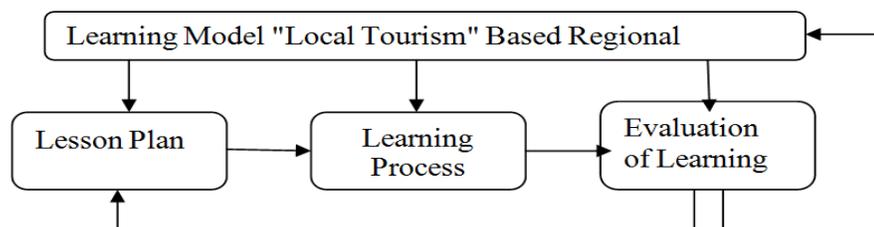
Picture 1. The Details of Implementation Phase Learning Model "Local Tourism"

b. Classroom Learning implementation.

The implementation phase learning model "Local Tourism" at the level of classroom learning is done by using quasi-experimental research approach. The first implementation was carried out in 10 SD (Elementary School) in Rembang. Implementation at the SMP (Junior High School) held on subjects: Science, Social Studies, Civics, Indonesia Language. The results of the implementation of the conclusions and recommendations in primary school followed up with the implementation of the model on the level of SMP

(Junior High School), SMA (Senior High School), and SMK (Vocational High School). Subjects who developed are: Social Studies, Science, Chemistry, PPKn (Civics) and Indonesia Language.

Implementation of the model in the classroom this two-dimensional case. The first dimension of the development model, and the second study. Dimensional model development activities include the development of learning tools, learning methods, as well as evaluation of learning. Dimensional research provides benefits for teachers to do research with quasi-experimental approach. The study also had an impact on teacher-lecturer research articles.



Picture 2. Relations Learning and Evaluation of the Model.

c. Results Implementation Model "Local Tourism" in Class

1. Implementation in SD

The results of the effectiveness evaluation model concludes research in SD are: (1) learning model "Local Tourism" effective and practical to use, and the observation of the implementation of the model provides excellent value. (2) The model is feasible to be implemented at various levels of education in the district of Rembang. (3) The model needs to be developed in other counties or cities.

2. Implementation at the SMP, SMA, and SMK

a) Between Different Test Pre Test and Post Test Delivery

Implementation of the second phase was conducted at SMP Negeri 1 Lasem, SMP Negeri 1 Pamotan, SMP Negeri 2 Rembang, SMA Negeri 1 Lasem, SMA Negeri 1 Kragan, and SMK Muhammadiyah Lasem and SMK Cendekia Utama Rembang. The test results pre test between the control group treated with a class of data that we recommend homogeneous, except for research at SMPN 1 Lasem and SMPN 1 Pamotan. In a test post test between the control group and the treatment class data showed that all significantly different. The conclusion is that class treatment (application of learning models "Local Tourism") have significant differences with the control group (without using the learning model "Local Tourism" based on local potential).

b) Correlation Between Pre-Test and Post-Test

The correlation between pre-test and post-test in both control and treatment classes, conducted using statistical test Paired- Samples T test, because both (pre and post test) were in a group. There are three interpretations of the results of the correlation analysis, include: first, to see the strength of relationship between two variables; second, the significance of the relationship; and third, the direction of the relationship. This study was conducted to obtain data interpretation of the relationship between two variables, namely the pre-test and post test, with the figures correlation coefficient calculation.

There was no correlation between pre-test and post-test using SPSS, obtained as follows: (1) In the control group, there were 3 (three) school to the conclusion that there is no difference between Pree test to post-test, whereas in class treatment all the conclusions of the difference. (2) The value of the correlation of classes was relatively high compared with the control group.

c). Test Effectiveness Model

Learning model "Local Tourism" is a new product, it is necessary to test the effectiveness of its use. This assessment is associated with response and observation of the learning model "Local Tourism". Evaluation by the teachers themselves, and peer teachers to model, and model student responses to the enforceability of the class.

1) Observation of the model by assuming teachers and teachers themselves.

Based on the average ratings by two (2) teachers and teachers themselves allied data showed that the highest value is dominated in the third (89%) with the conclusion performing well. It can be concluded that the model is very good to be done.

2) Assessment to guide the learning model "Local Tourism"

Good teacher colleagues and teachers themselves asked to evaluate the revenue model guidance "Local Tourism". Assessment associated with: is / material contained on the website and posters, expediency, practicality of the model, the scope of the model, and the use of the model. Trading Instruments appraised value of 1 to 5. A value of 1 (disagree), 2 (less suitable), 3 (as appropriate), a value of 4 (very convenient), the 5 (very convenient). The results of evaluation of the obtained data model guide highest value of 4 (51%), the value of 5 (14%). The conclusion is very appropriate model to be implemented in all schools in all subjects. In addition to filling instrument teachers who were prepared, the teachers were also interviewed in connection with the implementation of the model and the response associated with the model. Following the conclusion of the evaluation researcher with the teacher model: (a) the expected model to be developed further. (B) The model of learning support creative, innovative and fun, facilitating students to relate the learning environment / regional potential. Students take pride in their area. (C) Rekomensai to be developed in other subjects. (D) It is necessary to technique / strategy assignments so students more flexibility to find more potential. (E) This model students closer to their environment. (F) learning model "Local Tourism" provides a stimulus for students to learn. (G) Through this model, both teachers and students do adventurous knowledge. (H) Students are very enthusiastic. The students' response to the new things that exist in Rembang district. (I) To develop the creativity of teachers in linking learning materials with the potential of the area. (J) Students feel more real in learning. (K) Opinion Indonesian teacher: that all materials in accordance with the needs of Indonesian. (L) Encourage students to better know the real condition of the existing potential of the region. (M) Encourage students to compare and link the data field with the data contained in the web. It provides an opportunity for the development of web content. (N) The spirit in the teachers and students. (O) The students were excited and enthusiastic for learning to use the internet.

3) Response Capability Teachers Manage Learning By Students

The students 'response to the skill and ability of teachers to teach using the model of "Local Attractions" include: (1) students' attitudes toward learning process, including discussions, delivery methods, learning environment, opportunity presentations given to students, enthusiasm for learning, especially conjunction with web and posters; (2) The attitude toward learning material, including material compliance with the requirements, the reality of the daily life of students, the knowledge acquired, content and ease of understanding, which is presented in WEB and posters.

All students are asked to respond / her response to instruction by teachers, by filling out a questionnaire that has been prepared. Assessment includes: a value of 1 (disagree), 2 (Less Agree), 3 (Agree), and the 4 (Strongly Agree). Students of the model, the data obtained 87.2%. This value is the combined value of the three (agree) and 4 (strongly agree).

4) Post-Implementation Evaluation Model Learning "Local Tourism"

Based on information from the teacher was very helpful teacher model of learning, and provide facilities for obtaining information with respect to data that is in Rembang district. Post-implementation model "Local Tourism" teacher inspired to develop it through the MGMP group. Model of great help teachers in the classroom. Web presence "Local Tourism", the tourist does not have to work methods to the field.

CONCLUSION

The results of the development of this model was to provide an assessment to be used effectively. Based on data validity and enforceability of the observation model provides an excellent evaluation results. Assessment of the practicality of the model, data showed that the model is practical to use. Based on the results of the post-implementation evaluation model "Local Tourism" in Rembang district obtained some data, such as: (a) Students are very eager to learn; (B) Students are very interested to know more about the local potential that exist in Rembang

district; (C) Students keen to know in real terms in relation to the local potential in the field; (D) Students feel proud because it is a descendant of the Majapahit; (E) Teachers are required to associate with many other materials; (F) Teachers are required to learn more; (G) The question of demanding process of learning to overcome them; h) Bring up the imagination of students to develop wider.

REFERENCES

1. Depdiknas, (2003). *Undang-Undang RI Nomor 20, Tahun 2003, tentang Sistem Pendidikan Nasional*
2. Winaryati, E. (2 Desember 2009). Sinergitas pemberdayaan rembang. *Wacana Lokal. Suara Merdeka*, p. 9.
3. Winaryati, E. (2010). Model pembelajaran sains berbasis potensi daerah: upaya penguatan "NILAI –NILAI LUHUR BANGSA" pada sekolah dasar dan menengah. *Prosiding Seminar Nasional "Menyongsong Pendidikan Sains Masa Depan Berbasis Nilai Luhur Bangsa". Fakultas MIPA, Universitas Negeri Yogyakarta, 23 Oktober. ISBN:978-602-99456-0-7,*
4. Winaryati, E. (2011). Pelatihan pengembangan media pembelajaran sains, melalui analisis CIRCULAR MODEL of R&D. *Prosiding Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA. Fakultas MIPA, di Universitas Negeri Yogyakarta. 14 Mei. ISBN:978-979-99314-5-0.*
5. Winaryati, E., Handarsari, E., & Faturrohman, A. (2012). Analisis pengembangan model pembelajaran "wisata lokal" pada pembelajaran sains. *Prosding Univ. Muhammadiyah Semarang (UNIMUS). ISBN : 978-602-18809-0-6.7.*
6. Winaryati, E., Iriyanto, S., & Faturrohman, A. (2013a). Desain model pembelajaran "wisata lokal" kabupaten rembang, jawa tengah. *Prosding Semnas UNS IX, ISBN No. 978-602-8580-51-9* tanggal 9 Nopember 2013.
7. Winaryati, E., Iriyanto, S., & Faturrohman, A. (2013b). Developmen model pembelajaran "wisata lokal" kabupaten rembang, jawa tengah. *Prosding UNSOED. 26-27 Nopember 2013.*
8. Winaryati, E. (2014). Model Pembelajaran "Wisata Lokal" Pada Pembelajaran Sains Berbasis Kurikulum 2013. *Prosding Semnas UNY, tanggal 15 November 2014.*
9. Winaryati, E., Haryani, S., Iriyanto, S., & Faturrohman. (2015a). *Define: Model Pembelajaran "Wisata Lokal" Berbasis Potensi.* Prosding UPGRIS, tanggal 22 Agustus 2015. ISBN 978-602-99975-1
10. Winaryati, E., Haryani, S., Iriyanto, S., & Faturrohman. (2015b). Nilai-Nilai Karakter Dalam Model Pembelajaran "WISATA LOKAL" Prosding Urecol. UNIMUS, tanggal 29 Agustus 2015.. ISSN 2407-9189

The Description of II Class Women Prisoners' Cervix in Semarang

Erna Kusumawati^{1,a)}, Novita Nining Anggraini^{2,b)}

¹ Faculty of Nursing and Health, Universitas Muhammadiyah Semarang

^{a)} Corresponding author: cayangatha@gmail.com

^{b)} novitanovi80@yahoo.co.id

Abstract. The second highest cancer in the world is cervix. The early detection of cervix was done in order to give the description about pathophysiology, the risk, the symptoms, the invention of lesion of cancer, and treat them. The prisoners often faced the obstacle in doing the adaptation to the prison's environment. The longer isolation in the prison made the improvement of doing homosexual done by someone. It influenced to the cervix health that enabled traumatic. Besides that, the condition of the prison with bad sanitation and environment could decrease the quality of prisoners' life, facilitate the spread of health problems like TBC, HIV/AIDS. The method of this research was descriptive. The population was 44 women prisoner of class IIB in which two of them were infected by HIV. Speculum examination was done to the women prisoners. The result of this study showed that the test of positive IVA was 27.3% (12 women), the negative IVA was 72.7% (32 women), the partio erosion was 34.1% (15 women), the un partio erosion was 65.9% (29 women), whitish translucent was 36.4% (16 women) consisted of whitish was 54.5% (24 women), yellowish was 6.8% (3 women), and greenish was 2.3% (1 woman). From the result above, it could be concluded that the description of II class women's cervix in the prison was not health physically.

INTRODUCTION

The second highest type of cancer in women in the world is the servical cancer (16 per 100,000 women) . The type of cancer the second highest in-patients in hospitals across Indonesia in 2010 was cervical cancer (12.8 %) . Cancer prevention efforts in Indonesia is not optimal , because nearly 70 % of new cases were found in the advanced stages .

Program activities early detection of cervical cancer uterus can give an idea of the associated pathophysiology , risk factors , symptoms , the discovery of pre-cancerous lesions and treating pre-cancerous lesions . In accordance with WHO recommendations , that the success of early detection of cervical cancer will occur when it can cover at least 80 % of the population at risk , which means 80 % of the female population aged 30 s / d 50 years .

According Edianto (2006) more than 90% of the causes of cervical cancer is HPV (Human Papilloma Virus) is transmitted by sexual intercourse . In addition there are some risk factors that affect the incidence of cervical cancer are age marry young / first coitus , high parity , low socio-economic groups (low education , age of marriage , low hygiene , education , occupation and income) .

Prisoners serving a sentence in prison often have problems in adapting to the prison environment and in an effort to meet the needs of both biological and psychological needs . Cooke , Baldwin , and Howison (1990) , reveals that prisoner face various problems , not only from within the prison , but also from outside the prison . Criminal inmates undergo physical and psychological punishment , such as loss of individual freedom , love of children or spouse . Among the prisoners there who feel less comfortable because the room cells that tend to narrow and stuffy , limited bathroom and water facilities are often not smooth .

The facilities were completely inadequate , is less concerned about power cuts and water activities in the Penitentiary is not going well because of the lack of facilities and infrastructure

Conditions prisons / detention which is the case with poor sanitation and the environment can degrade the quality of life for residents prisons / detention . This in turn can facilitate the spreading of various diseases . Meanwhile on the other hand , the availability of facilities and infrastructure is still low which resulted in prison / detention center was not able to provide adequate health services . In such conditions the inmates prone to health problems , such as

very susceptible to infection / disease, tuberculosis, HIV / AIDS , psychiatric disorders , and psychiatric crisis . Preliminary study in prison Class IIB Semarang City there are 15 inmates who have a positive HIV status .

Study homosexuals in prison ever conducted by Helen M. Eigenberg focuses on the processes of change sexual orientation in men's prison . The man who originally had a heterosexual sexual orientation turned into homosexuals. Isolation long since locked up in the prison resulted in effects among others ; homosexual practices evolve (Kartini Kartono , 1992) . Homosexuality in the life of society regarded as a taboo and controversial , but in prison it becomes commonplace .

Based on the above research , the researchers are interested to know the description of the cervix in women prisons occupant class II .

METHODS

This type of research used in this research is descriptive . Descriptive research method is a method of research conducted with the main objective to create a picture or descriptive of a situation objectively (Notoatmodjo , 2000) . Using a cross sectional study design or cross-sectional study which subjects observed only once , and the measurement is made on the character or variable subjects during the examination . In this study, the sampling technique used is by accidental sampling technique . Accidental sampling is sampling accidental (accidental) by taking the case or the respondent accidental or available somewhere within the context of research (Sugiono , 2010) . Samples used as many as 44 people .

RESULTS

1. IVA test

Table 1. Frequency Distribution of IVA Test results

No	IVA Test	Amount	Percentage
1.	Positive	12	27,3 %
2.	Negative	32	72,7 %
Amount		44	100 %

IVA test results distinguish positive and negative , indicating that respondents with a positive VIA test as many as 12 people or 27.3 % , and the IVA Test negative as many as 32 people or 72.7 % .

Visual inspection of acetic acid (VIA) in the English language is Visual Inspection of the uterine cervix with acetic acid (VIA) is porsio inspection with the naked eye and confirmed positive when after 20 seconds rubbing with 3-5 % acetic acid appear white area (white epithelium) . IVA also called servikoskopi . The existence of the " white spots " after acetic acid staining probably due to precancerous lesions of the cervix.

IVA is one method for early detection of cervical cancer . Screening with IVA is stated easier , simpler , and less expensive than the pap smear test . Cervical cancer is caused by HPV (Human Papilloma Virus) HPV virus is transmitted through sexual intercourse . Risks starting from the first sexual contact .

At inmates , expression and sexual fulfillment experiencing barriers to be distributed . solasi long since locked up in the prison resulted in effects among others ; homosexual practices evolve (Kartini Kartono , 1992) . Homosexuality in the life of society regarded as a taboo and controversial , but in prison it becomes commonplace .

2. Erosion portio

Table 2. Frequency Distribution Erosion Portio

No	Erosion Portio	Amount	Percentage
1.	Yes	15	34,1 %
2.	No	29	65,9 %
Amount		44	100 %

Results showed the erosion of the lower portion of respondents who experienced many as 15 people or 34.1 %, and the lower portion is not eroded as much as 29 people or 65.9 % .

Erosion portio is an inflammatory process or an injury that occurred in the cervical portio uteri (cervix) . The reason could be due to infection with germs or viruses , could also be due to a chemical stimulus / specific tools ; usually caused by infection . Porsio erosion can be caused by trauma (sexual intercourse , use tampons , a foreign object in the vagina , or exposed to a speculum) and vaginal hygiene factor .

A large proportion of women in prison have been victims of sexual violence . Sexual violence indicate unequal sexual relationships and any element of compulsion in sexual intercourse occurred . If there is penile penetration by force or coercion will facilitate the female reproductive organs (mucosal) cuts or irritation .

Cindy Struckman - Johnson. et . al . Sexual coercion in research Reported by Men and Women in Prison reported seven percent of victims of sexual violence in prison is a female occupant . Fifty percent of the women who become the victims said they had been forced to have sexual intercourse , vaginal, anal , or oral . Of cases of sexual violence , as many as 18 % of them carried out by prison staff .

3. Keputusan

Table. 3 Frequency Distribution vaginal discharge

No	vaginal discharge	Amount	Percentage
1.	Clear	16	36,4 %
2.	White	24	54,5 %
3.	Yellow	3	6,8 %
4.	Green	1	2,3 %
Amount		44	100 %

Results showed leukorea translucent respondents experienced as many as 16 people or 36.4 % , white as many as 24 people or 54.5 % , yellow as much as 3 or 6.8 % , and green as much as 1 person or 2.3 % .

Whitish translucent included in the category of normal or physiological discharge . Whitish fluid like this would normally be seen at the beginning of the cycle up to ovulation . Whitish sticky and bias of this type help pull the sperm into the uterus .

White vaginal discharge triggered by fungal or yeast infection and causes mucus or white liquid such as condensed milk , but without strong odors . Other symptoms are usually accompany severe itching and sores around the vaginal pain during sex . Shifting the balance in the amount of normal bacteria in the vagina can also cause bacterial vaginosis infection . Mucus vaginal discharge appears to be smelled fishy and white or gray , but not itchy or irritated. This infection can be treated with antibiotics .

Whitish and yellowish green , whitish kind is usually caused by trichomoniasis , a sexually transmitted disease that is caused by a parasite . Mucus is usually due to infection in large numbers, smelling , and accompanied by the pain when urinating . Swelling and itching around the vagina are also experienced by patients with trichomoniasis . These infections can also be treated with antibiotics .

Some causes of vaginal discharge that is unusual due to the use of public toilets, stress , unhealthy diet , and the use of the wrong underwear . In prison the use of public facilities such as toilets and water is very limited so as to allow the lack of cleanliness in the tool genitalia that cause infection. Food is also not very well thought out , eat regular instant cause whitish because basically we need a reproductive adequate nutrition .

Overcrowding situation (the number of residents who exceed the carrying capacity) has caused a number of problems caused by deteriorating prison facilities and services . For women residents, this situation puts them at their own vulnerability exposed to the disease . Design conceived prisons and detention centers for men that do not take into account the specific needs of female occupants related to reproductive health such as menstruation , pregnancy, childbirth , and child care in prison . Plus the conditions of prisons overcrowding, the female occupants will have different vulnerabilities with the male occupant , other than because of differences in physical and psychological conditions between men and women.

CONCLUSIONS

Based on the description of the results of research that has been put forward in the previous chapter , it can be concluded from the results of the overall findings as follows :

1. IVA positive test as many as 12 people or 27.3 %, and the IVA Test negative as many as 32 people or 72.7 % .
2. Erosion portio as many as 15 people or 34.1 %, and the lower portion is not eroded as much as 29 people or 65.9 % .

Vaginal discharge c as many as 16 people or 36.4 % , white as many as 24 people or 54.5 % , yellow as much as 3 or 6.8 % , and green as much as 1 person or 2.3 % .

REFERENCE

1. Notoatmojo, Soekijo. Metodologi Penelitian Kesehatan, Jakarta: Rineka Cipta, 2000
2. Efrina, Pengaruh Karakteristik Penghuni Lapas Terhadap Tindakan Berisiko HIV/AIDS di Lapas Kelas IIB Lubuk Pakam. 2011
3. Poedjo Hartono, Kanker Serviks/Leher Rahim dan Masalah Skrining di Indonesia. Denpasar, 2000
4. Edianto Deri. Buku Acuan Nasional Onkologi Ginekologi. In: Aziz M Farid, Adrijojo, Saifuddin Abdul Bari, editors. Kanker Sserviks. Jakarta: Yayasan Bina Pustaka Sarwono Prawirohardjo, 2006. p. 442-455.
5. Mansjoer, Gangguan Kesehatan reproduksi Wanita. Jakarta: EGC, 2005
6. Julisar Lestadi, Penuntun Diagnostik Praktis Sitologi Hormonal Apusan Pap. Jakarta: RSPAD Gatot Subroto, 1995
7. Kartini Kartono, Psikologi Wanita, Mengenal Gadis Remaja dan Wanita Dewasa, CV. Mandar Maju, Bandung, 1992
8. Abdul Aziz, Homoseksual Dalam Prespektif Hukum Pidana dan Hukum Islam Suatu Studi Komparatif Normatif, 2012
9. Cooke, Baldwin, dan Howison, Psychology in prison, London: Routledge, 1990
10. Sugiono, Metode Penelitian Pendidikan : Pendekatan Kuantitatif Kualitatif dan R & D Bandung: Alfabeta, 2010
11. Eigenberg. Helen M, The Prison Journal, Vol. 80, No. 4, hal. 415-433. Fine, Michelle and María Elena Torre. 2006. Intimate details: Participatory action research in Prison . Action Research no. 4; hal. 253, 2000
12. Cindy Struckman-Johnson, et. al. Sexual Coercion Reported by Men and Women in Prison, 1996

The Pursuance And Implementation Of Informed Consent Law Towards Vaccination Service Based On 1464/Menkes/Per/X/2010 About Permission And Implementation Of Midwife Practice In Self-Proclaimed Midwives In Semarang

Fitriani Nur Damayanti^{1,a)}, Siti Nurjanah^{2,b)}, Dewi Puspitaningrum^{3,c)}

^{1,2,3}*Study Program of DIII Midwifery, Universitas Muhammadiyah Semarang.*

^{a)} Corresponding author: fitrianiurdamayanti@gmail.com

Abstract. In providing vaccination services can be done by health workers to give medical consent (informed consent). Informed consent is a term often used for the translation of the approval of medical action. Informed Consent in the medical world we are actually still relatively new. The use of informed consent to health care is still so low, and 30% had experienced midwives maternal perinatal audit due to the demands of patients who do not agree on its medical action and the absence of proof of informed consent in medical record. Purpose : To describe Compliance Midwives in Informed Consent Law Enforcement Against Vaccination Services Based Permenkes 1464 / Menkes / Per / X / 2010 on the Permissions and Implementation of Self-proclaimed Midwives in Semarang. Methods: Descriptive study the necessary data in the form of primary data and secondary data. The sample in this study is Self-proclaimed Midwife in Semarang 30 midwives. Sampling was done by way of non probability sampling technique is purposive sampling. Results: BPM obedient to fill informed consent as much as 40% and BPM are not obedient to fill informed consent as much as 60%. BPM which have informed consent vaccination by 33% and BPM do not have informed consent vaccination as much as 67%. The application of informed consent when the initial vaccination visit as much as 70% and the application of informed consent every time vaccination visit as much as 30%. Conclusion: Most BPM disobedient to fill informed consent, most BPM does not have the informed consent of vaccination and the majority of the application of informed consent at the time of initial BPM vaccination visit.

INTRODUCTION

The application of Informed Consent in vaccination service is different from medical action. It is so specific that vaccination is not therapeutics. Besides, there are special characteristic of vaccination method that is going to be given. If the method is Reversible, the Informed Consent should be confirmed to patient's family.

Informed Consent must require two things such as understanding and voluntariness. The application of informed consent to medical workers is still low, it can be identified by 30% midwives have ever encountered maternal prenatal audit because patients' claim about the disagreement of medical treatment given and there was no evidence about informed consent in medical record.

Based on the study (May, 2009) it was confirmed that 98% self-proclaimed midwives in Surabaya never apply informed consent in every medical midwives treatment such as pregnancy test, delivery, postpartum, family planning, and vaccination. It is also based on the result of study from 5 self-proclaimed midwives in Semarang; none of them applies informed consent when helping patients in the delivery process. However, in practice, all medical treatment done by midwives must apply informed consent stated by the Ministry of Health regulation Number 1464/MENKES/PER/X/2010 about *Permission and Implementation of Midwives Practice*. Based on the background, the writers are interested in conducting a study about "the Pursuance and Implementation of Informed Consent Law towards Vaccination Service based on 1464/MENKES/PER/X/2010 about Permission and Implementation of Midwife Practice in Self-proclaimed Midwives in Semarang.

METHOD

The study employed descriptive study. The subject of this study was 30 people. The sampling was conducted by non probability sampling technique with purposive sampling. The source of data included primary and secondary data. Validity test conducted by expert test. Data analysis method used descriptive quantitative approach.

RESULTS

Graduates	Respondent	
	n	%
DI	2	6
DIII	18	60
DIV	6	20
S1	1	3
S2	3	11
Total	30	100

Source: Primary data in 2016

The respondent taken varies in several level of education, such as 6% of DI, 60% of DIII, 20% of DIV, 3% of S1, and 11% of S2. Self-proclaimed midwives continued their study to DIII level because it is the minimal requirement of being midwives. Therefore, those who are not DIII (Diploma) of Midwifery are not allowed to provide self-proclaimed practice.

Year	Respondent	
	n	%
1985 - 1989	1	3
1990 - 1994	7	24
1995 - 1999	13	45
2000 - 2004	6	21
2005 - 2009	2	4
2009 - 2013	1	3
Total	30	100

Source : Primary data in 2016

The table showed that self-proclaimed midwives have already provided their service from 1985 is 3%, 1990 is 24%, 1995 is 45%, 2000 is 21%, 2005 is 4% and 2009 is 3%. Self-proclaimed midwives provide the service to pregnant women, delivery process, postpartum, newborns, vaccination, family planning, women reproduction health, as well as public health.

Pursuance of Midwives	Respondent	
	n	%
Aware	12	40
Not Aware	18	60
Total	30	100

Source : Primary data in 2016

The table showed that the pursuance of Midwives in applying the informed consent was 40% are aware midwives and 60% are not. The pursuance of Midwives in filling vaccination informed consent was influenced by number of patients' visit, education, knowledge, and the period of self-proclaimed midwives practice. It also can be seen that the number of patients' visit in each midwife is different one and another, so popular midwives tend to omit or ignore the filling of informed consent. Besides, education level also influences the pursuance of midwife in filling informed consent. Midwives who have not taken the DIII of Midwifery education tend to ignore the informed consent. There were some midwives who did not quite understand to fill the informed consent.

Table 4. Vaccination Informed Consent Data		
Informed Consent	Respondent	
	n	%
Available	10	33
Unavailable	20	67
Total	30	100

Source: Primary data in 2016

Based on table above, the midwives who provided vaccination informed consent were 33%, while those who did not provide vaccination informed consent were 67%. Informed consent is a medical treatment agreement given to patient or patient's family after getting explanation completely about medical treatment that will be done to the patient (Samil, 2003). Informed consent on self-proclaimed midwives should be given in every vaccination services, Family Planning, pregnancy, delivery, postpartum, normal newborns, reproduction health, and public health as well. Based on the study, midwives who did not apply the informed consent were due to their lack of understanding about the content of the informed consent in vaccination. Self-proclaimed midwives, however, only keep one informed consent for all services.

Table 6. The Data of Giving the Informed Consent of Vaccination		
The Application of the Informed Consent of Vaccination	Respondent	
	n	%
Early vaccination visit	21	70
Regular vaccination visit	9	30
Total	30	100

Source : Primary data in 2016

Based on table above, giving informed consent of vaccination in self-proclaimed midwives in the beginning of vaccination visit were 70%, while giving informed consent in self-proclaimed midwives in every vaccination visit were 30%. The informed consent of vaccination in self-proclaimed midwives was only in the beginning of vaccination, while ideally it must be done every vaccination visit. It is not only conducted by asking for patients' signature, but the patient must be explained about the vaccination, dose, injection, expiry date before doing the vaccination. Once the patient's family know and understand about the explanation, the informed consent should be signed to avoid misunderstanding between patient and midwives later on.

SUMMARY

1. Most of the midwives were 60% graduated from DIII, midwives who started self practice in 1995 were 45%.
2. The midwives who were aware to fill informed consent were 40% and those who were not aware were 60%.

3. Midwives who provided the informed consent of vaccination were 33% and those who did not provide were 67%. The application of the informed consent in the beginning of vaccination visit was 70% and for regular vaccination visit were 30%.

REFERENCE

1. Adami Chazawi, 2007, *Malpraktik Kedokteran*, Cetakan pertama, Jakarta : Bayumedia Publishing.
2. Alexandra Indriyani, 2008, *Etika dan Hukum Kesehatan*, Jakarta : Pustaka Book Publisher.
3. A Mansyur Effendi, 2005, *Perkembangan Dimensi Hak Asasi Manusia*, Jakarta : Ghalia Indonesia.
4. Azrul Azwar, 1996, *Pengantar Administrasi Kesehatan*, Edisi ketiga, Jakarta : Bina Rupa Aksara.
5. Bahder Johan Nasution, 2005. *Hukum Kesehatan Pertanggungjawaban Dokter*, Jakarta : Penerbit Rineka Cipta
6. Bambang Sunggono, 2010, *Metodologi Penelitian Hukum*, Jakarta : Rajawali Pers.
7. J Guwandi, 2007, *Hukum Medik*, Jakarta : Fakultas Kedokteran Universitas Indonesia.
8. Juanita, 2002, "Peran Asuransi Kesehatan Dalam Benchmarking RS Dalam Menghadapi Krisis Ekonomi", Tesis: Universitas Sumatera Utara.
9. Lutfi Effendi, 2004, *Pokok-pokok Hukum Administrasi*, Edisi pertama Cetakan kedua, Malang : Bayumedia Publishing.
10. M. Jusuf Hanafiah dan Amir Amri, 1999, *Etika Kedokteran dan Hukum Kesehatan*, Edisi tiga, Jakarta : EGC.
11. Mustika Sofyan, 2006, *50 Tahun IBI Bidan Menyongsong Masa Depan*, Cetakan Kelima, Jakarta : PP IBI.
12. Philipus M. Hadjon, 2001, *Pengantar Hukum Administrasi Indonesia*, Cetakan ketujuh, Yogyakarta : Gadjah Mada University Press.
13. Rahmawaty, 2006, "Perilaku Bidan Praktik Swasta Dalam Menggunakan Perlengkapan Perlindungan Diri", Skripsi : Universitas Sumatera Utara.
14. Ridwan HR, 2010, *Hukum Administrasi Negara*, Jakarta : PT Raja Grafindo Persada.
15. Safitri Haryani, 2005, *Sengketa Medik*, Jakarta : Diadit Media.
16. Soekidjo Notoatmodjo, S, 2003, *Ilmu Kesehatan Masyarakat*, Jakarta : Rineka Cipta.
17. Soerjono Soekanto dan Sri Mamudji, 1985, *Penelitian Hukum Normatif Suatu Tinjauan Singkat*, Cetakan Pertama, Jakarta : CV. Rajawali.
18. Soerjono Soekanto, 2003, *Pokok-pokok Sosiologi Hukum*, Jakarta: Raja Grafindo Persada.
19. Soerjono Soekanto, 2005, *Pengantar Penelitian Hukum*, Jakarta : Universitas Indonesia.
20. Sofwan Dahlan, 2000, *Hukum Kesehatan (Rambu-Rambu Bagi Profesi Dokter)*, Semarang : BP Universitas Diponegoro.
21. Sofwan Dahlan, 2008, *Ilmu Kedokteran Forensik Pedoman Bagi Dokter dan Penegak Hukum*, Semarang : Universitas Diponegoro.
22. Sri Soedewi Masjchun Sofwan, (t.th), *Hukum Badan Pribadi*, Yogyakarta : Yayasan Badan Penerbit Gajahmada.
23. Wila Candrawila Supriadi, 2001, *Hukum Kedokteran*, Bandung : CV Mandar Maju.

The Effect of Giving Rice Bran to Blood Glucose at Mice which Given Alloxan

Hapsari Sulistya Kusuma^{1,a)}, JB Suparyatmo²⁾, Bambang Suprpto³⁾

¹ Study Program of Nutrition, University of Muhammadiyah Semarang

² Nutritional Science Post Graduate Program, Sebelas Maret University

a) Corresponding author: hapsa31@yahoo.co.id

Abstract. World Health Organization predicts that Indonesia will encounter an increasing number of diabetic patients from 8.4 million in 2004 to approximately 21.3 million in 2030. The aims of this work is to investigate the effect of blood glucose following the administration of rice bran on the experimental rats treated with alloxan. This research is an experimental laboratory one with the randomized pre- and post-test research design with control group. The samples were white male Wistar rats aged seven weeks with the inclusion criteria, namely: blood glucose >142mg/dl, healthy, and energetic. They were divided into experiment and control groups. Each group had 6 rats. The total samples were 24. The t- test result shows that the difference of weekly blood glucose level of experiment groups and the one control group is statistically significant. It be concluded that the supplementation of rice bran powder amounting to 50% to the daily food intake of the diabetic rats exposed to the treatment can decrease their weekly blood glucose if compared to those that are not exposed to the same treatment.

INTRODUCTION

World Health Organization (WHO) predicts that Indonesia will encounter an increasing number of diabetic patients from 8.4 million in 2004 to approximately 21.3 million in 2030 (Perkeni, 2006). Diabetes mellitus therapy employing a good diet management is actually cheap and easy to be done, but it truly requires a severe discipline. Chen and Cheng research (2006) conducted a research in which they used diabetic rats to be treated by using a rice bran oil. The research resulted in insulin sensitivity escalation, triglycerides plasma, LDL cholesterol, and hepatic triglycerides reductions.

METHOD

This research is an experimental laboratory one with the randomized pre- and post-test research designs with control group. The Guinea pig custody and intervention were done in the Unit of Guinea pig Development, the University of Muhammadiyah Surakarta. The guinea pigs custody took 30 days started from selecting until treating periods of the guinea pigs. Laboratory tests conducted at the University of Muhammadiyah Surakarta. The samples used in this research were taken randomly from the provided population namely guinea pigs, Wistar strain males, aged 7 weeks which were being isolated in the the Unit of Guinea pig Development, University of Muhammadiyah Surakarta, in accordance with the terms of inclusion criteria. The inclusion criteria are as follows: blood glucose level of the guinea pigs ranged >142 mg/dl, and healthy and energetic guinea pigs. The number of guinea pigs used in this research were six (6) guinea pigs for each group (1 group is experimental group and 1 group is control group) so that the total numbers of the guinea pigs used in this research were 12 guinea pigs. For anticipating the possibility of a sudden death happened to the guinea pigs, each group was given one supernumerary guinea pig so that the total numbers of the guinea pigs were 14. Food supply for a guinea pig is 10% from the total guinea pig's weight. If the average weight of the guinea pig is 200 gr, then the total number of food supply need is 20gr. Rice bran which was given to the guinea pigs was 50% in the form of powder. Then, it needed 10 gr of rice bran powder given from the total 20 gr rice bran. The rice bran powder was given for substituting the standard food for guinea pigs with 50% concentration. Feeding was done by using nasogastric tube in order to make all foods being eaten well by the guinea pigs.

Table 1. Feed Composition

Foodstuff	Standard Feed AIN 93	Treatment 1
Maizena	620,69	310
Casein	140	70
Sucrose	100	50
soybean oil	40	20
fiber	50	25
mineral	35	17,5
vitamin	10	5
Choline bitrate	2,5	1,25
L-Sistine	1,8	0,9
Rice ban powder	-	499,19
Tempeh (soybean curd) powder		-
Total (g)	998,38	998,84
Total (cal)	3346,40	3045,9

Retnaningsih et al, 2001³

Alloxan injection was done through intra peritoneal way with the dosage 80 mg/kg from the guinea pigs' weight (Retnaningsih et al, 2001, Suarsana et al, 2008)^{3,4}. The guinea pigs were kept in a good ventilated room, kept in group in a one cage (1 cage consisted of 6 guinea pigs). The room temperature was about 28-32 degree celcius, with 50±5% humidity rate. Feeding treatment was given through the nasogastric tube. The cage was being cleaned once a week. Group 1 as the control group was only given a standard meal of AIN 93 for about 21 days. Group 2 as the experimental group was given a standard meal mixed with 50% rice bran concentration for around 21 days. Blood glucose of the guinea pigs were measured on the day 0 before the alloxan injection done, day 21 after the alloxan injection meaning that the blood glucose was measured on day 0 soon as the aloxan injected and day 22 after the alloxan injected. The blood that had been taken from the blood vessel of the guinea pigs' tail ± 1 µl. the blood were then being centrifuged so that the serum is gained. In order to measure the blood glucose level, the sample and testing sheets must be prepared. The data were being analyzed statistically by using the following steps: descriptive and statistical analysis employed t test method to investigate whether there was a difference on the decrease of blood glucose happened in both experimental and control groups. The margin will be achieved is $p < 0,05$ with 80% research power and 95% trust intervention.

RESULTS

The effect of rice bran powder for the guinea pigs fed alloxan is shown in the table 2 below

Table 2. the average of the guinea pigs' blood glucose level (mg/dl)

Treatment	Pre Alloxan	Post alloxan	Week I treatment	Week II treatment	Week III treatment
Rice bran powder 50%	58,1	193,1	117,5	103,8	93
Control of the feed standard 100%	116,6	199,8	195,1	196,3	193,8

From the table 2 above, it is clearly shown that after alloxan were given to the all guinea pigs, the blood glucose level of guinea pigs increased.

It is found that the blood glucose level is gradually decreased every week. It is proven by the t-test that had been conducted on week 1, 2, and 3.

The decrease of the blood glucose level every week can be seen in the table 3 below.

Table 3. The Average Of The Decrease Of The Blod Glucose On The 1st, 2nd, And 3rd Weeks

Treatment	N	Week 1		Week 2		Week 3	
		Mean	SD	Mean	SD	Mean	SD
Control	6	-4.7	3.3	-3.5	12.9	-6.0	13.2
Rice bran	6	-75.7	36.1	-89.3	28.3	-100.0	33.1

Based on the three aforementioned description of the blood glucose level mean presented on the table above, it can be seen that the blood glucose level is gradually decreased every week happened to the experimental group.

For investigating the blood glucose level among the control groups and each treatment, t-test then conducted as it is presented on the table 4, 5, 6.

Table 4. T Test Results On The Mean Differentiation Of Blood Glucose Level Among The Experimental Groups In Week 1

group	n	Mean	SD	F	P
Control	6	-4.6	3.2	14.69	0.000
Rice bran	6	-75.6	14.7		

After the treatment done, on the first week, the result shows that there is a significant differentiation in the mean of the decrease of the blood glucose level happened to the each experimental group statistically because the value of p is <0.001.

Table 5. T Test Results On The Mean Difefrentiation Of The Blood Glucose Level Among Experimental Group Given Treatments On The Week II

group	n	Mean	SD	F	P
Control	6	-3.5	12.8	26.51	0.000
Rice bran	6	-89.3	11.5		

After the treatment being given, on the week 2, the results show that the mean differentiation of the blood glucose level happened to the each experimental group is statistically significant because the value of p is <0.001.

Table 6. T Test Results On The Mean Difefrentiation Of The Blood Glucose Level Among Experimental Group Given Treatments On The Week III

Kelompok	N	Mean	SD	F	P
Kontrol	6	-6.0	13.1	34.65	0.000
Bekatul	6	-100.1	33.0		

On the week 3, after the treatment being given, the results show that the mean differentiation of the blood glucose level happened to the each experimental group is statistically significant because the value of p is <0.001.

Based on this study, it can be seen that 2 weeks after the alloxan treatment being given to the all guinea pig groups, the blood glucose level of those guinea pig groups increase. This result is in line with the research that had been conducted by Retnaningsih (2001) which is stated that one day after the alloxan being injected to the guinea pigs, the blood glucose level on the serum is increased and it is happened to the all guinea pig groups. This result indicates that all guinea pigs are suffering diabetes mellitus. In line with Ganung's proposition in Retnaningsih (2001), "alloxan is one of substances which can obstruct the insulin secretion which then trigger the hyperglycemia"

Rice bran treatment that were given for around 3 weeks generally decreases the blood glucose level around 51,8% respectively.

The result of this study is supported by Chen and Cheng research in 2006. Chen and Cheng(2006) stated that the components of γ oryzanol and γ tocotrienol found in rice bran can increase the insulin sensitivity in guinea pigs suffered diabetes mellitus. In other side, Madar (1983) stated that rice bran fiber only gives a slight significant effect on the glucose tolerance⁵.

The data collected every week soon as the blood glucose examination done, then were being examined. Saphiro Wilk method was employed to examine the data normality test. The test result is $p > 0,05$. In other word, it can be stated that the data which were normally distributed, was then being examined by using t test method in order to investigate whether there was a decrease of blood glucose level among the guinea pigs in the control group that had already given a rice bran treatment in advance. Based on the t test on the week 1, week 2, and week 3, the result is as follows: p value $p < 0,001$, namely $p=0,000$.

The result of this study is in line with the result of Nygren and Hollmans's research in 1982. They stated that there is a differentiation in the blood glucose level namely in the guinea pigs suffering diabetes mellitus which given raw rice bran compared to those which are not being given the rice bran⁶.

SUMMARY

Rice bran powder that is given to the guinea pigs is about 50% from the daily food intake can actually decrease the blood glucose level every week compared to the guinea pigs which are not being treated the same thing.

REFERENCES

1. Perkeni.2006. *Konsensus Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia 2006*.
2. Chen C W and Cheng H H. 2006.A Rice Bran Oil Diet Increases LDL-Receptor and HMG-CoA Reductase mRNA Expressions and Insulin Sensitivity in Rats with Streptozotocin/Nicotinamide-Induced Type 2 Diabetes. *Journal of Nutrition*. 136:1472-1476.
3. Retnaningsih C, Noor Z dan Marsono Y. 2001. Sifat Hipoglikemik Pakan Tinggi Protein Kedelai Pada Model Diabetik Induksi Alloxan. *Jurnal Teknologi dan Industri Pangan*. XII : 141-146.
4. Suarsana I N, Priosoeryanto B P , Bintang M dan Wresdiyati T. 2008. Aktivitas Daya Hambat Enzim α -Glucosidase dan Efek Hipoglikemik Ekstrak Tempe Pada Tikus Diabetes. *Jurnal Veteriner*. 9 : 122-127.
5. Madar Z. 1983. Effect of Brown Rice and Soybean Dietary Fiber on the Control of Glucose and Lipid Metabolism in Diabetic Rats.*The American Journal of Clinical Nutrition*. 38:388-393.
6. Charlotte N and Goran H. 1982.Effects of Processed Rye Bran and Raw Rye Bran on Glucose Metabolism in Alloxan Diabetic Rats.*Journal of Nutrition*. 112:17-20.
7. Soegondo S, Soewondo P, Subekti I. 1995. *Diabetes Melitus Penatalaksanaan Terpadu*.Fakultas Kedokteran Universitas Indonesia.
8. Team Farmakologi.2008. *Buku Petunjuk Praktikum Farmakologi I*. Laboratorium Farmakologi Fakultas Kedokteran Universitas Muhammadiyah Surakarta.
9. Villegas R, Gao Y T, Li H L, Elasy T A, Zheng W, and Shu X O. 2008. Legume and Soy Food Intake and The Incidence of Type 2 Diabetes in the Shanghai Women's Health Study.*The American Journal of Clinical Nutrition*. 87:162-167.
10. Anonim.Cyber Nurse. 2002. *Konsep Diabetes Mellitus*. <http://forum.ciremai.com>. Cited at December 12, 2009.
11. Anonim.*Mengenal Manfaat Bekatul*.Natural Organik.2009. [http://www.naturalorganik.multiply.com/journal/item/5/Mengenal Manfaat Bekatul.cited at December 12](http://www.naturalorganik.multiply.com/journal/item/5/Mengenal_Manfaat_Bekatul.cited_at_December_12), 2009.
12. Hu F B, Manson J E, Stampfer M J, Colditz G, Liu S, Solomon C G, dan Willett W C. 2001. Diet, Lifestyle, and The Risk of Type 2 Diabetes Mellitus In Woman. *New England Journal of Medicine*. 345:790-797.
13. Chicco A, Alessandro M E D, Karabatas L, Pastorale C, Basabe J C and Lombardo Y B. 2003. Muscle Lipid Metabolisme and Insulin Secretion Are Altered in Insulin Resistant Rats Fed a High Sucrose Diet. *Journal of Nutrition*. 133:127-133.
14. Direktorat Jenderal Bina Kesehatan Masyarakat. 2003. *Peran Diit Dalam Penanggulangan Diabetes*. Departemen Kesehatan RI.
15. Gibney M J, Vorster H H and Kole F J. 2002.*Introduction to Human Nutrition*. New York : Blackwell Science. Hal : 69-80.
16. Hiswani.1997. *Peranan Gizi Dalam Diabetes Mellitus*. Fakultas Kedokteran. Universitas Sumatra Utara.

17. Hutagalung H. 2004. *Karbohidrat*. Bagian Ilmu Gizi Fakultas Kedokteran Universitas Sumatra Utara. USU digital library. Hal : 1-13.
18. Irawan M A. 2007. Karbohidrat. *Sport Science Brief*. Vol : 01. No :03.
19. Irawan M A. 2007. Glukosa & Metabolisme Energy. *Sport Science Brief*. Vol : 01. No :06.
20. Kerckhoffs D A.J.M, Brouns F, Hornstra G, and Mensink R P. 2002. Effects on the Human Serum Lipoprotein Profile of β -Glucan, Soy Protein and Isoflavones, Plant Sterols and Stenols, Garlic and Tocotrienols. *Journal of Nutrition*. 132:2494-2505.
21. Linder M C. 1992. *Biokimia Nutrisi dan Metabolisme Dengan Pemakaian Secara Klinis*. Jakarta : Penerbit Universitas Indonesia (UI-Press). Hal : 27-58.

The Risk Factors occurrence of contact dermatitis: a cross sectional study

Cynthia ayuningtias^{1,a)}, Eko Krisnarto^{2,b)}, Kanti Ratnaningrum^{3,c)}

¹Student of Medical Education Department, Universitas Muhammadiyah Semarang

²Department of Dermatology and Venereal, Medical Faculty of Universitas Muhammadiyah Semarang

³Department of Tropical Diseases, Medical Faculty of Universitas Muhammadiyah Semarang

^{a)} Corresponding author: cynthia.ayuningtias.unimus@gmail.com

^{b)} kantiratna@ymail.com

Abstract. Contact dermatitis is a disease that is most often found in the majority of cases dermatology. Several factors can be act as cause of contact dermatitis, therefore the researchers wanted to know the risk factors that contribute to the incidence of contact dermatitis. This work is an analytic observational studies conducted in RSUD Tugurejo hospitals of Semarang with cross sectional approach using total sampling method. In this work, primary data were taken from direct interviews and secondary data were derived from medical records. Data analysis using chi square test. Analysis of the 65 samples showed that there are a relationship between age ($p = 0.004$), gender ($p = 0.002$), history of atopic ($p = 0.004$), irritants ($p = 0.000$), duration of contact ($p = 0.000$), and the location lesions ($p = 0.000$) on the incidence of contact dermatitis. It can be concluded that there is a relationship between age, sex, history of atopic, irritants, contact time and location of the lesions on the incidence of contact dermatitis in Tugurejo hospitals of Semarang.

INTRODUCTION

Contact Dermatitis is a disease mostly found 86% in the whole dermatology case . The dermatitis prevalence of Central Java in 2007 is around 8%, and dermatitis in Semarang City is around 3,5%. Furthermore, contact dermatitis disease prevalence in RSUD Tugurejo, Semarang is 85% in 2014, whereas irritant contact dermatitis is around 15% of the whole dermatitis contact case.

Contact dermatitis is a multifactorial skin disease, besides the exposure of allergen and irritant, which has some individual and environment factors that take a role in the disease development. Endogenous factor includes age, sex and atopic background and exogenous factors are irritant agent, and exposure period. There are many the contact dermatitis cases and the dermatitis cause factors, so it needs to do a research that aims to know the analyzing factors of contact dermatitis occurrence .

RESEARCH METHODOLOGY

This research is a cross sectional research conducted in RSUD Tugurejo, January-December 2014. Sampling method is total sampling method. The sampling is the patient diagnosed contact dermatitis in poly RSUD Tugurejo, Semarang. The data is secondary and primary data which are medical record and interview. The variables of this research are age, sex, atopic profile, irritant agent, contact period and lesions location. The data analysis techniques is chi square test.

THE RESULT OF RESEARCH

From 65 samples analyzed according to the age variable, it has been obtained that : 36 patients above 2 years old (55,4%), 36 woman patient (55,4%), 40 atopic background patient (61,5%). Moreover, there are 33 (50,8) patients exposed strong irritant agent, 40 patients (61,5%) with contact exposure period more than 24 hours, and 20 patients (30,8%) mostly located on hands. Meanwhile, there are 33 patients who get irritant contact dermatitis. (Table 1).

Table 1. Contact Dermatitis Sample Characteristic in RSUD Tugurejo

No	Characteristic	Frequency	%
1	Age		
	More than 2 years old	36	55.4%
	Less than 2 years old	29	44.6%
2	Sex		
	Man	29	44.6%
	Woman	36	55.4%
3	Atopic Background		
	Own	40	61.5%
	Not own	25	38.5%
4	Irritant Agent		
	Strong	33	50.8%
	Weak	32	49.2%
5	Contact Period		
	More Than 24 Hours	40	61.5%
	Less Than 24 Hours	25	38.5%
6	Lesions Location		
	Face	11	16.9%
	Neck	11	16.9%
	Hand	20	30.8%
	Leg	16	24.6%
	Other Body Part	7	10.8%
7	Contact Dermatitis		
	Irritant	33	50.8%
	Allergy	32	49.2%

From those analyzed factors, the result are as followed : above 2 years old ($p=0,004$; CI:56-12,68), woman category ($p=0,002$; CI:1,80-1529), atopic background ($p=0,004$; CI:1,61-14,18), exposed strong irritant agent ($P=0,000$; CI:0,01-0,15), getting exposure more than 24 hours ($P=0,000$; CI:7,81-201,03), lesions location ($p=0,000$; CI : 1,54-4,49) and it is the significant total toward contact dermatitis occurrence . The lesions location and irritant agent are the most influencing factors that totally cause contact dermatitis because the confidence interval score distance is the most narrow (Table 2).

Table 2. Risk Factor Relation toward Contact Dermatitis

No	Characteristi c	Contact Dermatitis		95% CI		P score
		Dki	Dka	Low	Up	
1	Age					
	More Than 2 Years old	24 (36,9%)	12 (18,5%)	1,56	12,68	0,004
	Less than 2 Years Old	9 (13,8%)	20 (30,8%)			
2	Sex			1,80	15,29	0,002

	Man	21 (32,3%)	8 (12,3%)			
	Woman	12 (18,5%)	24 (36,9%)			
3	Atopic Background					
	Own	26 (40%)	14 (21,5%)	1,61	14,18	0,004
	Not Own	7 (10,8%)	18 (27,7%)			
4	Irritant Agent					
	Strong (Metal , Dangerous Chemical Material)	6 (9,2%)	27 (41,5%)	0,01	0,15	0,000
	Weak (Detergent, Baby Diapers)	27 (41,5%)	5 (7,7%)			
5	Contact Period					
	More Than 24 Hours	31 (47,7%)	9 (13,8%)	7,81	201,03	0,000
	Less Than 24 Hours	2 (3,1%)	23 (35,4%)			
6	Lesions Location					
	Face	10 (15,4%)	1 (1,5%)			
	Neck	11 (16,9%)	-			
	Hand	6 (9,2%)	14 (21,5%)	1,54	4,49	0,000
	Leg	2 (3,1%)	14 (21,5%)			
	Other Body Part	4 (6,2%)	3 (4,6%)			

DISCUSSION

It can be proven that age has a relation with contact dermatitis occurrence . There are mostly irritant contact dermatitis occurrence for 2 years old, whereas there are mostly allergy contact dermatitis occurrence in less 2 years old. This research matches toward Potts Ro research (2003) who stated that skin susceptibility toward irritant effect decreases coming along with aging which is caused by the reduction of skin barrier function.

Sex is proven that has a relation with contact dermatitis occurrence . For man, there are more irritant contact dermatitis occurrence and there are mostly allergic contact dermatitis occurrence for woman. It is appropriate to the former retrospective research in Surabaya.

Atopic background is proven that has a relation with contact dermatitis occurrence . Atopic background patient mostly get irritant contact dermatitis, whereas allergy contact dermatitis mostly happens to the patients who have not atopic background. This result is appropriate to former research which stated 43% allergic contact dermatitis patients have atopic background.

Irritant agent is proven that has a relation toward contact dermatitis occurrence . In strong irritant agent, patients mostly have allergic contact dermatitis and in patients of weak irritant agent mostly have irritant contact dermatitis. Weak irritant agent can reduce the risk factors of contact dermatitis compared to strong irritant agent. The result above is appropriate with Hudyono (200) who stated that skin which contacts with strong irritant chemical material continuously and long will cause susceptibility for workers from common phase until serious phase.

Contact period is proven that has a relation toward contact dermatitis occurrence . Patients exposed more than 24 hours will have irritant contact dermatitis, whereas patients exposed less than 24 hours will have allergic contact dermatitis occurrence . This result is appropriate with Irfan's research (2014), which stated that there is a relation between the period contact and contact dermatitis occurrence .

Lesions location is proven that it is related to contact dermatitis occurrence . Irritant contact dermatitis patients mostly get this disease on their faces and necks. Allergic contact dermatitis patients mostly have the disease on their hands and legs. Lesion location patients have irritant dermatitis contact on their around chest and whole of body. This result is appropriate to another research which stated that contact dermatitis is mostly found on hands.

CONCLUSION AND SUGGESTION

Based on this research, it can be concluded that factors² which influence contact dermatitis among age, sex, atopic background, irritant agent, contact period and lesion location are statistically related to the contact dermatitis occurrence .

According to this research result, it can be informed the importance of self protection as the preventive effort from irritant agent such as, detergent, liquid body soap, sawdusts, and also other dangerous chemical material for skin.

REFERENCES

1. Jeyaratman J, Koh D. Buku ajar praktik kedokteran kerja. Edisi 1. Jakarta: EGC, 2009: p.99-104.
2. Riset kesehatan dasar. Badan penelitian dan pengembangan kesehatan kementerian kesehatan RI tahun 2007: p.108-11. <http://terbitan.litbang.depkes.go.id/penerbitan/index.php/blp/catalog/download/63/92/238-1>. 2007
3. Data rekam medik dermatitis kontak iritan dan alergi RSUD Tugurejo Semarang tahun 2014.
4. Taylor JS, Sood A, Amado A. Irritant contact dermatitis. Edisi ke-7. New York: McGraw Hill Medical. 2008: p.395-401.
5. Artikel agama kebersihan sebagian dari iman. <http://kata-kataku.mywapblog.com/artikel-agama-kebersihan-sebagian-dari-i.xhtml> Diakses 16 Maret 2014.
6. Hudyono J. Dermatoses akibat kerja. Majalah Kedokteran Indonesia, November 2002
7. Groot DA. Allergic contact dermatitis. In: Marks R, editor. Eczema. New York: Martin Dunitz; 1992. p. 103-125
8. Potts, David, dkk. Development Planning and Poverty Reduction. New York: Palgrave Macmillan Ltd. 2003
9. Trihapsoro, Iwan. Dermatitis Kontak Alergik pada Pasien Rawat Jalan di RSUP Haji Adam Malik Medan. Skripsi Universitas Sumatera Utara.2003

Enhancing Student Character Based on Conservation Values (Case Study at Semarang State University)

Masrukhi^{1,a)}

¹ Senior Lecture in Civic Education Departement, Semarang State University Indonesia

^{a)} Corresponding author: masrukhiunnes@gmail.com

Abstract. Conservation university that has to be the characteristic of Semarang State University, has a strategic meaning in the context of character development. This is related to the meaning of conservation it self, not only a physical connotation, but it also cultural and values. Conservation values manifested in daily life interactions, based on three important pillars, such as the protection, preservation, and sustainable use. Values and culture which framed by the pillars will emit value of life which could be the basis of character development. Therefore, through this formula will be embedded in the students, the character which can contribute to the life of the nation.

INTRODUCTION

A woman named Helen Keller (1880-1968) can not be separated from the process of character building story. She was a extraordinary woman who became deaf and mute at 19 months old due to her illness. Then because of her family and her teacher Annie Sullivan, in later days she became the first blind and deaf woman who graduated cum laude from Radcliffe College in 1904. On subsequent trips, with blind conditions and deaf, Helen Keller writed 19 books, and successfully established Helen Keller International, a non-profit organization to help people who are less fortunate. One of her famous books is *The Miracle of Life*. One of her views in the book is "Avoiding the risk is no more secure than openly confront. Cowards caught as often as the brave ". Helen Keller successfully passed the hard times, because of the right character building. With strong characters, all odds turned into a challenge and an opportunity.

Character Building is the process of carving or understand the soul, so it has a unique, exciting, and different or distinguishable with others. Character education is an educational effort that seeks explore aspects contained in human beings, to be directed, nurtured, and developed to align with the moral standards that apply in public life (Kurtines, 2004).

In a social context, character building is a very basic problems for the nation. Every nation recognizes the importance of character building in order to preserve and maintain its existence as a nation-state). In Indonesia, the character development efforts in the context of national character, has been touted by Bung Karno. His speech is very well known with regard to character building is as follows "... to build a nationalist character, in the power of nationalism is its location, which will be opened days later enjoyment. We have nationalism, nationalism must be positive, nationalism which creates, a nationalism that established ", a nationalism which" created and adored ". With positive nasonalisme, the people of Indonesia can establish independent living conditions including material and inward. (Sukarno, 1930:63)

STUDENTS ROLE IN INDONESIAN HISTORY

One of prominent feature of the students existence, in the context of social dynamics is collective consciousness to come together to actualize their potential and reflect on the social life. This is known as *collective consciousness*.

Cases in Indonesia showed that the gait of the student movement in the nation's history, showing evidence of the role of collective consciousness energy is very significant. Milestones Indonesian's struggle, since 1908 (period of national revival), 1928 (oath youth), 1945 (independence), 1966 (the new order), until 1998 (the period of reform order), are inseparable from the role of gait and them. In times of distress, they took the initiative to lead the fight without waiting for orders from anyone, and without any political tendency. They always in place on the main stage this nation's history. Therefore no exaggeration when Mulyana (2008) asserted that Indonesia's history is essentially

the history of the struggle of students / youth. The student was the one who spearheaded the national struggle, and later as young adults, to continue the struggle for Indonesia triumphant.

When the nation is still in a very dense colonization, nationality and independence inspiration born by the students. Children's nobility, who was educated in medicine STOVIA Jakarta spawned great ideas to foster a spirit of nationality. Their ideas to evoke the spirit of nationalism inspired the birth of the national movement.

Towards the Indonesia's independence, they are also very prominent role. With progressive stance, they encourage the Bung Karno and Bung Hatta proclaimed Indonesian independence immediately, after it emerged that the Japanese surrendered to the Allies unconditionally. They want to be immediately proclaimed Indonesian independence, free from ties and promises Japan. Revolutionary and progressive attitude shown by their independence to inspire immediate proclamation declared. While Bung Karno and Bung Hatta remained in his stance that would proclaim together with other PPKI. Despite the differences of opinion that had tapered between the younger and older groups at the time, but it is the dynamics of the struggle.

In 1966, the student movement surged again when looking at the national political situation is much deviated from the state constitution. They see the atmosphere of "chaos" due to conflicts of interest are so thick, between the communist and nationalist groups. As a form of resistance against communism that has penetrated so far in almost all joints life of the nation. The students formed new forces as a place of struggle. Recorded in the history, there are HMI, PMII, PMKRI, GMKI, Somal, Student Pancasila, IPMI, and the like. This student organization framed in Forum Indonesian Student Action (KAMI) which is the same goal to fight against the PKI. At that time the collective energy consciousness resurfaced, public awareness was moved to fight communism. Supported by all elements of society and the military, the student movement managed to restore the life of the nation on the track of actual constitution. Thus was born the new order.

At the 1998 event, as the beginning of the reform period, the student movement showed a hard bite. Not only a change of national leadership, through the revolution of May, but it also continues on some key events. The central issue raised in the collective consciousness movement that time was about corruption, collusion and nepotism (KKN).

Learn from the history of the nation and state, students will always be in the forefront, tirelessly, as perceived gaps. They will be the moral guardian, so that truth and justice into joint life. Keywords of their movement is collective consciousness, which is a group of students who have to stick together.

DEVELOPING CONSERVATION CHARACTER

Entering the global life, challenges for the existence of students getting heavier. Global life which offers cultures hedonism, materialism, capitalism, pragmatism, will easily erode idealism ideology which has been the spirit of student life, if this is not done maintaining properly.

It needs attention, because the symptoms of the erosion of student idealism began to seem a bit much. Research conducted by the author in 2011, obtain a student style, which is divided into five groups. The first is a group of idealistic confrontational, which are active in the struggle against the stability through demonstrations. Second, a realistic idealist group is students who choose cooperative in his fight against the stability. Third, opportunists are students who tend to favor the ruling government. The fourth is a group of professionals, which is more oriented to learning or lectures. The fifth is a recreational group which oriented glamorous lifestyle and love feast.

Therefore the campus needs to have a "base value", which can be done maintaining the idealism, and the role of students of all ages. Students should be aware of the importance of having and believe in the system of values on which to base their foundation in activity, reaching the ideals of a glorious future.

Conservation, option names are attached to the Semarang State University, has a very deep value content. Conservation not only with respect to the activities of a physical nature, related to the relationship between humans and nature, but the wide spread of values and universal. In the study of language, "Conservation" (con means together and save servare means) that attempts to maintain what belongs wisely. There are three activities such as the saving, studying, and using, to create harmony, compatibility, and harmony of life.

In this context, the rights and obligations of a main prop of human attitudes and behavior, which is what we get must be balanced by what we give. Of course it's in the broadest sense. The balances between the rights and obligations not only on the economical things, but also in the relationship between human and nature around. Breath of fresh air, enjoying the coolness of the trees, enjoy the enchanting birdsong; was right that we get from the universe. Therefore as a counterpart, we must preserve, protect, and preserve it.

These are very beautiful value. When responsibility, caring, love, compassion, wisdom, politeness, manifest in everyday life through a relationship with a student of the universe, the trees, the birds, the water, the air, and of course, with human, it will be internalized values of themselves as a moral knowing, moral feeling, and moral action. From the beauty of these conservation values, then will grow breaths of spirituality. They do not only love and be responsible for the universe, but also do so against their creators; creator of the universe.

Borrowing terminology from Schopenhauer, love and care is called compassion, which is love, empathy, and sympathy. He said love is not just a mere profane nuanced, but also sacred. Schopenhauer called it an All Encompassing Oneness, which is the true identity of human.

At this level Schopenhauer was referring to a metaphysical consciousness, that love and concern for the environment based on "amanah ilahiyah". Person who has reached this level, doing maintenance efforts, protection, and preservation because of the command of God. Awareness at this level, then gave birth to a wide range of universal human values.

Collective consciousness of the value of conservation in students must be treated in order to develop perfectly. If any day they graduated, they will menjadil conservation cadres reliable, and ready to devote themselves to the nation through the conservation values that they believe. Fostering collective consciousness, must be a comprehensive effort, with multy approach. Borrowing moral analysis of Kurtines (2004), there are three approaches namely coaching Cognitive Moral Development, Affective Moral Development, Behavior Moral Development.

Firstly, there should be efforts to change the structure of cognition in order to understand the importance of conservation values. According to the approach of Cognitive Moral Development, in recognition of the importance of conservation values by the students, is expected to grow awareness and readiness to accept these values into themselves (internalization). Awareness and internalization of values that begins with an understanding of these values (cognitive structure) will have an authentic power, as a result of the learning process (learned behavior). The inclusion of environmental education courses on curricular structure, is appropriate to direct the collective consciousness of the value of conservation on the formal lectures.

In addition to character building efforts, through changes in the structure of cognition, no less important is the approach through intuition. This approach is done by bringing the imagination and the mood of the students in the heroism of conservation values. This is emphasized by the Affective Moral Development approach, which instill values, through affective such as sense of feeling, imagination, and intuition. Affective development process requires its own distinct strategy with cognitive coaching processes. Leaders and lecturers are required to have expertise in managing strategic approach. Out bond methods, games, lectures outside of class, and so on.

Furthermore, the approach of Moral Behavior Development considers that internalization through habituation (conditioning / habituation). Despite this approach originated from experiments conducted by Ivan Pavlov on an animal, but this approach is particularly relevant to efforts to instill values. A student who familiarized orderly and well behaved in their daily lives, will get used to doing it. In turn, the habits of doing it would settle into his own property values. When they doing an act out of character, they will feel guilty.

These approach will have a higher effective when carried out simultaneously. It means that coaching character (character building) to be comprehensive, covering the conversion of the structure of cognition, emotional touches, and the creation of a conducive environment.

Through dialogue with the students, both formal and informal meetings, they generally claim to feel proud to the university's conservation. Their expressed pride is one indicator of the strength of the collective consciousness of the conservation among them.

The existence of the university "conservation" was an effort to find solutions of tumultuous environment problem around us, both physical and social environment, and culture. Physical environmental issues for example, as general concern of society and students in particular.

EMPOWERING STUDENT ACTIVITY UNIT

UNNES have student service units that can be used to foster and develop reasoning, interests, talents, arts, and well-being. To meet service in fostering and developing of students, Unnes have Student Activity Unit (UKM). In the year 2013 there were 54 number of "UKM" are classified into four areas, like the field of reasoning, and science, fields of interests, talents, and abilities, welfare and social care field.

Reasoning and scientific fields, aims to inculcate scientific attitude, stimulating creativity and innovation, improving the ability of researching and writing scientific papers, professional understanding and cooperation within the team, both at the college and among universities within and outside the country. While the field of talents,

interests, and capabilities aimed at improving students' ability in practical management, organize, cultivate aspirations for sport and the arts, scouting, defending the country, love of nature, journalism, and social work. Welfare field has a goal to improve the physical, mental, and spiritual student. This activity can be shaped; scholarships, student dormitories, student cafeteria, student cooperatives, clinics, and other similar activities. Finally, the field of social care, aims to improve community service, instill a sense of national unity, foster a love of the homeland and the environment, awareness of the society, nation and state dignified. Through this student can conduct their activities outside school hours. It prepared by themselves, start from planning, implementation, evaluation, and follow-up. Party leaders at the university, faculty or department, directing all their activities in the form of the outlines of the policy, as an effort to develop the potential of students as a whole, which is based on the values of conservation. There are four basic to nurture the students are honest, intelligent, caring, and tough. Honestly, is the value derived from conscience. Smart is a reflection of the development of mind. Care is a vehicle to develop the flavors, while the a tough reflects the health of the developing students health body. So with the fourth great value, will be process of hearts, thought, art, and sports are balanced, the students themselves, in order to develop itself into a complete human.

The type and number of UKM is possible continues to grow according to the needs of the students. The emergence of these UKM is facilitated UNNES in realizing the aspirations and needs of students to actualize their interests, talents, and potential students. Looking ahead, the existing UKM will be optimized performance, in accordance with the needs and dynamics of professional management. To support service units utilized by students, provided budget funds, facilities, coaching, and student activities agenda.

To achieve maximum goals, to manage student activities prioritized the principles of togetherness, by basing itself on the five principles of coaching, such as shared vision, systems thinking, personal mastery, mental models, and team learning.

Shared vision is formulated and understood by all campus residents. Unnes develop a shared vision, as the university's international conservation of healthy, superior, and prosperous. This vision has been well socialized to all citizens Unnes, from elements of leadership, faculty, students, until the next regular employees. Subsequently, *system thinking*. The entire academic community are fully aware that Unnes is an organization that consists of work units that doing activities based on a system that has been agreed. Therefore, each unit of work including student organizations (ORMAWA) activities should be carried out on the basis of the principle of solidarity. While personal mastery (qualified human resources), implies that every campus residents are required to have competency and develop themselves in accordance with the demands of their duties and functions. Mental models meaning exemplary principle must be put forward. Hence the attitude and behavior and ways of thinking every Unnes's citizen should be able to be an example to others. Hence they should have the mental, and personality that can be universally accepted.

CONCLUSION

Conservation as a mainstream Semarang State University, has a very deep meaning. With the principle of the protection, preservation, and wise use of the order of life, whether physical, social or cultural; conservation is expected to establish and develop the character of students to be good citizens. All activities related to both student reasoning, and knowledge, interests, talents, and abilities, welfare and social care field, always based on conservation values. So later when the students graduate and work in the community, they become conservation cadres that can empower the surrounding, in order to build the nation as a whole.

REFERENCES

1. Kartijono, Nugroho Edi, dkk. 2009. *Naskah Akademik Pengembangan Universitas Negeri Semarang sebagai Universitas Konservasi*. Tidak diterbitkan. Semarang: Universitas Negeri Semarang.
2. Mulyana, Slamet. 2008. *Sejarah Pergerakan Nasional*. Jakarta: Gramedia.
3. Kurtines, Willian M. 2004. *Morality, Moral Behavior, and Moral Development*. New York: John Wiley & Sons.
4. Masrukhi. 2009. *Eksistensi dan Pola Interaksi Organisasi Kemahasiswaan Intra dan Ekstra Universitas (Studi Kasus di Universitas Negeri Semarang)* tidak diterbitkan. Semarang: Lembaga Penelitian Unnes.
5. Soekarno. (1930). *Indonesia Menggugat Pidato Pembelaan Bung Karno; Dimuka Hakim Kolonial Tahun 1930*. Jakarta: Departemen Penerangan RI.

Surface Degradation Analysis of Vacuum Composite Epoxy Resin Insulation Material Using Coastal Sand and Filler Containing Much Calcium

Moh Toni Prasetyo^{1, a)}

¹*Faculty of Engineering, Semarang Muhammadiyah University.*

^{a)}Corresponding author: toniprast@gmail.com

Abstract. One of the insulating polymer in high voltage air insulation materials is epoxy resin because it has several advantages. However, has a degradation of the surface due to environmental pollution. Material that was used in this research was epoxy resin polymer isolation using of comparison values, material DGEBA : MPDA were 1:1, with the increase filler. Vacuum method to left out void. Research was done in laboratory according to standard IEC 587: 1984. High voltage electrodes were connected to high voltage AC generator 3.5 KV. The ground electrode was connected to oscilloscope for measuring the leakage current. The effect of variation were analyzed. From the results of the research, the composite are categorized as hydrophobic and partially wetted. The increase concentration of filler caused the increase in contact angle, slow down the aging on the surface of insulating material. Concentration value of filler that had the optimal performance was 40%.

INTRODUCTION

Moment happened by the rain, polutan in isolator surface will be dissolve in water and form the conductive band which continue so that can cause the leaky current [6]. Existence of this leaky current generate the heat to dry the polutan on isolator surface. This matter cause formed dry ribbon. Existence of dry ribbon trigger the happening of payload release into the air because of distribution electric field compared to higher dry ribbon other area [2]. If dry ribbon progressively mount, hence longer will cause the happening of flashover representing failure an isolator. From leaky current phenomenon and impact generated, its important background conducted research concerning leaky current in laboratory [4] especially at material of epoxy resin by *silane* and coastal sand as filler.

In conducting research to leaky current at this isolator surface is used by method of Inclined-Plane Tracking (IPT) arranged in IEC 587:1984 [3]. In this method, certain sampel material of the size positioned with the angle 45° and given dilution polutan made in with the certain stream, so that this method is very suited for represent of external isolator situation in Indonesia owning high rainfall [7].

THEORY BASE

A. *Insulation Material.*

Insulation is the nature of functioning materials can dissociate electricly two or more nearby electric voltage conductor, so that is not happened the current leakage, jumping movement fire (*flashover*), or fire sprinkling (*sparkover*). While isolator is appliance weared for the insulation of partitioning or ability of insulation. Materials to restrain the volage referred as a dielectric strength, dielectric strength excelsior of good insulation materials progressively weared, especially at equipments of high voltage electric. Dielectric strength from insulation materials is vital importance in the case of determining the quality of isolator which later will support the overall of electric power system.

B. *Epoxy Resin*

Epoxy resin is faction of termoset polymer where mixture two component which finally in form of vitriform at room temperature having the nature of competent electric insulation as well as having high waterproof. That has become the important shares from insulation material especially in the field of electrical because this polymer type

has been recognized more than 50 year. Epoxy resin is good electric isolator and protect the electrics component from short current, dirt and humidity.

Epoxy resin have the characteristic: nature of low viscosity, easy to formed, low decrease, mount the high hardness, nature of high mechanic, high electrics insulation and also good chemistry resistance.

Epoksi resin used in this research is result of maturation of epoksi resin *diglycidyl ether of bisphenol - A* (DGEBA) and *metaphenylenediamine* (MPDA) with the *silane* filler (stick on glass).

C. *Materials of Filler Silane.*

Silane so-called also *silicon rubber* is materials which hold up to high temperature which is usually used for the insulation of cable and materials of high voltage insulation. *Silicone Rubber* represent the polymeric synthetic which relative newly its use upon which insulation in the field of electrics technique compared to with the other polymer like epoxy resin or *polyethylene* [5]. Popularity this materials is compared to with the ceramic materials/porcelain and other polymer type because measuring up to high hidrofobik, thereby conductivity of isolator surface remain to lower, so that minimization leaky.current. Besides measuring up to good dielectric, as light as a feather, easy to handling and its installation. Nature of this material physical is repairable by mixing filler materials like silica or calsium sand.

D. *Materials of Filler Coast Sand which is Many Containing Calcium.*

Coastal sand of Kukup used as materials of addition filler representing type of coast sand which is many containing *calcium*. From result test at Analytic Chemical Laboratory of Gadjah Mada University, obstetrical *calcium kaborat* (CaCO_3) reach 55,98% from grand total sand, *oxide calcium* (CaO) 31,37%, *carbonate magnesium* (MgCO_3), and some other supporter element.

Addition of sand filler will improve, repair the nature of materials physical so that will be yielded a material which do not easy to flex and brittle.

E. *Contact Angle Hidropobik.*

Contact angle represent the angle formed by between materials surface test with the water dripped to materials surface test. Angle measurement contact at one particular insulation materials conducted to know the nature of materials surface, hidofobik or hidrofilik. Nature of hidrofobik good for external insulation because in a state of damp or wet will not be formed a continually water coat at isolator surface, so that isolator surface remain to have the low conductivity, as a result leaky current very small [1].

Researcher classify the material surface with the amount of angle of contact that is material surface very wet (hidrofilik) when angle of contact dilution its surface smaller than 30° . If contact angle between 30° up to 89° , material surface referred as partially wetted contactangle more than 90° referred as hidrofobik or have the character of water-repelent.

F. *Insulation of Leakage Current and Pollution.*

Polutan which consisted in on the air can patch at isolator surface and gradually form a flimsy coat at isolator sumost having an effect on element. Most having an effect on element the isolator is salt brought by set breeze. In moment of wheater condition that way, will emit a stream of the leakage current from strand of metal of fasa to the ground through the conductive coat which patch at isolator surface and also at stanchion.

Leaky current surface of insulation materials from isolator of couple air-duct outside, depended from condition polutan causing surface contamination. Besides also depend on climate and wheater condition. Drenching of coat polutan by timid weather, item irrigate, the rain water drenching which moderate rain, resulting conductive electrolyte, so that resistansi surface will become small, and cause the leakage current surface.

Analyse the leakage current investigated by pursuant to waveform and duration of electrics sickening by signifikan influence the performance of insulation materials as a whole. Therefore, identify the nature of this leakage current applicable to detect early failure of high voltage isolator.

RESEARCH METHOD

A. *Research Materials*

Materials used in this research:

- a. Polymer of epoxy resin by DGEBA (*Diglycidyl ether of Bisphenol A*) elementary upon which, MPDA (*Metaphenylenediamine*) upon which hardening.

- b. *Silane* (Stick on the Glass), and coastal sand of Kukup which is many containing upon which filler.
- c. Polutan in the form of NH_4CL (*Ammonium chloride*).
Sample composite produced by mixing resin epoxy and filler with vacuum method to left out void.

Tabel 1 Mixing composition of composite

No	Kode	Bahan Campuran (%)			
		DGEBA	MPDA	Silane	Pasir
1	RTV 10	45	45	5	5
2	RTV 20	40	40	10	10
3	RTV 30	35	35	15	15
4	RTV 40	30	30	20	20
5	RTV 50	25	25	25	25

B. *Research Equipments.*

Equipments used in this research cover:

- a. A set appliance of materials printer test the (glass, mica paper, churn, place mingle the materials test).
- b. A set appliance to measure the angle of contact (Lamp box with the lamp 1000W, pipette drop 50 μl , place put the polutan, glass)
- c. A set appliance for the examination of leaky current (upper electrode and under electrode made from aluminium (stainless steel), support, to put down the sampel which have been nipped by a electrode, paper filter the, pump peristaltik (peristaltik pump))
- d. A set appliance for the vacuum system
- e. Some equipments for the measurement system: AC transformator, oscilloscope, digital camera and a computer

C. *Measurement steps*

C.1 *Contact Angle Test*

This angle of contact examination is mean to know the nature of materials surface test. Nature of such that is nature of hidrofobik. If angle got ever greater, its meaning the materials possibility measure up to the hidrofobik. Progressively hidrofobik a materials surface, hence ever greater also materials strength to arrest the water in order not to come into the materials [8]. Step the angle of contact examination that is as follows:

1. Putting down sampel and turn on the camera, both positioned in such a manner so that camera screen, rectilinear visible surface sampel.
2. Dripping water counted 50 μl . Water dripped in the form of polutan to be used.
3. Turn on light source so that when taken a photo, dot irrigate clear visible surface sampel.
4. Shooting, so that its result earn direct entered into computer to get big measured angle of contact.
Result angle of contact examination got in the form of data of value angle every each sampel.

C.2 *Leakage Current Test*

Leaky current test yielding process of tracking and erosion from isolator of polymer resin epoxy with the filler of *silane* and coastal sand contaminated conducted to pass the steps following:

1. Putting down electrode upper and lower at sampel. At upper electrode, before attached, sampel given the paper filter counted 8 layer. Then put down the the sampel at support so that part of surface sampel face down wards with the angle 45° to tinder horizontal.
2. Arranging speed of stream polutan at 0,3 ml / minute, then emit a stream of into the sampel through the paper filter. Function from paper usage filter this is to be happened the stream contaminant which uniform from electrode to the until under electrode before application tension. Assess the this stream polutan relate to the voltage of break even and resistor application matching with IEC 587:1984.



Fig 1. Electrode location materials test.

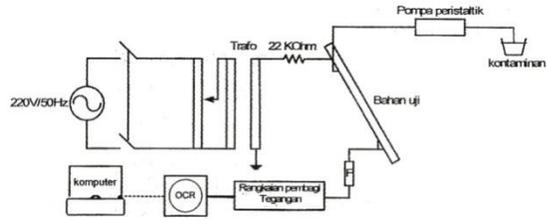


Fig 2. Leakage current test network

3. Applying 3,5 kV voltage at sampel, what is got from generating high voltage through the upper electrode while electrode of under attributed to a equipments measure.
4. Measuring leaky current use the oscilloscope. To over come the big voltage come into the oscilloscope, hence used the following voltage divider network.

C.3 Surface Degradation Test

Process the measurement of surface degradation of materials conducted by using macro photo which is on its essence represent the perception to change of structure of ageing materials test, with the the following working procedure.

Materials chaptured to use the macro photo shares the happening of conduction band by using ordinary photothen compared to each its concentration. Result of film record printed in the form of photo draw.

RESULT AND SOLUTION

A. Contact Angle Hidrophobic Test

Result of photograph processed using the *software Image Pro Plus* to get the angle of contact at right side and left side measured sample test.

From result data of test and fig 3 below, visible that resin epoxy composite wich used this research have the *partially wetted* character and *hidrofobik*. Angular value contact to range from 65° until 91.5° what can be categorized to have the partially wetted character (wet some of) until hidrophobic

Tables 2. The test result of contact angle

Kode sampel	Konsentrasi pengisi, nk (%)	Sampel	Sudut kontak, θ (°)			
			kiri	kanan	rata-rata	terbaik
RTV 10	10	1	89	89	89	89
		2	77	75	76	
		3	79	79	79	
RTV 20	20	2	90	90	90	90,5
		3	91	90	90,5	
		4	88	90	89	
RTV 30	30	1	91,5	91	91,25	91,25
		2	90	90	90	
		3	91	89	90	
RTV 40	40	1	92	90	91	91,5
		2	93	90	91,5	
		3	90,5	86	88,25	
RTV 50	50	1	90	90	90	91,25
		2	92	90,5	91,25	
		3	92	90	91	

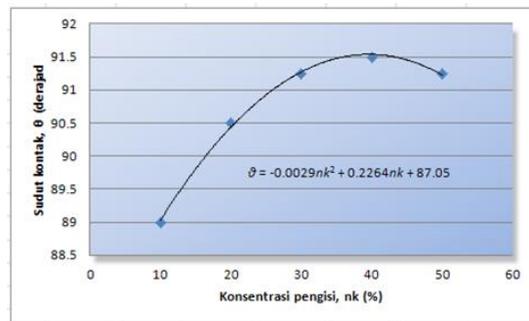


Fig 3. Graph, relation of contact angle and concentration

. The biggest contact angle is resin epoxy RTV40. Nature of hidrophobic at epoxy resin material got from its filler that is *silane* owning water-repелent characteristic.

B. Result of Leakage Current Test

Materials test placed with the inclination angle 45°. At this research, polutan NH₄Cl, with the speed 0,3 ml / minute emit a stream of on the surface of materials test to pass the paper filter 8 layer nipped among materials test and upper electrode going to under. Upper electrode applied by volgtage AC 3,5 kV

Result of this leakage current test shown by picture voltage waving at oscilloscope. Value waving this voltage represent the value of oscilloscope input from voltage divider network.

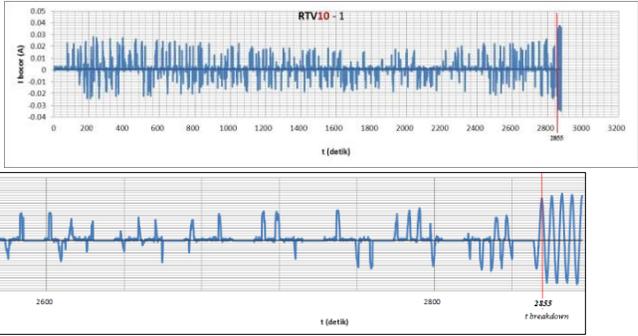


Fig 4. Result of composite leaky current test of resin epoksi RTV10 sampel 1

Fig 5. Result of magnification 10x range moment of before breakdown

Pursuant to fig 5, inferential that happened the payload discharge (*flashover*) at second 77. This payload deprival marked with the existence of leakage change magnitude current on the spur of the moment. This payload deprival happened till many times, then happened the insulation failure marked with the leaky wave sinusoidal current at second 2855. this sinusoidal wave indicate that have been happened the intact conduction band from electrode high voltage to ground electrode.

Matter which the same also happened in variation of assess the other concentration, but different at frequency and time the happening of flash over until the happening of breakdown.

Table 2. Tracking Surface Time.

% filler	Early flash over time (s)	Breakdown time (s)	Tacking time (s)
10%	77	2855	2778
	70	1585	1502
	187	1991	2018
20%	43	1190	1138
	351	1651	1300
	303	1925	1605
30%	452	2084	1701
	288	2800	2836
	68	1707	2067
40%	196	2467	2320
	628	2608	1980
	184	1940	1903
50%	49	1799	1750
	115	1235	1117
	49	2025	1976

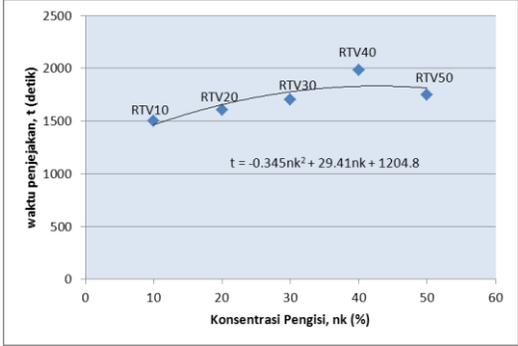


Fig 6. Graph of relation tracking time with the composite filler concentration.

From test result, earn also obtained time tracking of mean each concentration resin epoxy filler. Relation between tracking time and value the composite concentration visible epoxy resin shown at fig 6.

From fig 6, visible that increase value the composite filler concentration epoxy resin tend to cause the increase of tracking time. This matter indicate that the composite filler concentration excelsior resin epoxy hence process the happening of band of conduction and carbon band at surface of insulation materials will tend to tardy progressively, so that can slow down the happening of degradation surface.

C. Result of Degradasi SurfaceTest

To know the degradation surface in the form of erosion, cart and calcify needed by an way for the characterize of surface. One of the methodused for macro photo technique.

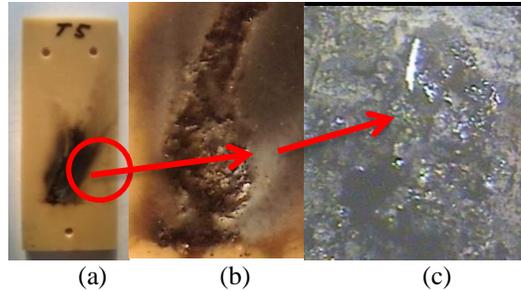


Fig 7. Chapture result (a) without magnification (b) macro10x and (c) macro 30x from composite surface sampel resin epoxy RTV10

Result of macro photo composite surface sampel epoxy resin used at this test isobtained that have been happened the structure change at composite surface of resin epoksi isolator.

CONCLUSION

Pursuant to data obtained and result of data analysis which have processed, hence inferential:

1. Increase value the sand concentration have high calcium and *silane* as composite filler of resin epoxy tend to cause:
 - a) Angle of contact tend to increase, biggest contact angle of epoxy resin RTV40 with the filler concentration 20% sand and 20% silane and comparison of materials of ossifying of *metaphenylene diamine* (elementary MPDA) Basic materials, *diglycidyl ether of bisphenol A* (DGEBA) is 1:1.
 - b) Lowing down the happening of insulation failure or complicate the happening of leakage current surface of materials insulation resin epoxy. Increase value the sand concentration have high calcium and *silane* as filler cause the increase contact angle meaning increase of resistansi of surface of insulation materials, so that leakage current do not easy to emit a stream of on the surface of insulation materials. Increase value the filler concentration of sand wich have calcium and *silane* will not water down the happening of jumping movement electrics (*flashover*) to trigger the happening of insulation failure.
 - c) Slowing down process the happening of carbon band at surface of insulation materials.
 - d) Degrading damage (degradation) at surface of materials insulation epoxy resin. Tracking pattern happened from low voltage electrode to high voltage. This matter caused by direction of electron stream actually from negative electrode to positive electrode.
2. Value the sand concentration have high calcium and *silane* as composite filler will compare diametrical to tracking time and level of contact angle will influence the tracking time, comparing diametrical to tracking time.
3. Value the sand concentration have high calcium and *silane* as composite filler of resin epoxy having optimal performance to tracking process and erosion is 40%.

REFERENCES

- [1] Amin, M. et.al., 2007, *Hidrophobicity of Silicone Rubber Used For Outdoor Insulation (An Overview)* Advanced Study Center CO.Ltd.
- [2] Berahim, Hamzah, "Metodologi Untuk Mengkaji Kinerja Isolasi Polimer Resin Epoksi Silane Sebagai Material Isolator Tegangan Tinggi di Daerah Tropis", Disertasi Fakultas Ilmu Teknik Jurusan Teknik Elektro Universitas Gadjah Mada, 2005
- [3] British Standard, BSi., 1986, *Metode for Evaluating Resistance to Tracking and Erosion of Electrical insulating materials used under severe ambient conditions*, IEC 587 :1982
- [4] Chandrasekar, S. et.al., 2007, *Analysis of Surface Degradation of Silicone Rubber Insulation Due To Tracking under Different Voltage Profiles*, Elecr.Eug (2007) 89 : 489-50 L

- [5] Eklund, A. et.al., 1995, *Conditioning of Silicone Rubber Insulators : Loss and Recovery of Hydrophobicity*, 9th ISH, Graz, Austria.
- [6] Jauhari, E., 2005, *Isolator Saluran Udara*. Eri Jauhari-EnJ's Blog
- [7] Moh Toni, Efektifitas Pemanfaatan Pasir Pantai Berkalsium Tinggi Sebagai Material Pengisi Bahan Isolasi Resin Epoksi untuk Isolator Listrik (Media ElektriKA, Vol.7 No.2, 2014, Semarang)
- [8] Shaowu, W. et.al., 2002, *Hydrophobicity Changing of Silicone Rubber Insulators in Service*, 21,rue d'artois F-5008, Paris.

Small Area Estimation For Mapping Human Development Index

Moh. Yamin Darsyah^{1a)}, Rochdi Wasono²

^{1,2}*Department of Statistics Faculty of Mathematics and Natural Science, Universitas Muhammadiyah Semarang*

^{a)} Corresponding author: mydarsyah@unimus.ac.id

Abstract. Human Development Index (HDI) is one of the indicators that used to determine the human development of a country. The calculation of the value of HDI in Indonesia is carried out until the scale of the district each year. Since the implementation of regional autonomy policy, the calculation of the HDI value is required with a smaller scale in the district. The calculation of HDI values with sub-scale is difficult because the sample is too small to estimate the value of HDI per district. One of the components to calculate the value of HDI is an index of purchasing power that approximated by the value of per capita expenditure. Small Area Estimation is one of the indirect estimates that used to estimate the parameter values of the subpopulation. On this research, Small Area Estimation (SAE) is a statistics method for estimate small sampel. The research purpose to estimate per capita expenditure for HDI in Demak District. The results of the estimation with SAE methods in Demak District indicates that the Demak Sub-district has the largest per capita expenditure that can be said have the highest HDI value while Kebonagung Sub-district has the smallest per capita expenditure that can be said have the lowest HDI value.

INTRODUCTION

United Nations Development Programme (UNDP) developed the method to calculation the Human Development Index (HDI) which is used to measure the success of human development in each country. HDI is a composite index that is calculated as the simple average of the life expectancy index, education index, and living standards index. HDI publication issued by UNDP in 2015 put Indonesia in ranked 108 out of 177 countries. This rating is worse than in 2007 where Indonesia stand in ranks 107. This rank puts Indonesia under Singapore (ranked 27), Brunei (ranked 37), Malaysia (ranked 57), Thailand (ranked 92) and the Philippines (ranked 97). Every year, central bureau of statistics (BPS) calculating the HDI, but only up to a scale of district/city. Since the construction is likely to be directed at the pattern of regional autonomy, it is required the HDI calculation in sub-district scale to assist local governments in the distribution of equitable development efforts in the region. Thus, the calculation of the HDI should be calculated in detail in a small area to the sub-district level and village.

Unavailability of HDI at sub-district level is due to the limited information (data) for the calculation of the value of its components at the sub-district level. Life expectancy index is measured by life expectancy at birth; education index is measured by the literacy rate of the population aged 15 years or older and the average length of the school; and living standards index is measured by the adjusted real per capita expenditures. Often the source of the data that used in this research is the National Socioeconomic Survey (SUSENAS) which not all sub-districts are taken as samples or samples are drawn so few that cause the estimate to be biased. One of the efforts is to increase the number of samples but the costs involved are quite expensive.

Small area statistics are in great demand in various fields at this time. Small area estimation is needed to obtain information on a small area, such as the scope of the city/district, sub-district, or village. The information is essential to the development of regional autonomy in Indonesia because it can be used as a reference for developing a system of planning, monitoring, and other government policies without having to incur huge costs to collect the data themselves. The method which constantly being developed to estimate small area statistics is Small Area Estimation (SAE) with techniques to utilize the information from small area.

SAE is a statistical technique for estimating the parameters of a subpopulation of its small sample size. The estimation techniques utilizing data from large domains (such as census data, the Susenas data) to estimate variables of concern to the smaller domain. SAE-called indirect estimation because in the estimated using the techniques to borrowed information in the area and outside the area. Simple estimation of small area called direct estimation, in which the direct estimation is not able to provide sufficient accuracy when the sample size in a small area of concern

is to small/small size, so that the resulting statistics will have a large variance or even the estimation can not be done because it is not represented in the survey (Rao, 2003).

Various studies related to small area estimation have been carried out, among others are Darsyah (2013) using the SAE Kernel-Bootstrap for estimating per capita expenditure in Sumenep District, Darsyah and Wasono (2013) using the SAE to estimate the level of poverty in Sumenep District and estimating HDI on small area in the city of Semarang.

This SAE further research aimed to estimate the HDI in Demak District, located in Central Java Province, wherein the east is bordered by Kudus District and in the west is bordered by the city of Semarang. The city of Semarang and Kudus District is a region that has the highest per capita expenditure whereas Demak District has the lowest per capita expenditure in Central Java. Per capita expenditure can describe the purchasing power that produced by each region depend on the natural resources and factors of production areas. The high per capita expenditure of a region indicates the level of social welfare and economic conditions of the area.

RESEARCH METHOD

Small area models with SAE approach is applied to estimate the per capita expenditure at the level of sub-districts in Demak. The following variables were used in the study:

1. Response Variable

Estimation observed in this study is the calculation of the HDI at sub-district level in Demak District that calculated by the approach of per capita expenditure.

2. Concomitant Variable

In this research, concomitant variables that will be used is per capita expenditure with the technique of "borrowing the information".

Table 1 Research Variables

No	Variable	Information	Operational Definition
1	X	Per Capita Expenditure	The amount of expenditure of each household member within one month
2	Y	HDI	Measured by the amount of expenditure per capita approach

The source of data which will be used in this research is secondary data from the BPS. For the response variable of per capita expenditure at the level of Demak Districts in the data is obtained from the National Socioeconomic Survey (SUSENAS) BPS in 2012 and for the concomitant variables derived from the data of Demak District in Figure 2013.

The stages of the analysis conducted in this study are described as follows. Estimate the per capita expenditure per sub-district in Demak with SAE approach Kernel (Mukhopadhyay & Maiti, 2004). Here are the steps of SAE-algorithm Kernel approach:

1. Using the predictor data variables (x_i) and the response variable (y_i),
count: $\hat{m}_h(x) = \frac{1}{m} \sum_{i=1}^m W_{hi}(x) y_i$
2. Count $\hat{\sigma}_u^2 = \max \left\{ 0, \frac{1}{m-1} \sum_{i=1}^m W_{hi}(x) [y_i - \hat{m}(x_i)]^2 - 1 \right\}$
3. Substitute $\hat{\theta}_i = \hat{\gamma}_i y_i + (1 - \hat{\gamma}_i) \hat{m}(x_i)$ with $\hat{\gamma}_i = \frac{\hat{\sigma}_u^2}{\hat{\sigma}_u^2 + 1}$

RESULT DISCUSSION

The estimation of HDI on small area in Demak District using the per capita expenditure approach as the concept of purchasing power. The estimation results of the average per capita expenditure in Demak District in 2013 using SAE method is Rp 225.510,00. Based on the standard deviation of 0,5591 indicates that the estimates value of

per capita expenditure at sub-district level in Demak District was very diverse. Estimates value of the smallest per capita expenditure is Rp 188.110,00 and estimate value of the largest per capita expenditure is Rp 250.680,00. Sub-districts that have estimate value of the smallest per capita expenditure is Kebonagung Sub-district and sub-districts that have estimate value of the largest per capita expenditure is Demak Sub-district.

Table 2 Summary Value of Statistics Per capita Expenditure

Statistic	Per Capita Expenditure
Mean	225.510,00
Standard Deviation	0,5591
Minimum	188.110,00
Maximum	250.680,00

In Figure 1, we can see that the pattern of per capita expenditure in each sub-district in Demak District is almost equal between the width of the top and the width of the bottom. This shows that the distribution of per capita expenditure in each sub-district in Demak District which is above the average of per capita expenditure and under the average of per capita expenditure is impartial. Thus, almost half of the total sub-districts in Demak District was under the average of per capita expenditure, this indicates that the public welfare is not evenly distributed in Demak District. There are some sub-districts that have a high outlier per capita expenditure, namely Demak and Mranggen Sub-District that the location is closely to the city center where the Sub-District of Demak has the highest population density in Demak District. Some of the major factors that lead to high per capita expenditure, among others are population density, level of education, occupation, health, infrastructure, as well as the purchasing power then per capita expenditure is used to the approach to measure HDI. HDI value in a small area in Demak District can describe the level of public welfare so that the high and low of HDI value reflected in the amount of per capita expenditures in each sub-district.

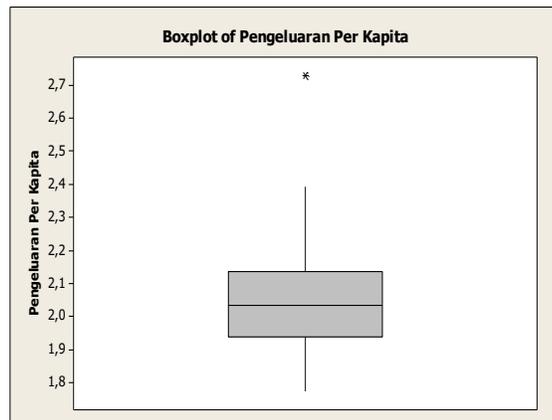


Figure 1 Boxplot per Capita Expenditure

Figure 2 shows that there is a striking difference in the value of the HDI. From the value of per capita expenditure at the sub-district level in Demak District can be drawn the conclusions that the sub-districts that have the smallest per capita expenditure is a sub-district that has the lowest HDI value, otherwise the one that has the largest per capita expenditure has the highest HDI value. Sub-districts that have the smallest per capita expenditure is Kebonagung, it is indicating that the sub-district had the lowest HDI value that is far from the quality of the development, while the one that has the largest per capita expenditure is Demak Sub-district which is indicating that the sub-district had the highest HDI value. HDI prediction results on the sub-district level is expected to be a very valuable input for local governments to prioritize and give serious attention to the sub-district who had a low HDI category. The information on a small area will be the reference for local governments in drafting, planning, and creating the information-based regional development policy. Regional development based on information is expected right on target in the areas that need to avoid imbalance in development so that the public welfare in Demak District can be evenly distributed.

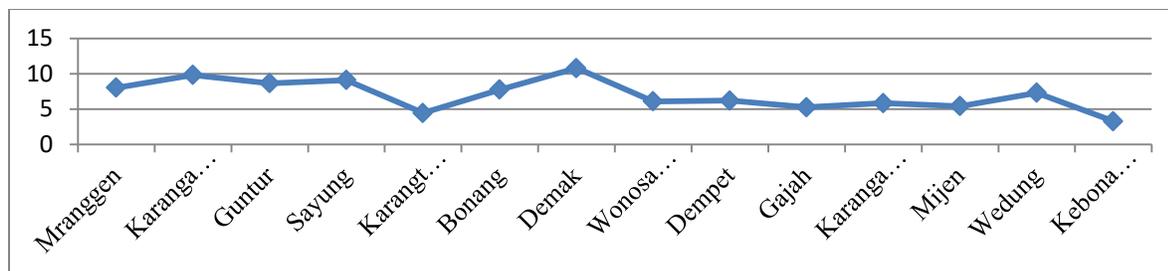


Figure 2 Distribution Graph of HDI area in Demak District

CONCLUSION

The results of the estimation with SAE methods in Demak District indicates that the largest per capita expenditure in the Sub-district of Demak was Rp 250.680,00 and the smallest per capita expenditures in the Sub-district of Kebonagung was Rp 188.110,00 with a diversity of inter-subdistrict per capita expenditure is very large with a standard deviation of 0,559. Demak Sub-district has the largest per capita expenditure that can be said have the highest HDI value while Kebonagung Sub-district has the smallest per capita expenditure that can be said have the lowest HDI value.

Selection of the concomitant variables in the SAE model is very important to obtain the best estimate so that the concomitant variables chosen to be complex. SAE subsequent research is encouraged to try to use the other of nonparametric approaches and can be done by comparing the SAE model with the parametric approach to build a model of comprehensive Small Area Estimation.

REFERENCES

1. Central Bureau of Statistics. (2014). *Demak District In Figures 2014*. Demak District.
2. Darsyah, M.Y. (2013). *Small Area Estimation Terhadap Pengeluaran PerKapita di Kabupaten Sumenep dengan Pendekatan Nonparametrik*. Jurnal Statistika. Vol.1 No.2. Universitas Muhammadiyah Semarang
3. Darsyah, M.Y dan Wasono, R. (2013). *Pendugaan Tingkat Kemiskinan di Kabupaten Sumenep dengan Pendekatan SAE*. Proceedings of the National Seminar on Statistics UII, Yogyakarta
4. Darsyah, M.Y and Wasono, R. (2013). *Pendugaan IPM pada Area Kecil di Kota Semarang dengan Pendekatan Nonparametrik*. Proceedings of the National Seminar on Statistics Diponegoro University, Semarang
5. Darsyah, M.Y, Rumiati, A.T, Otok, B.W. (2012). *Small Area Estimation Terhadap Pengeluaran Per Kapita di Kabupaten Sumenep dengan Pendekatan Kernel-Bootsrap*. Proceedings of the National Seminar on Mathematics and Natural Science UNESA, Surabaya
6. Mukhopadhyay P, Maiti T. (2004). *Two Stage Non-Parametric Approach for Small Area Estimation*. Proceedings of the ASA Section on Survey Research Methods, p. 4058-4065
7. Rao JNK. (2003). *Small Area Estimation*. New Jersey: John Wiley & Sons, Inc.

The Influence Of Learning Method And Gender On The Learning Outcomes Of Students At 'Aisyiyah Bustanul Athfal Kindergarten In Semarang City

Mufnaetty^{1,a)}

¹ Universitas Muhammadiyah Semarang

a) Corresponding author: Nettyshofac@gmail.com

Abstract. Observation on gender related activities showed some differences. Some experts argue that those differences occur due to genetic factors and different parenting method since they was born. Therefore those differences also influenced by their learning process such as playing and storytelling method during kindergarten ages. The aim of this study was to determine whether the teaching methods and gender will alter the learning outcome of students in kindergarten. Population of this study was students in kindergarten (TK – ABA) Indraprasta 01 Sub District of West Semarang and TK ABA 04 Wonodri Village District of South Semarang 2005/2006 academic year. The total population was taken as a sample unit by using cluster sampling method. The test and documentation was used to collect the data. The data than were test by using the non parametric one sample Kolmogoroff-sminov of Normality test. Two-way-analysis of variance was used to determine the effect of learning methods and gender on learning outcomes. T-Test was used to determine differences among groups and its interactions. Results of the study were indicated that students who were learned by playing and storytelling methods did not show any differences. Learning outcome on both men and women showed no differences. Furthermore learning methods and gender have no interactive effects as well on learning outcomes.

INTRODUCTION

Kindergarten is a medium of pre-school education that serves to help the growth of children. Moeslichatoen (2004: pg.10) said that among the necessary basic forms to be experienced by children in kindergarten are independence, affection, relationship, self-control, mimicking a variety of roles, introduction of body, the mastery of motoric skills, introduction to the environment, treasury of words and protecting the environment. Methods of learning in kindergarten are plenty. Among them are playing and storytelling. The experts of education found that playing is the most effective learning technique. Playing method has the strong qualities of touching and feeling so that it has values and characteristics which are essential for the growth of their daily live (Sudomo: 2003).

Storytelling method can also be used in teaching kindergarten students. Ways of storytelling vary, for instance; direct reading of books, telling by illustration, using panel boards, dolls, through role plays, songs, audio recordings, and others (Muslichatoen: 2004, pg.10). Results of preliminary observations on the activities of boys and girls were found that there is difference. The difference occurs because of the way of different parenting since birth (patmonodewo: 2003, pg.111). Method of playing and storytelling are two different methods. In the method of playing, the activities of children are more dominant, while in storytelling activities of teachers are more dominant. These two different methods if treated on two groups of children enable to obtain different results.

Aisyiyah Bustanul Athfal kindergarten is an educational institution for pre-school, managed by Aisyiah organization, which has been available in 14 districts of Semarang. In that regard, this research is conducted on the influence of playing and storytelling method as well as the genders toward the learning outcomes of students at Aisyiyah Bustanul Athfal kindergarten.

RESEARCH METHODS

This research employs a factorial design. Its phase begins with the initial observation, the preparation of grating instruments, test instruments, and pre-test providence. The final stage is the provision of post-test and the evaluate on it. The research population is students in two ABA kindergartens; located at Indraprasta 01 West Semarang and

Wonodri 04 South Semarang, academic year 2005/2006. The entire population is taken as a sample unit. It uses a cluster-sampling method. The independent variable is gender and learning methods i.e., playing and storytelling. The dependent variable is the learning outcomes of students. The data collection technique employs a test method and documentation. Data analysis was conducted in two stages: (1) The preliminary stage by normality and homogeneity test, (2) The final stage for pre-test and post-test form by normality and hypothesis test with Two Way ANOVA analysis (two-way ANAVA) and the examination of T-Test.

RESULTS AND DISCUSSION

The learning outcome of students can be seen in chart 1 and 2.

Chart 1 The learning outcome of students based on learning methods

Learning Method	N	Learning outcomes of students	
		Average	Deviation Standard
Playing	72	87,01	7,11
Storytelling	98	87,84	6,74

Chart 2 The learning outcome of students based on gender

Gender	N	Learning outcomes of students	
		Average	Deviation Standard
Boys	81	87,25	5,73
Girls	89	87,70	7,83

Table 1 shows the average results of learning by storytelling method are better than by playing . Based on ANAVA analysis, it results $F_{\text{account}} 0.631$ with a significance level of 0.428. Thus, the probability scale $0.428 > 0.05$ then the hypothesis H_0 is accepted. It shows that there are no differences in learning outcomes of students who experience the method of playing and storytelling. The implication of this research is enabled because of the weakness of the instrument used and the success of teachers in organizing methods of playing and storytelling. In this case, teachers have taken advantage of both methods (playing and storytelling) to anticipate the weaknesses that may occur. This is commensurate with the provisions of the Ministry of Education in the curriculum 2004 where learning should be oriented to the needs of children for the sake of achieving maximum growth, habituation, cognitive physics/ motoric and arts. Muhibbin Shah (1999) claims that among the factors which determine the success of learning are some ways selected by teacher in presenting the material activities. Method of playing is one of the methods that can be used in kindergarten learning as well as storytelling. Storytelling requires preparation so that the learning process is more optimal like Hidayat (2003) and Sugihastuti (1996) assert. Therefore, both playing and storytelling can be used as methods of leaning in kindergarten.

Table 2 shows the average learning outcomes of girls are higher than of boys. Based on the anava analysis, it generates $F_{\text{account}} 0.286$ with a significance level of 0.593. Thus the probability scale $0.593 > 0.05$ then the hypothesis H_0 is accepted, that there are no differences in learning outcomes of students either boys or girls. The implication of this research is that boys and girls are able to receive the lessons given by the method of playing and storytelling and that there is the presence of other factors that possibly influence the condition. This is in line with the view of Morteza (1985) that their biological differences of boys and girls do not imply that they have special abilities to perform tasks. Related to this, when elements that shapes the difference are abandoned by treating boys and girls equally and giving them the same opportunities in activities with playing and storytelling method, each of the individuals can obtain optimal learning results and the results do not lead to significant differences. This is in accordance with the words of Allah in the Qur'an chapter an-Nahl (the Bee) verse 97. The verse clearly states that men and women, who believe in Allah, have the same opportunities in gaining good live and getting rewards from

Allah after performing righteous deeds . Therefore, in the future, treatment in learning for boys and girls should not be distinguished.

The influence of interaction between the learning method and gender towards learning outcomes results F_{account} 0.738 with a significance level of 0.391. Thus, the probability scale $0.39 > 0.05$, so H_0 is accepted. It means that the results of the analysis does not support the hypothesis put forward. Consequently, it is concluded that there is no influence between learning methods and gender on learning outcomes.

The hypothesis is not proven and is allegedly due to several factors i.e., the change of insights and behavior of parents and teachers who no longer distinguishes the treatment of educating and learning for students; boys and girls. The implication of this proof is that the learning methods of playing and storytelling is the ones which fit and are appropriately able to be used in learning activities for kindergarten students either for boys or for girls. The methods are beneficial in making students able to absorb the material activities. It is expected playing and storytelling methods can be developed accordingly to the development of learning, so that they can lead learners to acquire optimal outcomes.

CONCLUSION

Based on the results of this research, it can be concluded:

1. Students who join in the learning method of playing and storytelling have no differences in learning outcomes.
2. The learning outcomes obtained by students either boys and girls show no difference.
3. The method of learning and gender have no interactive influence on learning outcomes.

REFERENCES

1. Anggani Sudomo, Sumber Belajar dan Alat Permainan Untuk Pendidikan Usia Dini, Jakarta: Grasindo, 2000.
2. Cony R. Semiawan, Belajar dan Pembelajaran Dalam Taraf Usia Dini, Jakarta: PT. Prenhallindo, 2002.
3. Engkongswara. Dasar-Dasar Metodologi Pengajaran, Jakarta: Bina Angkasa, 1988.
4. Hadi Purwanto, Pengaruh Metode Pembelajaran dan Jenis Kelamin terhadap Belajar ranah kognitif Pendidikan Agama Islam di SMU Negeri I Grobogan, Tesis IAIN Walisongo, Semarang: IAIN Walisongo, 2003.
5. Heri, Hidayat, Aktifitas Mengajar Anak TK, Bandung Katarsis, 2003.
6. Jackie Silberg, The Values Book for Children, 500 permainan 5 menit, permainan yang mudah dan cepat untuk anak usia 3-6 tahun, terj. Ida muhayat, jakarta: P Gramedia, 2002.
7. Moeslichatoen R. Metode Pengajaran di Taman Kanak-Kanak, Jakarta: Rineka Cipta, 2004.
8. Moh. Nasir. Metode Penelitian, Jakarta: Galia Indonesia, 1988.
9. Morteza Mutahhari, Wanita dan Hak-Haknya dalam Islam, terj. M. Hashem. Bandung: Ganesha, 1985.
10. Mudiyo, Peranan Pendidikan Prasekolah Dalam Proses Sosialisasi, Tesis PPS UNY, Yogyakarta: PPS UNY, 1996.
11. Muhibbin Syah, Psikologi Belajar, Jakarta: Gramedia, 1999.
12. Nana Sudjana, dasar-dasar Proses Belajar Mengajar, Bandung: Sinar Baru AlGesindo, 2002.
13. Nazarudin Umar, Argumen Kesetaraan Gender, Jakarta: Gramedia: Paramadina, 2001.
14. Pimpinan Daerah 'Aisyiah (PDA) Kota Semarang, Data Amal Usaha Majelis DIKDASMEN, 2005.
15. Soemiarti Patmonodewo, Pendidikan Anak Prasekolah, Jakarta: rineka Cipta, 2003.
16. Sudirjo, Strategi Belajar Mengajar, Yogyakarta: IKIP, 1991.
17. Sugihastuti, Serba-Serbi Cerita Anak-Anak, Yogyakarta: Pustaka Pelajar. 1996.
18. Susi Maresta, Pelaksanaan Metode Bermain Peran Dalam Pembelajaran Budi Pekerti di TK Budi Mulia Dua, Skripsi FIP UNY, Yogyakarta: FIP UNY, 2002.
19. Syahri Alhusin, Aplikasi Statistik Praktis dengan SPSS 10 for Windows, Yogyakarta, Learning, 2002.
20. T. Handayanu, Memakai Cerita Mengasah Jiwa, Panduan Menanamkan Nilai Moral pada Anak Melalui Cerita, Solo: Era Intermedia, 2001.
21. Undang Undang RI 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, Jakarta: Kaldera, 2003.

Fostering Intrinsic Motivation through Self Assessment; an Alternative in Improving Learning Quality

Muhimatul Ifadah,^{1,a)} Siti Aimah,^{2,b)}

1)Faculty of Language and Foreign Culture, Universitas Muhammadiyah Semarang

2)Faculty of Language and Foreign Culture, Universitas Muhammadiyah Semarang

^{a)} Corresponding author: muhimatul@unimus.ac.id

^{b)}siti.aimah@unimus.ac.id

Abstract. The study aimed to stimulate students' motivation through self assessment in improving learning quality. For this purpose, each student was given assessment sheet to make judgment about themselves for the whole semester. Alternative assessment is believed to have effective feedback for the students in the process of learning; its primary focus is on the ongoing development of the learner's learning (Brown: 2004). The responses taken showed that the students in the early semester admitted that they have done the best, and gradually, they admitted that they need to improve their effort in the process of learning. In fact, personal motivation in the classroom setting is affected by various causes; one of others is triggered by the other's judgment or can be by personal reflection. By filling personal judgment and reflection, the students are having chance to drawback their personal learning purposes.

INTRODUCTION

Some people think that test and assessment are the same, but actually they are not. Assessment is an ongoing process that encompasses a much wider domain (Brown:2004). However, in the classroom setting, an ideal teacher will always concern about their students' achievement or development. Regarding to this issue, each teacher has different ways and also mechanism in measuring their students' competence. In the process of teaching, a teacher has a target or demand for his students, particularly about the materials which represented by the competence that should be mastered. However, different teacher will have different perspective about how to do the assessment in their teaching, but it is believed that the role of evaluation may give benefit for the teaching learning situation and indicate the advantages for the process itself. Hence, the effectiveness of assessment will also depend on how it is delivered and how the relationship between the teacher and the students. In many cases, the interpersonal and social relationship will influence the students' responses to teacher's explanation or teaching. Students' motivation is highly influenced by the teacher's strategy in the teaching; whereas intrinsic motivation or motivation that arisen from their awareness in the learning target is also give impact on the learning succeed.

In addition, Brown (2004) stated that self assessment as part of alternative assessment rather than traditional assessment bring its positive nature, such as continuous, contextualized, individualized, and oriented to process, displayed interactive performance, and fosters intrinsic motivation.

However, self-andpeer-assessment can reportedly achieve more. It may also help students to become realistic judge soft heir own performance, by enabling them to monitor their own learning ,rather than relying on their teachers for feedback, (Ross et.al)

RESULT

From the statement above, it is reasonable whenever the students are given chance to give judgment about themselves to train their awareness about their learning purposes. Far from the simple target, challenging their open minded-side to consider about their performances, targets, and also the competence were the facts that want to be portrayed. The next question that may be addressed then is how the result of the assessment can help the teacher in improving its learning quality.

Carless(2006) in Ross et.al suggested that teachers can improve the effectiveness of self-and peer-assessment by being very clear with the student show they will benefit from participating. In this point, the teacher has authority to design how their students will be involved, and how the expectation will be fully met by the students. The answer may be obviously stated that the students' perspective and aptitude toward the process of learning are positively presented. In this study, the writer digged up the students' perspective and judgment about their attitude in finding solution for their learning problems in the process of learning during the whole semester through interview and questionnaire. The questions are mainly focused on the students' aptitude and perspective about themselves; for example how they think about their comprehension, what do they think about their teacher whenever they are given project or assignment, how they think about their classmates in the discussion or presentation session, and also how do they applied learning strategies in meeting their learning purposes. The questionnaire is given for eight times during the whole semester, and the result showed that in the first two submission, they always answered in the high range, as the questionnaire made into four range, from strongly agree, agree, disagree, and strongly disagree. The phenomena described the students' worry about their performance whenever being judged by others, and they have to display the good answer as the consequences. However, this study aimed not only to find the good answer, but how the students are willing to pursue their comprehension-as if it is one of the indicator of learning result, so the teacher gave feedback to the students how the topics in the subject are not comprehended in significant way. The feedback is not meant to give pressure for the students, but as a reminder for the students that they have to be wise enough to admit their weakness-to build their motivation to pursue the learning purposes. Some of the students showed the persistent answer, but most of the students gave various answers in each topic that are being discussed, indicated that they are willing to be given feedback as it should be. The other significant result from the study is that the students are likely to be enjoyed the process of learning by proposing strategy to the teacher, raising various questions, asking suggestion about their comprehension, and some of them are not worrying about the mark they get in the end of the semester. The answer is that the teacher has delivered the competence that should be achieved, discussed the topics, gave feedback after the discussion and presentation, and remind the students to apply the learning strategy freely outside the classroom setting. They do not deny that mark A is always tempting, but they also admitted that the process is also important because they have chance to perform their effort in it. For all practical practices, formative assessment-in this case is self assessment is likely to improve the students' concern about their learning, both from the strategy and indirectly-to their achievement. Reflection and responsibility are seemed agreed as indicator of learning skills which can promote the other soft skill in the real life.

CONCLUSION

Self Assessment helped the teacher to give feedback to their students personally. They will be forced in a condition to do reflection for what have been done. The impact will be obviously showed various results for each of the students. Some students showed significant responses in attending the classes, from its performances through discussions; meanwhile the others showed different attitudes and responses in attending the classroom, but still need to be encouraged by the teacher. However, personal attitude influence the students' responses in doing reflection and finding solution for their learning problems. In addition, self assessment requires more time than summative assessment, and it needs consideration if we have big class in delivering it, whereas the result is not as simply as translated into numbers or score that many teachers are getting used with it.

REFERENCES

1. Brown, Douglas H. 2004. Language Assessment: Principles and Classroom Practices. Pearson Education Inc. New York.
2. Dylan, William. Voices from the Middle, Volume 21 Number 2, December 2013. Available at <http://www.ncte.org/library/NCTEFiles/Resources/Journals/VM/0212-dec2013/VM0212Assessment.pdf>
3. Groundlund, Norman. 1981. Measurement and Evaluation in Teaching. Macmillan Publishing Co, Inc. New York.
4. Ross, John A. (2006). The Reliability, Validity, and Utility of Self-Assessment Practical Assessment Practical Assessment Research & Evaluation, 11(10). Available at <http://pareonline.net./getvn.asp?v=11&n=10>

5. Thomas, Glyn; Martin, Dona; and Pleasant, Kathleen, using self-and peer assessment to enhance students' future-learning in higher education, *Journal of University Teaching & Learning Practice*, 8(1).2011. Available at <http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1112&context=jutlp>

The effect of cyanoacrylate infiltration on microstructure of hydroxyapatite/chitosan composite

Purnomo^{1,a)}, Endang Tri Wahyuni Maharani^{2) b)}

¹⁾ *Program Studi Teknik Mesin, Universitas Muhammadiyah Semarang.*

²⁾ *Program Studi Analisis Kesehatan, Universitas Muhammadiyah Semarang*

^{a)}Corresponding author: purnomo@unimus.ac.id

^{b)}endangtm@gmail.com

Abstract. Brittle nature of hydroxyapatite for bone implants reduced by adding chitosan. To strengthen the particles bond of the composite, cyanoacrylate was infiltrated into the composites. Infiltration was performed at room temperature and without any external pressure treatment system. The aim of this study is to examine the microstructure of hydroxyapatite-chitosan composite by infiltration of cyanoacrylate. Hydroxyapatite composite-chitosan composite was immersed in cyanoacrylate. Cyanoacrylate infiltrate into composite from all directions. The system is isolated from atmospheric air in order to avoid direct contact with air. Surface morphology was observed by scanning electron microscope on the specimen. Observations indicate that the higher content of chitosan, cyanoacrylate increasingly looks much infiltrated composite hydroxyapatite-chitosan.

INTRODUCTION

Hydroxyapatite (HA) bioceramics have porous morphology which results in good bonding capability to the bone, and a good mechanical interlock of the material. Dimensions and morphology of the pores can support bone osseointegration [1,2]. Although HA is superior in biocompatibility thereby making it a material of choice for bone implants [3], unfortunately, its mechanical properties is not as good as the mechanical properties of natural bone [4]. A wide range of materials for biomedical applications can be created based on two components, i.e., nanocrystalline apatite and chitosan [5,6,7,8]. Chitosan is a promising material for biomedical applications because it is biocompatible with human tissue, and its ability to facilitate the regenerative process in wound healing [9]. The HA has a low hardness and is brittle so it gives constraints in the design process [10] used the chitosan which was a natural biopolymer that is expected to be like the organic component of bone matrix and can cope with the fragile nature of HA, and the enhanced elastic modulus significantly was shown in macro-mechanical test.

Recently, biomedical material has been used cyanoacrylate with low viscosity as a tissue adhesive and bioimplant orthopedic [11,12]. Cyanoacrylate (CA) is suitable as a filler material of bone, increasing bone tissue bonding and new bone growth [13,14]. In this study, the cyanoacrylate was infiltrated into HA-chitosan composite without any pressure from outside the system. Infiltration effect of cyanoacrylate on the morphology of HA-chitosan composites were investigated using scanning electron microscope (SEM), furthermore the results of the investigation are discussed.

METHOD

Materials and manufacture

Materials used in this work are chitosan powder, bovine HA powder, and cyanoacrylate. Chitosan powder made from crab shells was mixed with bovine hydroxyapatite in a dry condition. The composite series of materials have different chitosan-HA weight concentration ratios, i.e. 0 wt.%, 10 wt.%, and 20 wt.% of chitosan. The HA was calcined on 500°C for 3 hr prior to mixed at 120 rpm and 30 min. Green bodies (12 mm diameter, 3 mm thick) of HA-chitosan composites were successfully compacted and sintered using cold uniaxial compaction technique. In

uniaxial pressing the specimens were compacted at 50 kg/cm², 75 kg/cm², and 100 kg/cm². Sintering was performed at 1000°C, and holding time for 1h.

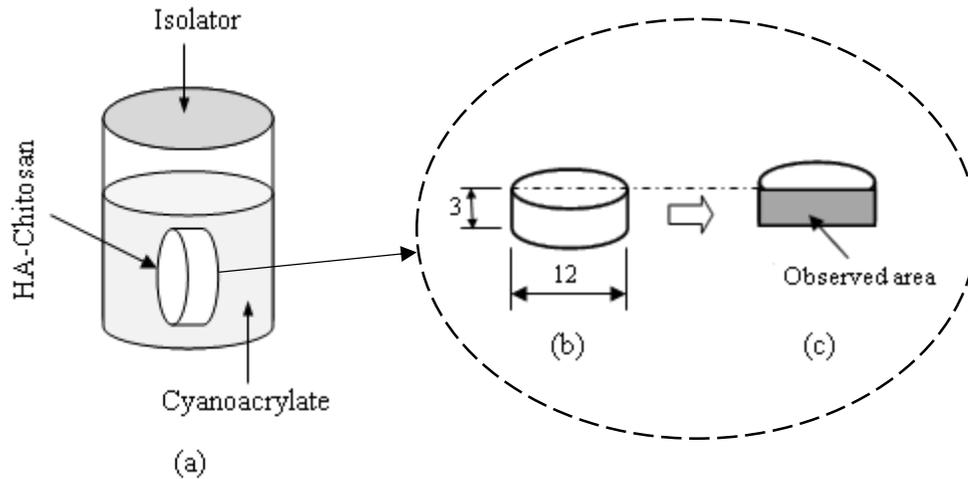


Fig. 2 Schematic diagram for (a) infiltration test, (b) sample HA-Chitosan, and (c) infiltrated surface of CA for HA-Chitosan composite

The CA-HA/Chitosan composites made by pressureless infiltration-assisted liquid technique. Liquid CA was infiltrated into a porous HA/Chitosan composites at room temperature in 24 hours. During the infiltration process, it was distributed in all directions, and was kept from direct contact with atmospheric air so that no polymerization of CA (see Fig. 1a).

Morphological test

The depth infiltration of CA on composite HA-chitosan (Fig. 1b) was observed using scanning electron microscope (SEM).

RESULT AND DISCUSIONS

Surface morphology of calcined HA at compacting pressure of 50 kg / cm² with and without infiltration of cyanoacrylate is shown in Fig. 3.

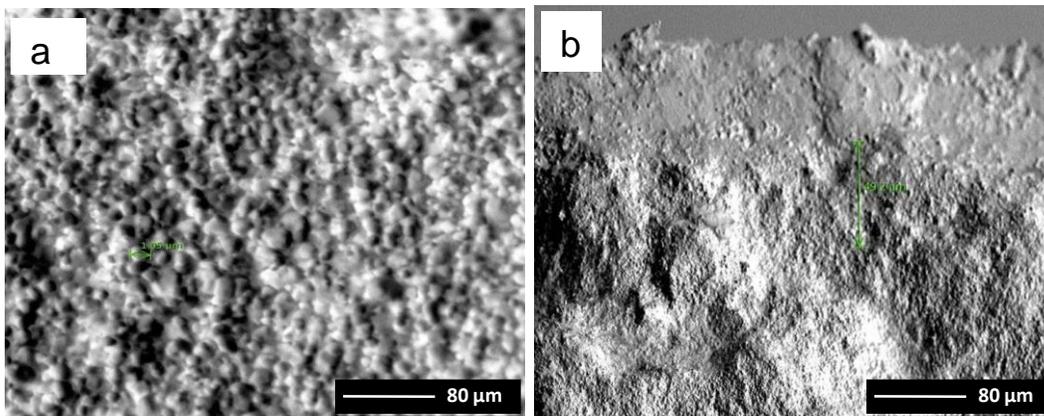


Fig. 3 Section Surface morphology of calcined HA calcined at compacting pressure of 50 kg/cm² without CA (a) and CA.

In case of composites without CA, the pores are clearly observed. Different conditions was seen in the infiltrated composite in which the pores are closed by cyanoacrylate that filled pores. From SEM observation, the composite HA-chitosan decomposes on the surface, bound by cyanoacrylate and then embed to the surface of composite. Cyanoacrylate fill the pores, especially near the surface of the composite to decompose (**Fig. 3**).

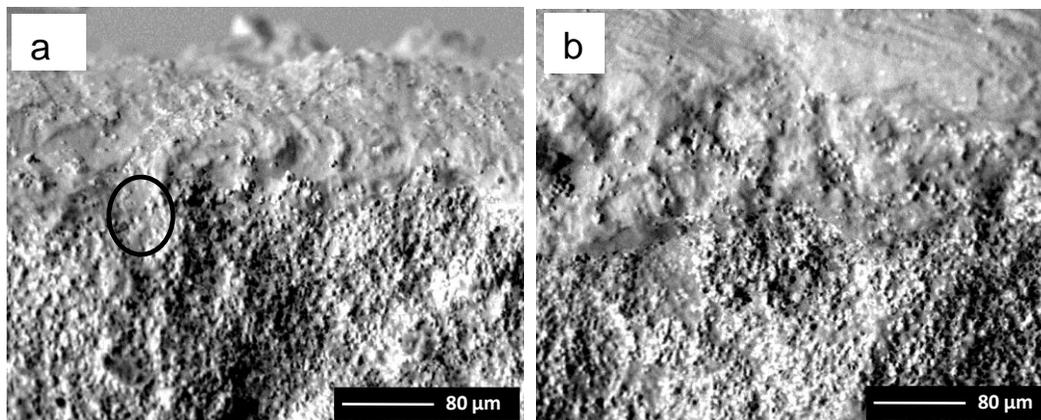


Fig. 4. Surface microstructure of HA-K composite on compacting pressure of 75 kg/cm². (a) and pressure of 100 kg/cm². Black circle indicated the infiltration of CA.

Fig. 4 depict a thin layer cyanoacrylate infiltrate the pores of the composite HA-chitosan which led to reduced composite porosity. Although infiltration occurred in the area in the middle of the composite section, however cyanoacrylate has not been able to fill the entire pores formed on the composite HA-chitosan. Cyanoacrylate infiltration occurred in many locations close to the surface of the composite, as shown in **Fig. 5**. In this area, the infiltration of cyanoacrylate capable of filling the pores of the composite HA-chitosan.

The entire surface was observed showed similarities phenomenon. The HA-chitosan composite is porous therefore CA is able to infiltrate that composite through the pores. Cross-section surface close to the surface in direct contact between the composites and cyanoacrylate has higher intensity on infiltration of CA. These conditions encourage cyanoacrylate able to fill the pores and into the bond between the particles previously separated by pore. Good adhesion of CA is able to increase the interfacial bonding between the particles hydroxyapatite. Increased interfacial bonding effect though small is to increase Young's modulus [15]. Good interfacial adhesion affect the behavior of the composite and the ability to transfer load will be increased by increasing the interfacial bonding strength [15].

CONCLUSIONS

Infiltration cyanoacrylate composite surface is a function of distance. The farther from the surface, cyanoacrylate infiltration decline that ultimately was not able to fill the pores of the composite. When the composite is in the cyanoacrylate, composite surface to decompose and the things that are the cause has not been evaluated.

REFERENCES

1. Le Huec, J.C, Schaefferbeke. T, Clement. D, Faber. J, Le Rebeller. A, *Biomaterials* 16. 113(1995).
2. Yoshikawa. H, Myoui. A. *J. Artif. Organs* 8. Pp. 131(2005).

3. Kim Y., Seo S., Moon H., Yoo M., Park I., Kim B., Cho C. Chitosan and its derivatives for tissue engineering applications. *Biotechnology Advances* 26, pp. 1-21(2008)
4. Guo, H.B, X. Miao, Y. Chen, P. Cheang, K.A. Khor. Characterization of hydroxyapatite-and bioglass-316L fibre composites prepared by spark plasma sintering, *Materials Letters*, 58, pp 304-307 (2004).
5. Yamaguchi, I., Tokuchi, K., Fukuzaki, H., Koyama, Y., Takakuda, K., Monma, H. and Tanaka, J. Preparation and microstructure analysis of chitosan/hydroxyapatite nanocomposites. *J. Biomed. Mater. Res.* **55** , 20–27 (2001)
6. Li, J., Chen, Y.P., Yin, Y., Yao, F. and Yao, K. Modulation of nano-hydroxyapatite size via formation on chitosan–gelatin network film *in situ*. *Biomaterials* **28** , 781–790 (2007).
7. Wang, L. and Li, C. Preparation and physicochemical properties of a novel hydroxyapatite/chitosan–silk fibroin composite. *Carbohydrate Polym.* **68** , 740–745 (2007).
8. Jiang, L., Li, Y., Wang, X., Zhang, L., Wen, J. and Gong, M. Preparation and properties of nano-hydroxyapatite/chitosan/carboxymethyl cellulose composite scaffold. *Carbohydrate Polym.* **74**, 680–684 (2008)
9. Muzzarelli, R.A.A. Chitins and chitosans for the repair of wounded skin, nerve, cartilage and bone. *Carbohydrate Polym.* **76**, 167–182 (2009).
10. Verma D, Katti KS, Katti DR, Mohanty B. Mechanical resposns and multilevel structure of biomimetic hydroxyapatite/polygalacturonich/chitosan nano composte. *Materials Science and Engineering. C*, **28** (3), 399–405 (2008)
11. Vanholder.R., Misotten.A., Roels. H., Matton.G. Cyanoacrylate tissue adhesive for closing skin wounds: a double blind randomized comparison with sutures. *Biomaterials* 14 (10), pp 737–742 (1993)
12. Bayer,I.S.,Tiwariand, M. K.C., Megaridis, M.K. Biocompatible poly(vinylidene fluoride)/cyanoacrylate composite coatings with tunable hydrophobicity and bonding strength. *Applied Physics Letters* 93, 173902 (2008)
13. Bhat .S., Askew M.J., Njus G., Smith D.J. Alkyl Cyanoacrylates as Space Filling Bone Adhesives. *J Appl Biomater.* Fall;3 (3):207-10. (1992).
14. Kyeong-Jun Park, Ji-Ho Park, Sang-Bae Lee, Doug-Youn Lee, Kyoung-Nam Kim, and Kwang-Mahn Kim. Bioactive Cyanoacrylate-based Filling Material for Bone Defects in Dental Applications. *Key Engineering Materials Vols.* 284-286. pp. 933-936 (2005)
15. Fu, S.Y., Feng, X.Q., Lauke, B., Mai, Y-W. Effects of particle size, particle/matrix interface adhesion and particle loading on mechanical properties of particulate–polymer composites. *Composites: Part B* 39: 933–961 (2008)

Serum Transferrin Receptors of Iron Deficiency Anemic Rats That Feeding Tempe Fortification Combination Iron and Vitamin A

Rahayu Astuti^{1,a)}, Hertanto Wahyu Subagyo^{2,b)}, Siti Fatimah Muis³⁾, Budi Widianarko⁴⁾

¹Public Health Study Program, Public Health Faculty, Muhammadiyah University of Semarang (UNIMUS), P.O. Box 50273 Semarang, Indonesia

^{2,3}Department of Nutrition, Medical Faculty, Diponegoro University (UNDIP), P.O. Box 50275 Semarang, Indonesia

⁴Food Technology Study Program, Faculty of Agricultural Technology, Soegijapranata Catholic University, P.O. Box 50234 Semarang, Indonesia

^{a)}Corresponding author: ra.astuti@unimus.ac.id

^{b)}drhertantows@yahoo.com

Abstract. This research investigated tempe fortified with iron and vitamin A on serum transferrin receptors. Experimental research Randomized Pre Test-Post Test Control Group Design was conducted on 30 Sprague-Dawley rats with iron deficiency anemia. The rats divided into 6 groups randomly, was treated for 6 weeks with a standard feed supplemented by soybean tempe fortified with iron and vitamin A. Group 1 control group was given standard feed AIN-93G (SF), group 2 SF+T0, group 3 SF+T1, group 4 SF+T2, group 5 SF+T2+V15, (6) SF+T2+V50. T0 was tempe without fortification. T1 and T2 was tempe that was fortified with 230 ppm and 271 ppm of iron (FeSO₄7H₂O, respectively. V15 and V50 was tempe that was fortified with 15 ppm and 50 ppm of vitamin A (retinyl acetate, respectively. Statistical test was used Kruskal Wallis test. The result showed that before intervention, there was no significantly different on mean of serum transferrin receptors (sTfR) (p=0,280). After intervention, sTfR became 13,0±4,0; 8,7±2,8; 8,5±2,6; 7,4±3,4; 7,2±1,7 and 1,9±0,4 µg/mL, respectively. Tempe fortification with iron and vitamin A significantly decreased sTfR (p=0,004). Average of sTfR lowest in the treatment of SF+T2+V50 (standard feed+tempe was fortified with 271 ppm of iron + 50 ppm vitamin A).

INTRODUCTION

Nutritional anemia is one of the most common nutritional problem in the world, including in Indonesia. The findings of several studies in Indonesia show that the anemia prevalence of adolescent remained high (26,1%-42,6%). In nutritional anemia, iron deficiency anemia was considered as the most common cause. Among various solutions to improve nutrition, food fortification is one effort to do. Tempe-based soybean meal as an alternative to allow fortified with iron.

Fortification in this research with added the iron and vitamin A because various studies suggest a role of vitamin A in hematopoiesis. The relationship between vitamin A deficiency and anemia has been studied for several year. The results of the research in Indonesia, the baby and mother with serum retinol <0,7 µmol/L have 2,4 times the risk of becoming iron deficiency anemia (Dijkhuizen et al., 2001). Other studies have shown that children who received iron fortified soup and vitamin C to increase levels of serum iron and transferrin saturation higher when serum retinol levels > 40 mg/dL compared to <20 mg/dL, thus stated that vitamin A status has the effect of mobilizing iron stores (Stuijvenberg et al., 1997; Zimmermann, 2007).

Over recent years, serum concentrations of soluble transferrin receptor have been investigated as a marker of iron status. The transferrin receptor is a transmembrane glycoprotein, made up of two identical subunits connected by a pair of disulphide bridges, forming a molecule of 190 kDa (Feelders et al., 1999; Seligman et al., 1979;

Trowbridge et al., 1984). The role of the transferrin receptor is to insert iron into a cell center by joining transferrin molecules in the blood (Bali et al., 1991; Feelders et al., 1999).

MATERIAL AND METHODS

This study was conducted with Randomized Pre Test-Post Test Control Group Design. A total of 30 Sprague-Dawley rats underwent depletion period for 2 weeks (Naruki et al., 2010) with standard fed (AIN-93G) of free-Fe so iron deficiency anemia rats. Samples were divided into 6 groups randomly, and then the rats were treated for 6 weeks. The treatment were as follows: 1) Standard feed (SF) (Reeves et al., 1993), 2) SF+TWF, 3) SF+T1, 4) SF+T2, 5) SF+T2+VA15, 6) SF+T2+VA50, which TWF was tempe without fortification, T1 and T2 tempe was fortified with iron 230 ppm and 271 ppm, respectively and VA15 was 15 ppm vitamin A and VA50 was 50 ppm vitamin A.

Iron used ferrosulfat heptahydrate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) and vitamin A, retinyl acetate. Iron levels refer Tawali research (2000) and Astuti et al. (2012). Standard feed was prepared referring to the principle of iso-caloric and iso protein. Amount of 36,5% casein protein of standard feed was substituted by flour of tempe.

Blood sampling in rats conducted at the orbital sinus and the maintenance of experimental animals at the Center for Food and Nutrition Studies, Gadjah Mada University, Yogyakarta. Ethical clearance was obtained from the Health Research Ethics Committee, Faculty of Medicine, Diponegoro University.

Sprague-Dawley rats aged 4 weeks, were weighed 100-175 gram adapted for 7 days with standard feed AIN 93G (Reeves et al., 1993). The body weight was measured weekly. At 7 a.m. every day, rats were fed with 10 grams pellet. Residual feed were weighed every day. The next stage was depletion period which the rats were fed AIN-93G free-iron for 14 days, and then hemoglobin level was measured until was ≤ 6.0 g/dL (Naruki et al., 2010). Before and after the intervention was measured levels of serum transferrin receptor (sTfR). During the study none of the rats died.

Transferrin receptor levels in serum were measured by enzyme-linked immunosorbent assay (ELISA) using a Model Elx 800 ELISA reader (Universal Micro-plate Reader) Bio-tek Instruments Inc. with a wavelength of 450 nm and units of mg/mL. Kruskal Wallis test was used to analyze the difference of serum transferrin receptors (sTfR) level between groups. Normality test of biomarker data was conducted by Kolmogorov Smirnov test. The differences were considered significant at $p < 0,05$.

RESULTS AND DISCUSSION

Serum transferrin receptors (sTfR) levels

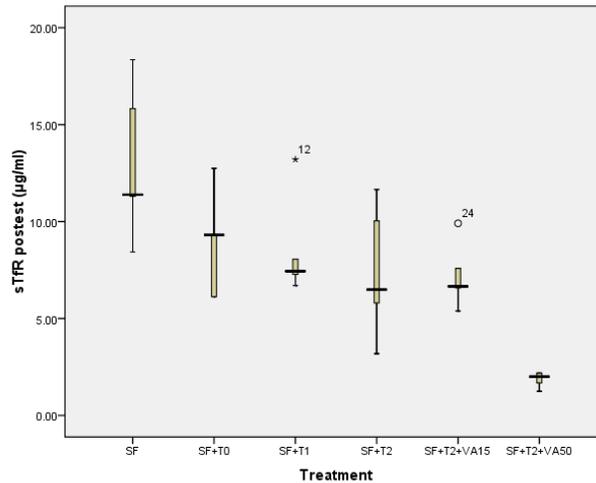
Mean of serum transferrin receptors (sTfR) levels at baseline, after a period of depletion was $46,4 \pm 23,8$ $\mu\text{g/mL}$, and there was no significant difference in sTfR before intervention based on treatment ($p=0,280$).

Table 1. Mean of sTfR level before and after treatment

Treatment	sTfR level before treatment ($\mu\text{g/mL}$)	sTfR level after treatment ($\mu\text{g/mL}$)
SF	$54,4 \pm 42,3$	$13,0 \pm 4,0^a$
SF+T0	$30,3 \pm 16,3$	$8,7 \pm 2,8^a$
SF+T1	$63,7 \pm 27,3$	$8,5 \pm 2,6^a$
SF+T2	$47,0 \pm 13,5$	$7,4 \pm 3,4^a$
SF+T2+VA15	$39,4 \pm 8,0$	$7,2 \pm 1,7^b$
SF+T2+VA50	$41,2 \pm 7,8$	$1,9 \pm 0,4^c$
p-value	0,280	0,004**

1) **There were significantly difference (Kruskal-Wallis test)

2) On each collom *superscript* that different showed there were significantly difference based on posterior Mann Whitney test



Figur 1. Boxplot of sTfR level based on treatment

After intervention sTfR in the control rats (SF) were still high is $13,1 \pm 4,0 \mu\text{g/mL}$; rats fed soybean tempe fortification only iron, mean of sTfR is $8,5 \pm 2,6 \mu\text{g/mL}$ and $7,4 \pm 3,4 \mu\text{g/mL}$, whereas rats fed soybean tempe fortification iron and vitamin A combination (SF+T2+VA15 and SF+T2+VA50), mean sTfR levels more decrease is $7,2 \pm 1,7 \mu\text{g/mL}$ and $1,9 \pm 0,4 \mu\text{g/mL}$. The test results showed that administration of soybean tempe fortified iron and vitamin A combination may decrease levels of sTfR was significantly ($p=0,004$). Mean of sTfR levels highest in the treatment 271 ppm of iron + 50 ppm of vitamin A. The combination of iron and vitamin A significantly decreases sTfR levels.

DISCUSSION

1. sTfR in rats under conditions of iron deficiency anemia (before treatment) and after treatment

Average levels of serum transferrin receptors (sTfR) in rats under conditions of iron deficiency anemia was $46,4 \pm 23,8 \mu\text{g/mL}$, where the condition of the rat hemoglobin ranged from 5,2 to 6,0 g/dL. In line with the research Beguin et al., 1988 that in male rats aged 8-12 weeks were iron deficiency an average of transferrin receptors was $32,6 \pm 8,6 \mu\text{g/mL}$. Normal rats in Beguin study was $5,7 \pm 0,7 \mu\text{g/mL}$, whereas in this study, the mean sTfR after treatment was $7,9 \pm 5,0 \mu\text{g/mL}$. Beguin (2003) in other studies also showed serum sTfR levels average $5,0 \pm 1,0 \mu\text{g/mL}$ in normal rats but the various commercial assays give different values because of the lack of international standards. The most important determinant of the level of sTfR was marrow erythropoietic activity which can cause variations up to 8 times below and up to 20 times the average value normal.

This study showed that in the status of iron deficiency anemia, the sTfR levels are high. The mechanism can be explained that in the intestine, the amount of iron absorbed is set according to the needs of the body by altering levels of DMT-1 and ferroportin levels according to the iron status of the villous enterocytes of duodenal crypts. Iron into the crypts enterocytes from transferrin plasma binds to transferrin receptors on the surface of basal cells (Hoffbrand et al., 2005). In rats with iron deficiency, iron deposits in the form of hemosiderin and ferritin decreased progressively and not sufficient to meet the requirement to be a normal turnover (WHO, 2001). In these circumstances, supply of iron to apotransferrin transport protein causes decreased transferrin saturation and increased transferrin receptor on the cell surface circulation and including eritron. Iron deficiency conditions in the crypts cells will lead to increased expression of DMT-1, where the ability of iron regulatory protein (IRP) to bind to the iron response element (IRE) increases, so that the mechanism of transferrin receptor is increased in iron deficiency (Hoffbrand et al., 2005). Transferrin receptor is a parameter that is intended to measure the activity of erythropoiesis (WHO, CDC, 2007; Gropper et al., 2009). Beguin et al., 2003 suggests that sTfR is a quantitative

assay of marrow erythropoietic activity and markers of tissue iron deficiency. This test is useful for identifying iron deficiency in patients with concurrent inflammation because ferritin values were then generally normal. Higher levels of sTfR also describes the characteristics of functional iron deficiency, which is the state that is defined by a network of iron deficiency despite adequate iron stores. WHO (2001) noted the advantages measurement of serum transferrin receptors (sTfR) measurement was that this fact is not significantly affected by infection or inflammatory process and not too varied according to age, sex or pregnancy. In this study, no significant correlation was obtained sTfR with infection status.

Serum transferrin and transferrin receptors undergo changes when there is a decrease iron stores. In the first phase of iron deficiency conditions, namely "*early negative iron balance*", the iron stores in the liver, spleen and bone marrow begins to decline, serum transferrin receptors is still stable. Iron deficiency entered the second phase of "*iron depletion*", more decreased iron stores, the recent increase in serum transferrin receptors. In the third phase, namely "*iron deficient erythropoiesis*", is the stage of iron deficiency on erythropoiesis activity with an increased state of serum transferrin receptors is also high. As well as the fourth phase of "*iron deficiency anemia*", is the stage of iron deficiency anemia with more severe state with higher serum transferrin receptors and ferritin decline heavier and Hb level is below the normal range (Gropper et al., 2009).

2. The relationship between iron status and vitamin A

The results of this study showed that combination of iron and vitamin A may decrease sTfR levels. The relationship between iron status and vitamin A has been widely studied. The influence is due to the presence of vitamin A roles in hematopoiesis (Fishman et al., 2000; Gropper et al., 2009). Several mechanisms may explain the influence of vitamin A deficiency upon the status of anemia: 1) the decrease of iron mobilization from iron deposit to bone marrow (Zimmermann, 2007; Gropper et al., 2009); 2) lower resistance to infection which may increase the status of anemia due to infection (Semba and Bloem, 2002; Zimmermann, 2007); 3) the influence of iron absorption or metabolism; and 4) direct modulation or stimulation of erythropoiesis (Semba and Bloem, 2002; Zimmermann, 2007; Gropper et al, 2009).

Vitamin A in relation to iron absorption associated with the results of studies in humans that vitamin A and beta-carotene can form complexes with soluble iron in the intestinal lumen, and then prevent the inhibitory effect of phytate and polyphenols on the absorption of Fe (Garcia-Casal et al., 1998). The results of the research on school children is in the children deficiency of vitamin A and iron, supplementation of vitamin A mobilizes iron from iron store thus increase erythropoiesis, and the effect is mediated by increased circulating EPO (erythropoietin). Erythropoietin is a hormone made in the kidneys that stimulates erythropoiesis. Vitamin A, in particular retinoic acid responds element binding in the erythropoietin gene and stimulates the formation of red blood cells. When vitamin A is inadequate, erythropoietin gene could not be transcribed so the synthesis of red blood cells decreased (Gropper et al., 2009).

The role of vitamin A in the gene expression mechanism through the retinoic acid affects cell differentiation. A series of events retinoic acid moves into the nucleus, which subsequently interact with DNA. Firstly, all-trans retinoic acid or 9-cis retinoic acid are transported into the nucleus, then it binding to the CRABP (Cellular retinol-binding protein) (Gropper et al., 2009). In the cell nucleus, all-trans retinoic acid and 9-cis retinoic acid binds to retinoic acid receptors (RAR) and retinoic X receptors (RXR) (Noy N, 2010; Theodosiou et al., 2010). RAR and RXR regulate gene transcription by binding to retinoic acid response element (RARE) in the target gene (Tang and Gudas, 2011). In general, the absence of ligand, RAR/RXR suppress gene transcription because the RAR/RXR interact more with the co-repressor, whereas the presence of ligand RAR/RXR interacts with co-activators (Noy N, 2010). Each retinoic acid receptors are divided into α , β , and γ whose isoforms; each isoform encoded by a different gene (Tang and Gudas, 2011). RXR regulates gene transcription as homodimers or heterodimers with other nuclear receptors, including RAR, peroxisome proliferator activated receptor that is, vitamin D receptor, and the hormone receptor thyroid (Tang and Gudas, 2011). Homodimer is formed when two similar receptors interact as RAR-RXR-RAR or RXR. Heterodimer formed between two or more different receptors such as RAR or RXR-VDR (Vitamin D Receptor)-RXR (Gropper et al., 2009). Changes in mRNA transcription will lead to changes in protein synthesis.

CONCLUSION

This research suggests that before intervention with tempe fortification combination iron and vitamin A was not significantly different on mean of serum transferrin receptors (sTfR) level ($p=0,280$). After intervention, sTfR levels

decreased significantly ($p=0,004$). The lowest average sTfR levels in the treatment is tempe fortification 271 ppm of iron ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) + 50 ppm of vitamin A.

ACKNOWLEDGEMENTS

The authors would like thank to the Directorate General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia, which has provided financial support for the research activities in Fiscal Year 2013.

REFERENCES

- [1] Astuti R., A. Syamsianah, S. Aminah, (2012). Tempe Fortifikasi untuk Penanggulangan Anemia Gizi Besi pada Remaja. Laporan Hibah Bersaing Tahun I. Universitas Muhammadiyah Semarang, 2012.
- [2] Bali P.K., O. Zak, P. Aisen, (1991). A new role for the transferrin receptor in the release of iron from transferrin. *Biochemistry.*, 30:324–328.
- [3] Beguin, Y., H.A. Huebers, B. Josephson and C.A. Finch, (1988). Transferrin receptors in rat plasma. *Proc. Natl. Acad. Sci. USA*; 85:637-640.
- [4] Beguin, Y., (2003). Soluble transferrin receptor for the evaluation of erythropoiesis and iron status. *Clin Chim Acta.*, 329:9-22.
- [5] Dijkhuizen, M.A., F.T. Wieringa, C.E. West, Muherdiyantiningsih, Muhilal, (2001). Concurrent micronutrient deficiencies in lactating mothers and their infants in Indonesia. *Am J Clin Nutr.*, 73:786-91.
- [6] Feelders R.A., E.P.A Kuiper-Kramer, H.G. van Eijk, (1999). Structure, function and clinical significance of transferrin receptors. *ClinChem Lab Med.*, 37:1–10.
- [7] Fishman, S.M., P. Christian and K.P. Jr West, (2000). The role of vitamins in the prevention and control of anaemia. *Public Health Nutr.*, 3:125-150.
- [8] Garcia-Casal, M.N., M Layrise, L. Solano, M.A. Baron, F. Arguello, D. Llovera, (1998). Vitamin A and beta-carotene can improve nonheme iron absorption from rice, wheat and corn by human. *J Nutr.*, 128:646-50.
- [9] Gropper, S.S., J.L. Smith, J.L. Groff, (2009). *Advanced Nutrition and Human Metabolism*. Fifth ed. Belmont, USA: Wadsworth, Cengage Learning.
- [10] Hoffbrand, A.V., J.E. Pettit, dan P.A.H Moss. (2005). *Kapita selekta hematologi (Essential Haematology)*. Dewi AM, ed. Jakarta: Penerbit buku kedokteran, EGC.
- [11] Naruki, S., M. Astuti, Y. Marsono, S Raharjo, (2010). Sifat Prooksidatif fortifikan NaFeEDTA, dengan kecap kedelai manis sebagai makanan pembawa, dalam system biologis (Tikus). *Majalah Ilmiah AGRITECH.*, 30(4): 244-249.
- [12] Noy N., (2010). Between death and survival: Retinoic acid in regulation of apoptosis. *Annu Rev Nutr.*, 30: 201–217.
- [13] Reeves, P.G., F.H. Nielsen, G.C. Jr. Fahey, (1993). AIN-93 Purified Diets for Laboratory Rodents: Final Report of the American Institute of Nutrition Ad Hoc Writing Committee on the Reformulation of the AIN-76A Rodent Diet. *J Nutr.*, 123:1939-1951.
- [14] Seligman, P.A., R.B. Schleicher, R.H. Allen, (1979). Isolation and characterization of the transferrin receptor from human placenta. *J Biol Chem.*, 254:9943–9946.
- [15] Semba, R.D., M.W. Bloem, (2002). The anemia of vitamin A deficiency: epidemiology and pathogenesis. *Eur J Clin Nutr.*, 56:271-81.
- [16] Stuijvenberg, M.E., M. Kruger, C.J. Badenhorst, E.P.G. Mansvelt, J.A. Laubscher, (1997). Response to an iron fortification programme in relation to vitamin A status in 6-12 year old schoolchildren. *Int J Food Sci Nutr.*, 48:41-49.
- [17] Tang, X.H., L.J. Gudas, (2011). Retinoids, retinoic acid receptors, and cancer. *Annu Rev Pathol.*, 6: 345–364.
- [18] Tawali, A.B., (2000). Fortifikasi zat besi pada ragi tempe dan analisis ketersediaan (*availability*) zat besi pada tempe yang dihasilkan (Suatu kajian fortifikasi mikronutrien pada makanan tradisional). Seminar Makanan Tradisional. Pusat Kajian Makanan Tradisional (PKMT) Universitas Brawijaya, Malang.
- [19] Theodosiou, M., V. Laudet, M. Schubert, (2010). From carrot to clinic: An overview of the retinoic acid signaling pathway. *Cell Mol Life Sci.*, 67:1423–1445.

- [20] Trowbridge I.S., R.A. Newman, D.L. Domingo, C. Sauvage, (1984). Transferrin receptors: structure and function. *Biochem Pharmacol.*, 33:925–932.
- [21] WHO, (2001). Iron Deficiency Anaemia. Assessment, Prevention, and Control. A Guide for Programme Managers. WHO/NHD/01.3. World Health Organization, Geneva.
- [22] WHO, CDC., (2007). Assessing the iron status of population : including literature reviews : report of a joint World Health Organization/ Centers for Disease Control and Prevention Technical Consultation on the assessment of iron status at the population level, Geneva, Switzerland, 6-8 April 2004. 2 ed. World Health Organization.
- [23] Zimmermann, M.B., (2007). Interactions between iron and vitamin A, riboflavin, copper, and zinc in the etiology anemia. In: Kraemer K, Zimmerman MB. (Eds.), *Nutritional anemia*. Sight and Life Press, Basel, Switzerland, 199-213.

The Implementation of Peer Assessment and Students' Responses in *Language Teaching Method* Class

Riana Eka Budiastuti^{1,a)}, Muhimatul Ifadah^{2, b)}, Siti Aimah^{3, c)}

^{1,2,3} Faculty of Foreign Language and Culture, Universitas Muhammadiyah Semarang

^{a)} Corresponding author: riana@unimus.ac.id

^{b)} muhimatul@unimus.ac.id

^{c)} siti.aimah@unimus.ac.id

Abstract. Being professional language teacher is principally about how teacher could understand and use the language orally and written well. Besides, professional teacher must also provide good assessment for their students. This study aimed to (1) measure to what extent does the implementation of peer assessment in Language Teaching Method (LTM) subject improve students' performance; (2) identify problems appear in the implementation of peer assessment; (3) elaborate students' response upon implementing peer assessment. This study employed descriptive experiment design conducted in the 6th semester of 14 students of English Department, Unimus. The result showed that students' performance upon the implementation of peer assessment in LTM subject increased significantly. There were several things to be underlined in this study, such as the high subjectivity in the process of assessing and the tendency of their unwillingness to be criticized. Therefore, generally students are encouraged and enthusiast in the learning process.

INTRODUCTION

Nowadays, student-centered learning becomes the most popular paradigm in education field. It could be clearly observed by the emergence of new methods focusing on students. Say, Collaborative learning, lesson study and so on that are lately being so familiar in our daily lives as teacher. It enables students to actively engage in the process of learning. Lecturer as the facilitator play important role to support and stimulate students to optimize all the existing learning resources. In other word, it is simply stated that lecturer is not the only source of learning who enter the class room to explain anything.

The development of the technology in education include the innovative learning method would support the invention of various evaluation tool, such as assessment tool. A good assessment could comprehensively evaluate the learning process. English education of Unimus as the institution which "create" English teacher, surely provide its students to sufficient skills of language skills and aspects, as well as designing the assessment. Writers interviewed the Language Teaching method lecturer and found that this subject emphasize more on the learning process and the assessment. This subject also applied peer assessment. Assessment is the general term which covers all methods to measure students' achievement by assessing someone or group performance. (Mimin Haryati: 2007). Assessment is usually conducted by lecturer to assess their students. Peer assessment is one type of innovative assessment (Mowl: 1996; McDowell and Mowl: 1996) which aims to improve the learning quality and encourage the students. While according to Yosie Dwetasaki (2011), peer assessment is the model of assessment based on the SCL principle.

This study tried to answer this following questions: (1) How to measure to what extent does the implementation of peer assessment in Language Teaching Method (LTM) subject improve students' performance; (2) What are problems appear in the implementation of peer assessment; (3) What are students' response upon implementing peer assessment.

METHOD OF THE STUDY

This was Classroom Action Research which aimed to improve learning process of LTM subject. The writer applied the theory of Kemmis and Taggart. This study was conducted in two cycles, where each of the cycle

consisted of planning, acting, observing and reflecting process. The study also engaged 5th semester students of English Education Department of Universitas Muhammadiyah Semarang in Language Teaching Method class.

In analyzing the data, there was several procedure to be accomplished, such as: (a) collecting students' score based on the assessment rubric, (b) analyzing the result of questionnaire, (c) analyzing the observation field.

FINDING

Initial condition of the students

In the Language Teaching Method class, it can be observed that the students' performance is still low. That is why lecturer must encourage the students to be confident in expressing their idea in format of public speaking. In this case, performing the material, see to what extents do they understand about the material being taught, in front of their friends.

First cycle

Peer assessment method	Percentage	Information
Discussion and determine the LO	66.67%	failed
Explanation and elaboration	80.00%	succeed
Friend assessment	60.00%	failed
Giving feedback	60.00%	failed
	65.33%	failed

It can be observed that the implementation of peer assessment was not successfully conducted by both students and lecturers. It could be identified by the percentage of achievement was less than 80%.

From the observation, students' responses towards the implementation were not positive at all. At least 50% students were not really enjoying the peer review. Besides only 52% students were motivated. This would lead the writer to design the second cycle.

Cycle 2

Peer assessment method	Percentage	Information
Discussion and determine the LO	80.00%	succeed
Explanation and elaboration	85.00%	succeed
Friend assessment	80.00%	succeed
Giving feedback	85.00%	succeed
	82.5%	succeed

In the second cycle, students performance increased and students' responses also positive. It could be observed by the 75% students find it enjoyable having peer review and 70% students were a lot motivated now.

CONCLUSION

From the study, it can be concluded that the implementation of peer review was succeed in 5th semester students of English Education Department of Universitas Muhammadiyah Semarang in learning Language Teaching Method. However, there were needed standardized measurements to limit the subjectivity. Besides, students must be encouraged to be open in all critique and feedback that may not always enjoyable.

REFERENCES

1. Depdiknas. 2008. *Penilaian hasil belajar*. Dirjen PMPTK.
2. <http://dwi-wahyuni.blogspot.com/2008/06/tugas-cooperative-learning.html>.) diakses pada tanggal 20 Agustus 2015
3. Kartono. 2009. *Penilaian diri dan teman sejawat sebagai inovasi metode penilaian dalam pembelajaran kooperatif*. Prosiding Seminar Nasional Pendidikan Matematika, ISBN: 9786028467360, 168-179.

4. McDowell, L. and Mowl, G. (1996) Innovative assessment - its impact on students, 131-147 in Gibbs, G. (ed.) *Improving student learning through assessment and evaluation*, Oxford: The Oxford Centre for Staff Development
5. Mimin Haryati. (2007). *Sistem Penilaian Berbasis Kompetensi, Teori dan Praktek*. Jakarta: Gaung Persada Press
6. Wahab, H. F. A., dkk. 2008. Penggunaan penilaian formatif sebagai proses melengkapi gelung: satu usaha penambahbaikan. Makalah seminar. Tersedia pada : <http://www.pdfchaser.com/>, Tanggal 21 Agustus 2010
7. Yosie Dwetasaki.2011. Peningkatan Prestasi Belajar Melalui Penerapan *Peer Assessment* (Penilaian Teman) pada Mata Pelajaran Akuntansi Siswa Kelas XI IPS 1 SMA Negeri Kebakkramat Karanganyar Tahun Pelajaran 2010/2011 (Penelitian Tindakan Kelas). Solo: UNS

Molecular Surveillance of Pyrethroid Resistance of Dengue Vector [*Aedes aegypti*] and its Implication To Public Health

Sayono^{1,a)}, Ulfa Nurullita^{2,b)}, Irfanul Chakim^{3,c)}

^{1,2,3}Faculty of Public Health, University of Muhammadiyah Semarang

^{a)} Corresponding author: say.epid@unimus.ac.id

Abstract. Resistance of *Aedes aegypti* mosquito to pyrethroid compounds have been a common problem in controlling this disease among the tropical countries, including Indonesia. Knockdown resistance alleles of voltage-gated sodium channel gene have been proposed as an effective marker for early detection of this problem. This study aimed to understand the pyrethroid resistance status of *Aedes aegypti* population among Dengue endemic areas in Central Java Province. The house hold larval surveys were conducted in Temanggung, Kendal and Jepara districts and Semarang municipal based on the Dengue cases. Mosquito larvae were reared to be 3-5 days old imago stage in entomologic laboratory, and then subjected to molecular experiment for detection of kdr alleles of domain II VGSC gene. This study found two single nucleotide polymorphisms, namely S989P and V1016G. These SNPs indicated that *Aedes aegypti* population has developed resistant to pyrethroid compounds. Generally, we found the high percentage of those SNPs, namely 26 and 93 percents. It is an important data input for public health officer in planning of Dengue prevention.

INTRODUCTION

Dengue hemorrhagic fever (DBD) has been worldwide problem caused by flaviviridae family of dengue virus resulting in a million cases of mortality and morbidity worldwide [1]. The absence of dengue treatment and preliminary protection, i.e. vaccine, to reduce its environmental mass impact have made significant disruption for dengue control program [2]. As presented data by Indonesian government, stagnant case number of dengue for at least 4 last years elucidated its consistency [3]. In other hands, the occurrence of dengue vector resistance to various insecticides, as dengue control manifestation, made another list of prevention obstacle [4].

Resistance of *Aedes aegypti* mosquito to pyrethroid compounds have been a common problem in controlling this disease among the tropical countries especially in Indonesia. The causes were known as intensive vector control using insecticide and becoming merely prevention program attempted by local health department. The report of our previous study explaining the history of insecticide use, i.e. mosquito coils or sprays to protect mosquito bites, have played important role in stimulating resistant competence against various insecticide compounds [4]. There are plenty of report tried to address vector resistance to various insecticide known to be pyrethroid compounds, that are α -cypermethrin, deltamethrin and permethrin, that spread throughout the world, including Indonesia [5-12].

Many studies have been conducted trying to understand the base mechanism of insecticide exposure affected genetical changes and led to resistance status mosquito acquires. The most common target site mechanism conferring pyrethroid resistance is linked to single nucleotide polymorphisms (SNPs) on the voltage-gated sodium channel (VGSC), collectively referred as knock down resistance (kdr) alleles. It has been proposed as an effective marker for early detection of this problem [7,12,13-19]. Our prior study has discovered a nationwide distribution of S989P and V1016G of VGSC genes and found highly resistance status as well as strongly correlated with pyrethroid compounds [4]. This finding suggests the need of routine molecular surveillance of molecular bases resulting in resistant phenotype could give important facts for early detection strategy.

In our present stage of research, we were trying to reveal the need of molecular surveillance. We have found that Central Java isolates been resistant based on S989P and V1016G markers. This finding was strengthening our prior study and also provide ongoing data for national and local health department to consider it as an effective approach.

MATERIAL AND METHODS

Study sites and mosquito collection

This study was conducted in four region of high endemic of dengue, which is proven by local health data, in Central Java province, Indonesia. Semarang, Kendal and Jepara district are located in northern coastal area of Central Java, Which is commonly urban, while temanggung is inland and suburban.

Mosquito was derived from household clusters that are near with dengue cases. The cases played as a core for their neighboring houses subsequently we survey in- and outside containers of their house for approximately 100 m around the cases. We collected larva of each region and housed in a different hutch as well as reared it to second generation. The second generation was reared by strandard treatment thereafter blood feed 2 days post emergence, as WHO standard protocol, and then store it in a plastic microtube.

DNA extraction and PCR amplification

Whole body of each mosquito was homogenized individually in 1.5 ml Eppendorf microtubes containing 50 µl of grinding buffer. We used Chelex ion exchanger to extract the DNA from mosquito segment as previously described [16]. *Aedes aegypti* voltage-gated channel (AaNav) gene encompassing domains IIS6 with predicted length of 437 bp was amplified using single-step polymerase chain reaction (PCR) with specific primer pairs [14] (AaNavF20_kdr): 5'-ACAATGTGGATCGCTTCCC-3' (AaNav_R21_kdr): 5'-TGGACAAAAGCAAGGCTAAG-3'. The PCR reaction mixture consisted of 25 µl containing of 5 µl template DNA; 50 mM KCl; 10 mM Tris-HCl, pH 8.3; 1.5 mM MgCl₂; 200 mM dNTP; 1 U taq polymerase and a primer pairs (20 pM each). The reaction was performed in thermocycler machine for 5 minutes at 95°C for initial denaturation, followed by 40 cycles of 30 s at 95°C for denaturation, 30 s at 58°C for annealing, and 30 s at 72°C for elongation and eventually 72°C polymerase extension, according to the KAPA kits instruction (KAPABIOSYSTEMS, Boston, MA, USA). Electrophoresis of 5 µl aliquots of the PCR product in 2.0% agarose gels used to successful polymerase amplification. The purified amplicons were sequenced using an ABI Prism™ Dye BigDye terminator cycle sequencing ready kit (Applied biosystem, Foster City, USA). In an automatic sequencer through fluorescent DNA capillary electrophoresis (ABI 3130X1) at the Eijkman institute, Jakarta, Indonesia. The sequence obtained was analyzed using an alignment editor program (Biological Sequence Alignment Editor, BioEdit, Ver 7.0.9, IbisBioSciences Carlsbad, USA). Descriptive statistical analysis were performed with SPSS software.

RESULT

After DNA extraction and amplification, the samples was sequenced due to point out the mutational changes of AaNav gene IIS6 region. There are three types of three base element, the minimum amount of base element to express an amino acid, Homozygous-susceptible and Homozygous-resistant as well as Heterozygous (Figure 1). Homozygous-susceptible express susceptible strain of mosquitoes, inversely to homozygous-resistant, while heterozygous produce double invisible bases indicating indistinctness between resisten or susceptible. We found they occurred in almost all of the study sites and further used for allelic frequency. There are several kodon that represent AaNav resistant to phyretroid, i.e 989, 1011, 1014 and 1016, the number of the bases accordingly based on *Drosophila* (Figure 2). However, there are only 989 and 1016 known to affect resistance status of *Aedes aegypti*.

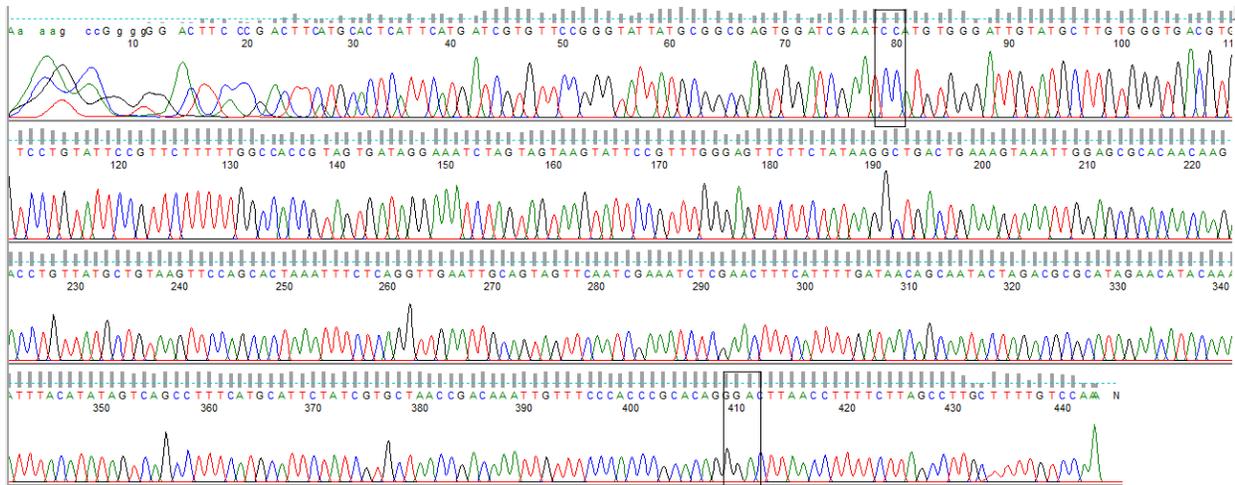


Figure 1, Chromatogram curve of domain II VGSC gene sequence. This figure clearly show the peaks of each base along the gene sequent, indicating the homozygous or heterozygous mutation.

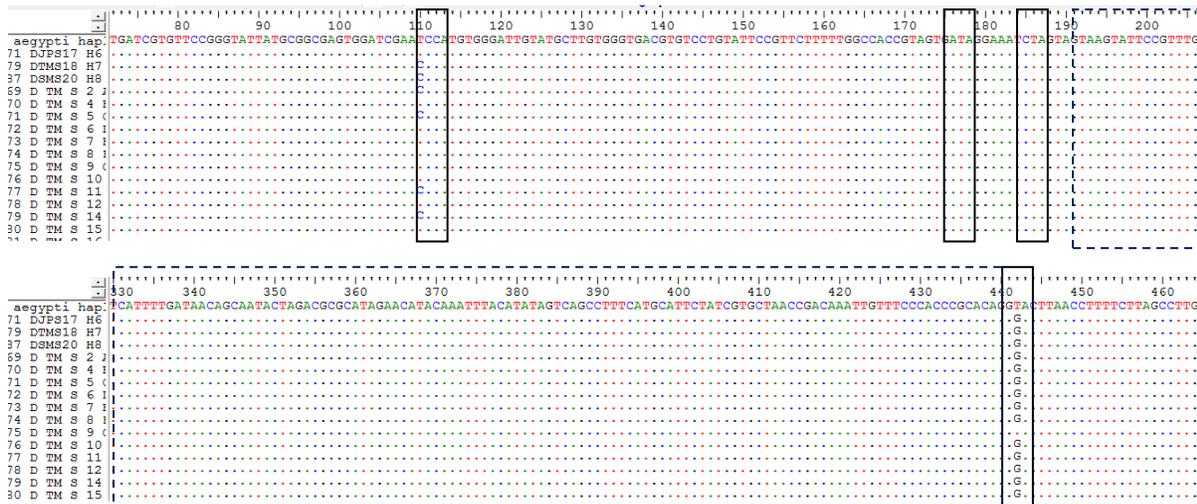


Figure 2, SNPs site in the domain II of VGSC gene sequence. There are five important sites in this sequence, namely bases number 110, 176, 185, 191-440, and 441. Those sites represent codon 989, 1011, 1014, intron, and codon 1016. All of DNA samples showed that there were no bases substitution in codon 1011, 1014 and intron. I1011M is common SNP of this gene among the *Aedes aegypti* population in Latin America, but never found in other regions. While the 1014 is usually found in *Anopheles* mosquito with Leucine to Phenylalanine amino acid changing, and also never found in *Aedes*.

To decide if our isolates have a high resistance status molecularly, we provide allelic frequency analysis in our study. The base substitution of codon 989 is known by TCC (wild-type) to CCC (resistant-type) which likewise changing serine to proline, it called *Non-synonymous mutation*. There are 26 of TCC, 18 of homozygous or mixed, and 3 of CCC. The overall alleles frequency of serine is 0.74, while proline 0.26, indicates susceptible domination in this codon.

Inversely, there are extremely high status of resistance in the codon 1016 of AaNav. The substitutional bases are GTA to GGA which revamping valine to glycine. Forty samples were belonged to GGA (resistant-type), two samples of susceptible and heterozygous. The alleles frequency showed 0.93 are glycine and valine for the rest.

Table 1. Genotype and kdr allele frequency of codon 989 Nav gene of *Ae. aegypti* in Central Java

Population	n	TCC	TCC/ CCC	CCC	Genotype frequency			Allele frequency	
					S/S	S/P	P/P	S	P
Semarang city	13	6	4	3	0.46	0.31	0.23	0.62	0.38
Kendal	3	1	2	0	0.33	0.67	0.00	0.67	0.33
Jepara	11	7	4	0	0.64	0.36	0.00	0.82	0.18
Temanggung	20	12	8	0	0.60	0.40	0.00	0.80	0.20
Total	44	26	18	3	0.55	0.38	0.06	0.74	0.26

Table 2. Genotype and kdr allele frequency of codon 1016 Nav gene of *Ae. aegypti* in Central Java

Population	n	GTA	GTA/ GGA	GGA	Genotype frequency			Allele frequency	
					V/V	V/G	G/G	V	G
Semarang city	13	2	1	10	0.15	0.08	0.77	0.19	0.81
Kendal	3	0	0	3	0.00	0.00	1.00	0.00	1.00
Jepara	8	0	0	8	0.00	0.00	1.00	0.00	1.00
Temanggung	20	0	1	19	0.00	0.05	0.95	0.03	0.98
Total	44	2	2	40	0.05	0.05	0.91	0.07	0.93

DISCUSSION

To date, dengue vector control program using insecticides have been widely implicated by national and local health department of Indonesia. Fogging, Abate, mosquito-net, have been the base line approach to prevent vector-borne-related-disease. The frequently use of household insecticide to prevent mosquito bites seen to be cultural behavior of Indonesian society. Unfortunately, *Aedes aegypti* has been live together with humans in their containers and exposed daily to insecticides. Therefore, constant exposure to insecticide from various sources resulting in a rapid selection for resistance to pyrethroid. Taken together, a mass genetical damage is unavoidable.

Molecularr study has been initiated from the last decade by researchers, trying to connect the basic mechanism of biological changes caused by specific exposure with field eradication technique. There are plenty of papers revealed the synonymous mutation of kdr alleles [7,12,13-19], especially 989 and 1016 in *Aedes aegypti* [13,14-15], that have a strong connection with susceptibility status of mosquito population. Our prior study supported the previous effort to elucidate their connection [4]. Now, we repeatedly reported the important of molecular surveillance for prevention strategy and early detection to every decision making. We found that 0.74 of mosquito was susceptible molecularly in codon 989 and inversely 0.97 resistant types detected in codon 1016 which is similar with our prior result. Taken together, although codon 989 is not entirely resistant, nevertheless almost all of codon 1016 contains resistant genotype. It is in line with phenotype status when RR95 to α -cypermethrin ranging 14.5-125.5 [4], despite a highly resistance status found, susceptible strain still exist. It indicates that different rates of resistant SNPs occurred between codon 989 and 1016 are as a consequence of rapid mutational steps from susceptible to resistant. This study gave important additional information that our molecular surveillance strongly suggest early detection program for planning prevention strategy.

In conclusion, vector resistance is an common instance widely spread overseas, including Indonesia. The abundance of papers reporting *Aedes aegypti* resistant to various insecticides and correlating them with VGSC genes (S989P and V1016G) for several decades have exhorted public health sector to implement routine molecular surveillance. It is enhanced by our latest study that includes a wide range of geographical areas of Central Java.

ACKNOWLEDGEMENT

The authors wish to thank Prof. Amin soebandrio, MD, PhD Clin. Microbiol, director of the Eijkman institute for molecular biology for his kindness in permitting us to conduct the laboratory study; Prof. Din Syafruddin, PhD as malarial laboratory director for his material and non-material support; the directorate for Research and Public

Services the ministry of education and culture, Republic Indonesia for the grant and all the staf of the provincial, Districts/Municipalities Department of Health.

REFERENCES

1. Simmons CP, Farrar JJ, Nguyen van VC, Wills B (2012) Dengue. *N Engl J Med* 366: 1423–1432. doi:10.1056/NEJMra1110265.
2. Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL, et al. The global distribution and burden of dengue. *Nature*. 2013; 496 (7446):504–507. doi: [10.1038/nature12060](https://doi.org/10.1038/nature12060) PMID: [23563266](https://pubmed.ncbi.nlm.nih.gov/23563266/)
3. Oscar P, Yudianto, Budijanto D, Hardhana B, Soenardi A.T. *Profil Kesehatan Indonesia 2014*. Jakarta: Kementerian Kesehatan Republik Indonesia. 2015.
4. Sayono S, Hidayati N.P.A, Fahri S, Sumanto D, Dharmana E, Hadisaputro S, Asih S.B.P, Syafruddin D. Distribution of Voltage-Gated Sodium Channel (Nav) Alleles among the *Aedes aegypti* Populations In Central Java Province and Its Association with Resistance to Pyrethroid Insecticides. *PLoS ONE* 11 (3): e0150577. doi:10.1371/journal.pone.0150577.
5. Luna JED, Martins MF, Anjos AFd, Kuwabara EF, Navarro-Silva eMA. Susceptibility of *Aedes aegypti* to temephos and cypermethrin insecticide, Brazil. *Rev Saude Publica*. 2004; 38(6):1–2.
6. da-Cunha MP, Lima JBP, Brogdon WG, Moya GE, Valle D. Monitoring of resistance to the pyrethroid cypermethrin in Brazilian *Aedes aegypti* (Diptera: Culicidae) populations collected between 2001 and 2003. *Mem Inst Oswaldo Cruz*. 2005; 100(4):441–444. PMID: [16113895](https://pubmed.ncbi.nlm.nih.gov/16113895/)
7. Lima EP, Paiva MHS, Araujo APd, Silva EVGd, Silva UMd, OlivieraLNd, et al. Insecticide resistance in *Aedes aegypti* populations from Ceara, Brazil. *Parasites Vectors*. 2011; 4(1):5.
8. Ponlawat A, Scott JG, Harrington LC. Insecticide Susceptibility of *Aedes aegypti* and *Aedes albopictus* across Thailand. *J Med Entomol*. 2005; 42(5):821–825. PMID: [16363166](https://pubmed.ncbi.nlm.nih.gov/16363166/)
9. Garcia GP, Flores AE, Fernandez-Salas I, Saavedra-Rodriguez K, Reyes-Solis G, Lozano-Fuentes S, et al. Recent Rapid Rise of Permethrin Knock Down Resistance Allele in *Aedes aegypti* in Mexico. *PLoS Neg Trop Dis*. 2009; 3(10).
10. Thanispong K, Sathantriphop S, Chareonviriyaphap T. Insecticide resistance of *Aedes aegypti* and *Culex quinquefasciatus* in Thailand. *J Pestic Sci*. 2008; 33(4):351–356.
11. Ahmad I, Astari S, Tan M. Resistance of *Aedes aegypti* (Diptera: Culicidae) in 2006 to Pyrethroid Insecticides in Indonesia and its association with Oxidase and Esterase Levels. *Pakistan J Biol Sci*. 2007; 10(20):3688–3692.
12. Brengues C, Hawkes NJ, Chandre F, McCarroll L, Duchon S, Guillet P, et al. Pyrethroid and DDT cross-resistance in *Aedes aegypti* is correlated with novel mutations in the voltage-gated sodium channel gene. *Med Vet Entomol*. 2003; 17:87–94. PMID: [12680930](https://pubmed.ncbi.nlm.nih.gov/12680930/)
13. Srisawat R, Komalamisra N, Eshita Y, Zheng M, Ono K, Itok TQ, et al. Point Mutation in domain II of the voltage-gated sodium channel gene in deltamethrin-resistant *Aedes aegypti* (Diptera: Culicidae). *Appl Entomol Zool*. 2010; 45(2):275–282.
14. Martins AJ, Lins RMMdA, Linss JGB, Peixoto AA, Valle D. Voltage-gated Sodium Channel Polymorphism and Metabolic Resistance in Pyrethroid-Resistant *Aedes aegypti* from Brazil. *Am J Trop Med Hyg*. 2009; 81(1):108–115. PMID: [19556575](https://pubmed.ncbi.nlm.nih.gov/19556575/)
15. Singh OP, Dykes CL, Das MK, Pradhan S, Bhatt RM, Agrawal OP, et al. Presence of two alternative kdr-like mutations, L1014F and L1014S, and novel mutation, V1010L, in the voltage-gated Na⁺ Channel of *Anopheles culicifacies* from Orissa, India. *Malar J*. 2010; 9(1):146.
16. Syafruddin D, Hidayati APN, Asih PBS, Hawley WA, Sukowati S, Lobo NF. Detection of 1014F kdr mutation in four major Anopheline malaria vector in Indonesia. *Malar J*. 2010; 9(1):315.
17. Kawada H, Higa Y, Komagata O, Kasai S, Tomita T, Yen NT, et al. Widespread Distribution of Newly Found Point Mutation in Voltage-gated Sodium Channel in Pyrethroid-Resistant *Aedes aegypti* Populations in Vietnam. *PLoS Neg Trop Dis*. 2009; 3(10).
18. Harris AF, Rajatileka S, Ranson H. Pyrethroid Resistance in *Aedes aegypti* from Grand Cayman. *Am J Trop Med Hyg*. 2010; 83(2):277–284. doi: [10.4269/ajtmh.2010.09-0623](https://doi.org/10.4269/ajtmh.2010.09-0623) PMID: [20682868](https://pubmed.ncbi.nlm.nih.gov/20682868/)

19. Kasai S, Ng LC, Lam-Phua SG, Tang CS, Itokawa K, Komagata O, et al. First Detection of a Putative Knockdown Resistance Gene in Major Mosquito Vector, *Aedes albopictus*. *Jpn J Infect Dis.* 2011; 64:217–221. PMID: [21617306](#)

Effective Use of Lesson Plan to Trigger Students' Autonomy

Siti Aimah^{1,a)} Muhimatul Ifadah^{2,b)} Dwi Anggani Linggar Bharati^{3,c)}

¹*Faculty of Foreign Language and Culture Universitas Muhammadiyah Semarang*

²*Faculty of Language and Culture Universitas Muhammadiyah Semarang*

³*Faculty of Language and Arts Universitas Negeri Semarang*

a) Corresponding author: siti.aimah@unimus.ac.id

b) muhimatul@unimus.ac.id

c) dwi_anggani@yahoo.com

Abstract. This study was intended to trigger students' autonomy in joining Genre-based Writing class of State University of Semarang. Further, it was conducted to know how the students demonstrate their ability in using a set of tactics for taking control of their own learning. For this purpose, 30 students were randomly chosen and two observers involved in lesson study consisted of plan, do, and see. The result showed one of the indicators of successful teaching and learning in the classroom was not only determined by interaction between the lecturer and the students in the classroom but also the use of lesson plan designed. In triggering the students' autonomy in learning, the lecturer established a variety of instructional strategies focusing on academic expectations through the lesson plan. The lecture was designed to engage the students' activeness and autonomy so that the goal of learning could be achieved well.

INTRODUCTION

Boud (1988: 23) cited in Cotterall (1995: 195) states that the main characteristic of autonomy as an approach to learning is that students take some significant responsibility for their own learning over and above responding to instruction. Students' autonomy plays an important role in achieving the success of learning. It could be said as autonomous learners if they could demonstrate the ability to use appropriate strategies for taking control of their own learning. Unfortunately, not all students are able to set and use their tactics to achieve what the purpose of their learning. Mostly, they join the teaching learning process because it is a part of curriculum that they have to take to and get the score of it. For some students, they do not know how to set the goal, choose the materials, take the chance, monitor and evaluate the progress of learning. Those conditions exactly have a profound influence on their behavior of learning guiding them to be autonomous learners.

Autonomous learners are not learners who learn with themselves without a teacher guiding them in achieving the goal of learning in the classroom, but it could be seen from their responsibility to monitor and evaluate the progress of learning. Marzano et.al (2003: 1) reveals that the most students' achievement is affected by a teacher. That is why the teacher has an important role in determining the successful of teaching includes for being autonomous learners. Wong (2009: 12) mentions that 1) an effective teacher has a positive expectations for student success; and lesson plan reflects such expectations, 2) an effective teacher knows how to design lessons for student mastery; which is reflected in lesson plan, 3) an effective teacher is an extremely good classroom manager; which is possible via good time management during class time and that is possible only by effective implementation of a good lesson plan. The success of teaching is not only looked at from the way the teacher interacts with the students through conveying the materials with the appropriate strategy used, but also from the lesson plan designed for teaching. Through lesson plan, the teacher could decide what and how the students learn in the classroom.

The role of lesson plan does not only affect to the teacher instruction given to the students, but also a well-managed classroom as well. The characteristics of well-managed classroom are 1) students are deeply engaged with their work; possible if their roles are described and they have a goal as provided in a good lesson plan, 2) students know what is expected; possible via routinely implemented good lesson plan, 3) there is little wasted time, confusion; possible via effective implementation of a good lesson plan, 4) the climate of the classroom is work-oriented, but relaxed and pleasant; possible via good time management due to effective implementation of a good lesson plan (Wong, 2009: 81).

Looking at the importance of lesson plan which is very crucial in conducting teaching learning process, the teacher should consider the quality of lesson plan by determining the students' background knowledge and students' problems. By knowing them, it would make the teacher easy in determining the goal of learning, choosing the method of learning, simplifying the material, and using the supporting media. All of the indicators include in a lesson study. Lenski et.al (2009: 50) state that lesson study approach is a method of professional development that encourages teachers to reflect on their teaching practice through a cyclical process of collaborative lesson planning, lesson observation, and examination of student learning.

THE RESEARCH METHOD

This study was a qualitative research contained in a research lesson consisted of plan, do, and see. There were 14 students involved and took Genre-based Writing class in English Department, State University of Semarang, Indonesia. In conducting the research, it involved five observers who already collaborated with the lecturer in discussing the planning of lesson study. All data obtained from research lesson were analyzed by content analysis method.

FINDINGS

The result showed that there were some activities done collaboratively in discussing some learning problems. In order to solve the problems, the lecturer presented the main problems faced by either the students or the lecturer to be discussed together in the stage of planning. Formerly, the lecturer designed the lesson plan used to teach supported by the material, the media, the students task, and completed with the observation sheet used by the observers in the classroom. It was made based on the problems faced by the students. The following was the result of Genre-based Writing lesson plan.

Table 1. The Result of Genre-based Writing Lesson plan

No.	Aspect	Score	Criteria
1.	Formulating learning achievement indicator.	4.50	Excellent
2.	Organizing material.	5.00	Excellent
3.	Choosing sources of learning.	5.00	Excellent
4.	Learning scenario.	2.33	Less
5.	Assessing.	3.00	Fair
6.	Using language.	4.00	Good
	Average	4.00	Good

While in the implementation of lesson plan designed by the lecturer, the students were provided with the strategy of learning that enabled them to be autonomous learners. In triggering the students' autonomy, the lecturer designed the lesson plan based on the students' characteristic, need, and learning goal. Implementing cooperative learning in the classroom as one of some alternative ways in learning, demanded them to have a good responsibility in comprehending the material. Peer review was also done to check the writing so that they learnt from the other mistakes in writing. Through the use of it, the students were also stimulated to monitor and evaluate their own learning influencing the success of learning especially in writing a text.

DISCUSSION

In designing a lesson plan, the lecturer considered a variety of instructional strategies focusing on academic expectations. Richards (1998: 103-121) states that a lesson plan addresses 1) concept or objectives to be taught, which tells the student what they will learn, 2) time blocks, e.g., approximate time expected to be devoted to the lecture, 3) procedures to be used for instructional design, 4) materials needed both for the student and the teacher, 5) independent practices or student time on task, 6) evaluation, applications, and student understanding, e.g. main questions to be asked by the teacher to check student understanding. A successful lesson plan provides some

instructional strategies designed for each minute to be done by the teacher and the students in the classroom. It is in line with the characteristic of lesson study in which all the participants (lecturer and observers) collaborated each other to discuss the components written in a lesson plan.

Based on the result of Table 1, it showed that the lecturer's ability in designing lesson plan was good with the average achievement was 4.00 in good category. In designing the lesson plan, the lecturer was able to formulate learning achievement indicator well. It was proven with the score of it was 4.50 in which the indicator contained learning behavior. It was in line with Cotterall (1995: 196) states that beliefs and experience govern learning behavior. In this case, the lecturer formulated the achievement indicator in four aspects; cognitive, process, skills, and affective aspects. Those aspects were important in determining the students' learning behaviour. It also determined the students' autonomy in learning so that they did not rely on the others in completing the task.

While in the aspects of organizing the material and choosing the learning sources, it achieved the maximum result with the average for each was 5.00 with excellent category. It showed the lecturer's ability in preparing the teaching learning needs well. The selected material was based on the students' characteristic and the learning goal. The clarity of learning framework was also presented in detail. It was important because the lecturer considered some aspects influencing the success of teaching learning process.

Eventhough in designing learning scenario had not shown the significant result, there were some efforts shown by the lecturer in order to trigger the students' autonomy. Through the selected strategy used in teaching learning process, the lecturer provided the students with the opportunity to set the goal of their learning. Besides that, they were given a chance to determine by themselves the appropriate model of learning. It was done in order they were able to monitor and evaluate their own learning so that it influenced them in choosing and using the style of learning.

For Genre-based Writing class in which there were some students who had special character, the lecturer designed the lesson plan referring to Richards' theory. Looking at the criteria above, it showed that the lecturer had ability in preparing teaching learning process well. Some aspects considered well in order to answer the problems. One of big problems faced by the lecturer in teaching writing was about students' autonomy. Generally, the students did not have the responsibility of their own learning. It made them difficult to monitor and evaluate their learning progress. There were some students tended to rely on the others. They did not actively discuss with the others related to the material they got.

One of strategies used by the lecturer in solving the problems was by choosing the appropriate model used in conducting teaching learning process in the classroom. The use of cooperative learning e.g. Numbered Heads Together (NHT) became a reference to the lecturer. It was chosen because generally the students of State University of Semarang tended to enjoy the teaching learning process by doing a discussion in groups. It was proven from the result of the pre-observation done by the lecturer in which the students felt comfortable in doing group discussion.

In order to avoid the dependence to the others, the lecturer designed the lesson plan in such way so that each of them had responsibility for not only individually but also in a group. Through the implementation of NHT, the numbered students discussed together in comprehending the material they got and answered the questions given by expanding the information based on their knowledge. It also helped the students in building their confidence and motivation to improve their ability in writing. Besides that, the students were given a chance to do peer review so that they knew what kinds of the writing mistakes written by the others and also corrected them in the same time before finally being turned back to the owner.

REFERENCES

1. Chaterine. C. L, *Lesson Study: A Handbook for Teacher-Led Improvement of Instruction* (Education Department, Mills College, Oackland CA, 2010).
2. George, J. M. et.al., *Learning Cooperative Learning via Cooperative Learning: A Sourcebook of Lesson Plans for Teacher Education* (SEAMEO Regional Language Centre, Singapore, 1997).
3. Lenski. S. J. & Caskey. M. M, *Using the Lesson Study Approach to Plan for Student Learning*, Middle School Journal, 2009, 40(3), pp. 50-57 (available at http://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1011&context=ci_fac).
4. Panasuk. R. M. and Sullivan. M. M, *Need for Lesson Analysis in Effective Lesson Planning*, Academic Journal Article. (available at <https://www.questia.com/library/journal/1G1-20494595/need-for-lesson-analysis-in-effective-lesson-planning>).

5. Sara. C, *Readiness for Autonomy: Investigating Learner Beliefs*. System Journal, 1995, 23(2) pp. 195-205 (available at <http://people.exeter.ac.uk/zhhm201/1-s2.0-0346251X95000088-main.pdf>).
6. Simon. B. and Saleh. A, *Learner Autonomy: English Language Teachers' Beliefs and Practices*, (British Council, London, 2012), pp. 1-50 (available at https://www.teachingenglish.org.uk/sites/teacheng/files/b459%20ELTR%20Report%20Busaidi_final.pdf).
7. Volkan. C. and Hidayet. T, *Effective Use of Lesson Plans to Enhance Education in U.S. and Turkish Kindergarten thru 12th Grade Public School System: A Comparative Study*, International Journal of Economy, Management and Social Sciences 2(6), June 2013, pp. 334-341. (available at http://www.iises.net/download/Soubory/soubory-puvodni/pp10-20ijote_V2N2.pdf).

Performance Description Of Counselor Family Planning In The Implementation Family Planning Program In Demak District

Siti Istiana¹⁾, Siti Nurjanah²⁾

^{1,2}*Faculty of Nursing and Health, Universitas Muhammadiyah Semarang*

^{a)} Corresponding author: aquana.mt99@yahoo.co.id

Abstract. One of the problems in the management of family planning programs is still high unmet need. Unmet need is the pair of fertile age who need family planning service are not met. The impact of these conditions it will be too close distance pregnancies (<2 year) which is one of the indirect cause of maternal mortality. In 2014 from a total of as much as 278.732 that fell into the unmet need of 22.627 or 8.12%. The main reason women of fertile age not using contraception that is most is they require a more in-depth explanation of contraceptive methods (29.4 %). On the other side, BAPERMAS already empowers counselor of family planning to socialize about contraception but the results have not been maximal. **Purpose:** This study aims to describe the performance of counselor family planning in the implementation of family planning programs. **Method:** quantitative study using cross sectional approach. Respondents are counselor family planning some 65 people in the district. Data was collected through interviews using a questionnaire. Data analysis techniques by univariate analysis. **Results:** showed that the characteristic respondents (29-51 years of age, had an average of 4 village built, mostly already qualified higher education (DIII/ DIV/SI/S2) and working >10 years). Total of 53 respondents to approach the formal leaders, 36 respondents collection data and mapping, 55 respondents to approach informal leader, 53 respondents development of the agreement. Total of 55 respondents stabilization agreement, 34 respondents give counseling, information and education, 48 respondents formed a group pioneers, 57 respondents planning services. Total of 64 respondents provide information and coaching participants and 38 respondents do recording, reporting and evaluation. **Conclusion:** for BAPERMAS in Demak District increase the number of counselor family planning, hold training for recording and reporting the latest format, continuity guidance from Ka.UPT, develop creativity counseling and proportional division of duties.

INTRODUCTION

Nowadays, a family planning program (KB) in Indonesia is still facing some crucial problems in its aims to maintain a program momentum in which the program had been being done successfully recently. One of the problems in managing the family planning program is a high rate of unmet need. Unmet need is productive couples (PUS) who do not get service about family planning program. Unmet need is a problem in which a pregnant woman does actually not want to get pregnant. The unwillingness to get pregnant can trigger the health of pregnant mother and her infant.

Demak regency is one of cities in Central Java province which has a high rate of unmet need. In 2014, from the total 278.732 of productive couples, among 22.627 or 8, 12 percent belongs to the unmet need category.

Woman belongs to unmet need category has a big chance to get pregnant and, not to mention, has a big chance too in getting a complication during her pregnant, labor, and childbed period. Consequently, there are two alternative choices which can be taken when woman gets an unplanned pregnant. First, she can keep her pregnancy which leads to a close pregnancy interval. The close pregnancy interval is an indirect cause of maternal mortality. In 2014, there were 13 women got close pregnancy interval, i.e. less than 2 years interval in between the first and the next pregnancies.

Second, woman does not keep her pregnancy or even tries to do abortion. From the data gained from RISKESDAS 2010, the unplanned pregnant rate was 11,6% and the abortion rate was 7%. The unplanned pregnancy happened due to the woman limitation in getting a knowledge about reproduction health mainly dealing with pregnancy plan and prevention information.

Unmet need rate in Demak is caused mainly by a condition in which women do not have adequate information and understanding either about contraception and its side effects or about health information dealing with the use of contraception. Those condition triggers women not to use any contraception at all. Furthermore, unmet need happens due to uneven socialization regarding to contraception done by the official stakeholders. The lack of knowledge and understanding toward contraception lead to a lethargic society participation in joining family planning program.

The one that in charge of motivating society for joining the family planning program in regency level is the Agency for Community Empowerment of Women and Family Planning (BAPERMAS & KB). A board of BAPERMAS of Demak regency in cooperation with Demak regency's society had done the socialization in unmet need area in which they triggered women to join family planning program.

There are some problems faced by PKB in doing their jobs in Demak regency. The first problem is irregular socialization. Secondly, the partnership with the cadres are taken for granted in which the stakeholders do not seriously and wisely take advantage from the partnership relation. In addition, cadres are not being involved in the socialization activity but they just are in charge of taking and reporting the data achieved by the acceptors. Data collection methods were only done by using door to door data collection method and the rest of the data were taken from the Central Bureau of Statistics (BPS). Reporting format and procedure were only given once in the beginning of the program by PKB officers.

In doing their jobs, family planning tutors (PKB) face some obstacles due to the various working unit nomenclatures which lead the increase of family planning tutors' burdens. Family planning tutors (PKB) are not only taking in charge of managing family planning program (KB) but also taking in charge of managing other development programs in accordance with the institutional mission in their region. There are small number of family planning tutors (PKB) in Demak regency, i.e. 65 people in which the ratio show 1:4-5 meaning that one family planning tutors (PKB) must manage and run family planning program in 4-5 villages. That condition is not really ideal since the ideal condition requires 1:1 ratio meaning that 1 person of family planning tutor (PKB) must manage and run family planning program in 1 village only.

All family planning tutors (PKB) in Demak regency has already joint the general basic training and competency training. Family planning tutors (PKB) do not get any neither incentive nor compensation for the jobs they did but the compensation is only given based on their functional position. The lack of guidance and supervision from the authority make them feel conscious whenever they face problematic cases dealing with family planning program. Rarely does the authorized person for example a director of family planning program give a guidance and supervision for the family planning tutors because the authorized person assume that all of family planning tutors are capable to do their jobs. Structurally, the organization in which family planning tutors (PKB) are working in is under the head of the board of society empowerment and family planning program (BAPERMAS & KB) of Demak regency. However, in fact, the the family planning tutors (PKB) works under the head of regional technical implementation unit (UPTD). In the hierarchy of the organizational structure and family planning program of BAPERMAS Demak region, family planning tutors (PKB) is not solely responsible to the head of UPTD but directly responsible to the head of the board of society empowerment and family planning program (BAPERMAS& KB) of Demak regency. Information obtained by the head of technical implementation unit (UPT) from the family planning tutors (PKB) will be reported and submitted to the board of society empowerment and family planning program (BAPERMAS& KB) of Demak regency, and vice versa.

RESEARCH METHODOLOGY

This research is a qualitative research in which cross sectional approach was implemented in this research. This study aimed to describe the performance and the role of the family planning tutors (PKB). Thus, the population in this research were 65 family planning tutors (PKB) who are working in sub districts of Demak regency. The sample gained by employing total sampling method. The data collection was done by implementing structured questionnaires. And, the data were analyzed by using univariate (frequency distribution) method.

FINDINGS

The 69.2% of respondents are 29-51 years old in which 90.8% of respondents worked in 4 village, 81.54% of respondents have been working more than 10 years, and 61.5% of respondents are highly educated people with diploma, bachelor, or master degree (DIII / DIV / SI / S2).

Approaching the formal figure had been done well which was indicated by the action of 81,5% of respondents who had visited the formal figure before mapping and collecting the data. The first step that must be done by the family planning tutors (PKB) in one new area or in a new developed program is meeting the head of the village to tell their presence, share visions of the family planning program as one of the government programs. In addition, they must ask a permission and support to the head of the village for conducting data collection and mapping activities with cadres of Institutions Rural Communities (IMP) in his or her official working area. All of the family planning tutors (PKB) involved in this research had already visited some formal figures such as the head of the village (Kades), official officers of the village or sub district like midwifery working in the village, religious leader, etc. For the second step, collecting and mapping the data had been done well in which 55,4% respondents did the data collection and mapping. For the sake of recognizing their working area, the family planning tutors (PKB) identified their working area including the identification of the border of the working area, citizenship identification, etc. which are relevant with the family planning program and a new program which would be developed by both the formal and informal figures in each area of community group (RW) or neighbourhood group (RT). The results of those identification activities were being mapped as those are the important data to support the operational activity in the future. Data collection and mapping had been done well supported by the answers of the respondents showing that 92.3% of respondents planning prior to data collection activities at the village level. Planning is the process of defining the purpose of data collection, create strategies to achieve goals and develop a plan of work activities of the organization. To be able to identify and take advantage of the potential of existing support in the working area, the family planning tutors (PKB) should conduct data collection and mapping of the area. Through data collection, PKB is able to control all planning activities and be able to calculate the amount of the acceptors increased in each month and can count the number of users of contraceptives. The total amount obtained can be used as a benchmark for the success of family planning programs each month.

Before collecting the data, there were 83,1% respondents had already evaluated the large of the area. The previous collected data can be used as the basic step in developing the next program namely for deciding the target participants, approaching the important society leaders, etc. Then the results of the data collection are used for the reference in creating a policy deals with a decision in choosing the target participants so that the maximum results of family planning program activity can be achieved. For example, in one area, there is still found a low rate family planning program acceptors and many unmet needs, then the priority program must be done is doing door to door personal approach to the important community leaders.

In the third step, there are 84,6% respondents have been doing a regular meeting with the community leaders. The meeting with community leaders was done regularly once a month (84,6%). The approach was done for the sake of explaining the benefits of family planning program for the society in general. Then, the family planning tutors (PKB) asked the community leaders to actively involved in this program. The fourth step was also done well (81,5%), for it was proven by the consensus results reported to the stakeholders. The community leaders who were still being confused whether or not support this program, were invited by the head of the village to come to the villagers conference agenda (MMD). Technically, the family planning tutors (PKB) explained the description and benefits of the program which would be implemented. On the other side, the fifth step had not done well since the result showed that 84,6% respondents did not require to make a schedule to discuss the results of the consensus. The implementation of villagers' conference agenda was followed by asking the community leaders to realize the KIE that had been scheduled.

The sixth step, it was found that 52,3% respondents had done the KIE. The socialization had been done was not only dealt with the unmet need but also the socialization of the important to increase and enrich knowledge about family planning program. The socialization is important for the sake of enriching and increasing knowledge about family planning program. By the socialization, is hoped that the women know and aware about unmet need. In addition, it is hoped that they can be the family planning program acceptors and actively participate in the family planning program.

In the seventh step, the establishment of a pioneer group had done well (73,8%). The establishment of a pioneer group is the activity in which the tutors motivate a family to become a model or cadre. Not to mention, the establishment of a pioneer group activity is aimed for motivating a family to participate actively in managing the national family planning program. Soon as KIE had implemented, the family planning tutors (PKB) did a data collection activity to record the data which families were willing to be participants in family planning program. It is matched with the respondents' responses in which 84,6% established the pioneer group to motivate the unmet need groups and not to mention to give live socialization (84,6%). The example of the establishment of pioneer group is the establishment of MOP. MOP was established for providing a good model for the society on how to participate on the family planning program. However, the establishment of MOP did not give any immediate impact meaning

that the number of childbirths caused by unmet need was still high. The high number of childbirths is in fact not only caused by the unmet need but also the awareness of the husbands, for husbands have a significant role in the family program planning too.

The eighth step had done successfully. There were 87,7% respondents served family program planning. It was proven by the data collected in which 76,9% of unmet need women understood the given socialization; 81,5% of women responded that they could easily keep in touch with the family planning program tutors; and 73,8% of participants did the program naturally as they are. According to Wiriaatmadja (1997), a good socialization method is a method which is suitable with the condition of the targeted participants, has a good number of participants, timely and targeted, consists of acceptable and understandable content or materials, and affordable. The ninth step, the respondents gave an information and guidance to the participants. It was proven by the data as follows: 73,8% felt that they only have a responsibility toward the unmet need women. The activity of the family planning tutors (PKB) only deals with establishing demand creation of the family program planning by persuading productive couples (PUS) to participate family planning program. It is matched with the respondents' respond dealing with the attempt to persuade the unmet need women to join family planning program (73,8%). In this program, the family planning tutors (PKB) in accordance with the official stakeholders in the village review the service given, provide a comprehensive service on post service program, and also take a decision needed if something happened dealing with medical and psychological problems, etc.

The tenth step, 58% respondents did recording, reporting, and evaluating the program. Unmet need data was recorded in PK 2015 forms. Beside recording the the data, the family planning tutors (PKB) reported the activity to the authorized party or the director of family planning program. Reporting is a process which is done by the family planning tutors (PKB) to the director or other related authorized party as the information to be followed up and done periodically and continuously in a system which has been standardized. It is matched with the data in which 76,9% respondents in 21 October reported the data to the district office. There were 81,5% respondents reported the data of unmet need to the director of family planning program, and 86,2% respondents did evaluation through the staff meeting. The staff meeting activity done once a week up to once a month that will be indicated in the meeting journals. Furthermore, 76,9% respondents recorded the results to the provided forms. Choosing a proper and suitable method can exactly help the society in understanding the given information so that the family planning tutors can successfully trigger the society in general to join and participate actively in the family planning program.

A good working performance will actually support the national family planning program to be successful. The success of the family planning tutors in carrying out their duties must be supported by their capability in understanding the family planning program comprehensively and in managing the unstable condition both environmentally and socially. The results of this study show that 61,5% of the family planning tutors (PKB) have a good capability in carrying out their duties. However, the respondents' response show that 44,6% of the family planning tutors (PKB) did not do the recording and mapping the data well. Furthermore, 84,6% of the family planning tutors (PKB) did not make a well-structured schedule to discuss the consensus; 47,7% respondents did not do the KIE well; 41,5% respondents did not do a good recording, reporting, and evaluating activities.

CONCLUSION

Fifty three (53) respondents conducted an approach to the formal figure, there are 36 respondents who did a reporting and mapping, 55 respondents did an approach to informal figure, 53 respondents dealt with an agreement, 55 respondents strengthened the agreement, 34 respondents did KIE, 48 respondents built a pioneer group, 57 respondents served family planning program. Finally, 64 respondents gave information and guidance to the participants, 38 respondents did the recording, reporting, and evaluating the program.

REFERENCE

1. Akmal. Kepedulian Terhadap Unmetneed KB di Provinsi Sulawesi Selatan. Dinkes Provinsi Sulawesi Selatan. 2010.
2. BKKBN. Pemantauan Pasangan Usia Subur Melalui Mini Survey di Provinsi Jawa Tengah. Semarang: BKKBN; 2010.
3. BAPERMAS. Hasil Pelaksanaan Program KB Nasional Kabupaten Demak. Demak: BAPERMAS dan KB; 2014.
4. Dinas Kesehatan. Profil Kesehatan Kabupaten Demak. 2014

5. Pranata, Setia dan Sri Sadewo, FX. Kejadian Keguguran, Kehamilan Tidak Direncanakan dan Pengguguran di Indonesia. Surabaya: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI; 2012
6. Ratnalela, Siregar, Ice. Pengaruh karakteristik organisasi terhadap motivasi kerja penyuluh lapangan keluarga berencana (PLKB) di Kota Medan. (Tesis). 2008
7. Supardi. *Analisa Stres Kerja Pada Kondisi dan Beban Kerja Perawat Dalam Klasifikasi Pasien Di Ruang Rawat Inap Rumah Sakit TK II Putri Hijau KESDAM I/BBMedan.*(Tesis) 2007
8. Sutrisno, Edy. Manajemen Sumber Daya Manusia. Jakarta: Kencana Prenada Media Group; 2009
9. Handoko, TH. Manajemen Personalia dan Sumber Daya Manusia. II, Yogyakarta: BPFE; 2000.
10. Putri, Ratri Rasno. Hubungan Kompensasi Terhadap Kinerja Karyawan Pada Biro Manajemen Sumber Daya Manusia PT Jasa Marga (Persero) TBK. (Skripsi) 2012.
11. Suparti, Padi. Analisis Kinerja Bidan Pegawai Negeri Sipil (PNS) di Desa dalam Penjaringan Balita Gizi Buruk di Kabupaten Kendal.(Tesis) 2010.
12. Atikah. Hubungan Motivasi Kerja dan Kinerja Petugas Lapangan KB dalam Pencapaian Akseptor Baru di Kabupaten Kendal.(Tesis) 2009

Characterization of Hydroxyapatite Material from Bovine for Making 3D Printer Filament Method Fused Deposition Modelling for Implants Scaffolds Mandibular Reconstruction

Solechan^{1, a)}, Saifudin Ali Anwar²

¹*Faculty of Engineering, Semarang Muhammadiyah University.
Department of Dentistry- Faculty of Dental medicine, University of Muhammadiyah Semarang*

^{a)} Corresponding author: solechan1981@gmail.com

Abstract. Bone disease caused cancer by the WHO in 2008 reached 12 million new cancer cases, 7 million people died and 5 million people living with cancer. Bone tumors part of cancer, the case is less than 1% of all cancers. Location of the tumor at most ditibia 41%, femur bone at most 33%, maxillofacial and mandibular bone 3%. Mandible cancer treatment using scaffolds for bone recovery. Scaffolds made of polymers, ceramics and composites. Now these scaffolds formed with a 3D print through the filament composite. Material filament composite with filler hidroxyapatite bovine (HAb) or hidroxyapatite from cow bones have more strength. The method of making bovine Hidroxyapatite from cow bone cortical portion with calcination process at a temperature of 1100°C with a hold time of 3 hours. HAb material characterization test results are the functional groups and the diffractogram peaks sharp strengthen Hab has in common with commercial HA. HAb material has a ratio of Ca/P 2:15 while commercial HA 1.67. Material Hab has more calcium element of commercial HA. HAb grain shape irregular-shaped box with a grain size of 300 nm, making it suitable to be used as a filler material composite filament print 3D.

INTRODUCTION

Cancer bone disease caused by the WHO in 2008 reached 12 million new cancer cases, 7 million people died and 5 million people living with cancer. Bone tumors part of cancer, the case is less than 1% of all cancers (Salter RB., 1984). Location of the tumor at most ditibia 41%, 33% of the femur bone, maxillofacial and mandibular bone 3%, 2% and the radius bone fibula 2% (Nacomical surveillance system data., 2011). Tumors of the mandible potential to cause disturbance of mastication, respiratory, swallowing and speaking (Fonseca RJ., 2000). Removal of the tumor of the mandible often cause defects, ranging from a gap in the alveolar bone to mandibular bone discontinuity (Smith, 2006). It is necessary for the establishment of the reconstruction of mandibular continuity (Stosic S. 2008). Hospitals have developed an alternative approach to negating the bone harvesting operations (autografting), namely with scaffolds (Sandia National Laboratories and Carle Foundation Hospital., 2010).

The technique of making scaffolds must be precise, porosity, porous and interconnectivity between pores. This process, necessary processing parameters and controlled conditions (Salgado., 2004). Scaffolds can be produced using conventional techniques or sophisticated (Holy et al., 2003). Limitations of conventional techniques in controlling the pore size, pore geometry, interconnected pores, and internal channel construction scaffolds (Chua CK., 2003). This sophisticated technique is to be an alternative in controlling scaffolds architecture, manufacturing of complex, faster, more reliable and diverse (Chua CK., 2003). Advanced processing techniques include fused deposition modeling (FDM), 3D printing, selective laser sintering (SLS) Stereolithography (SLA) and multiphase Jet Solidification (MJS). FDM has the feasibility to create scaffolds directly and high precision engineering (Iwan Zein., 2002).

Scaffolds are implant three-dimensional (3D) which is biocompatible, biodegradable and osteokonduksi (Papenburg BJ., 2009). Materials scaffolds derived from polymers, ceramics and composites. The choice of material determines the characteristics, mechanical properties, degradation and biological functions (salvalani., 2006). Making scaffolds using 3D print formed of filaments as 3D printing inks. Filaments print 3D today many molded from composite material, the filler material hidroxyapatite bovine (HAB) or hidroxyapatite from cow bones. Hidroxyapatite bovine bone for the manufacture of very easy, abundant, characterization together with commercial

HA, and reasonably priced. Hab formed by the process at a temperature kalsiniasi 1000-1100°C with a hold time of 3 hours. In this research wanted to characterize hab with calcination process at a low temperature for the filler material composite filament print 3D.

METHODOLOGY

The process of making bovine hydroxyapatite (HAB) from bovine bones as filler material 3D printing filament explained in flowchart in **Figure 1**.

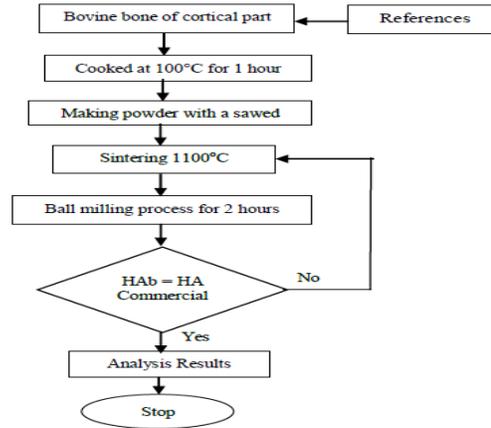


Figure 1. Flow Research in flowchart

HAb material taken from a cow bone of cortical section. Cortical bone is first cleaned before sawed was cooked use water at a temperature of 100°C for 1 hour. Once the meat attached to the bone separated, then cleaned with aquades until the dirt on the bone is lost. Pulverizing bone saws process using a handsaw manual process. The powder was collected for processing the results saws calcination. Calcination with an induction furnace at a temperature of 1100°C for 3 hours. Bone powder poured in the cup of clay was placed in a furnace. bovine bone powder calcination process is shown in **Figure 2** below. The process of bone powder cooling with cooling in the furnace to room temperature 27°C. bovine bone powder calcination result is white but still coarse grain size. Smooth the bovine bone powder into hab uses ball miling machine for 3 hours at 400 rpm rotation.

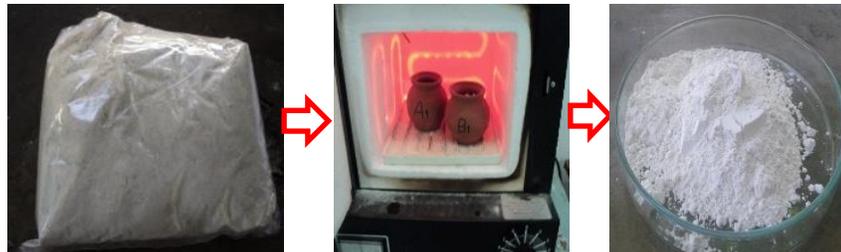


Figure 2. Process calcined bovine bone with an induction furnace

RESULTS AND DISCUSSION

To know the characteristics of hdroxyapatit material (HA) from bovine hydroxiapatit (HAB) with testing XRD, FTIR, EDX, SEM and TEM. The test results support the filament as filler in 3D print using FDM system. XRD test results shown in **Figure 3**.

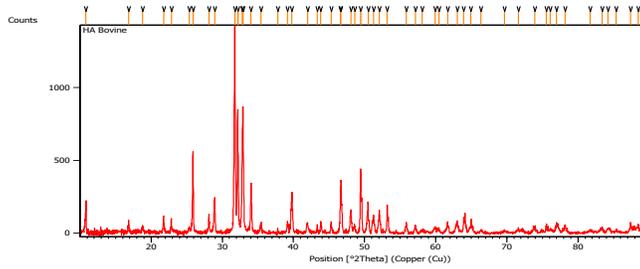


Figure 3. Test Results XRD of HAb material

XRD test results can be analyzed on a graph that shows the diffractogram peaks sharply with the intensity high. A sharp peak at an altitude of 1423.63 cts at Pos ($^{\circ}$ 2Th) $31,7750^{\circ}$ owned by the element calcium (Ca) and the Post ($^{\circ}$ 2Th) $25,8842^{\circ}$ with a summit elevation of 556.05 cts owned by phosphorus (P). The elements calcium and phosphorus are owned by HA material of the functional groups $CA_{10}(PO_4)_6(OH)$, so that this material are elements meet the elements owned by HA material. From the graph of test results are diffractogram with sharp peaks and high intensity illustrates that the sample-phase semi-crystalline and have a high crystallinity (Pujiyanto et al, 2005). HAb sampled diffraction patterns have the same diffraction pattern of hydroxyapatite commercially from Sigma Aldrith. The similarity of the diffraction pattern indicates that the sample HAb has in common with the commercial HA. From the intensity of the diffraction pattern and a peak altitude at which commercial HA reached 1.230 cts match the height of the peak material HAb, how is shown in **Figure 4**.

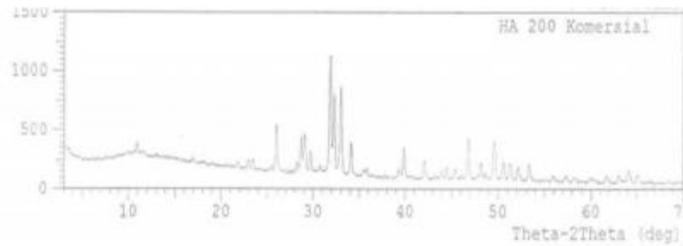


Figure 4. X-ray diffraction pattern of the commercial HA (brand Sigma Aldrith)

FTIR test results amplify material HAb XRD data on the test. The functional groups of the highest peaks shown in **Figure 5** for hidroxipatite bovine material (HAb) is on a wave of 3569.15 cm^{-1} with intensiti 98.740 and Wave 2013.63 cm^{-1} with 98.037 intensiti have functional groups OH with alcohol compound (H-bonds). A wave of 1421.57 cm^{-1} with 92.585 intensiti have functional groups C-H compound calcium phosphate powder (Ca^{2+}). A wave of 1086.31 cm^{-1} to C-O functional group with a compound orthophosphates (PO_4^{3-}). Wave of 879.92 cm^{-1} to C-H functional groups with alkenes (Aprilia and Sri Bandiyah, 2012). Materials HA has a compound $CA_{10}(PO_4)_6(OH)$ on the test results FTIR Hab material has a calcium phosphate compound (Ca^{2+}), orthophosphates (PO_4^{3-}), and O-H alcohol compound. Test FTIR strengthen HAb material has elements possessed material elements of hydroxyapatite (HA) commercial.

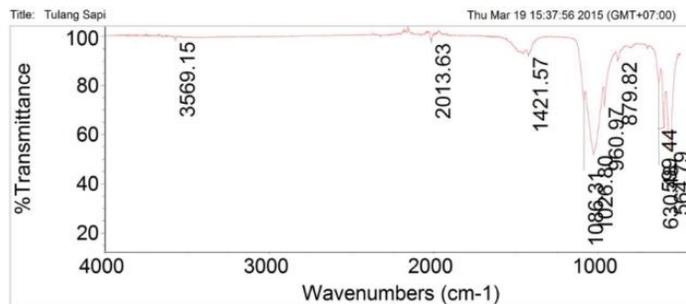


Figure 5. FTIR spectra on bovine hydroxyapatite (HAb)

The test results of XRD and FTIR testing is supported by EDX (Energy-dispersive X-ray spectroscopy) to amplify the chemical composition of the material HAb. EDX test results in **Figure 6** shows the chemical composition that appears on the highest peaks possessed by the elements Ca, P, and O. For the element calcium (Ca) has a weight percentage of 43,84 wt%, the element phosphorus (P) with a weight percentage of 20,32 wt%, and the element oxygen (O) with a weight percentage of 28,59 wt%. From the graph appears other compounds, such as magnesium (Mg), sodium (Na), and carbon (C) but the weight percentage is very small. EDX testing to prove that the material HAb has in common with commercial HA material that has proven its use. For the ratio Ca/P of test results 2:15 while commercial HA 1.67 (Albaryak et.al., 2008). Materials HAb has more calcium elements from commercial HA, this will affect the strength, timing degradation and bone recovery (Haibo Wang et al, 2003).

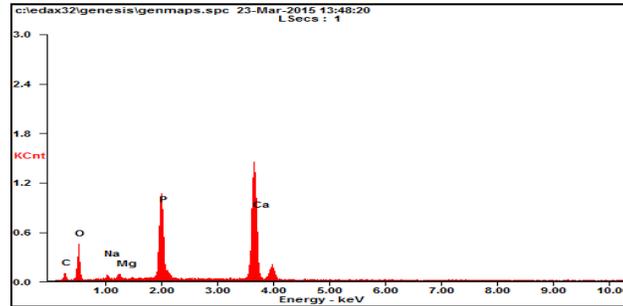


Figure 6. The test results EDX of bovine hydroxyapatite (HAb)

Hidroxyapatite bovine (HAb) from bovine bones have a grain size of 40-50 μm with a box shape is irregular, how test results are shown in **Figure 7a** SEM with a magnification 5.000x. The grain size is not uniform filaments make mechanical strength at 3D prints have different properties at each point or so-called anisotropic (WD Callister, 2007). Forms of non-uniform grain size shown in **Figure 7b** with 500x magnification. Hab Materials to reduce the grain size required downsizing process grains by using ball milling machine with a long time.

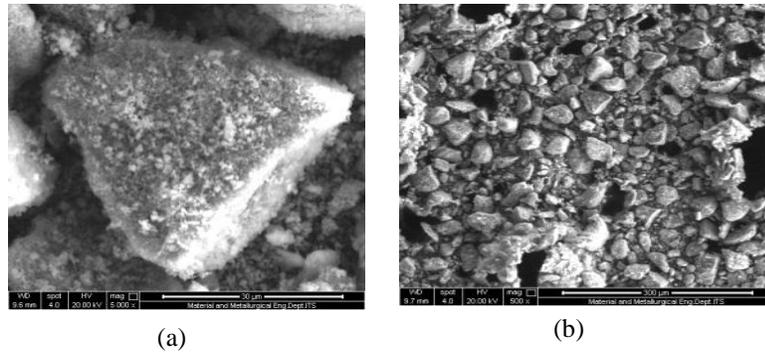


Figure 7. Results of SEM photos bovine hydroxyapatite (HAb) 5.000x magnification and, b) 500x magnification

The grain size in material hab with SEM testing reinforced by transmission electron microscopy (TEM). Testing TEM to form grains granular or ball. The grain size of **Figure 8** different grain size in the assay SEM. TEM test results for smaller grain size of 300 nm. This is due to TEM testing time using a chemical reagent that can reduce the grain size.

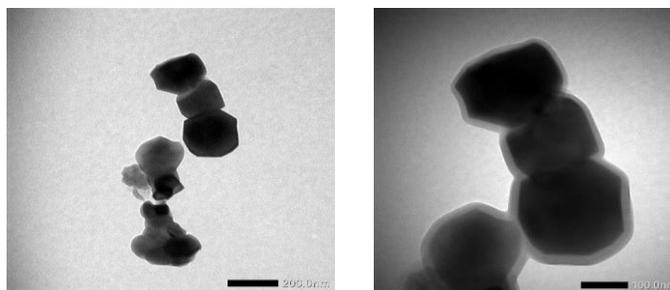


Figure 8. Results of bovine hydroxyapatite material TEM photos (HAb)

CONCLUSION

From the research that has been done it can be concluded as follows:

1. The test results of material characterization and functional groups HAb basis diffractogram sharp peaks strengthen HAb has in common with commercial HA (Sigma Aldrich).
2. Material HAb has a ratio of Ca/P 2:15 while commercial HA 1.67. Materials HAb has more calcium elements from commercial Ha.
3. Form HAb grains irregularly shaped box with a grain size of 300 nm, making it suitable to be used as a filler material composite filament print 3D.

ACKNOWLEDGMENTS

The author would like to thank the Directorate General of Higher Education, Ministry of National Education Indonesian who has given Competitive Research Grant funds for fiscal year 2014-2015.

REFERENCES

1. Albayrak O, El-Atwani O, Altintas S. (2008). Hydroxyapatite Coating on Titanium Substrate by Electrophoretic Deposition Method: Effects of Titanium Dioxide Inner Layer on Adhesion Strength and Hydroxyapatite Decomposition. *Surf Coatings Technol* 202: 2482-2487.
2. Aprilia, Sri Bandiyah. 2012. Spektrofotometer IR. http://bandiyahsriaprilliafst09.web.unair.ac.id/artikel_detail-48339-Spektrofotometer%20ir.html. Diakses pada tanggal 20 oktober 2014.
3. Chua, C.K., Leong, K.F., Lim, C.S., 2003., *Rapid Prototyping Principles and Applications*, 2nd ed, p.13, Singapore, WS Publishing Co.Pte.Ltd.
4. Callister WD., 2007., *Materials Science And Engineering An Introduction.*, second edition., New York., Vol.7.
5. Fonseca RJ., 2000., Masticatory myalgias. In *Oral and Maxillofacial Surgery. Temporomandibular Disorders* et al.: Philadelphia: WB Saunders. 38–45.
6. Holy, C.E., Fialkov, J.A., Davies, J.E., Shoichet, M.S., 2003., Use of a biomimetic strategy to engineer bone. *Journal of Biomedical Materials Research A*, Vol.65,pp. 447-53.
7. Haibo Wang¹, Jong-Kook Lee^{1,†}, Amr Moursi² and John J. Lannutti¹, 2003, Ca/P ratio effects on the degradation of hydroxyapatite in vitro, *Journal of Biomedical Materials Research Part A*, Volume 67A, Issue 2, pages 599–608, 1 November.
8. Iwan Zein, Dietmar W. Huttmacherb, Kim Cheng Tanc, Swee Hin Teoha., 2002., Fused deposition modeling of novel scaffold architectures for tissue engineering applications., *Biomaterials* 23 (2002) 1169–1185., Elsevier
9. Iwan Zein , Huttmacher DW, Tan KC, Teoh SH., 2001., Fused deposition modeling of novel scaffolds architectures for tissue engineering applications. *Biomaterials*;23:1169–85.
10. Nanocomial surveillance sytem data rumah sakit Dr. Kariadi ., 2011.
11. Papenburg BJ., 2009., *Design strategies for tissue engineering scaffolds.*, University of Twente., ISBN 9490122394, 9789490122393., hlm 198.

12. Pujiyanto, E., Tontowi, A.E., Siswomih ardjo, W., dan Ana, I.D., 2005, Perbandingan Karakteristik Hydroxyapatite Hasil Sintesa Gypsum Kulon Progo dan Tasik Malaya dengan Biopex, Jurnal Teknik, FT UNS.
13. Salter RB., 1984., Text Book of Disorders and Injuries of the Musculoskeletal System. 2nd Ed. Baltimore: William-Wilkins p.320 – 45.
14. Smith. JE., Blackwell K., 2006., Mandibular Reconstruction, www.emedicine.medscape.com/article.
15. Sandia National Laboratories dan Carle Foundation Hospital., 2010., - Technology Ventures Corporation., New and Highlihts press.,352
16. Salgado,. Anto´nio J., 2004., Bone Tissue Engineering: State of the Art and Future Trends., Braga, Portugal., DOI: 10.1002.
17. Salvalani Carlo, Robert D Brown Jr, Gene G Hunder., 2006., Adult primary central nervous system vasculitis., Vol 380 August 25, www.thelancet.com.
18. Stosic, S., Novakovic, M., Jovic, N., Mirkovic, Z., Bogeski, T., Loncarevic, S., Cvetinovic, M. (1997) Vascularized fibular graft in the reconstruction of posttraumatic mandibular defects. *Vojnosanitetski pregled*, 54(4 Suppl): 27-31.

Molecular Characterization And Hemagglutination Activities of Flagellin Protein of *Salmonella typhi*

Sri Darmawati^{1, a)}, Budi Santosa², Muhammad Evy Prastiyanto³, Ragil Saptaningtyas⁴

^{1,3,4} Microbiology Laboratory of Health Analyst Study Program of Nursing and Health Faculty, Universitas Muhammadiyah Semarang

² Clinical Pathology Laboratory of Health Analyst Study Program of Nursing and Health Faculty, Universitas Muhammadiyah Semarang

^{a)}Corresponding author: ciciekdarma@unimus.ac.id

Abstract. The purposes of this research are for molecular characterization and hemagglutination activity test of flagellin protein of *Salmonella typhi*. The research samples consist of 7 strains of *S. typhi* isolates from Central Java (5 strains from Semarang city, 1 strain from Salatiga and 1 strain from Magelang) and 2 strains of *S. typhi* from Yogyakarta (Doctor Sardjito Hospital and Bethesda Hospital). The undertaking procedures are: 1) PCR and sequencing of *fliC* genes using primer LPW 1856 and LPW 1857.2) Isolation and separation of flagellin protein using SDS-PAGE. 3) Hemagglutination Activity Test upon human erythrocytes of blood group A, B, AB and O. The results show that 8 strains of *S. typhi* have a *fliC* gene size of 1452 to 1488 bp including serovar H1-d, and 1 strain with the size of 1267 bp including serovar H1-J. Flagella protein resulted from SDS-PAGE protein consists of 1-2 major proteins and 1-3 minor proteins with a molecular weight of 16-116 kDa. The results of hemagglutination activity test of flagellin protein show that there are 3 strains of *S. typhi* (MG-1, SA02.2 and BET) which are able to agglutinate human erythrocytes of blood group A, B, AB and O (2-64HA), 6 other strains show various hemagglutination activities varied

INTRODUCTION

Salmonella typhi (*S. typhi*) is a rod shape and gram-negative bacteria causing systemic infections to humans and animals known as typhoid fever (Yang *et al.* 2012). Its Pathogenity highly depends on the number of virulence factors, such as adhesion (attaching) ability to the cell host, which facilitates bacteria to attach in the small intestine mucosa (Jindal *et al.*, 2012; Alexan *et al.* 2009). Bacterial adhesion of *S. typhi* on the cell host is also performed by hemagglutinin protein, as the beginning of pathogenesis (Darmawati & Anwar, 2008). Hemagglutinin protein is a protein which is able to agglutinate erythrocytes, due to its ability to recognize receptors owned by the erythrocyte membranes. Darmawati and Anwar (2008) state that hemagglutinin proteins of some strains of *S. typhi* from Java have various hemagglutination activities upon the erythrocytes of mice.

The other virulence factor is flagella, composed of protein flagellin subunit, and in some bacteria, plays an important role in its life, serving as a means of motion and helping bacteria to get into the cell host (Darmawati, S. & Evy Prastiyanto 2014; Hatta *et al.* 2011). Flagellin subunits are targets which may be recognized by the natural body immune system through Toll-like Receptor (TLR) 5 (Baker *et al.* 2007). In addition, flagellin may stimulate the adaptive immune system (Alexan *et al.* 2009). Most *S. typhi* only have flagellin genes known as *fliC* which encodes flagella antigen phase 1 (Hd antigen). However, Indonesian *S. typhi* isolates express H-j antigen known as flagella antigen z66 (flagella antigen phase 2) encoded by the flj^{Bz66} , that is, *fliC* genes which experience deletion in the hypervariable region of linear plasmid (Hatta *et al.*, 2011). Based on flagellin genes owned by *S. typhi* in Indonesia, it shows genetic diversity which results in the expressed protein diversity.

Thus, this research aims to perform molecular characterization and hemagglutination activity test of flagellin protein of *S. typhi* Isolates from Central Java and Yogyakarta. Molecular Characterization of flagellin genes covers the size and profile of flagellin protein subunit, while hemagglutination activity test is conducted upon human erythrocytes of ABO blood group system.

METHODS

Research samples

The research samples consist of seven strains of *S. typhi* isolates from Central Java (5 strains from Semarang, 1 strain from Salatiga, 1 strain from Magelang), 2 strains of *S. typhi* from Yogyakarta (1 strain from Doctor Sarjito Hospital and 1 strain from Bethesda Hospital). Those nine strains of *S. typhi* are isolated from blood cultures of patients with positive Widal (Darmawati *et al.*, 2011)

PCR and sequencing of *fliC* genes of *S. Typhi*

DNA Isolation of bacterial genomes is conducted using *DNeasy Blood and Tissue Kits* (Qiagen catalog number 69504). Primary LPW 1856 (5'ATGGCACAAGTCATTAATACAAAC-3') and LPW 1857 (5'-TTAACGCAGTAAAGAGAGGACGTT-3') are used for amplification of *fliC* genes (Lau *et al.*, 2005). The reagent used for amplification of *fliC* genes with a method of *Polymerase Chain Reaction* (PCR) is Maxima Hot Start Green PCR Master Mix (2X) (Thermo Scientific, K1061) while the size used is 12.5 µl of master Mix, 1 µl of each primary LPW 1856 and LPW 1857, 1 µl of DNA template, 7.5 µl of sterile dH₂O, 25 µl of each tube volume, and the device used is *Applied Biosystems GeneAmp PCR System 2400*.

The amplification of *fliC* genes is conducted in a total of 30 cycles with conditions: a temperature of 95 °C for 30 seconds to perform DNA denaturation, a temperature of 46 °C for 30 seconds to perform DNA template annealing process (primary LPW 1856 and LPW 1857), for extension at 72 °C for 2 minutes with a *final extension* at a temperature of 72 °C for 10 minutes to perform DNA polymerization process. The results of DNA fragment amplification are separated by 1% of *Agarose Gel Electrophoresis* based on single band appearance at 1500bp. The amplicon visualization is conducted using *Major Science UV transluminator*. DNA sequencing is performed on a sequencer device of *ABI PrismTM 310*.

Isolation and SDS-PAGE of flagellin protein

Flagellin protein isolation is conducted using a modified method of Alexan *et al.* (2009). Flagellin protein is obtained by growing a bacterial colony of Mac Conkey media in 50ml BHI liquid medium, incubated at 37 °C for 48 hours with agitation used as a starter. The starter is then put into 500 mL of BHI media, incubated at 37 °C for 48 hours with agitation. The bacterial culture is then centrifuged at a temperature of 4 °C, with a speed of 3000 rpm for 20 minutes. Pellet is suspended with 5 mL of physiologic solution until it turns to be a thick suspension, then the suspension acidity is set into pH level of 2 by adding 1M of HCl plus, stirred for 30 minutes at room temperature, and centrifuged at 3000 rpm for 30 minutes. Supernatant containing flagellin protein is then added with 1M of NaOH that the pH level turns to be 7.2.

The isolates of Flagellin protein from Central Java and Yogyakarta are then separated using SDS-PAGE (12%) to see the protein profiles, by staining of 0.1% *Coomassie Brilliant Blue R-250*. Flagellin protein is then dried-frozen and used for hemagglutination test.

Haemagglutination test

Human erythrocyte hemagglutination test is conducted using a method of Hanne and Finkeltein (Booth *et al.*, 1983). Samples are multiply diluted with PBS on micro agglutination plate with a volume of 50 µl (50 µg/ml), and then each well is added by 50 µl of 1.0% human erythrocytes in PBS. The micro agglutination plate is then shaken for 1 minute, incubated at a room temperature for 1 hour and the occurrence of hemagglutination is observed. Hemagglutination titer (HA) is shown by the opposite of the highest dilution number that still showing the occurrence of hemagglutination.

RESULTS AND DISCUSSIONS

fliC Genes of *S. typhi*

The PCR results of *fliC* flagellin genes using primer LPW 1856 and LPW 1857, which is then electrophoresed using 1% agarose is shown in Figure 1, while the gene size based on the sequencing results is shown in Table 1. The results show that the tape size on PCR results of *fliC* genes of a strain of *S. typhi* SLT.1

isolates from Salatiga is equal to 1260 bp, looking different with the tapes of the other eight strains of *S. typhi* with a size equal to 1500bp. This is similar to the results of research conducted by (Frankel *et al.* 1989; Lau *et al.*, 2005; Baker *et al.* 2007) that the *fliC* flagellin gene with a size equal to 1267 bp encoding flagellin protein H1-J of *S. typhi* serovar H1-j, these bacteria are less motile and less invasive when compared with *S. typhi* serovar H1-d.

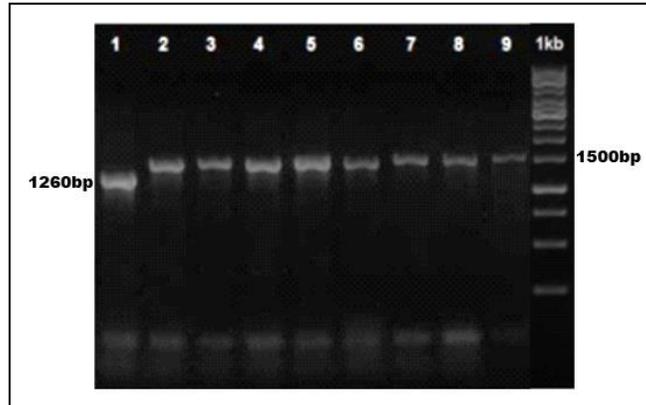


Figure 1. The PCR results of *fliC* genes of 9 strains of *S. typhi*, respectively: 1) SLT-1, 2) BA07.4, 3) MG-1, 4) SA02.2, 5) EM-3, 6) KD30.3, 7) KD 27.2, 8) BET, 9) SRJ, Marker (Darmawati & Prasetyanto, 2014)

Flagellin protein of *S. typhi* Serovar H1-j is expressed by *fliC* genes experiences deletion of 260 bp that the size is only approximately 1267 bp (Table 1). *Salmonella typhi* serovar H1-j is only found in Indonesia. Thus, from those 9 strains of *S. typhi* strains, there is one strain of H1-J isolates from Salatiga and 8 strains of H1-d.

Table 1. The Size of flagellin *fliC* genes of 9 isolates of *S. typhi* from Central Java and Yogyakarta based on results of sequencing

Strain	Origin	<i>fliC</i> gene (bp)
<i>S. typhi</i> SLT-1	Salatiga	1267 bp
<i>S. typhi</i> BA 07.4	Semarang	1458 bp
<i>S. typhi</i> MG-1	Semarang	1454 bp
<i>S. typhi</i> SA 02.2	Semarang	1464 bp
<i>S. typhi</i> EM 3	Semarang	1456 bp
<i>S. typhi</i> KD 30.3	Semarang	1452 bp
<i>S. typhi</i> KD 27.2	Semarang	1456 bp
<i>S. typhi</i> BET	Yogyakarta	1454 bp
<i>S. typhi</i> SRJ	Yogyakarta	1488 bp

Flagellin protein profile

Flagellin protein from 9 strains of *S. typhi* after separated using SDS-PAGE 12% shows that there are 1-2 major proteins and 1-3 minor proteins (Figure 2). The molecular weight of protein subunits arranging flagellin starts from 16-116kDa.

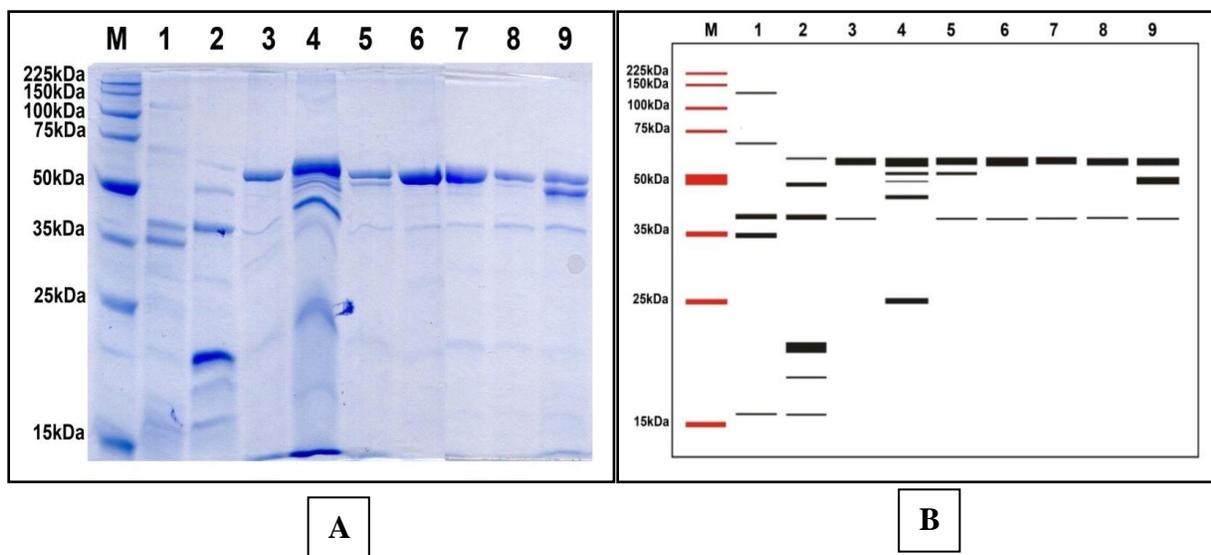


Figure 2. SDS-PAGE protein flagellin Profile in (A) and (B) of 9 strains of bacterial isolates of *S. typhi* consisting of 7 isolates from Central Java and 2 isolates from Yogyakarta respectively M) protein Marker, 1) *S. typhi* BA07.4, 2) SLT-1, 3) MG-1, 4) SA02.2, 5) EM-3, 6) KD30.3, 7) KD 27.2, 8) BET, 9) SRJ

Major protein tapes with a molecular weight of 60kDa are owned by 7 strains of isolates from Central Java and Yogyakarta, excluding *S. typhi* flagellin BA07.4 and SLT-1. This is irrelevant with a research conducted by Alexan *et al.* (2009) stating that flagellin protein of *S. typhi* which is isolated from chickens with diarrhea, consists of one major protein tape (54.11 kDa) and 3 minor protein tapes (41 kDa; 36.6 kDa and 25.7 kDa). The differences of flagellin protein profile from different strains show that there are genetic variations in flagellin genes owned by each strain. The differences of Flagellin protein profile probably results in virulence differences when playing its roles causing the occurrence of pathogenicity.

Table 2. Flagellin protein profile of 9 Strains of *S. typhi* from Central Java and Yogyakarta based on SDS-PAGE

No.	flagellin protein character (kDa)	<i>S. typhi</i> BA07.4	<i>S. typhi</i> SLT-1	<i>S. typhi</i> MG-1	<i>S. typhi</i> SA02.2	<i>S. typhi</i> EM-3	<i>S. typhi</i> KD30.3	<i>S. typhi</i> KD27.2	<i>S. typhi</i> BET	<i>S. typhi</i> SRJ
1	116	+	0	0	0	0	0	0	0	0
2	70	+	0	0	0	0	0	0	0	0
3	60	0	+	+	+	+	+	+	+	+
4	52	0	0	0	+	+	0	0	0	0
5	46	0	+	0	+	0	0	0	0	+
6	42	0	0	0	+	0	0	0	0	0
7	36	+	+	+	0	+	+	+	+	+
8	35	+	0	0	0	0	0	0	0	0
9	25	0	0	0	+	0	0	0	0	0
10	20	0	+	0	0	0	0	0	0	0
11	18	0	+	0	0	0	0	0	0	0
12	16	+	+	0	0	0	0	0	0	0

Note: (+) has, (0) does not have

Haemagglutination Activities

The results of hemagglutination (HA) Test of flagellin protein of 9 bacterial strains of *S. typhi* upon human erythrocytes of blood group A, B, AB and O show that the strains having hemagglutination activities upon human erythrocytes of 4 blood types are *S. typhi* MG-1, SA02.2, and BET (Figure 3 and Table 3).

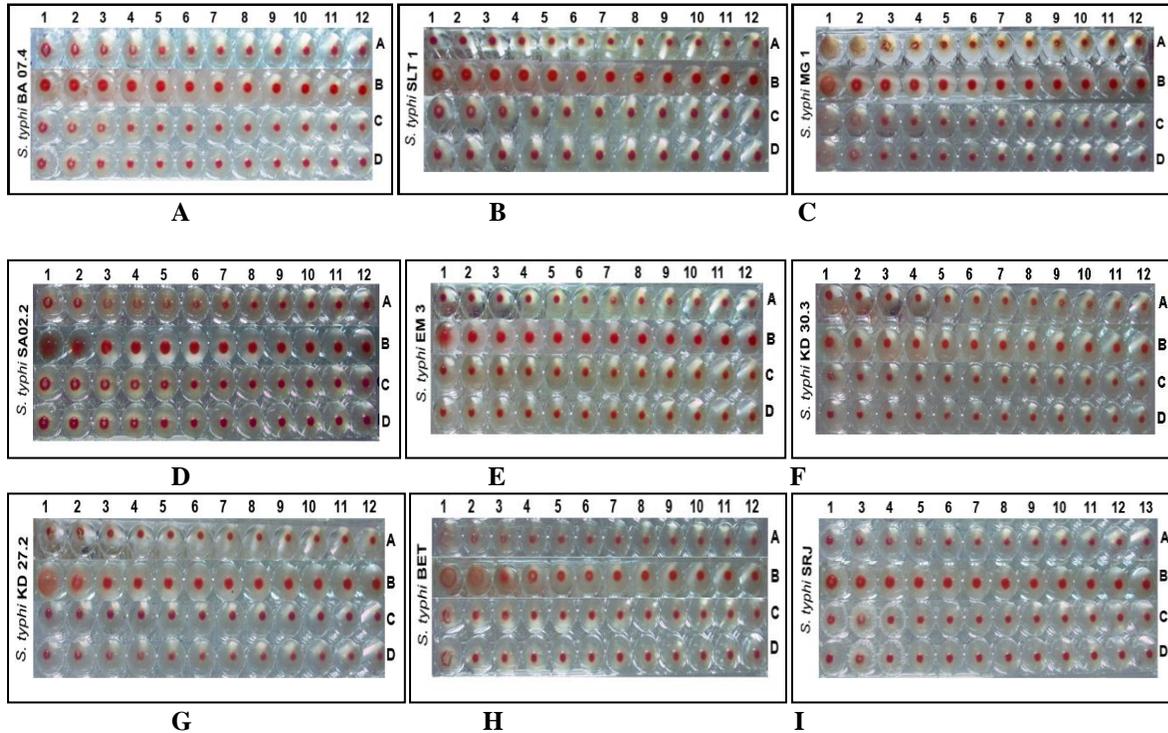


Figure 3. Flagellin protein hemagglutination activities upon human red blood cells of blood group A, B, AB and O of 9 strains of *S. typhi* isolates from Central Java and Yogyakarta respectively A) BA07.4, B) SLT-1, C) MG-1, D) SA02.2, E) EM-3, F) KD30.3, G) KD27.2, H) BET, I) SRJ

Flagellin protein ability to agglutinate erythrocytes is due to its ability to recognize receptors on the surface of erythrocytes owned.

Table 3. Flagellin protein hemagglutination activities upon human red blood cells of blood group A, B, AB and O of 9 strains of *S. typhi* isolates from Central Java and Yogyakarta.

No.	Golongan Darah	<i>S. typhi</i> BA07.4	<i>S. typhi</i> SLT-1	<i>S. typhi</i> MG-1	<i>S. typhi</i> SA02.2	<i>S. typhi</i> EM-3	<i>S. typhi</i> KD30.3	<i>S. typhi</i> KD27.2	<i>S. typhi</i> BET	<i>S. typhi</i> SRJ
		Titer hemaglutinasi (HA)								
1	A	16	—	16	64	—	—	4	8	—
2	B	—	2	2	4	2	2	4	16	2
3	AB	8	4	4	16	—	2	—	2	4
4	O	2	—	4	16	—	—	—	2	4

CONCLUSION

the research results on Molecular characterization and hemagglutination activities of flagellin protein of *Salmonella typhi* Isolates from Central Java and Yogyakarta show that: There are 8 strains of *S. typhi* which have a *fliC* gene size of 1452-1488 bp including serovar H1-d, and 1 strain with the size of 1267 bp including serovar H1-J. Flagella protein resulted from SDS-PAGE consists of 1-2 major proteins and 1-3 minor proteins with a molecular weight of 16-116 kDa. The results of hemagglutination activity test of flagellin protein show that there are three strains of *S. typhi* (MG-1, SA02.2 and BET) which are able to agglutinate erythrocytes of blood group A, B, AB and O (2-64HA), while six other strains show various hemagglutination activities. Thus, showing flagellin protein variations expressed by *S. typhi* from different strains indicate the presence of genetic variations.

ACKNOWLEDGEMENT

We would like to express our gratitude to ministry of research, technology, and higher education (*kemenristdikti*) who has given us a Fundamental Research Grant of 2015-2016 fiscal years through Private University coordination (*Kopertis*) VI of Central Java.

REFERENCES

1. Alexan, A.F., Mohamed, S.H. & Ibrahim, A.M., 2009. Immune Response Elicited in Mice after Immunization with Flagellin from Salmonella enterica Serovar Enteritidis. *Global Veterinaria*, 3(6), pp.465–471.
2. Baker, S. et al., 2007. A Novel Linear Plasmid Mediates Flagellar Variation in Salmonella Typhi. *PLoS Pathogens*, 3(5), pp.0605–0610.
3. Booth, B.A., Boesman-finkelstein, M. & Finkelstein, R.A., 1983. Vibrio cholerae Soluble Hemagglutinin / Protease Is Metalloenzyme. *Infection and Immunity*, 42(2), pp.639–644.
4. Darmawati, S., Sembiring, L. & Asmara, W., 2011. The Numeric-Phenetic Classification of *Salmonella typhi* from Central Java and Yogyakarta Based on Phenotypic Characterization Results. Introduction to a Research Method. *Biota Atmadjaya Yogyakarta*, 16 (1), pp.128-132. Available at: <http://jurnal.uaj.ac.id/biota>.
5. Darmawati, S. & Evy Prastiyanto, M., 2014. A biotechnology national seminar of Gadjahmada University. *In Biotechnology, National Seminar*. pp. 148-155.
6. Darmawati, S. Anwar, S., 2008. Hemagglutinin Protein Characterization of Pilli Sub Unit of Javanese *Salmonella typhi* Isolates. *In PIT PERMI Seminar Purwokerto*. pp. 1-9.
7. Frankel, G. et al., 1989. characterization of the H1-j gene of Salmonella typhi. *EMBO Journal*, 8(1), pp.3149–3152.
8. Hatta, M. et al., 2011. New Flagellin Gene for Salmonella enterica serovar Typhi from the East Indonesian Archipelago. *AM. J. Trop. Med. Hyg*, 84(3), pp.429–434.
9. Jindal, G. et al., 2012. Immunological characterization of recombinant Salmonella enterica serovar Typhi fliC protein expressed in Escherichia coli. *AMB Express a SpringerOpen Journal*, 2(55), pp.1–9.
10. Lau, S.K.P. et al., 2005. Typhoid Fever Associated with Acute Appendicitis Caused by an H1-j Strain of Salmonella enteric a Serotype Typhi Typhoid Fever Associated with Acute Appendicitis Caused by an H1-j Strain of Salmonella enteric a Serotype Typhi. *Journal of Clinical Microbiology*, 43(3), pp.1470–1472.
11. Yang, X. et al., 2012. Flagella Overexpression Attenuates Salmonella Pathogenesis. , 7(10).

Counter-Pressure Practice Method by Spouse's for Reducing Pain of Mother's In First Stage Labour

Sri Rejeki^{1,a)}

¹*Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang*

^{a)}Corresponding author: ii_rejeki@yahoo.com

Abstract. Background. Pain in childbirth cause psychological disorders for mothers, such as 87% of postpartum blues, 10% of depression and 3% of psychosis. Therefore interventions to reduce labour pain is necessary to prevent complications in the mother and fetus during the process and after delivery. One method to reduce the pain of childbirth is to give counter pressure on the sacral region, but the application of this method is usually only done by health workers. Counter pressure method can be taught in the family, especially the spouse to reduce the pain of childbirth. Mother in labor need support from the environment of health care workers, families, especially spouses (husband). **Objective:** to describe the practice of counter pressure made by the husband and wife to relieve pain in labour. **Research method:** used descriptive analytic design. As the population were 40 husbands who waiting for their wives at first stage of labour. The husbands have been trained about counter-pressure methods. The sampling method used consecutive sampling method. **Results:** obtained 75% husbands did well for practicing counter-pressure method, 60% women claimed reducing of pain after given counter- pressure by their husband. As a recommendation of this study is the importance of spouse presence in first stage labour for reducing the pain of mothers in childbirth.

INTRODUCTION

Most deliveries (90%) is always accompanied by pain while in labor pain is a common thing to happen, the pain of labor is a physiological and psychological processes (WHO, 2007; Ministry of Health 2007). Reported from 2,700 women giving birth only 15% of births take place with mild pain, 35% with moderate pain, 30% with severe pain and 20% of deliveries with very severe pain (Niven & Gijbers, 1984). Health statistics of Central Java (2003) obtained deliveries by skilled health personnel is not maximum 82.75%, and in particular the county Kendal obtained 64.71% figure means that about 35% of deliveries are handled by other than medical personnel. Moreover likely deliveries take a patient's own home. Labor pain can stimulate the release of chemical mediators such as prostaglandins, leukotrienes, thromboxane, histamine, bradykinin, substance P, and serotonin, will result in the secretion of stress hormones such as catecholamines cause and steroids with consequent vasoconstriction of the blood vessels to weaken intestinal contractions. Excessive secretion of these hormones will cause interference uteroplacental circulation resulting in fetal hypoxia. From the research, pain in childbirth causes women experience psychological disorders, 87% post partum blues that occur from 2 weeks to 1 year postpartum, 10% and 3% depression with psychosis (Perry & Potter, 2006).

Labor pain is not unbearable encourage maternal looking for some alternatives to treat pain, including the use of pain medications such as analgesics and sedatives (Anita A, Ocviyanti D, SD & Handaya Wisnuwardhani, 2002). While these drugs can give adverse side effects include fetal hypoxia, the risk of neonatal respiratory depression, decreased heart rate and increased maternal body temperature and may cause changes in the fetus (Mender & Rosemary, 2003). There fore interventions reduce labor pain is very necessary in order to reduce complications in the mother and fetus during the process and after delivery. Many kinds of methods performed by health workers to reduce pain in childbirth. Non farmakologi intervention reduces pain, among others, hypnosis, acupressure, yoga, hydrotherapy, acupunctur, Counter Pressure breathing and relaxation techniques.Counter Pressure sacral region proven to reduce labor pain but not much done. This method is relatively easy to do by the health worker and his family, especially her husband to help her reduce the level of labor pain. The importance of the role of the family, especially the husband in a decrease in the level of pain in labor should be recognized as an appropriate strategy, because here husband and can act as a psychological support to the wife in labor, so as to reduce morbidity and maternal mortality rates are not directly impact on reducing vulnerability and addressing the impact of the disease.

Objectives

This study aims to describe how her husband practices after getting training methods Counter Pressure to reduce pain in first stage labor.

Urgency Research

Labor pain is a pain that is felt by the mother in labor. From the research, pain in childbirth causes women experience psychological disorders, 87% of postpartum blues postpartum blues that occur from 2 weeks to 1 year postpartum, 10% and 3% depression with psychosis. Therefore, it is necessary to find a solution to the labor pain is cheap and practically can be used by mothers to reduce pain in first stage labor. Contribution that can be contributed from the research include: a) providing information about one of the alternatives to reduce labor pain in a nonfarmakologic. b) inform the husband's role in the practice of counter pressure method to reduce pain levels in the mother during the birth process first stage c) Provide information support the importance of family, especially the husband (spous) in nursing care in labor.

METHODS

The method used is descriptive which gives an overview of the practice of husbands reduce maternal pain in the first stage of labor by using a counter-pressure. The population in this study were all women giving birth by normal delivery at the first stage and as a whole, maternal sample is the normal delivery at the first stage of which is in the Kendal Hospital, with a sample that meets the criteria watchman husband and wife, the first wife.

Concecutif sampling technique sampling.

Data collection was started by selecting respondents ssesuai criteria, then trained Counter-pressure method. The instrument in this study is a set of tools in the form of instruments action steps that are used to guide him into doing counter-presure, and set of tools for measuring instruments that have been validated pain respondent. Applied research ethics approval or informed consent ie, anonimity with no name, give the patient the freedom to provide flexibility patient rights.

RESULTS

Table 4.1. Characteristics of respondents by age in the practice of counter pressure by the husband in Soewondo hospital, Kendal, 2014, n=40

Age	X	Mode	Sd	Min	Maks
Husband Age	32	34	7,0	18	48
Wife Age	28	30	6,3	17	40

Table 4.2. Characteristics of respondents by education in the practice of counter-pressure by the husband in Soewondo hospital, Kendal, 2014, n=40

Level of Education	Frequency		Percentage	
	Husband	Wife	Husband	Wife
Basic School	14	10	35,0	25,0
Junior School	9	16	22,5	40,0
High School	11	12	27,5	30,0
College	6	2	15,5	5,0
Total	40	40	100	100

Table 4.3. Characteristics of respondents based on the jobs of the practice of counter pressure by the husband in Soewondo hospital, Kendal, 2014, n=40

Jobs	Frequency		Percentage	
	F		%	
Farmer	2	0	5,0	0
Merchants	2	2	5,0	5,0
Private (workers, factory workers)	2	2	5,0	5,0
Theacher	34	21	85,0	52,5
Did not jobs	0	15	0,0	37,5
Total	40	40	100	100

Table 4.3. Characteristics of respondents (wife) based on the experience of childbirth in the practice of counter-pressure by the husband in Soewondo hospitals Kendal, 2014 ,n=40

Frequency childbirth experience	Frequency	Percentage
	F	%
First delivery	14	35,0
The second delivery	22	55,0
Childbirth is more than twice the	4	10,0
Total	40	100

Table 4.5. Characteristic behavior while training on counter pressure on the respondent (husband) in Soewondo hospitals, Kendal, 2014, n=14

No	Spous Behavior while training	Do		Not done	
		(n)	(f)	(n)	(f)
1	Husband listens to the goals Counter Pressure Method	26	60,0	14	40,0
2	Husband listens to the way action reduces labor pain with Counter Pressure Suami	36	90,0	4	10,0
3	Active husband asked as an explanation	20	50,0	20	50,0
4	Husband can take action to correct the Counter Pressure least 3 X while training	32	80,0	8	20,0
5	Husband willing to act counter pressure when the wife felt pain in the first stage of labor	40	100,0	0	0

Table 4.6: Table mean value of the husband's behavior in the training of counter pressure in Soewondo hospitals, Kendal, 2014, n=14

Value Frequency practice category	Frequency	Percentage
	F	%
Both (Score 200-400)	31	77,0
Less well (Score <200)	9	23,0
Total	40	100

Table 4.7. Characteristics of pain to reduction measures by respondent (spouse) to counter pressure practice in Soewondo hospitals Kendal, 2014, n=40

No	Counter pressure action	Do		Not done	
		(n)	(f)	(n)	(f)
1	Husband tells wife Pressure Counter measures to reduce labor pain	38	95,0	2	5,0
2	Husband gives wife a position as comfortable as possible on the felt labor pain	20	50,0	20	50,0
3	The husband gave the left lateral position before the action of pressure Counter	28	70,0	12	30,0
4	Fourth husband looking for the right spot to apply pressure with Counter Pressure to reduce the pain of his wife	32	80,0	8	20,0

5	Husband doing a strong push at the point in the lower back (sacral REGIO) during contraction using the heel of the hand	36	90,0	4	10,0
6	Husband doing a strong push at the point in the lower back (sacral REGIO) during the contraction of the thumb	24	60,0	16	40,0
7	The husband asked his wife whether the pain is reduced when performed counter-pressure	36	90,0	4	10,0
8	Husband always do a counter-pressure when the wife felt pain during childbirth	28	70,0	12	30,0

Table 4.8: Table of mean values husband practices in conducting counter pressure to counter pressure practice in Soewondo hospitals Kendal, 2014, n=40

Value of practice	Frequency	Percentage
	F	%
Both (Score 320-640)	30	75,0
Less well (Score <320)	10	25,0
Total	40	100

Table 4.9: Table frequency of pain after doing counter pressure by husband in Soewondo hospitals Kendal, 2014, n=40

Level of Pain	Frequency	Percentage
	F	%
Reduced	24	60
Not reduced	11	27,5
Increased	5	12,5
Total	40	100

DISCUSSION

According Bobak (2005) factors that affect reproductive health support to her husband, that knowledge about pregnancy and childbirth, experience, marital status, and socioeconomic status. From the research data obtained 35% of elementary school-educated husbands and 85% of workers are adah husband's job as a factory worker, shop workers and other workers. This suggests that the husband's education level and family income is low relatively low.

Husband's support is very important in the delivery process. Because at the time of delivery occurs physiologically severe pain interfere with the mother. From the results, the husband's behavior when trained counter-pressure is 77% of this kind of behavior shows their husband's attention when obtaining information relating to the wife in the delivery process is very large. The behavior of a good husband provides convenience in receiving information in the training of counter pressure. This is consistent with the findings that 80% of men can perform actions Counter-pressure 3 times correctly. The results of this study reinforced by research conducted Arif S (2002) that there is a relationship role of the husband of the behavior of pregnant women in service delivery (Arif, 2002).

In general, from the results, the practice of the husband to perform counter-pressure is good (75%) it shows no concern in giving support to the wife in labor. In the face of labor required consultation and support from family, especially her husband (Susilowati, 2000). Age is one indicator that can reflect the maturity of someone in the act, including in decision-making. The average age of the husband is 32 years old, it shows the average husband belonged to a young adult. Young adults can show positive behavior in preparing for the future, including in preparing a generation descendant of the family, especially the reproductive developmental tasks. Minimum age is 18 years old husband (7.5%) of this age is still part of adolescence to early adulthood is possible still less mature in the decision included in the act of doing spousal support (included in the delivery process). From the research data obtained there is still 23% less good husband in training Counter pressure and 25% less well in practice counter-pressure. This is possible because the husband is still there under the age of 20 years.

Age also affects a person responds to pain. Judging from the average age of the respondent (wife) is 28 years showed a majority in the age group 20-30 years, in addition to the average of the respondents were in the productive age, as well as physiologically possible still withstand labor pain. However, in addition to individual pain response, pain is influenced by many things such as the environment, race, certain actions and also the pattern of one's coping in the face of pain.

The result showed that 22% of mothers who received Counter-pressure measures were primigravida and has had second thoughts, it means the mother has had previous experience of overcoming pain. The results of the study mothers pain after Counter-pressure is reduced pain by her husband as much as 60% of mothers and only a small proportion is 12.5% said the pain increased after the counter-pressure by the husband, and 27.5% of mothers say no no change in pain even after counter-pressure by her husband. According Hutajulu (2003) individual labor pain and many other factors are very influential.

CONCLUSIONS AND RECOMMENDATIONS

Counter pressure action performed by the spouse's can reduce pain of mother in first stage childbirth.

From these results it is suggested that health workers involving husbands birth attendants in the delivery process especially in reducing labor pain.

REFERENCES

1. Anita A, Ocviyanti D, Wisnuwardhani SD, Handaya. 2002. *Gambaran Intensitas nyeri pada persalinan menggunakan metode VAS dan VRS*. MOGI. 2002; 26(4): hal 189-250.
2. Arif, Syamsul. 2002. *Kesehatan reproduksi wanita, siapa peduli?*. Majalah Suara Hidayatullah
3. Bennet, V. Ruth and Linda K. Brown (ed.). 2001. *Myles textbook for midwives*. Churchill Livingstone.
4. Bobak, I.M., et al. *Maternity Nursing*. 2005. (Wijayanti, MA & Anugrah, PI penerjemah). California: Mosby. (Sumber asli diterbitkan 1995).
5. Departemen Kesehatan Republik Indonesia. 2007. *Survey Demografi Kesehatan Indonesia 2007*.
6. Gorrie, McKinney & Murray. 1998. *Foundation of Maternal Newborn Nursing*. 2ndEd. United States of America: W.B. Saunders Company.
7. Hutajulu. P. 2003. *Pemberian Valetamat Bromida dibandingkan Hyoscine N Butil Bromida untuk mengurangi nyeri persalinan*. Bagian Obstetri Ginekologi USU.
8. May, K.A., & Mahlmaister, L.R. 1990. *Comprehensiv Maternity Nursing: Nursing Process & The Chidbearing Family*. 2nd Ed. Philadelphia. J.B. Lippincott Company.
9. McCaffery, M., & Beebe. 2003. *A. Pain:ClinicalManual For Nursing Practice*. Baltimore: V.V. Mosby Company.
10. Melzack R, Taenzer P, Feldman P, Kinch RA. *Labour is still painful after prepared childbirth training*. 1998. Can Med Assoc J 1981;125:357-63
11. Mender, Rosemary. 2003. *Nyeri Persalinan*. Jakarta: EGC.
12. Molyata. 2010. *Paket Penyuluhan dan Senam Hamil Mengurangi Stres dan Nyeri serta Mempercepat Penyembuhan Persalinan*, <http://www.uns.ac.id/cp/penelitian.php?act=det&idA=271>, 2010
13. Niven C, Gijsbers K. 1984. *A study of labor pain using the McGill pain questionnaire*. Soc Sci Med 1984;19:1347-51.
14. Potter. P, Ann Griffin Pery. 2006. *Fundamental of Nursing; Concep Process And Prectice*, 4th ed Missouri: Mosby Year Book Inc. St Louis.
15. Ridolf, Ray, Franzen, & Ifana Eka R Susane. 2001. *Shiatsu Untuk Wanita*, Jakarta: Arcan.

The Effect of Giving Furfures Soybean Tempeh Nugget Toward Reducing Cholesterol Level of White Rat Blood (*Rattus Norvegicus*) Hypercholesterolemia

Sufiati Bintanah^{1, a)}, Erma Handarsari²

^{1,2}Study Program of Nutrition, Universitas Muhammadiyah Semarang

^{a)}Corresponding author: sofi.bintanah@yahoo.com

Abstract. Coronary heart disease becomes a major cause of death because of the increase of cholesterol level in blood. *Tempe* and *bekatulare* said to be able to reduce blood fat levels. **Problem:** How is the effect of Furfures Soybean *Tempe* Nugget on cholesterol levels of white rat *Rattus norvegicus* hypercholesterolemia blood. **Objective:** To demonstrate the effect of Furfures Soybean Nugget on cholesterol levels of white rats *Rattus norvegicus* hypercholesterolemia blood. **Method:** using laboratory experimental design with Randomized Pre and Post Control -group Only in hypercholesterolemia mice. The mice were given nugget 25%, 50%, 75% and Controlled for 21 days. The statistical analysis in this study was different test of Anova (analysis of variance) and continued with *Benferoni* test. The result shows that there is a significant gap of decreasing cholesterol level between controlled group with treatment 1, 2, 3 but it was not significant between the treatment 1, 2 and 3. It can be concluded that giving Furfures Soybean Nugget can reduce cholesterol level in blood when it compared with not given treatment. Reducing cholesterol level with 1, 2, 3 treatments are not different significantly.

INTRODUCTION

There is a change of disease pattern in Indonesia, usually infection and malnutrition, which becomes degenerative and cancer disease now caused the change of life style and dietary habit which tends to consume highly fat and low fiber food. According to (SKRT) Household Health Survey Result in 1992, 1995 and 2001, it stated that heart attack and blood vessel are mostly the primary cause of death (31% of the whole death case) caused because of atherosclerosis in coronary blood vessel. Furthermore, Household Health Survey Result in 2001 stated that there is health problems in Indonesia, (except Nangroe Aceh Darussalam, Maluku, and Papua) for ages around 35-65 years old according to the cholesterol-total >200 mg/dl. The limit of blood cholesterol level needing treatment is cholesterol > 260 mg/dl, triglyceride >200 mg/dl and also LDL > 190 mg/dl with the main pillar of dyslipidemia management through out diet modification, physical exercises, and weight management.

Tempeh is a fermentation food of soybean which is fermented by *Rhizopus oligosporus* fungus. Tempeh can reduce triglyceride, total cholesterol, LDL cholesterol and also it can increase HDL cholesterol. The substances of tempeh have hypocholesterolemic (reducing blood cholesterol) which is protein, PUFA, food fiber, niacin, E vitamin, carotenoids, isoflavones, and calcium. The result of research shows that by giving 150gr tempeh for 2 weeks without using medicine can reduce total cholesterol 8,38%, LDL 8,28% (11,1 mg/dl), triglyceride 9,19% and increase HDL around 8.74%. another research has a result that using of 25%, 50% and 70% tempeh in ration as the real substitution can reduce serum cholesterol total. Genistein is the isoflavones existed in tempeh which believably can stop enzymes causing the development and movement of cell, so genistein can prevent the development of cell which creates plaques in artery vessel.

Besides tempeh, bran is also reported by some researches as a food that can reduce blood cholesterol level. Bran is the residue of rice milling. The result of bran oil and cholesterol metabolism in rat body shows that hypercholesterolemia rat fed bran oil and oil of sunflower seed with (7:3 wt/wt) proportion can decrease heart and serum cholesterol level. The hypocholesterolemic effect can be caused by oryzanol and tocotrienol existing in the oil. The result of a research reported about the reduce of cholesterol level in hamster body fed unfat bran wool and there are some levels in bran oil and the more significant reduce of cholesterol is the bran wool with fat content 43,7% compared to hamster fed with cellulose. The fat acid content of bran can reduce the cholesterol level in hamster, rat, primate and human body. Bran also contains of ferulic acid which can reduce blood pressure and blood cholesterol,

besides tocotrienol and gamma-oryzanol. The mechanism of blood fat reduce is assumed through the increasing of receptor LDL bound capacity. Another mechanism which has a role in blood cholesterol reduce is the increasing of cholesterol-7 alpha-hydroxylase enzyme activity that is responsible enzyme toward the process of bile acid biosynthesis, so it will stimulate the conversion of cholesterol to be bile acid and that is why it will cause the reduce of cholesterol in blood. Fiber has an influence toward the reduce of blood cholesterol because it will bind bile acid and release it along with feces. Much more fiber we eat, much more bile acid is released from our body along with feces. It will trigger the cholesterol changing to be bile acid, so cholesterol level will reduce. Result research shows that by consuming 85 gr of bran a day, it can reduce cholesterol around 8,3% and increase HDL cholesterol level (good cholesterol) around 11,8%.

Nugget is a rare product frozen to keep its quality during the storage process. Combined nugget from optimum bran and tempeh powder (Furfures soybean tempeh) with powder comparison 60 : 40 is one of the solution to reduce cholesterol level in hypercholesterol rat body.

RESEARCH METHOD

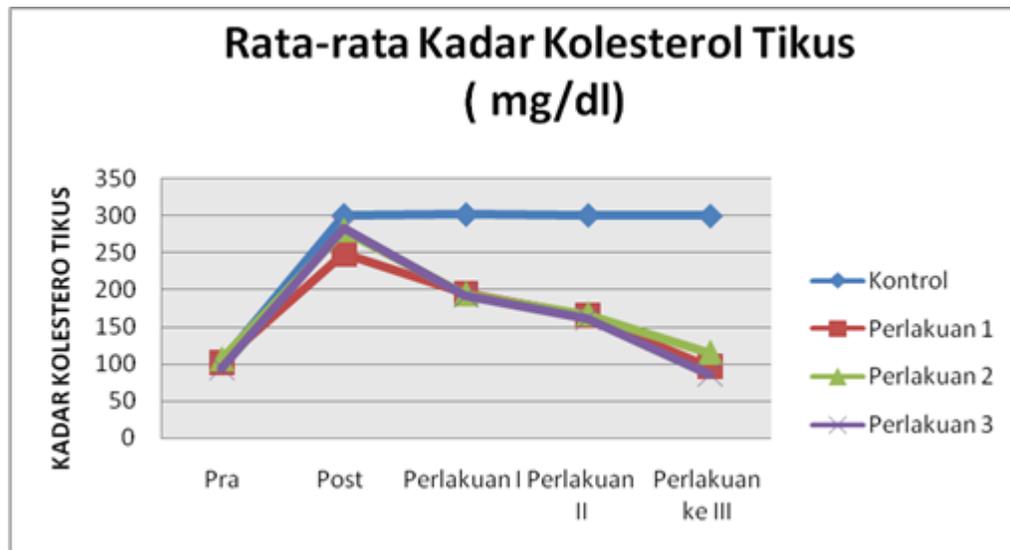
The type of this research is experimental laboric research with randomizedpre-post test and control group (Randomized prepost- test with control-group).

20 male rats or *rattus nurvegicus* which are 15 weeks old with criterion 180 – 220 gr weight , healthy and agile are used in this research. After it get adapted with the environment of the cage during 2 weeks, the rats are grouped into 4 treatment groups and every group consists of 5 rats. The first treatment is done by checking the early cholesterol and it is continued by feeding high cholesterol which refers to Hardiningsih (2005) with ingredients of 100 gr woof contained 1,5 cholesterol from yolk, 10% fat goat, and palm oil 1%. It will be given by using sonde instrument during 1 weeks and after that the rats will be checked the blood cholesterol level. Then, the rats are given a treatment by feeding AIN-93 rodential standart woof and Furfures Soybean Tempeh Nugget during 28 days using sonde instrument. The need of rats is 10% of the whole rat weight, so if a rat has a weight 200gr, the need woof for the rat is only 20gr. Group I as he control group is feeded only by standart woof. The I treatment group is fed standart woof and furfures soybean tempeh nugget 25%. The second treatment group is fed standart woof and furfures soybean tempeh nugget 50%. The third treatment group is fed standart ransum and furfures soybean tempeh nugget 75%. In the end of day 14th, 20th, and 28th, the rats are checked by taking their blood to see the cholesterol level.

The cholesterol level check uses CHOD-PAP method. The data tabulation and analysis uses Anova different test continued Benferoni test with significance degree limit $p < 0,005$ and 80% research power and 95% interval belief.

RESULT OF THE RESEARCH

The result of this research shows that the high cholesterol woof and PTU (propil tiu urasil) gives an effect toward the increasing of cholesterol level of blood cholesterol of wistar galur white rat *Rattus Nurvegicus*, and overall, group treatment 1,2 and 3 after being treated shows the reduce of vholesterol level. to see the blood cholesterol level of the rats during this research as below :



(a)

To compare the difference of the blood cholesterol level reduce between one group to others is done by using post hoc test. The result of post hoc test on every week can be seen in table 1.

Table 1. P score is the result of post hoc test about the mean comparison of blood cholesterol level reduce between control group and treatment group after the 1st week, 2nd week and 3rd week.

Treatment	Treatment	1st week		2nd week		3rd week	
		Different mean	P	Different mean	p	Different mean	P
TreatmentIII	Control	83,66	0,000	57,83	0,000	31,83	0,000
	TreatmentI	-10,00	0,052	29,50	0,000	37,83	0,000
	TreatmentII	-13,16	0,040	11,66	0,003	25,50	0,000
TreatmentII	Control	96,83	0,000	46,16	0,000	6,33	0,189
	TreatmentI	3,16	0,084	17,83	0,000	12,33	0,015
	TreatmentIII	13,16	0,045	-11,66	0,003	-25,50	0,000
TreatmentI	Control	93,66	0,000	28,33	0,000	-6,00	0,213
	TreatmentII	-3,16	0,084	-17,83	0,000	-12,33	-0,015
	TreatmentIII	10,00	0,052	-29,50	0,000	-37,83	0,000
Control	TreatmentI	93,66	0,000	-28,33	0,000	6,00	0,213
	TreatmentII	96,83	0,000	-46,16	0,000	-6,33	0,189
	TreatmentIII	83,66	0,000	-57,83	0,000	-31,83	0,000

According to the table above, it can be seen that the reduce of blood cholesterol between the control group and treatment group 1, control group and treatment group 2, and control group and treatment group 3 is significantly different, but the reduce of blood cholesterol level between group treatment 1, 2 and 3 is not significantly different.

It also happens in group treatment 2 and 3 which does not show the significant difference in the reduce of blood cholesterol level.

DISCUSSION

The result of this research shows that there is a cholesterol level reduce in the group which is fed with different dose of furfures soybean tempeh nugget compared to control group. It is totally appropriate with Hasan's research (2007) that by feeding 150gr tempeh during 2 weeks without consuming medicine can reduce total cholesterol around 83,8%. Furthermore, according to Sutapa's research (2006) shows that by using tempeh as the substitution in ransum around 50% and 70% actually can reduce serum cholesterol total and according to Tri Rosari's research (2004), feeding tempeh around 13,5gr/kg bb for one rat a day and 20,25gr/kg bb a day during 14 days can significantly reduce blood cholesterol level of the rats. Accordance with Pawiroharsono (2001), the components of tempeh which is assumed hypocholesterolemic are protein, fat acid without double unsaturated, fiber, niacin, E vitamin, isoflavones, and calcium. Isoflavones can reduce cholesterol toward the increasing of fat cell metabolism to create energy which causes the reduce of cholesterol content. Fermentation process using lactic acid bacteriy in tempeh also can increase isoflavones activity in soybean. Isoflavones contained in yellow soybean is the sterol which is originally from plant (Fitosterol) which if it is consumed, it can stop cholesterol absorption, whether cholesterol coming from diet or cholesterol produced from liver.

This detention happens due to the fitosterol competing and replacing the cholesterol position in mice cell. Because of the mechanism, it causes the cholesterol absorbed by gut reducing, so it will get reduced. Another factor of tempeh which has a role in reducing serum cholesterol is metabolit substance resulted from the fermentation of lactat acid bacteriy such as Conjugated Lonoleic Acid (CLA) and also some acids. Conjugated Linoleic Acid (CLA) is grouped as the weak acid without double saturated fat which can be used for the diet suplement that has the ability to reduce organic acid serum cholesterol level resulted from lactat acid bacteriy fermentation. The substances that have a role toward the reduce of serum cholesterol level are propionate acid and orotat acid. Propionate acid and orotat acid will compete with reductase HMG-KoA acid, so there will be retardment cholesterol synthesis that influences toward the cholesterol level synthesized by liver. Tempeh and bran also contain fiber which totally can be the retardment for the absorption, so there will be a reduce of food delivering in kilo micro form which directly causes toward the reduce of cholesterol level inside liver. Food fiber in tempeh and bran also can increase the hydroxylase -7 α -cholesterol enzym activity which can contribute toward the reduce of cholesterol inside liver. The reduce of cholesterol in liver can direct to the reductase (HMG-COA) metilglutarilkoenzym-3-hydroxy-3 enzymatic activity to increase the synthesis of endogenous cholesterol.

The bile acid excretion escalation by feces will cause the amoung of bile acid inside enterohepatic reducing. Liver will produce bile acid by taking much more cholesterol inside blood, so cholesterol concentration inside blood will reduce. According to Wilson et.al (2007), hypocholesterolemic effect exists in bran and other factions (Neutral Detergent fiber, hemiselulosa, and other unsoaped material) in research whether animal or human. Bran oil can actually reduce the blood cholesterol level. The unrelated component in bran is horyzanol, campesterol fitosterol substances and B-sitosterol. Oryzanol component, campesterol fitosterol substances and B-sitosterol can be antioxidant and competitive inhibitor in asbsorption and synthesis cholesterol. The real mechanism is the cholesterol absorption in gut, whether cholesterol coming from food or endogenous cholesterol. Oryzanol will create a complex substances with unabsorpted cholesterol, so the absorption level of the cholesterol will reduce in bile acid absorption. The over cholesterol will be released along with feces. Tocoferol will press the lipid peroxidation through the peroxil radical capture, including the peroxidation way or the reaction with lipid peroxy radical way. *A-tocoferol is the* strong breaker antioxidant of free radical chain and the most potential E vitamin Isomer absorpted in fat. Tocotrionel also can stop the choletserol synthesis, reducing the serum choletserol level in many researches toward animal and also pressing the proliferation of tumor cell.

CONCLUSION

The giving of furfures soybean nugget can reduce the blood cholesterol level compared to control group and the reduce of cholesterol level between group 1, 2, and 3 is not significantly different.

ACKNOWLEDGEMENT

Thank to Rector of Muhammadiyah University of Semarang, Dirjen Dikit, Kopertis VI Region of Central Java, Lemabaga Penelitian dan Pengabdian Masyarakat UNIMUS and all of my partners and all of parties for their supports in this research.

REFERENCES

1. Siswono.2003. Tinggi Serat Penurun Lemak, Indonesia Nutrition Work. Cited at December 10,2009.
2. Rustika, Fadilah S, Basuni A. 2005. Asupan Asam Lemak Jenuh Dari Makanan Gorengan dan Resikonya Terhadap Kadar Lipid Plasma Pada Kelompok Usia Dewasa. *Jurnal Biorekayasa Pangan dan Gizi*. 31-40.
3. Alrasyid .2009. Potensi Tempe Kedele Dalam Terapi Nutrisi medik Pada Obesitas Dewasa Dengan Komorbid .Pidato Pengukuhan Guru Besar Bidang Ilmu Gizi. Fakultas Kedokteran.Universitas Sumatera Utara.
4. Waspadji S, Slamet suyanto, Kartini Sukardji, Budi Hartati, Pengkajian Status Gizi Studi Epidemiologi. Pusat Diabetes dan lipid RSCM/FKUI dan Instalasi Gizi RSCM.Jakarta
5. Sukarji K. 2002. Penatalaksanaan Menu Untuk Dislipidema pada Penderita DM.Pedoman Diet Diabetes Mellitus.Balai Penerbit FKUI. Jakarta.
6. Anonim. Bekatul Padi Turunkan Kadar Kolesterol Darah. <http://www.sinarharapan.co.id/berita/0210/23/ipt03.html>. Cited at Januari, 2010
7. Hasan M. 2007. Perbedaan Kadar Koleaterol, LDL,Sebelum dan Sesudah Pemberian Formula Tempe. Hasil Penelitian Program Studi Gizi UNDIP.
8. Sutarpa I S. 2006. Pengaruh Penggunaan Tempe Sebagai Substitusi Kedele Dalam Rangsum Terhadap Kadar Kolesterol Pada Serum dan Daging Broiler. Jurusan Nutrisi dan Makanan Ternak. Fakultas Peternakan. Universitas Udayana.
9. Mindell, E. 2008. Terapi Kedelai. Jakarta: Delapratrasa. p. 57-58
10. Anonim. 2006. Bekatul untuk Menurunkan Hipertensi dan Hiperlipidemia. <http://www.BeritaIptek.com>. Cited at Januari, 2010
11. Sugano M and Tsuji E. 1997. Rice Bran Oil and Cholesterol metabolism. *Journal of Nutrition*. 127: 521–524.
12. Kahlon T S, Fayeil C, Robert Y, Sayre And Anntoetia B. 2009. Cholesterol-Lowering in Hamsters Fed Rice Bran at Various Levels, Defatted Rice Bran and Rice Bran Oil. *Journal of Nutrition*. 513-519.
13. Saija A, Tomaino A, Cascio r L, Trombetta D, Proteggente A, Pasquale A, Uccella I N, and Bonina F. 1999. Ferulic and Caffeic Acids as Potential Protective Agents Against Photo oxidative Skin Damage. *Journal Science Food Agricultural*. 79, 476-480.
14. Damayanthi E, Muchtadi D , Zakaria F R , Syarief C H, Wijaya H , dan Damardjati D S. 2004. Aktivitas Antioksidan Minyak Bekatul Padi Awet dan Fraksinya Secara Invitro. *Jurnal Teknologi dan Industri Pangan*. Vol. XV, (1) : 11-18
15. Bintanah, S. 2010. Pengaruh Pemberian tepung tempe dan bekatul terhadap penurunan kadar kolesterol darah pada tikus putih *rattus norvegicus* hiperkolestrolemia, UNS , Surakarta
16. Hardiningsih R, Nurhidayati N. 2006. Pengaruh pemberian pakan hiperkolesterolemia terhadap bobot badan tikus putih wenstar yang diberi asam laktat. Pusat Penelitian Biologi. LIPI.
17. Rosari T. 2004. Pengaruh Pemberian Tempe Terhadap Kadar Kolesterol Total Darah Tikus Putih (*Rattus norvegicus*) yang Diberi Minyak Kelapa. Universitas Negeri Semarang.
18. Pawiroharsono S. 2007. Prospek dan Manfaat Isoflavon untuk Kesehatan. Direktorat Teknologi Bioindustri, Badan Pengkajian dan Penerapan Teknologi
19. Gaur Ajay and Arvind Lal Bahtia. Genistein: A Multipurpose Isoflavon, *International Journal of Green Pharmacy*. 2008; 1:176-183
20. Ooi LG and Liong MT. Cholesterol Lowering Effects of Probiotics and Prebiotics : A Review of In Vivo and In Vitro Findings. *Int J Mol Sci*. 2010; 11:2499-2522
21. Lye HS, Ali GRR, Liong MT. Mechanism of Cholesterol Removal by Lactobacilli Under Conditions the Mimic the Human Gastrointestinal Tract. *Int Dairy Journal*. 2010; 20:169-175
22. Leroy F and De Vuyst L. Lactic Acid Bacteria as Functional Starter Cultures for The Food Fermentation Industry. *Trends in Food Science & Technology*. 2004; 15:67-68.

23. Abdalbasset and M. Djamila K. Antimicrobial Activity of Autochthon Lactic Acid Bacteria Isolated from Algerian Traditional Fermented Milk, *African Journal of Biotechnology*. 2008; 7(16):2908-2914
24. Roy S, Freake HC, Fernández ML. Gender and hormonal status affect the regulation of hepatic cholesterol 7 alpha-hydroxylase activity and mRNA abundance by dietary soluble fiber in the guinea pig. *Atherosclerosis*. 2002;163(1):29–37
25. Rideout TC, Harding SV, Jones PJ, and Fan MZ. GuarGum and Similar Soluble Fiber in the regulation of Management. 2008; 4(5): 1023-1033
26. Van Bennekum AM, Nguyen DV, Schulthess G, Hauser H, and Phillips MC. Mechanisms of Cholesterol-lowering Effects of Dietary Insoluble Fibers: Relationship with Intestinal and Hepatic Cholesterol Parameters. *British Journal of Nutrition*. 2005; 94(3); 331-337
27. Wilson T A, Nicolosi R J, Woolfrey B, Kritchevsky D. 2007. Rice Bran Oil and Oryzanol Reduce Plasma Lipid and Lipoprotein Cholesterol Concentrations and Aortic Cholesterol Ester Accumulation to a Greater Extent than Ferulic acid in Hypercholesterolemic Hamsters. *Journal of Nutrition. Biochem.* 18:105-112.
28. Sugano M and Tsuji E. 1997. Rice Bran Oil and Cholesterol metabolism. *Journal of Nutrition*. 127: 521–524.
29. Son MJ, Rico CW, Nam SH, and Kang MY. Influence of Oryzanol and Ferulic Acid on the Lipid Metabolism and Antioxidative Status in High Fat-Fed Mice. *Journal of Clinical Biochemistry and Nutrition*. 2010; 46(2): 150-156
30. Phenpham C. Antioxidants and Antioxidant Activities Cholesterol Metabolism: Current Understanding and of Pigmented Rice Varieties and Rice Bran. [Tesis]. Future Research Priorities. Vascular Health and Risk Universitas Mahidol, Thailand. 2007

Study of mechanical properties of prototype optical phase conductor for tropical climate conditions in Indonesia

Syamsudin Raharjo^{1,a)}, Solechan²⁾, Rubijanto JP³⁾

^{1,2,3} *Laboratory of Production Process, Mechanical Engineering Faculty, Universitas Muhammadiyah Semarang*

^{a)}Corresponding author: samraharjo2@gmail.com

Abstract. To access the electrical and telecommunications networks required huge costs because there is no infrastructure. To overcome this problem the government is targeting the national electrical capacity 57 thousand Megawatts in 2016 by appointing the State Electricity Company. Target national of Java-Bali distribution network throughout 27.779 km. PLN uses electricity transmission line from the plant to the substation through the tower-tower SUTT and SUTET. This study makes OPPC cable used for extra high voltage power conductors and internet network data that has reliable performance and durable. These goals will be achieved when the known characteristics and mechanical properties OPPC cable. Making cables OPPC by varying the amount of reinforcing steel galvanized wire and twisting torsional stress magnitude for analyzing mechanical properties ranging impact strength and tensile. The mechanical properties of artificial OPPC cable when compared with mechanical properties that are owned by the ACSR cable and commercial OPPC should be equal or close to its value before the applied field. The results of material testing OPPC cable diameter of 3 cm for Type-voltage torsional twisting 36/6/24 RBS 50% have the impact strength and tensile highest of 112.27 kN and 61.26 MPa. While the impact strength and tensile cables that OPPC least 3 cm in diameter with a voltage selection of the type of 36/6/24 RBS 25% of 63.24 kN and 36.36 MPa. The tensile strength and impact influenced the amount of galvanized steel wire and twisting torsional stress. The more galvanized steel wire and high torsional twisting voltage, proportional to the impact strength and tensile increased.

INTRODUCTION

Marginal areas especially rural communities still lack electrical lighting and telecommunications facilities. To access the electrical and telecommunications networks required huge costs because there is no infrastructure⁽¹⁸⁾. Overcome the government is targeting the national electrical capacity 57 thousand Megawatts in 2016 by appointing State Electricity Company⁽¹⁶⁾. National targets of distribution electricity Java-Bali distribution network along the 27,779 km⁽⁷⁾. PLN uses electricity transmission line from the plant to the substation through the tower-tower Air Channel High Voltage (SUTT) and the Air Line Extra High Voltage (SUTET).

Conductor used type ACSR (aluminum Conductor Steel Reinforced) which berlilit wire with fiber core steel as reinforcement in the middle of a layer of aluminum fibers⁽¹⁷⁾. Weakness ACSR not stand the heat and high electrical conductivity⁽⁴⁾. While the ACCR (Aluminum Conductor Composite Reinforced), which consists of a core of aluminum alloy matrix fibers surrounded by fiber aluminum zirconium content. Conductivity properties, tensile strength and high heat resistance but did not leave the nature of light (Suprihadi, 2007). ACCR conductor can operate continuously at temperatures of 210°C to 240°C in an emergency, so it will increase the capacity of the distribution of two to three times greater than using conventional conductors⁽¹¹⁾.

In line with the times will be urgent demands need for electricity and the need for communication of information particularly the Internet data, now developed terintergritas conductor cable called OPPC (optical phase conductor) composed of aluminum wire for the first layer surrounding the galvanized steel pipes and steel hollow that in the insert (inserted) optical fiber wrapped in insulation to protect the hot temperatures with increasing current voltage⁽¹⁰⁾.

The main function of the transmission network OPPC airways are as channel power from central power to substations, while the fiber optic telecommunications networks both telephone and data networks. Conductor OPPC supposedly able to conduct electricity, is resistant to changes in temperature, pressure and pull force resistance from rain and wind. Then the data necessary mechanical and electrical properties of electricity wires and cables used in optical Telkom Indonesia influenced the climate, topography and current loading on the performance of mechanical work cable channels OPPC.

At the beginning of the study and the known characteristics of the mechanical properties of each material OPPC basic cable. While in this study, to determine the mechanical properties of the cable OPPC tensile and impact tests in comparison with cable and OPPC SUTET. Hopefully this research provide significant distribution for State-Owned Enterprises (SOEs), particularly electricity company (PLN) and TELKOM to use OPPC cable.

RESULTS AND DISCUSSION

Data of impact and tensile test results made OPPC cable will compared with cable and cable SUTET OPPC commercial. OPPC cable twisting and twisting loads varied amount of galvanized wire reinforcement, which certainly has different mechanical properties. The following discussion of the results of testing to be performed.

Impact test

The test results impact OPPC cable shown in **Table 1**. Improve strength galvanized steel wire impact loads, the more galvanized steel wire, power impact loads will rise. Galvanized steel wire has HVN 134.66 hardness and tensile strength of 45 kg/mm^2 ⁽¹²⁾. When compared to other basic material, for better mechanical strength withstand impact loads.

The results of the test data cable OPPC 3 cm in diameter which has the power of the most high-impact weight-bearing on the cable type OPPC 36/6/24 for galvanized steel wire reinforcement more. It is also influenced by twisting torsional stress and the effect is very large.

Table 1. Result of Impact test of OPPC cable

Twist tension (RBS %)	Strength of Impact Test (kN)			
	OPPC cable (Ø 3)			SUTET cable (ACSR)
	36 /2/24	36 /4/24	36 /6/24	
load 25 (RBS %)	63,24	81,45	103,11	110
load 50 (RBS %)	67,33	85,56	112,27	117

explanation : a) 36 /2/24 : 30 wire aluminium, 2 galvanis steel, 24 fiber optic
 b) 36 /4/24 : 30 wire aluminium, 4 galvanis steel, 24 fiber optic
 c) 36 /6/24 : 30 wire aluminium, 6 galvanis steel, 24 fiber optic

For torsional stress RBS 25% have impact strength RBS 103.11 kN while 50% of 112.27 kN 9.16 kN happens difference can be seen in **Fig. 1**. tension produces a large torsional twisting OPPC cable twisting tighter and tidy, a little empty cavities on the cable wires will affect the impact strength ⁽¹¹⁾.

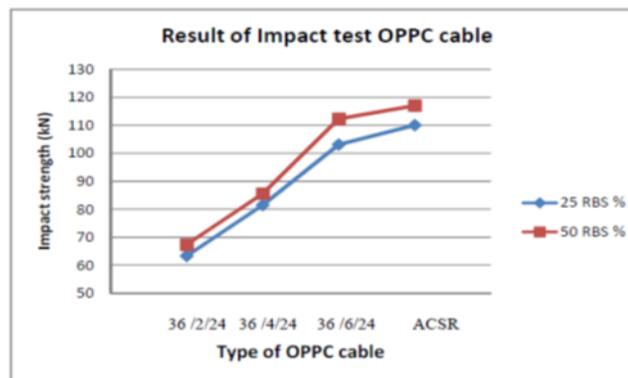


Fig. 1. Result of impact test OPPC cable

Cable has made OPPC impact strength approaching SUTET type ACSR cables are now used in Indonesia, from chart types OPPC cable twisting loads 36/6/24 with 50% RBS has a difference of impact strength of 4.73 kN, while the commercial OPPC cable by 3, 75 kN. OPPC cables made impact strength impact strength of nearly ACSR cable and commercial OPPC, is expected to add 2-4 wire galvanized steel for impact strength equal to commercial cable and can be used in Indonesia⁽¹⁵⁾. Effect on the impact strength OPPC cable withstand shock loads that affected both the rain, wind and earthquakes that make the cable is damaged or broken.

Tensile strength

OPPC cable pull testing affects the weight of the power cord until the cord broke. Tensile test results shown in Table 2, explain the magnitude of the tensile strength of each type of cable manufacturing OPPC and ACSR.

The result is almost the same as the tensile impact test, the higher the impact strength, the tensile strength is higher. Ultimate tensile strength of the cable diameter of 3 cm OPPC 36/6/26 type RBS with 50% torque load because the load is supported by galvanized steel wire as much as 6 pieces with a tensile strength of 61.26 MPa, while the impact strength of 65 MPa ACSR cable which has a difference 3.74 MPa. The increase in tensile strength is also affected cable twisting torsional stress, where there is a difference between 25 and 50% RBS can be seen in Fig. 3.

Table 2. Result of tensile test OPPC cable

Twist tension (RBS %)	Tensile strength Test (MPa)			
	OPPC cable (Ø 3)			SUTET cable (ACSR)
	36 /2/24	36 /4/24	36 /6/24	
load 25 (RBS %)	36,36	48,35	56,05	59
load 50 (RBS %)	39,67	52,77	61,26	65

explanation : a) 36 /2/24 : 30 wire aluminium, 2 galvanis steel, 24 fiber optic
 b) 36 /4/24 : 30 wire aluminium, 4 galvanis steel, 24 fiber optic
 c) 36 /6/24 : 30 wire aluminium, 6 galvanis steel, 24 fiber optic

The density of aluminum wire between the cable depends OPPC voltage cable twisting. The more tightly between the aluminum wire, the tensile strength will increase as freestyle between aluminum wire pull test at smaller (Suprihadi, 2007). Tensile strength cables 36/6/26 OPPC type approach OPPC commercial cable tensile strength. The tensile strength of commercial OPPC cable has a difference of 63 MPa tensile strength of 1.74 MPa of artificial OPPC cable. In terms of mechanical properties approaching artificial OPPC cable ACSR cable and commercial OPPC but to test electrical and thermal test yet.

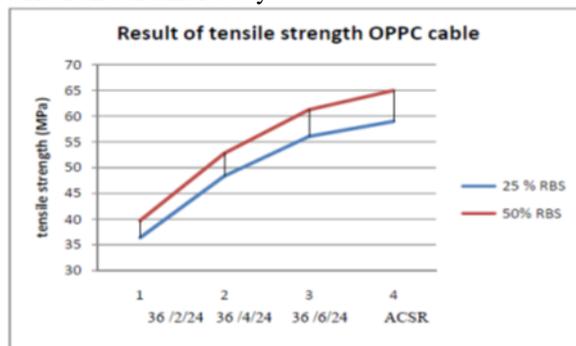


Fig. 3 Result of tensile strength OPPC cable

CONCLUSIONS

From the research that has been done, it can be concluded as follows. The impact strength and tensile cables OPPC influenced the amount of galvanized steel wire reinforcement. The more the number of galvanized steel wire

reinforcement, tensile strength and higher impact. Tension greater percentage torsional twisting, impact and tensile strength also increased. The higher the voltage torsional twisting, cabling density and neatness OPPC better.

ACKNOWLEDGEMENTS

The author would like to thank the Directorate General of Higher Education, Ministry of National Education of the Republic of Indonesian who have provided funding for this study Competitive Grant FY 2011-2012.

REFERENCES

1. ASTM D256-00
2. ANSI C119.4, (Connector testing)
3. Aluminum Association Guide for Stress-Strain Testing, 1999
4. A. S. Pabla.,1994, “ Sistem Distribusi Daya Listrik”, Erlangga, Jakarta, 1994, p.181.
5. 3M corporation.,2003,” *Conductor and Accessory Testing*. Aluminum Conductor Composite Reinforced (ACCR)” Technical Notebook, 2003
6. Harsono Wiryosumarto, 2000, *Metal Welding Techniques*, PT. Pradnya Paramita, Jakarta.
7. Jakarta newspaper.,2009, “Electrical Problems unflagging”
8. Nkt cable, 2010., optical OPGW Ground Wire Optical OPPC Phase Conductor and Accessories
9. Reinhard Girbig, 2005., “Advanced OPPC Accessories for the Use on Power Lines up to 36 kV”
10. Reinhard Girbig and Philippe Bernon.,2005,” OPPC Solutions for 63 kV, 90 kV and 225 kV Power Lines.
11. Suprihadi.,2007,” Mechanical Performance Analysis Work Flow Changes Due ACCR Conductor Line”.
12. Samsudi Raharjo, Solechan, 2012., Characterization studies for the manufacture of optical phase conductor Indonesia's tropical climate conditions. Journal UMP. Vol.03.
13. SNI 07-0408, 1989
14. SNI 08-0409-1989
15. SPLN, 1981., Reinforced conductive aluminum steel. State power company standards., SPLN 41-7:
16. Tempo, 2009., Government is targeting a national electrical capacity 57 thousand Megawatts in 2016., 2009
17. William D. Stevenson Jr., 1990, “Analysis of Electric Power System”, Erlangga, Jakarta, V.10 No.6,1990.
18. www.tvonenews.tv, 2012

Family Roles in Parenting of International Migrant Workers

Tri Nurhidayati¹, Desy Ariyana Rahayu², M Fatkul Mubin³

^{1,2,3} Faculty of Nursing, Universitas Muhammadiyah Semarang

^{a)}Corresponding author: tnh@unimus.ac.id

Abstract. This study aims to identify the role of the family in the care of migrant workers on the psychosocial development of children and families of children of migrant workers who left to work abroad. It is based on some research that families become overburdened entrusted with the child, the child's relationship with the mother becomes tenuous, unruly children and school dropouts. This study was a descriptive study, analyze and describe the role of the international family of migrant workers in childcare. Analysis used univariate analysis. Research results obtained good family role as many as 22 people (55%) and not well 18 people (45%). item No. 10 Observe the activities of children outside school activities doubt answer, sometimes and never showed more than 50%. Families are advised to pay attention to the children's learning process and socialization of children.

INTRODUCTION

Number of Indonesian workers who become migrant workers has increased every year, it is based on data obtained from the National Agency for the Placement and Protection of Indonesian Workers (BNP2TKI). The area of origin of international migrants also covers the whole of Indonesia. According to the report on the disposition of origin in 2011-2012 based on the area of 50 City and County region in Indonesia, Kendal was ranked the ninth with a total number of 18 257 people (BNP2TKI, 2012)¹. No less than many workers, occurred the problems often experienced by these workers. Among them are: shortage of salary, the worker's death, the pain of labor, labor repatriation because of work, termination of employment, fraud committed by labor suppliers (PWNI / BHI Ministry of Foreign Affairs, 2012)².

The problems often experienced by migrant workers will have an impact for families left behind. Such impacts may be direct or indirect. The direct impact may arise from the loss and separation from family members working as migrant workers, such as the onset of anxiety in family members who left because of the news about the occurrence of the problem on laborers from Indonesia (NurFatoni, 2012)³. Problems that may arise indirectly, namely the phenomenon of divorce among women workers who eventually decrease the learning achievement of children (Janeko, 2011)⁴. Some families become overburdened with children entrusted, the child's relationship with her mother became strained, unruly children and school dropouts (Arfida, 2004; Ariyana. *et al*, 2013)⁵. The family is a social group is first and foremost as a place of education in the formation of value structures the child's personality through the norms and values of the parents. And with her parents, especially mothers working abroad will have much effect on the child. Problems often experienced by children whose parents work abroad (especially mothers) migrated abroad to earn money for my family is that many children who pass through the golden era without the guidance of the mother, even though this period and determine the most critical period for children. According to Bloom about 50% of potential intelligence of the child is formed at the age of 4 years to reach 80% of the total was 8 years old the intelligence that will be achieved at the age of 18 years. Though the mother will not be replaced by anyone. Children who left many experienced psychosocial problems such as emotional disorders, behavioral problems, hyperactivity, tend to be more passive in terms of overcoming problems that arise both families and schools. The problem - the problem is a set of psychosocial problems that arise in children as a result of the decision taken by the majority of Indonesian female workers to work abroad (Setioningsih&Septiana, 2011)⁶. Based on the identification and background of the above, the formulation of the problem of this research is: How does the role of the International family of migrant workers in child care in Kendal?

METHODS

This study was a descriptive exploratory. The method used was a survey questionnaire interviews and observation. The selection of respondents is done based on inclusion criteria specified that the international family of migrant workers with family members (mother) who left children aged 0-18 years in the village of Taman Gede, sub Gemuh, Kendal regency. data collection tool with a questionnaire that had been tested before. The research process took place on 12, 19, May 21, 2014. Data were analyzed by univariate.

RESULTS AND DISCUSSION

The results of the study with the extended family type with the number of 40 respondents with an age range of children who vary as follows:

Table 1 The Age Range Of Children In May 2014 At Taman Gede Kendal

Age	N	Percentage	Minimum	maximum	mean	SD
0-1	2	5	9	9	9	0
2-3	3	7.5	6	6	6	0
3-6	11	27.5	4	7	5.63	1:02
6-12	12	30	3	8	5:25	1.71
12-18	12	30	5	10	8:50	1.88
Amount	40	100				

Table 2 Role Of Families Of Migrant Workers In May 2014 At Taman Gede Kendal

The role of Family	Frequency	Percentage(%)
Not good	18	45
Good	22	55
amount	40	100

The frequency distribution of respondents by both the family role at most that 22 (55%).

Table 3 Item Role Of Families Of Migrant Workers In May 2014 At Taman Gede Kendal

No	Statement Item	ALWAYS	OFTEN	DOUBT	SOMETIMES	NEVER
1	Loved the warm (hugging, caressing)	15 (37.5%)	15 (37.5%)	5 (12.5%)	4 (10%)	1 (2.5%)
2	Help children learn	4 (10%)	16 (40%)	4 (10%)	7 (17.5%)	9 (22.5%)
3	Say love in children	5 (12.5%)	27 (67.5%)	2 (5%)	4 (10%)	2 (5%)
4	Very caring in children	8 (20%)	30 (75%)	0 (0%)	2 (5%)	0 (0%)
5	Laugh together if there are cute	6 (15%)	21 (52.5%)	4 (10%)	3 (7.5%)	6 (15%)
6	Take the time to talk at any time	9 (22.5%)	10 (25%)	9 (22.5%)	6 (15%)	6 (15%)
7	Listen / ask opinions and ideas in children	3 (7.5%)	19 (47.5%)	4 (10%)	5 (12.5%)	9 (22.5%)
8	Asked about the children's friends	5 (12.5%)	16 (40%)	3 (7.5%)	6 (15%)	10 (25%)
9	Provide a special time discussing problems with friends	2 (5%)	10 (25%)	5 (12.5%)	5 (12.5%)	18 (45%)
10	Knowing the activities of children outside of school activities	4 (10%)	14 (35%)	6 (15%)	0 (0%)	16 (40%)
11	Paying tuition on time	16 (40%)	11 (27.5%)	7 (17.5%)	4 (10%)	2 (5%)

12	Purchasing school supplies children	6 (15%)	23 (57.5%)	2 (5%)	6 (15%)	3 (7.5%)
13	Giving pocket money children	12 (30%)	23 (57.5%)	2 (5%)	3 (7.5%)	0 (0%)
14	Take children with their own vehicle	6 (15%)	10 (25%)	4 (10%)	4 (10%)	6 (15%)
15	Buy kids clothes	7 (17.5%)	19 (47.5%)	9 (22.5%) *	4 (10%)	1 (2.5%)
16	Giving eggs / fish	8 (20%)	23 (57.5%)	4 (10%)	1 (2.5%)	4 (10%)
17	Provide a good place to stay	12 (30%)	19 (47.5%)	5 (12.5%)	2 (5%)	2 (5%)
18	Care for the sick child	9 (22.5%)	29 (72.5%)	2 (5%)	0 (0%)	0 (0%)
19	Buy drugs in a stall	3 (7.5%)	6 (15%)	2 (5%)	8 (20%)	21 (52.5%)

Table 3 shows the item in question no 4 was very concerned about the child and the item No. 18 is waiting for the sick child of 95%. This shows the role of the family is supported by relatives who were in Indonesia. Family type all respondents are extended family. According to Friedman M, Bowden and Jones (2003: 9)⁷ types of families: Nuclear family (related by marriage), the family formed by marriage, parenthood or birth, consisting of husband, wife and their children, both biologically, adoption or both, Family orientation (family of origin), the family unit where a person is born. *Extended family* (extended family), the nuclear family and individuals related (by blood relation), who is usually a member of the family of origin of one of the spouses of the nuclear family. This family consists of his relatives and can include grandmother / grandfather, aunts, uncles, nephews and cousins. The existence of relatives very helpful parenting abandoned by mothers who work abroad.

Table 3 shows the item in question No. 2 that help learning, item No. 6 to take the time to talk at any time, item No. 9 presents a special time to talk about friends, item No. 10 observe the activities of children outside school activities answer the doubt, sometimes and never show more than 50%. Each individual has a position or status in the family structure, and cultural and social role in the interaction with the family group. Every family has traditions and values of each as well as setting standards for interactions within and outside the group. Each defining experience that must be owned by the child, the things that must be protected, and how each of these experiences can meet the needs of family members. When the family ties stronger, more effective social control and most of the family members can perform their respective roles with a sincere da full commitment. Conflicts arise when people are unable to fulfill their role as expected by other family members, and also because they have no such expectations or because they choose to meet these expectations (Wong, et al, 2009: 43)⁸.

Children who left to work abroad will have different responses associated loss of his mother. Different parenting will produce different personalities. This will have an impact both psychologically and different social (Riyanti, 2013). Some families become overburdened with children entrusted, the child's relationship with her mother became estranged, unruly children and school dropouts (Srfrida, 2004; Ariyana et al, 2013)⁵.

Children are a candidate for the next generation of the future, and to create a generation of quality, it is necessary to pay serious attention to the family. Family is the foundation for the early growth and development of children. Adequate nutrition, providing a place to stay healthy physically and mentally, strong religious foundation planting, maintenance of good health, and fulfilling the needs of safety, comfort, and love is the main thing that the family in children. Based on research data above, so that should be given attention is giving a special time on the subject of friends.

The structure or composition of the family, made up of individuals, each with their status and social position and the position is known, interacting with regular manner, and repeatedly by social sanctions. When the number of family members increases or decreases because of an event (eg marriage, divorce, birth, death, expulsion, imprisonment), changing family composition and roles must be defined or redistributed (Wong, et al, 2009: 40)⁸.

The basic functions of the family is to meet the needs of the family members themselves and kenutuhan society more important luas. Tujuan filled family is generating new members (of reproductive function) and train indifidu become part of the community members (socializing function) (Kingsburg & Scanzoni, 1993) ,

Five family function be closely interrelated when assessing and intervening with families. Some of the functions family are:a) Affective functions (functions mempertahankan personality): Facilitating the stabilization of

adult personality, meet the psychological needs of family members. ,b)The function of socialization and social status: Facilitate the primary socialization of children that aim to make the child as productive members of society, as well as provide status to family members, c)Reproductive function: To maintain the continuity of the family for several generations and for the survival of the community, d) Economic functions: Provide a source of considerable economic and effective allocation, e) Health care functions: Provides physical needs, such as food, clothing, shelter, health care. (Friedman, Bowden, and Jones, 2010: 86)⁷

CONCLUSION AND SUGESTION

Family roles both as many as 22 people (55%) and either 18 (45%). 3 shows the item in question No. 2 that help learning, item No. 6 to take the time to talk at any time, item No. 9 presents a special time to talk about friends, item no 10 know the activities of children outside school activities answer the doubt, sometimes and never showed more than 50%. Families are advised to pay attention to children's learning process and socialization of children.

REFERENCES

1. BNP2TKI. (2012). *Penempatanberdasardaerahasal (Kota/Kabupaten) tahun 2011-2012*. Accesed from www.bn timer 2tki.go.id, March 10 2013.
2. PWNI/BHI Kemlu/, (2012). *Pemasalahansosial TKW danimplikasinyaterhadappelayanansosial*. <http://wikipedia.ensiklopedia> diakses tanggal 4 oktober 2012
3. Fatoni, N. (2012). *Theses: Kecemasanpasanganyangditinggalbekerja di luarnegeri*. Kendal: Stikes Kendal
4. Janeko. (2011). *Theses: Fenomenaperceraian di kalangantenagakerjawanita di hongkongdan Taiwan*. Malang: UIN Maulanamalik Ibrahim.
5. Ariyana, D.A, Nurhidayati, T., Mubin, M.F. (2013). Research Report:*PerspektifKejiwaandalamkeluarga: GambaranKerentanansosialpadakeluargaburuh migrant internasional di wilayahkabupaten Kendal*. Semarang: DIKTI
6. SetioningsihdanSeptiana. (2011) *Pengaruhpsikologiterhadapanak TKI* Diakses <http://pengaruhpsikologiterhadapanaktki.blogspot.com>
7. Friedman, dkk.2010.*Buku AjarKeperawatanKeluarga : riset, teori, &praktik*.Jakarta : EGC
8. Wong, Ddkk (2009).*Buku Ajar KeperawatanPediatrikEDISI 6 VOL.1*.EGC. Jakarta

Mother's Profile in Formula-Feeding Their (Less Than Six Month) Infants in Semarang

Yuliana Noor Setiawati Ulvie^{1a)}, Erna Kusumawati²

^{1,2}*Faculty of Nursing and Health Sciences, Universitas Muhammadiyah Semarang*

^{a)}Corresponding author: ulvieanna@gmail.com

Abstract. Babies given the infant formula in their first six months would likely encounter higher infant death risk than those who are given the exclusive breast milk. This likely could happen since mothers were not well-informed about the advantages of breastfeeding, appropriate lactation technique, and sporadically rapid infant formula product marketing in the society. This study aimed to identify mothers' profiles in formula-feeding their (less than six months) infants in Semarang especially in *Puskesmas Bangetayu Kota Semarang*. This study also employed explanatory observation retrospective design. The population of this study was 150 mothers of babies less than six months with formula feeding. From the population, there was 60 mother taken as the sample of the study and the data was analyzed using Chi-Square test. Upon conducting the study, it could be known that there were 48 mothers (60%) who formula-feed their babies (less than six months) in *Puskesmas Bangetayu* were 21-35 years old, 27 mothers (45%) were only graduated from elementary school, 36 mothers (60%) were housewives, and 27 mothers (60%) were low-informed about the advantage of breast milk. It is suggested that mother should improve their knowledge and get enough information about breastfeeding since the regular antenatal care (ANC).

INTRODUCTION

Exclusive breastfeeding is the best food for newborns to 2 years infants. By about six months of age, babies are ready to have their first nutritious food to support their growth and development. Although many people acknowledge the advantage of breastfeeding, the tendency of breastfeeding among mothers nowadays is low. This could be observed by mothers who enthusiastically feed the babies with various foods earlier (less than six months). In other hand, there are several reasons raised, such as working mom, influence of advertisement, social cultural factors, low education level, and lack of husband's support for breastfeeding mothers.¹

Every year there are at least 1-1.5 million babies died due to mothers ignorant to breastfeed their babies exclusively. This is also supported by mother's lack of information about the importance of breastfeeding for their babies. It will lead mothers to formula feed their infants that relatively dangerous for baby's health. Besides, the sporadic advertisement of formula milk also trigger mother to formula feed their less than 6 months old-babies. In fact, parents should be wisely careful when choosing the formula for their infants because pediatrics always emphasizes that breast milk is the best food for infants.

Formula fed-babies have 25 times higher death risk in their first six months of life than those who get exclusive breast milk. They also have tendency to suffer from diarrhea, colon infection due to fungi and bacteria, and mouth ulcer as well.

Medical practitioner plays important role to give information about the advantage of breastfeeding. Based on the Indonesian Health Demography Survey in 2002, there was 28% mother breastfed their babies and increased by 32% in 2007. Along with the breastfeeding process, the provision of formula feeding was also increase from 17% to 27.9% in 2002 and 2007 respectively.

According to the interview conducted to support the study, it is found that 7 of 10 mothers do not have any awareness of formula feeding impact for baby (under than 6 months). That is why, writers would like to identify mothers' profiles in formula feeding their (under 6 months) babies in *Puskesmas Bangetayu Kota Semarang*.

METHOD OF THE STUDY

This study employed explanatory observation retrospective design. The population of this study was 150 mothers of babies less than six months with formula feeding in *Puskesmas Bangetayu Semarang*. From the population, there was 60 mothers taken as the sample of the study and the data was analyzed using Chi-Square test.

FINDING

Mothers of formula feeding babies (<6 months) in *Puskesmas Bangetayu* was becoming the respondent in this study. The respondent's profile was categorized by age, education, profession and information that could be illustrated by the following table:

Table 1. Mothers' profiles of formula feeding babies (< 6 months)

No	Keterangan	Frekuensi (n)	Persentase (%)
Usia (tahun)			
1.	< 20	6	10
2.	21-35	48	80
3.	36-40	6	10
Pendidikan			
1.	Pendidikan Dasar	27	45
2.	Pendidikan Menengah	22	36.7
3.	Pendidikan Tinggi	11	18.3
Pekerjaan			
1.	Pedagang	0	0
2.	Karyawan swasta	20	33.3
3.	Buruh	3	5
4.	Pegawai Negeri Sipil (PNS)	1	1.7
5.	Ibu Rumah tangga (IRT)	36	60
Pengetahuan			
1.	Baik	18	30
2.	Cukup	15	25
3.	Kurang	27	45
Total		60	100

It can be inferred from the table that there were 60% (48 respondents) of 21-35 year old mother. Another thing to be underlined that 27 respondents (45%) were mother who only passed their study at Elementary and Junior High School Level, 11 respondents (18.3%) were university graduated, and the other was only passed their Senior High School level. The next thing to be identified from the table was the profession of the respondent, the number one highest profession of mother who formula fed their babies was housewives and the lowest one was civil servants. The table also describes about respondent's knowledge about the advantage of breastfeeding were good (30%) and at least 45% respondents have the average knowledge.

Previous study identified that the implementation of exclusive breastfeeding for babies less than 6 months was relatively low. It was due to several urgent factors such as mothers' education, knowledge and experiences to the success of breastfeeding their babies. While Early Initiation Breastfeeding (IMD) is strongly determine the success of breastfeeding. Therefore, the massive TV advertisement about formula milk will discourage mother to breastfeed their babies especially for those who has low education level.

As the result of the study that there were several factors that trigger mother in formula feeding their babies, such as mothers' education level, information, and profession. The influential level for mother who formula feed their babies due to lack of information about the advantage of breastfeeding during both in regular ante natal care

and after delivery. In the other hand, the mass media rarely expos the advantage of breastfeeding support the formula feeding among the society. After that, it is also known that experience also plays important role to gain the information.

Mother, who provide breast milk for their babies are those who are well-educated about the advantage of breastfeeding and not really interested in the marketing tricks of formula milk in the media, and vice versa. Also, mother with higher information and knowledge about exclusive breastfeeding will have better understanding than those who do not have much information. This should be such interference for medical workers to all mothers that they must let their babies get the golden colostrums, avoid pre-lactal feeding to infants (under 6 months) and breastfeed their babies for at least six months. This study elaborated much that both education-based information and experience-based information could determine the formula or breastfeeding the babies (<6 months).

CONCLUSION

It could be concluded from the study that mothers' profiles who formula feed the babies (under 6 months) in Puskesmas Banget Ayu Kota Semarang was influenced by the age. It could be indentified that at least 60% (48 respondents) mothers aged 21-35 years old found to formula feed their babies, 45% (27 respondents) mothers who were passed from elementary and junior high school level, 60% (36 respondents) mothers' profession was housewives, and 45% (27 respondents) did not get enough information about breastfeeding.

It is suggested that mothers would improve their knowledge and information about the advantage of exclusive breastfeeding. This should be socialized for all mothers by medical workers since the antenatal care to delivery process. In other hand, government should also provide non-commercial advertisement related to the advantages of breastfeeding.

REFERENCES

1. Departemen Kesehatan RI. Pelatihan Konseling Menyusui Sejak Lahir sampai Enam Bulan hanya ASI saja. Jakarta; 2007
2. UNICEF dan Depkes RI. Petunjuk praktis bagi Ibu Kader dalam Menyusui. Direktorat Jendral Bina Kesehatan Masyarakat Direktorat Gizi Masyarakat. Jakarta; 2008
3. Dwindi. Susu Formula. Jakarta: EGC; 2006.
4. Erfiana, Irma. Kajian Berbagai Faktor yang Berperan dalam Pemberian Susu Formula Awal pada Bayi (6-8) di Kelurahan Tugu Jaya Kecamatan Cihideung Kota Tasikmalaya. Jawa Barat, Universitas Siliwangi; 2012.
5. Dinas Kesehatan Kota Semarang. Rekap Laporan ASI eksklusif; 2012
6. Fikawati, S dan Syafiq, S. Penyebab Keberhasilan dan Kegagalan Praktik Pemberian ASI Eksklusif. Jurnal kesehatan Masyarakat Nasional. Vol.4, No.3, Desember 2009.
7. Notoatmodjo, S. Pendidikan dan Perilaku Kesehatan. Jakarta: PT. Rineka Cipta; 2003.
8. Wawan dan Dewi. Pengetahuan, Sikap dan Perilaku Manusia. Cetakan II. Yogyakarta: Nuha Medika; 2010
9. Arifin, S. Faktor-faktor yang Mempengaruhi Pemberian ASI oleh Ibu Melahirkan. Fakultas Kesehatan Masyarakat. Universitas Sumatera Utara; 2004
10. Maryunani, Anik. Inisiasi Menyusui Dini ASI Eksklusif dan Manajemen Laktasi. Trans Info Media: Jakarta; 2012

Internalizing Conservation Values in *Conversation of Conservation (COC) English Club of Sport Science Faculty* towards ‘I am Poem’

Betari Irma Ghasani^{1a)}, Bagus Dwi Pambudi²

^{1,2}*Postgraduate Program, Semarang State University, Indonesia*

^{a)}Corresponding author: betari.ghasani@gmail.com

Abstract. Reconsidering the role of value as a fundamental aspect to student have become important nowadays. It is argued that learning values can build their basic skill as human. In addition, developing their correct perception of learning English is needed in order to expand learners’ ability in using English as a foreign language used around the world. These beliefs have led to an increased interest in combining them, especially conservation values by using English. In teaching conservation values, it requires an activity which can be internalized and remembered all the time. Here, ‘I AM POEM’ plays its role. This poem is based on BBC which is re-designed to challenge and motivate students. By stimulating and involving students, conservation values are introduced and developed. This paper focuses on the status of conservation values through learning English. It also reports the analysis of implementing ‘I AM POEM’ for teaching conservation value to students.

INTRODUCTION

E Learning is a process which does not only require exchange of materials but also values. More importantly, values hold fundamental role in every individual to build characters – in which today’s curriculum focuses on. The same extent occurs in learning English as a foreign language, as well. On the one side teacher helps the students to engage language aspects. Good values, on the other side, needs to be enhanced to make well-characterized students.

This study purposes to depict the student’s awareness of conservation values in daily life as well as measure English skills in terms of grammatical features in making simple sentence using poem.

Literature Review

In this case, one of the values the writers concern on is conservation values. Such values are being encouraged among the academicians of Semarang State University that declared itself as the conservation university in 2010. Conservation, based on rules number 27, 2012 established by the rector, principally consists of seven main concerns – biodiversity conservation, green architecture and internal-transportation system, waste management, paperless policy, clean energy, conservation of ethics, arts, and culture, and conservation regeneration. As the object of this study was the student of Conversation of Conservation (COC) English Club of Sport Science Faculty, implying conservation values was suggested to support the university’s programs. The writers chose an interactive media which is in the form of poem entitled ‘I am poem’ both to build conservation values and teach language aspects.

‘I am poem’ is a kind of poem structure which allows the students to make their own poems according to the given topics. It is considered as a good way to teach English for foreign learners because they can focus on their own characteristics. Providing conservation topic for the poem enables the students to relate themselves to various conservation activities. Once the students are interested in this activity, they are expected to apply conservation programs. This poem can also function as an interesting appetizer to catch the students’ attention in learning English.

In addition, learning English concerns on language features, as well. In this study, one of the features the writers emphasized was subject – verb agreement which becomes fundamental structure to create a clause. Foreign learners still feel difficult to deal with such grammatical features. Ellis (1997: 22) argues that there is a definite accuracy grammatical order and that this remains more or less the same irrespective of the learners’ mother tongue, their age, and whether or not they have received formal language instruction. Sometimes, learners fail to mark the verbs with –

ing, auxiliary be, and plural –s. When learners acquire a grammatical structure, they do so gradually, moving through a series of stages *en route* to acquiring the native-speaker rule (Ellis, 1997: 23).

Therefore, teaching both conservation values and grammatical feature for foreign learners can be done using ‘I am poem’ to give significant implication.

RESEARCH METHOD

This is a qualitative descriptive study which intended to build conservation value as well as grammatical features on students of Sport Science Faculty, Semarang State University, particularly those joining conservation of conservation (COC) program. The writers only selected a student to create the poem. The intent of this selection was not to generalize the information in the students, but to elucidate the particular, the specific. Before asking the students to create poem, the writers provided a topic and some guidelines helping the students concentrate on the topic given. The topic was about conservation. Firstly, the student was asked to introduce his name in the first sentence. Secondly, she wrote some simple sentences containing adjectives describing herself. In the third line, the student explained the adjectives in the previous sentence with new sentences telling something which related to conservation. The students might write more than one sentence to explain the adjectives. There were 8 lines in the poem. In the end, the writers analyzed whether the structure of the sentences was grammatically correct and whether the sentences related to the topic given

RESULTS AND DISCUSSION

The writers gave some choices of topic related to conservation as follows:

1. Preserving flora and fauna
2. Eco-friendly transportation
3. Decreasing and recycling waste
4. Paperless and recycled paper-based administration
5. Saving energy (fossil fuel and electricity) and generating renewable energy.
6. Preserving and developing local wisdoms (ethics, arts, and cultures)

Generally, the student already has basic knowledge about the topics since conservation program has been socialized in the beginning of the semester. Moreover, the student has applied some conservation programs in the campus such as using online attendance list and minimizing the use of vehicles due to university’s rules.

After some instructions were given to the students, the student created poem as in the following:

I am Miranda.
I am kind, confident, and diligent.
I love animal.
I have a rabbit and a cat.
I respect other people.
I sometime visit my family and friends.
I put trash in dustbin.
I never littering in school.

In the poem above, the writers firstly concentrate on language feature – sentence structure. Those sentences were considered as simple sentences which consist of a subject, finite, and object or complement. Generally, the students has already known to make sentences using auxiliary *be* such in the line 1 and 2. She put ‘Miranda’ which is noun as complement on the line 1 and ‘kind, confident, and diligent’ which are adjectives as complement of the second line. In the following sentences, she started using active verbs to explain the previous sentence. Mostly, the sentences are already correct in which there is ‘I’ as subject followed by verb as well as object. However, some errors still occurs in terms of verb form such in the last sentence ‘*I never littering in the school*’. Present participle form –ing should stand after auxiliary *be* or come as gerund. The correct form of verb in this sentence should be ‘*litter*’.

On the other extent, some errors occur in vocabulary in which the students failed to add plural marker –s in the third sentence ‘I love animal’. Plural marker –s should be added to the word ‘animal’ as it refers to the whole animals, not only one animal. Furthermore, lack of suffix –s is also found in the line 6. The word ‘sometime’ has

different meaning from ‘sometimes’. When it refers to frequency which is neither always nor often, the word ‘sometimes’ is used as adverb.

The second point the writers focuses on is conservation values. As explained in the method of the study, the student was asked to create sentences explaining the previous adjectives related to conservation programs. The writers note that the student has already portrayed some conservation values such as in the following sentences.

I love animal.

I have a rabbit and a cat.

I respect other people.

I sometime visit my family and friends.

I put trash in dustbin.

I never littering in school.

The sentence ‘I love animal’ refers to value of preserving flora and fauna. It is also explained that the student has a rabbit and a cat that she takes care. This is such a simple application of conservation value before we apply in larger context. The second example states that the student respect other people that she realized by visiting her family and friends. It is included as preserving and developing local wisdoms. We are supposed to respect the other people – colleagues, teachers, and friends since respecting other people represents the culture of our nation, Indonesia. In the last example, the student exposed the value of decreasing and recycling waste by putting trash in dustbin. Creating clean and health environment is an obligation for every people. Putting trash in the dustbin can be a simple start to keep our environment clean. More importantly, it becomes a good example for the children since such values can be easily internalized.

CONCLUSIONS

As part of conservation agent, the student has already been able to demonstrate some conservation values. Even though she only started with small things, it functions as fundamental aspects to give significant contribution for the university’s program and in larger context saving the earth.

Moreover, since internalizing conservation values can be done through learning English, some language features, such as subject-verb agreement can also be taught to improve student’s skills in using English as a foreign language.

REFERENCES

1. Azar, Betty Schramper. 1989. Understanding and Using English Grammar. New Jersey : Prentice Hall
2. Ellis, Rod. 1997. Second Language Acquisition. New York: Oxford University Press.
3. Gerot, L. and P. Wignell. 1994. Making Sense of Functional Grammar. Sydney: Gerd Srabler.
4. Haynes, Judie and Zacarian, Debbie. 2010. Teaching English Language Learners across the Content Areas. Alexandria: ASCD.
5. Hatch, J. Amos. 2002. Doing Qualitative Research in Education Settings. New York: State University of New York Press.
6. Stake, Robert E. 2010. Qualitative Research Studying How Things Work. London: The Guilford Press.
7. The Rules of UNNES Rector, Number 27 of 2012. [http:// http://konservasi.unnes.ac.id/?page_id=378,](http://konservasi.unnes.ac.id/?page_id=378) 2016.
8. Thornburry, Scott. 1999. How to Teach Grammar. England: Bluestone Press.

Classroom Management in Learning (Objectives, Functions, Principles and Approaches)

Abdul Hamid^{1a)}

¹*Mathematics Program STKIP YPUP Makasar Indonesia*

^{a)}Corresponding author: memedlurang@yahoo.co.id

Abstract. Classroom management can affect the quality of learning in the classroom because the management class will actually manage the classroom atmosphere becomes as good as possible so that students become comfortable and happy during the learning process. Therefore, the quality of student learning as the achievement of optimum results and basic competencies that are expected to be achieved with good and satisfactory. In addition, the management class will also create and maintain the atmosphere of the classroom so that teaching can take place effectively and efficiently. Quality learning is not only determined by curriculum renewal, the facilities available, a sympathetic teacher's personality, learning the full impression, insight knowledge of the teacher who is knowledgeable about all areas, but also teachers must master classroom management tips. An understanding of the principles of classroom management is essential mastered before special things in mind. By mastering the principles of class management, it would be a filter that removes the common mistake of classroom management. In addition, also, the management class, the level of absorption of the material that has been taught teachers will be burned into the memory of the students for their reinforcement provided by the teacher during the learning process takes place.

INTRODUCTION

Quality human resources is essential for a country to become a developed country, strong, and prosperous. Improving the quality of human resources can not be separated with the nation's education problems. According Mulyasa (2006: 3) "There are at least three requirements that must be considered in the development of education in order to contribute to improving the quality of human resources (HR), namely: (1) a means of building, (2) quality books, (3) teacher and educational staff professional.

Teachers have contributed greatly to the success of learning in schools. Teachers was instrumental in helping the development of learners to realize the goal of his life optimally. In the classroom the teacher acted upon two main activities, namely teaching and classroom management activities. Teaching is essentially a process set up, organize existing environment around students. All components of teaching that includes objectives, teaching materials, teaching and learning activities, methods, tools and resources, and evaluation performed optimally to achieve the goals of teaching that was set before teaching implemented.

Classroom management is not just a classroom setting, physical facilities and routines. Classroom management activities intended to create and maintain an atmosphere and conditions of class, so that teaching and learning can take place effectively and efficiently. For example, provide reinforcement, develop a relationship between teachers and students and create a productive group.

In class belongs all aspects of education and teaching meeting proceeds. Teachers with all his ability, students of any background and their individual properties. Curriculum with all its components, and materials and resources with all the principal language learning and blended to meet and interact in class. Even the results of education and teaching is largely determined by what happens in the classroom. Therefore, it is proper class of well-managed, professional, and must constantly.

Djamaroh (2006: 173) states "The problem faced by teachers, both beginners and experienced is classroom management. Aspects that are often discussed by professional writers and teachers are also classroom management ".because the main and most difficult task for the teacher is classroom management, while there is no single approach that is said to be the most excellent. Most teachers are less able to distinguish the problem of teaching and management issues. Teaching problems must be addressed by means of teaching and management issues must be addressed by way of management.

CLASSROOM MANAGEMENT

- A. Management means the process of using resources effectively to achieve the goals. While management is a process that provides oversight on all matters involved in the implementation and achievement of goals. Class management purposes is referring to the creation of atmosphere or conditions of class that allows students in the class can learn effectively. According to the old conception, classroom management is defined as the effort to maintain classroom order. According to the modern conception of classroom management is a selection process that uses a tool fixed to the problem and the situation of classroom management (Lois V. Johnson and Mary Bany, 1970.)
- B. Based view of Specific Operational Approach (Excerpted from Wilford A. Weber 1986), namely :
1. A set of teachers activities to create and maintain order upscale atmosphere through the use of discipline (authoritarian approach).
 2. A set of teachers activities to create and maintain order upscale atmosphere through intimidation (bullying approach).
 3. A set of teachers activities to maximize the freedom of the student teachers (Permissive Approach)
 4. A set of teachers activities to creates a classroom atmosphere by following the instructions / recipes that have been presented (Approach Cooking).
 5. A set of teachers activities to create a classroom atmosphere that is effective through planning quality learning and well executed (Instructional Approach).
 6. A set of teachers activities to develop learners' behavior desired by reducing unwanted behavior (Approach Changing Behaviour).
 7. A set of teachers activities to develop good interpersonal relationships and positive socio-emotional climate classroom (socioemotional Creation Approach).
 8. A set of activities teachers to foster and maintain an effective classroom organization (Social Systems Approach)

OBJECTIVE, ASPECT, FUNCTION, AND PROBLEMS OF CLASSROOM MANAGEMENT

1. Objective Classroom Management
 1. Realizing the situation and condition of the class, either as a learning environment and as a group learning, which allows students to develop skills as much as possible.
 2. Eliminate the obstacles that may hinder the realization of the learning interaction.
 3. Provide and organize the facilities and furnishings that support learning and enable students to learn in accordance with the social environment, emotional and intellectual students in the classroom.
 4. To foster and guide the student in accordance with the social, economic, cultural as well as the properties of the individual (Director General of Primary and Secondary Education 1996: 2)

2. Aspects, Functions, and Problems of Classroom Management

Classroom management is a skill that must be held by teachers in deciding, understand, diagnose and ability to act towards the improvement of classroom atmosphere to aspects that need to be considered in the management of a class is the class nature, the driving power of the class, the classroom situation, action selection and creative (Lois V. Johnson and Mary A.Bany, 1970).

1. The management class in addition to giving significance to creating and maintaining optimal conditions of class, but also classroom management functions to giving and equip facilities for all kinds of tasks such as: assist the group in the division of tasks, helping the formation of groups, facilitate cooperation in finding the organization's goals, help the individual to be able to work with a group or class, helping working procedures, changing the conditions of the class.
2. Maintaining that tasks can run smoothly. Problems of Classroom management can be grouped into two categories: individual and group problem.

The emergence of individual problems caused several possible actions of the students, namely :

1. Behavior who want to get the attention of others.
2. Behavior that wants to show strength.
3. Behavior aimed at hurting others.
4. Demonstration of incompetence.

While the problems of groups that may arise in the classroom, namely :

1. Class is less cohesive due to reasons of sex, race, socioeconomic levels, and so forth.
2. Deviations from the norms of behavior which have been agreed in advance.
3. Class reacted negatively to one of its members.
4. The group tend to be easily distracted from wrought, morale is low, classes are less able to adjust to new circumstances such as teachers are forced to schedule disruptions temporarily replaced by another teacher. (Lois V.Johnson and Mary A.Bany, in M.Entang and T.Raka Joni1983).

PRINCIPLES IN CLASSROOM MANAGEMENT.

"In general, the factors that affect the management class is divided into two groups, namely, internal factors and external factors of students." (Djamarah 2006: 184). Internal factors associated with problem students emotions, thoughts, and behavior. Premises student's personality characteristics typical of each lead different students from other students run private individual. These individual differences in terms of aspects such as biological diversity, intellectual, and psychological.

External factors associated with problem students learning atmosphere, student placement, grouping students, the number of students, and so forth. Problem number of students in the class will be influenced the dynamics of the class. The more the number of students in the class, for example, twenty-one and older will more prone to conflict. Conversely the smaller the number of students in the classroom tend to be smaller conflicts.

Djamarah (2006: 185) states "In order to minimize the interference problems in classroom management, can be used classroom management principles proposed by Djamarah are as follows:

1. Warm and Enthusiastic
Warm and enthusiasm required in the learning process. Teachers who warm and familiar to the students always showed enthusiasm to the task or the activity will succeed in implementing classroom management.
2. Challenge
The use of the words, actions, work methods or materials will increase the passion to challenge students to learn, thereby reducing the possibility of the emergence of deviant behavior.
3. Varies
The use of tools or media, teaching styles, patterns of interaction between teachers and students will reduce the appearance of interference, improve the students' attention. This variation is the key to achieving effective classroom management and avoid saturation.
4. Flexibility
Flexibility of teachers behavior to change their teaching strategies to prevent the disturbances students as well as creating a climate of effective teaching and learning. Flexibility of teaching can prevent disorders such as student commotion, no attention, no chores and so on.
5. Emphasis on Positive Things
Basically in teaching and learning, teachers should emphasize the positive things and avoid focusing on the negative things. The emphasis on the positive things that repression by the teachers to the students positive behavior rather than negative behavior nags. The emphasis can be done with positive reinforcement and awareness of teachers to avoid mistakes that could disrupt the learning process.
6. Cultivation of Self-Discipline
The final goal of the classroom management is students can develop themselves to disciplinary and teachers themselves should be an example of self-control and implementation responsibilities. So, teachers should discipline in every way if you want to join their students disciplined in everything.

Approaches in Classroom Management

Classroom management is not a stand-alone issue, but related to a variety of factors. The problems of the students are the main factors that teachers do no other than to heighten the excitement of the students either in groups or individually.

Harmonious of relationships between teachers and students, the high cooperation among students is summed up in the form of interaction. Nascency of optimal interaction depend on the approach that teachers do in order to manage the classroom. (Djamarah 2006: 179)

Various approaches are as in the following description:

1. Power approach

Classroom management is defined as a process to control the behavior of their students. The teacher's role here is to create and maintain discipline in the situation kelas. Kedisiplinan is the power that demands to the students to obey. In it there is power and binding norms to be adhered to class members. Through the power in the form of norms, the teacher approached her.

2. Threat Approach

From this, threats or intimidation approach, as well as classroom management is a process for controlling the behavior of the students. But in controlling the behavior of the students is done by giving threats, such as prohibiting, ridicule, sarcasm, and force.

3. Freedom approach

Management is defined as a process to help students to feel free to do anything at anytime and anywhere. The teacher's role is to work as closely as possible the freedom of students.

4. Recipes approach

This Approach recipe is done by giving a list that depicts what should and what should not be done by the teacher reacts to all problems or situations that occur in the classroom. In the list it is described step by step what to do by teachers. The teacher's role is simply to follow the instructions as written in the recipe.

5. Teaching approach

This approach is based on an assumption that in the planning and implementation will prevent the emergence of behavioral problems of students, and solve the problem if they can not be prevented. This approach encourages teachers in teaching behavior to prevent and stop the behavior of the students who are less baik. Peranan teachers is to plan and implement a good lesson.

6. Behavioural change approach

As the name implies, management class defined as a process to change the behavior of the students. The teacher's role is to develop the students' behavior was good, and preventing behavior that is less baik. Pendekatan based on a change in behavior (behavior modification approach) is contrary from the standpoint of behavioral psychology.

7. Socio-Emotional Approach

Socio-emotional approach will be maximum reached when the good interpersonal relationships thrive in the classroom. The relationship includes the relationships between teachers and students as well as the relationship between the students. At this point the teacher is the key to the development of the relationship. Therefore, teachers should develop good classroom climate through the maintenance of interpersonal relationships in the classroom. For the creation of relationship between teachers and students a positive attitude and condescension understand.

8. Working Group Approach

In this approach, the teacher's role is to encourage the development and teamwork. Classroom management with group process requires the ability of teachers to create conditions that allow the group into a productive group, and in addition, teachers must also be able to maintain the condition to remain good. To keep the class teacher should be able to maintain high morale, to resolve conflicts, and reduce management issues.

9. Elektis or pluralistic approach

Elektis approach is also called a pluralistic approach, namely the management class that attempted to use a variety of approaches that have the potential to create and sustain an enabling condition learning process runs effectively and efficiently.

CONCLUSION

Classroom management can improve the quality of learning in the classroom because of the circumstances of the classroom allows students to develop skills as much as possible. In the future, the management system is expected to be further enhanced classroom. Learning development in a globalized world is rapidly increasing, therefore the class teacher is required to have a special competence in managing the class so enjoyable learning atmosphere, effectively and efficiently can be done well.

Classroom management is needed because from day to day and even from time to time the behavior and actions of students are always changing. Today students can learn well and quiet, but not necessarily tomorrow. Yesterday there healthy competition in the group, otherwise the future it may be less healthy competition. Class is always in the form of behavior, actions, attitudes, mental, and emotional students.

REFERENCES

1. Analisis Pengaruh Kinerja Guru Terhadap Motivasi Belajar Siswa.pdf
2. Nana Sudjana.(2002). Dasar-dasar proses belajar mengajar.Bandung: Sinar baru
3. Dedi Supriadi. (1999). Mengangkat Citra dan Martabat guru.Yogyakarta: adicita karya nusa
4. Permendiknas Peraturan Menteri Pendidikan Nasional. 2007. Peraturan Menteri Pendidikan Nasional nomor 16 tahun 2007 tentang Standar Kualifikasi Akademik dan Kompetensi Guru. Jakarta: BSNP.
5. Permendikbud Peraturan Menteri Pendidikan dan Kebudayaan. 2013. Peraturan Menteri Pendidikan dan Kebudayaan nomor 69 tahun 2013 tentang Kerangka Dasar dan Struktur Kurikulum Sekolah Menengah Atas/Madrasah Aliyah. Jakarta: Kementerian Pendidikan dan Kebudayaan.
6. PP RI Peraturan Pemerintah Republik Indonesia. 2009. Peraturan Pemerintah Republik Indonesia nomor 19 tahun 2005 tentang : standar nasional . 2009. Peraturan Pemerintah Republik Indonesia nomor 74 tahun 2008 tentang : guru. Jakarta: Novindo Pustaka Mandiri.
7. Purwo BK. 2009. Menjadi guru pembelajar.Jurnal Pendidikan Penabur 8 (13):64-70.

Developing Autonomous Learning Using Web 2.0 in a Digital Age: Building Language Learners' Content Knowledge and Improving Writing Skills

Djoko Sutrisno^{1a)}

¹*Ma'arif Nahdlatul Ulama University of Kebumen Central Java Indonesia*

^{a)}Corresponding author: jokounnes@gmail.com

Abstract. In a fast-changing digital age, English language learners face increasing demands to advance their familiarity with a variety of online tools (Conole, 2008). Technologies are changing the way we teach and learn in many respects. In teaching learning we are not only cultivate the college students' comprehensive qualities but also develop their autonomous learning ability. For this reason, the present article explored whether a Developing Autonomous Learning Using Web 2.0 could improve the college students' overall English performance more effectively than the traditional English teaching setting. The aim of this experimental study is to determine if Web 2.0 can be an effective tool building language learners' content knowledge and writing skills. The study involved 15 advanced students of Ma'arif Nahdlatul Ulama University of Kebumen. Both quantitative and qualitative data collected from post-surveys, transcribed digital recordings, blog reflections, and final interviews were analyzed. The findings provide the data showed that Web 2.0 empowered students to use their own writing for self-expression and self-reflection and that social interaction helped establish a sense of community in which students be able in building language learners' content knowledge and enhancing writing skills.

INTRODUCTION

Providing opportunities for self-study helps to increase ownership of responsibility for learning English by encouraging learners to organize self-access learning resources and search for appropriate materials to develop their own progress. Self-access or learner-centered learning refers to the change in focus in the classroom from the teacher to the learners. This shift makes it so students ultimately direct their learning through self-access facilities for autonomous learning (Sheerin, 1989). The purpose of this paper is to investigate Web 2.0 and to understand users' perspectives of its application in language teaching and learning whether it is building language learners' content knowledge and improving writing skills. As discussed by O'Reilly (2005), an important principle of Web 2.0 is the web as a platform that facilitates the building of web-based communities and the contribution from collective intelligence. Web 2.0 has a multitude of good features (Amol Deshpande & Alejandro Jadad, 2006; O'Reilly, 2005; Skiba, 2006). It: 1) presages a freeing of data 2) permits the building of virtual applications, 3) is participative, 4) has applications that work for the users, 5) has applications that are modular, 6) is about sharing, 7) is about community and facilitating community, 8) is about remixing, 9) is smart, 10) opens up the Long Tail. Given the fact that Web 2.0 is such a new concept, many language teachers and learners may still not be aware of this revolutionary progress in designing language curriculum. By forming an online participatory community, we expect to examine three major questions proposed and six types of tools in language teaching and learning. (Blogs vs. Wikis, Myspace vs. Facebook, Podcasting vs. Vodcasting, Mindmeister vs. Mindomo, Mashups, and Second Life vs. Quest Atlantis). When granted access to enterprise networks and the Internet, applications can enable sharing of information within workgroups, throughout an enterprise and externally with partners and customers. Until recent years, when applications were launched only from desktop computers and servers inside the corporate network, data security policies were relatively easy to enforce. However, today's organizations are grappling with a new generation of security threats. Consumer-driven technology has unleashed a new wave of Internet-based applications that can easily penetrate and circumvent traditional network security barriers. The Web 2.0 introduces the idea of a Web as a platform. The concept was such that instead of thinking of the Web as a place where browsers viewed data through small windows on the readers' screens, the Web was actually the platform that allowed people to get things done. Currently this initial concept has gained a new dimension and is really starting to mean a combination of the

technology allowing customers to interact with the information. The specific research questions of this literature review study are: 1. What are the theoretical underpinnings that scholars used to frame their research? 2. Which Web 2.0 technologies were examined in these studies? 3. What methodologies and data analysis techniques did scholars employ to analyze their research data? What were the benefits and challenges of using Web 2.0 for language learning and teaching as identified in these studies?

THEORETICAL FRAMEWORK

Web 2.0 and Language Learning

The Web 2.0 increased online participation has been most commonly defined by its contrast with the concept of Web 1.0. In the first stage of the internet, or Web 1.0, users played the more passive role of a simple receiver of information. The traditional tools of Web 1.0 included email, chat rooms, and discussion boards (McLoughlin & Lee, 2007). Web 1.0 users would read static content created by “experts” who had the technical ability to write and post content (Ebner, 2007). Web 1.0 is contrasted with Web 2.0 in which general users consume, create, and edit content while easily collaborating with other users (McLoughlin & Lee, 2007). Web 2.0 tools provide users the opportunity to play a more active role of potential author, contributor, editor, or specialist. Not only are users given more opportunities to participate at a richer level, the quality and even the survival of Web 2.0 tools such as blogs, wikis, social networks, and mashups, are largely dependent on the quality and consistency of the contributions of the users. Blogs are largely made up of user-created content, wikis allow multiple users to contribute to a growing knowledge base, and social networks allow users to develop online communities of shared interests. While these Web 2.0 tools have grown in popularity with general users, some discussions focus on the continued relevance of Web 1.0 tools in today’s world (De Weber, Mechant, Veevaete, & Hautekeete, 2007). Nevertheless, the emergence of Web 2.0 tools may not diminish the importance and usefulness of Web 1.0 tools for today’s users.

Benefits of the Web 2.0

The Web 2.0 allows for more exposure to the target language. Podcasts exposed students to the language both at home and at school, increasing encounters with the target language. However, there are concerns **over** the appropriateness of the materials students are exposed to, where not all videos are school-appropriate. Nevertheless, the computer and online environment seems to benefit students. Learners using instant messaging (IM) are more comfortable, advanced and proficient in writing (or typing) than orally. They also contributed more on social networks like Facebook (FB) and preferred writing on computers. However, learners were not as familiar with technology as expected. Using technology for EFL also enhanced students’ language skills and aspects. Reading performance was improved. However, it was also found that the students’ reading skills did not improve significantly. On the other hand, writing skills improved using blogs and FB; and impressively, learners were able to differentiate writing styles. Web 2.0 technology also increases student motivation and interest. Students enjoyed writing and reading blogs and motivated them, while social networks reduced pressure on making language errors. Other studies demonstrated positive effects on students’ motivation to learn. However, there is a risk of the initial novelty wearing off and students losing motivation. Nevertheless, students’ confidence in the language increased when using the Web 2.0. Such confidence could come from being comfortable in communicating using technology. Self-esteem was raised due to a larger readership and participation also increased especially from introverted students. Web 2.0 technologies also allowed for more meaningful interactions. There is increased interaction and rapport between learners. They built a sense of belonging to a community. These tools served also to enhance the often-neglected communicative competence of learners. Strangely, learners seemed unable to connect their “social life” and their EFL. Students consider the writing on an online platform as “communication”, but not “writing” which is related only to academic genres. A unique feature of Web 2.0 is that it allows the exchange of feedback. The tools were found helpful in exchanging opinions and ideas, resulting in a valuable peer review culture. Students even preferred peer comments than the teacher’s as it matched their level of ability. However, students were actually dissatisfied.

There are many benefits of using Web 2.0 tools for EFL. However, what are the benefits that gifted students experience when using them? From the data, the Web 2.0 makes for interesting learning, provides an English language environment, the presence of “virtual critics”, improves language aspects and skills, it is building language learners’ content knowledge and improving writing skills.

Content Knowledge

Content knowledge is knowledge about the subject matter that is to be learned or taught, including, for example, middle school science, high school history, undergraduate art history, or graduate-level astrophysics. Knowledge and the nature of inquiry differ greatly among content areas, and it is critically important that teachers understand the disciplinary “habits of mind” appropriate to the subject matter that they teach. As Shulman (1986) noted, content includes knowledge of concepts, theories, ideas, organizational frameworks, methods of evidence and proof, as well as established practices and approaches toward developing such knowledge in a particular discipline. In the case of art appreciation, for example, such knowledge would include knowledge of art history, famous paintings, sculptures, the influence of artists’ historical and social contexts, as well as knowledge of aesthetic and psychological theories for understanding and evaluating art. The cost of teachers having an inadequate content-related knowledge base can be quite prohibitive; students can develop and retain epistemologically incorrect conceptions about and within the content area (Bransford, Brown, & Cocking, 1999; Pfundt, & Duit, 2000).

THE STUDY

Participants

Considering the advantages of Web 2.0, this section will share two classroom practices that involved the application of Web 2.0. These practices were directed to a group of English students which consisted of youths and adult beginners, aged 18–23 years in Ma’arif Nahdlatul Ulama University. It is important to note that the students have very few opportunities to practice English outside the classroom as the English -Writing community in the city is very small. In addition, the students have never been to any English-Writing community because they lived in remote area. These practices were carried out in a classroom university where writing is a compulsory subject. In this university, the writing course consists of 16 meetings including mid and final examination. In the context of learning English as a foreign language, the amount of time allocated is insufficient for an environment that lacks natural exposures to achieve authentic.

METHOD

Selection Criteria

To answer the research questions, a series of selection criteria were established and followed strictly in this review study:

1. Research must focus on using Web 2.0 tools in the context of language learning and teaching. Published research on using Web 2.0 tools in other disciplines or areas of study was excluded from this review.
2. Research must consist of empirical studies reporting data derived from actual observations or experimentations. Published research that was solely focused on conceptual framework, personal opinions or anecdotal experiences was excluded
3. Research must explicitly identify one or multiple Web 2.0 tools examined in its studies. Studies that examine the full courseware, such as Moodle or WebCT, or that report on any types of academic online learning program, without implicitly identifying the use of the Web 2.0 tool in such courses/programs, are also excluded in this review.
4. Research must provide evaluative evidence of the Web 2.0-supported activities by reporting qualitative or quantitative data in one or more of the following dimensions of learning: affective learning (i.e, whether the use of Web 2.0 affects student motivation, attitude and perception); cognitive learning (i.e, whether the use of Web 2.0 affects student achievement and performance); and metacognitive (i.e, whether learners are more autonomous and self-directed in the learning processes). Papers that did not provide any evidence on the previous three dimensions were excluded.

FINDINGS AND DISCUSSION

The results of our investigation are described using quantitative and qualitative sections. The quantitative section presents aggregate information regarding students were using Web 2.0, while the qualitative section delves into a deeper analysis of the meanings behind the quantitative results. The quantitative results indicate a general tendency of Web 2.0 to shift across time. Approximately 59% of student ratings were different between the pre- and the post survey, indicating that students' perception of their language learners' content knowledge domains changed over the duration of the web.2.0 program. Additionally, it appears that students perceived a largely positive change in their technological, pedagogical, and language learners' content knowledge after engaging with the web.2.0 program as indicated by the fact that out of the 14 ratings that did change between the pre- and the post-survey, 11 were positive while just 3 were negative. In addition: (a) the most positive change occurred in the technology knowledge category with five out of eight teachers indicating that their technology knowledge increased; (b) the technology and content knowledge components exhibited only positive changes; and (c) five out of eight teachers indicated that their knowledge increased in at least one of the three knowledge components. The language learners' content knowledge component exhibited mixed results: three teachers perceived an increase in their language learners' content knowledge; three perceived a decrease in their language learners' content knowledge; and two felt that their language learners' content knowledge remained unchanged. Based on the teacher interviews UMNU students' perceived benefits of using Web 2.0 technologies for EFL, the professional development opportunity of the Web.2.0 program had a highly positive impact on the students' knowledge development and confidence in teaching English with technology. The teachers immediately gravitated to discussing their experiences by reflecting on each knowledge domain (technology, writing skill, and language learners content knowledge). In addition, our conversations with the students revealed themes of empowerment through the development of the knowledge domains, confidence through "on-demand" support of the knowledge domains, and the "dynamic" qualities of Web.2.0. These are discussed in turn.

CONCLUSION

With Web 2.0 tools and their interactive, social and collaborative features, language acquisition can be more engaging, motivating, and collaboration-oriented. The 43 studies in this current literature review suggest that the integration of Web 2.0 tools holds great potential to benefit language learning and teaching through multiple means, in agreement with Wang and Vasquez' (2012) findings. Activities designed with these Web 2.0 tools may help students to develop important skills in addition to language learning-related abilities such as communication, collaboration, and problem solving, which are critical skills needed especially in the 21st century. In the meantime, as Wang and Vasquez (2012) indicated, the challenges of using Web 2.0 tools and their inherent constraints coexist with benefits and affordances. In addition to the challenges found in Wang and Vasquez's (2012) study, new issues and their pedagogical implications were discussed in this current study. In regard to the characteristics of the reviewed studies in comparison to Wang and Vasquez's study (2012), these studies demonstrated an increase in their theoretical linkages and in the number and scope of Web 2.0 technologies investigated. In terms of Web 2.0 use, the current study provides a new perspective to encourage future research on studying the interaction and interrelation of the use of Web 2.0 and mobile devices. Also in regard to methodological issues, the similar types of methodological concerns identified in Wang and Vasquez's (2012) study persist in the contemporary reviewed studies, such as the lack of depth in research analysis and methodological robustness of research designs. Considering the ever-changing development of Web 2.0 technologies, reviewing and critiquing research studies over the past five years is critical to build upon the existing research base, which in turn helps to provide guidance and directions for future research and practices. In addition to these benefits, this review study also presents challenges found in the current research, such as persistent technical issues, teachers' inability to fully leverage Web 2.0's potentials, institutional barriers, and so on. Given these limitations, future research is much needed to corroborate the existing findings and explore the additional questions brought up by the researchers, including the various factors affecting student language learning in Web 2.0-enhanced learning processes and how to support effective means of said learning in technologically-supported environments and language learners content knowledge.

REFERENCES

1. Alexander, B. (2006). Web 2.0: A new wave of innovation for teaching and learning? *Educause Review*, 41(2), 32–44.
2. Alexander, B., & Levine, A. (2008). Web 2.0 storytelling: Emergence of a new genre. *Educause Review*, 43(6), 40–56
3. Barrett, H. (2006). *Researching and evaluating digital storytelling as a deep learning tool*. Retrieved from <http://electronicportfolios.org/portfolios/SITEStorytelling2006.pdf>
4. Burden, K., & Atkinson, S. (2008). *Evaluating pedagogical “affordances” of media sharing Web 2.0 technologies: A case study*. In Hello! Where are you in the landscape of educational technology? Proceedings ascilite Melbourne 2008 (pp. 121–125). Retrieved from <http://www.ascilite.org.au/conferences/melbourne08/procs/burden-2.pdf>
5. Crook, C. (2008). *Web 2.0 Technologies for learning: The Current landscape opportunities, challenges and tensions*: BECTA.
6. Franklin, T., & Van Harmelen, M. (2007). *Web 2.0 For content for learning and teaching in higher education*. JISC www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-contentlearningand-teaching.pdf. Greenhow, C.,
7. Robelia, B., & Hughes, J. E. (2009). *Learning, teaching, and scholarship in a digital age Web 2.0 And classroom research: What Path should we take now?* *Educational Researcher*, 38(4), 246–259.
8. Brown, J., Collins, A., & Duguid, P. (1989). *Situated cognition and the culture of learning*. *Educational Researcher*, 18(1), 32–42. doi:10.3102/0013189X018001032.
9. Brown, S. (2010). *From VLEs to learning webs: The implications of Web 2.0 for learning and teaching*. *Interactive Learning Environments*, 18(1), 1–10. doi:10.1080/10494820802158983.
10. Chen, J.-M., Chen, M.-C., & Sun, Y. S. (2010). *A novel approach for enhancing student reading comprehension and assisting teacher assessment of literacy*. *Computers & Education*, 55(3), 1367–1382. doi:10.1016/j.compedu.2010.06.011.
11. Craig, E. M. (2007). *Changing paradigms: Managed learning environments and Web 2.0*. *Campus- Wide Information Systems*, 24(3), 152–161. doi:10.1108/10650740710762185.
12. Darhower, M. A. (2008). *The role of linguistic affordances in telecollaborative chat*. *CALICO Journal*, 26(1), 48–69. Díez-Bedmar, M. B., & Pérez-Paredes, P. (2012). The types and effects of peer native speakers’ feedback on CMC. *Language Learning & Technology*, 16(1), 62–90.
13. Anderson, P. (2007). *What is Web 2.0? Ideas, technologies and implications for education*. Retrieved from <http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf>
14. Blazer, C. (2008). *Literature review: Educational technology*. Miami, Florida: Miami- Dade County Public Schools, Research Services (ERIC Document Reproduction Service No. ED 536868)

Applying Character Learning Strategy for Teaching Mathematics, A Case Study of Secondary School Students

Masrukan^{1, a)} and Muhammad ‘Azmi Nuha^{2, b)}

¹ Semarang State University

² Banyumas Education Community

Corresponding author:

^{a)} masrukan.mat@mail.unnes.ac.id

^{b)} azminuha@gmail.com

Abstract. The purpose of this research is, first, knowing how integrating character learning strategies in teaching mathematics, second, knowing what is the impact of the character learning in students. This research uses purposive sampling to gather research’s samples. The initial result last math subject test ranked is divided into three groups which are an upper group, the middle group, and lower group. Learning to set of the research is using 4K Model that is learning a model which includes performance, character, creativity and conservation in the model. Student character building uses modeling, habituation, reinforcement, and reflective thinking strategy. It is very useful in teaching mathematics. From character result, the research shows that the subjects have high discipline and tolerance.

INTRODUCTION

In 2010, Ministry of National Education launched “Culture and National Character Education” as a national movement. The movement appears since some problems in diversity’s attitude and cooperation in Indonesian people’s life that results in moral degradation. That cases of inappropriate attitude of an adolescent. Thus, character education is very important, especially in Indonesian education system. Lickona (2014) explains that character education can be integrated into class learning. Research from CDP, also explains that class with a curriculum based on character shows a positive attitude in student’s characters. The character integration in learning has no negative effect in student’s cognitive. An analysis in one of secondary school in Semarang showing some problem about discipline in school activity such as interdisciplinary in the ceremony, learning activity, etc. In another hand, K-13 curriculum explains the importance of affective in learning.

This research observes 8th grade student’s characters represented by students as research subjects. Characters that are observed in this research are character of discipline and tolerance. Discipline is an action that show orderliness and submissive in some policy and law. According to Narwanti (2011), discipline indicators are: (1) come in time, (2) follow learning activity, (3) follow learning procedure, and (4) finish assignment in time. Tolerance is behavior and action of respecting other religion, family, ethnic, opinion, attitude, and action differences although it is not the same as oneself. According to Narwanti (2011), tolerance indicators are: (1) work in group with friends come from different gender, religion, extended family, and ability, (2) do not force one’s opinion to others, (3) respect, and (4) speak politely.

Masrukan and Rochmad (2014) explain that 4K Model is learning model that includes performance, character, creativity, and conservation. The learning model integrates character education in learning activity. The learning model has conservation characteristic, it means learning activity uses mathematics model made of wasted objects. Mathematics model is the best learning media that is used in geometry. The 4K model syntax are: (1) Character Development Illustration, (2) Investigation, (3) Collaborative Exploration, (4) Creative Activity, (5) Communication, and (6) Appreciation.

Semarang State University character development team (2012) explains that are three strategies for integrating character in learning, they are modeling, habituation, reinforcement, and reflective thinking strategies can build a habit of conservation characters in college students. 4K Model used in this research is combined with character learning strategy. Each character learning strategies included combined with 4K Model.

METHODS

This research is a qualitative research. We use narrative design research. Creswell (2012) explain that narrative research is a research to qualify someone from their story. The research subjects are taken using purposive sampling. Purposive sampling is sampling method with certain condition, such as, by choosing the one who is able to fill the researcher's expectation.

There are two purposes of this research. First, knowing how integrating character learning strategies in teaching mathematics. Second, knowing what is impact of the character learning in students. Primary data that are collected in this research are character observation results and interview results of their characters.

Observation in this research focuses on the students. Observation activity uses observation paper to explain discipline and tolerance characters in the research subject. The kind of interview in this research is unstructured interview. Same order of questions, sentences, and methods is used for every respondent. Moreover, unstructured interview is also used to find information that is not mutual. The interview is used to compare data from every abilities and to understand the research subject deeper. Interview data is collected using interview paper.

Observation paper and interview paper are made by researcher and theoretically validated of two validator, they are Mathematics department lecturers of Semarang State University.

Result

1. Before doing the research, we take result of last subject. Based on the result, researcher divides the students into three groups, there are upper, middle, and lower group. Researcher asks mathematics teacher to take two subject from every group so there will be chosen six subject as shown in Table 1. The six subject will be observed in the last meeting in learning.

Table 1. Table of Research Subject

Research Subject	Group
S-1	Upper
S-2	
S-3	Middle
S-4	
S-5	Lower
S-6	

Integrating Character Learning Strategies in Teaching Mathematics

Learning instrument that is used in the research is lesson plan that includes 4K Model. Lesson plan also includes problem solving and character aspects in its main activity. Lesson plan's validation is done to measure whether it is valid or not.

The learning activities are done three times. Observations of teachers and students performed on the first and second meetings. The observer are mathematics teachers in the research setting and mathematics students from Semarang State University. Observation item in this research has been validated by validators.

In first learning, teacher's activity is good. He has 3.07 (scale 1-4) on average score from both observers. Although teacher's learning is good but lesson plan is revised for next meeting. From the result, there are three aspects that must be revised for second lesson plan. They are attitude in opinion discussion and collaborative exploration activity. Discipline aspect in mathematics model building is revised because it is not included in the first learning.

Second lesson plan's quality is improved from the first one. It was done after considering the observation result from the first meeting. Second learning's quality is very good. Teacher has 3.8 in average score from both observers. Third lesson plan qualities are based on second lesson plan.

In the last learning, teacher use the lesson plan is equal with second lesson. Modeling is used for discipline character that is shown by giving an example of coming in time to students. Habituation and character reinforcement of discipline and tolerance done by imitating the teacher's activities. Reflective thinking in discipline and tolerance character is done by discussing a video showing the habit of characters. Teacher is also give an illustration or video about character that connecting into the learning subject.

According to Ridlo (2014), modeling, habituation, reinforcement, and reflective thinking strategies can build a habit of conservation characters in college students. College students' characters can be developed using this

strategies. In this research, learning strategies which are used to form discipline and tolerance characters in students are modeling, habituation, reinforcement, and reflective thinking.

Students Character Result

Discipline characters of six subjects are included in high category. The highest score comes from middle group. He is S-3 which has 16 (max. 16) discipline score. The lowest score is S-5 with only 12 discipline score.

In the discipline of time, six research subjects have different punctuality. S-2, S-3, S-4, and S-6 are already in class before the bell ring. Subject S-1 enter the class at the same time when the bell is ringing. Subject S-5 would enter the class after bell's ring. Subject S-5 think learning would start after the bell because the teacher will come late.

Six research subjects have good discipline in learning activity. They follow mathematics learning activity in the class. High motivation is shown by S-1 because he likes mathematics.

Six research subjects always bring the inventory that support mathematics. They always bring pencil, pen, book, and other inventories that support the learning process.

In finishing the assignment, six research subjects finish their work in different time. S-1, S-3, S-4, and S-6 can finish the assignment before the time. Subject S-5 finishes the assignment in time. Subject S-2 finishes the assignment late. Subject S-2 bring the assignment after time was end.

The tolerance character in six research subjects are in high category. The highest score is from middle group. He is S-4 whose score is 16 in tolerance. The lowest score is S-5 whose score is only 12.

Good tolerance is shown by six research subjects in group activity. Six research subjects can work in group with each other. High motivation is also shown by S-2, S-4, S-5 and S-6 in group activity. In addition, six research subjects also show positive attitude while discussing their opinion in class. They can take any opinion with good tolerance as long as what is stated is correct.

Six research subjects also show positive attitude on respect. They can admire their friends who are doing presentation and their teacher who are teaching. A finding on S-5 indicates a point that S-5 just want to listen interesting presentation and lesson. In speaking aspect, six research subjects speak politely. Six research subjects do not bad speaking in the class but S-2 and S-5 usually speak with high intonation in the class.

CONCLUSION

Character learning strategies that used in this reasearch are modeling, habituation, reinforcement, and reflective thinking. Three strategies is using to delivery discipline and tolerance character in teaching mathematics. Discipline character of six research subjects is included in high category. The subject whose get the highest discipline characters is S-3. Tolerance characters of six research subjects are included in high category. The one gets the highest discipline character is S-4. Characters building in the learning activity give good effect for students' characters. Still, characters learning cannot leave cognitive aspect of students. Characters learning can give good characters without losing student academic aspect. Modeling, habituation, reinforcement, and reflective thinking strategies can build good character. They are good choice for teacher want to build good characters in the student.

REFERENCES

1. Ministry of National Education, Training Materials Reinforcement Learning Methodology Based Cultural Values To Establish power to compete and character Nations: Development Education Culture and Character nation (Curriculum Center, Jakarta, 2010)
2. Thomas Lickona, Character Education: Educating Students Complete Guide to Becoming a Smart and Good (Nusa Media, Bandung, 2014)
3. Sri Narwanti, Character Education (Familia, Yogyakarta, 2011)
4. Masrukan and Rochmad, "Teaching and Learning Mathematics Using Four-K Model at Junior High School" in International Conference of Mathematics and Science Education (Semarang State University, Semarang, 2014)
5. Unnes Curriculum Development Team, Book 3 Curriculum of Semarang State University 2012 (Semarang, 2012)
6. John W. Creswell, Educational Research (Pearson, Boston, 2012).

7. Saiful Ridlo, "Character Development Conservation Program for Students Professional Teacher Education Bachelor of Teaching in the Outermost Regions, Leading, Trailing (PPG-SM3T) " in Lembaran Ilmu Pendidikan (Semarang State University, Semarang, 2014)

Applying Character Learning Strategy for Teaching Mathematics, A Case Study of Secondary School Students

Septian Aji Permana^a, Dewi Liesnoor Setyowati, Achmad Slamet, Juhadi

Semarang State University

Corresponding author:

^{a)}adjigfc@yahoo.co.id

Abstract. This study aims to determine the champion understand and explore wisdom Maridjan as caretaker of Mount Merapi and the implications charisma MbahMaridjan. This study used a qualitative approach to assess the wisdom of MbahMaridjan as caretaker of Mount Merapi, the informants in this study is MbahMaridjan families and society as a region Cangkringantemapt stay MbahMaridjan and all the activities. The data collection is done by in-depth interviews. The collected data were then analyzed using descriptive analitik models. The results showed that the figure MbahMaridjan are not educated. However, his wisdom as a leader of the "old man" was not due to his age, eighties, but the "old man" is the idiom of Java means "linuwih", or to have more power, put these figures often become role models many people but sincerity and a great sense of responsibility bergitu that mbahMaridjan in his duties as caretaker, he understood as captain of a ship. A ship captain would not leave the ship in a state of uncontrollable, the captain will choose to die and went down with his ship. In such contexts, MbahMaridjan as caretaker insisted would not leave Mount Merapi Mount Merapi is "coughing". In his heart, he chose died on the slopes of Merapi affected wedhus trash instead of "run" left Merapi. Know at a glance MbahMaridjan, with cultural and traditional views attached to it, perhaps it will look portrait figure of a Javanese and wisdom.

INTRODUCTION

Mount Merapi, as one of the elements of nature is the source of life must always be considered properly, it is necessary that the relationship between humans and nature is not exploitation. Instead, this relationship is mutually keep each other so as to create harmony. Java rural communities believe that anyone who violates these interactions will be exposed to penalties, either from residents or supernatural powers were believed to be the ruler of the mountain.

Trust the people against their rulers Cangkringan Mountains, can be seen in some of the rituals performed. The ritual can include religious ceremonies, ceremonies harbor, and so forth. All of that is a representation of the values of the most fundamental and profound, that the values of togetherness, harmony, and respect for the environment. The place where they live, to live together, in order to achieve inner and outer harmony.

Maintaining alignment volcanoes, also at the time of the eruption of 10 November 2006, whether occurring in Kinahrejo hamlet Pelemsari, Umbulharjo village, Purwobinangun village, hamlet Turgo, Kepulharjo village, and hamlet Kaliadem. Confident attitude towards the harmony of nature visible when they refused to leave the area, although it has been destroyed by fire by heat clouds and made as a restricted areas and uninhabitable. This phenomenon can be understood as an attitude to always be humble with the environment and nature that they occupy. they assume that this place is a homeland, so that Mount Merapi with the natural process (of volcanic activity) that accompany perceived as something have a soul and soulless.

Merapimountain peaks may be broke, the roar of avalanches and the pressure due to magma may also be heard, but people like the hamlet TurgoCangkringan, Srumbung or Kinahrejo still quiet. Community that would still carry out daily activities such as grazing or looking for wood in the forest around Merapi. Public expression of Cangkringan still remains that the presence of Mount Merapi as a boon. They do not want to be moved or relocated, this is a tangible proof of local wisdom Cangkringan.

Although people are in refugee camps, but the daily activities of people still running. Reluctance residents to leave the area around Merapi, in the view of the general public living in Yogyakarta, sensed as a fundamental fairness. This is because it involves the existence of society as a cultured slopes of the volcano, which is able to coexist in harmony and harmony with the natural environment of Mount Merapi. bond that is not "naked-eye" is

quite difficult to be separated, because even if people are afraid of the Mount Merapi disaster, but the public also expect the eruption Merapi as a gift.

Low profile, as said by everyone, it turns out the figure of R. Ng. Suraksoharjo, or better known as MbahMaridjan. It does not look the slightest arrogance in him the caretaker of Mount Merapi, although rumored to be mbalelo for refusing order of Sri Sultan Hamengkubuwono X and Vice President Yusuf Kalla R.I to descend the mountain, when the Merapi volcano increased activity. Defensiveness that is displayed MbahMaridjan is one manifestation of devotion as caretaker of Mount Merapi, like the meaning Suroksoharjo name, which literally means "keeping the mountain".

MbahMaridjan as caretaker of Mount Merapi since 1982, extending the mandate assigned to it by his father, MbahTurgo, to continue to keep Merapi. In addition, these two men (Turgo and MbahMbahMaridjan) while the courtiers of the palace of Yogyakarta, which is designated ngarsa palace of Yogyakarta Sultanate Sri Sultan Hamengkubuwono IX, as the lead mediator between the human and supernatural world. MbahMaridjan itself has a special duty to Labuhan ceremony on the anniversary of the peak of Merapi to the throne (jumenengan), Sultan Hamengkubuwono every 30th RejebSaka.

Communities recognize and trust, that MbahMaridjan are people who know about Mount Merapi, as any incidents that arise from the mountain, only MbahMaridjan, people are believed to have authority, provide answers to the incident. So interesting in this study to be studied more deeply, is the charisma MbahMaridjan position as the caretaker of Mount Merapi eruption in the face of threats Merapi

METHOD OF RESEARCH

This study used a qualitative approach to examine in depth about the charisma and wisdom MbahMaridjan on the slopes of Mount Merapi as well as the authority and status as the courtiers of the palace that gets orders (decrees) of the Sultans palace of Yogyakarta, then the results are studied scientifically along with experts and practitioners.

This research was conducted in Yogyakarta with the research setting in Cangkringan. The reason for choosing Cangkringan for a place to stay mbahMaridja along with activities and people who have the perception that the CangkringanMerapi is not a threat but a boon. Then the results are scientifically studied together experts and practitioners.

The subjects were the people Cangkringan expected to have knowledge and understanding of the figure MbahMaridjan as the gatekeeper of Merapi, while the data collection techniques using life history, observation, and interviews. Data collection instruments such as interview guides knowledgeable about MBH Maridjan as the gatekeeper of Merapi.

Things are revealed in-depth interviews are related experience various activities shared MBH Maridjan, knowledge in perception about Merapi, understand the presence of the disaster and the efforts taken to prevent, deal or cope with disasters through his charisma MbahMaridjan as the gatekeeper of Merapi.

Data were analyzed with descriptive qualitative analysis, the qualitative research data analysis is basically the process of organizing and reducing the data into patterns, categories and descriptions basic unit so that it can be determined and themes can be formulated to a conclusion. The analysis was performed at the time of data collection and after the completion of data collection. Analytical work carried out in this case is organize, sort, categorize the data so that it can be found a description that matches the theme studied.

RESULT OF RESEARCH

Public Perception On Mount Merapi

Mountains in cosmology Java plays a very important man. Human Javanese believe that the mountain is large-hearted and takers. Volcanic eruptions are donors and takers. Volcanic eruptions are useful as fertilizer for their soil fertility, as a livelihood, but as a result of the eruptions can destroy the villages and sacrificed thousands of lives. Java community destroyed villages and homes to the spirits, so do not be surprised if many mountain emblem is found in Javanese society, for example at the beginning and end of the show there is a leather puppet as a symbol of his home mountain of the gods.

a. Cosmology Mount Merapi

Cangkringan community believes that in addition to humans, the world and the universe also inhabited by supernatural creatures, like life of people. The supernatural creatures are a separate organization that regulates the

state's hierarchy with all the attributes and activities, one form of government hierarchy supernatural beings who closely hearts Cangkringan society was the palace of supernatural beings. Merapi is understood as the palace of the spirits led by the spirit of the deceased.

Relations between Mount Merapi, nature and society as already one. Appear myths accompany the relationship the three elements. Although unable think by logic the ordinary mind. many people who believe in myths. One form of the myths that are still alive and still maintained among the people who believe are myths about the eruption of Mount Merapi as one of the mountains that has a very large force, both natural and mechanisms.

According to the people Cangkringan, before Merapi erupted nature will show the symptoms themselves. Animals such as tigers, wolves woods, and the monkeys will go down mountain forests. This knowledge can be from experience MbahMaridjan and society Cangkringan. Armed with experience and tradsi hereditary nature of the Merapi. Communities around gives it the most part of life and people's daily activities.

b. Kraton supernatural beings

Keraton supernatural beings Merapi in Yogyakarta Keraton cosmology believed by residents led by supernatural beings called masters of Rama and Permadi while according Cangkringan people know him KyaiMarlapa. The public believes there is still a leader in addition to assorted other characters inhabiting the palace Merapi.

Trust the people about KratonMerapi supernatural beings are not only trusted by the Sultan Palace but also extends to the community till Cangkringan. Society has the confidence of the concept of the world hereafter, according to the community when people are dead spirit will inhabit places depending on his treatment. Humans do good deeds during his life, his spirit will live on in the palace supernatural beings Merapi., Otherwise if man in his life is not good, then it will be removed from the palace of the soulmthat inhabit rocks, trees, quiet place and so on.

c. Trust haunted places

The public has the confidence of their haunted or sacred place. Haunted places are believed to be the places guarded by spirits that cannot be bothered and the places have supernatural powers that must be respected.

In places haunted residentsprohibition to do activity such as logging, grazing, and taking or moving objects that exist in the area. In addition to these restrictions there are also taboo to talk dirty, urinate or defecate because it will lead to a sense of offended spirits that inhabit the area. Territory around Merapi usually spot-places armature consisting of places populated areas have a habit of looking for grass in the forest, and springs.

The public perceptions of charisma Mbah Maridjan

As the gatekeeper MbahMaridjan has enormous influence on the surrounding community, the majority of their safety and welfare in the vicinity, the majority of their safety and welfare depend on nature. So most people regard as the pinnacle MbahMaridjan local wisdom, because of the proximity to Mount Merapi and the clarity of his heart. He was able to recognize any signs that issued the mountain, or the Javanese who still cling to the mythology, who believe that in a cycle interval between one tiger, one of the times, and one Sunday often the sasmita the occurrence of an event that is most big.

Surrender is what inspires violence hearts of many people not to evacuate. Fatwa on MerapiMbahMaridjan more credible than the recommended volcanology officer, like Hamlet Pelemsari for example, believes that the last eruption of Merapi, the state of their villages are safe because MbahMaridjan had a dream about Merapi eruption earlier. Regarding the threat of an eruption of Merapi now, MbahMaridjan himself argued that this is a natural cycle of Merapi.

Perhaps the figure MbahMaridjantiten given little science to understand the phenomenon of Mount Merapi is always faithful to his duties as caretaker of Mount Merapi. "The man has titen knowledge or know and understand the signs of nature, so as to ascertain whether it would jeopardize the Mount Merapi or not" (interview with Mr. Asih, Sunday January 31 2016, the house of the father Asih).

Perspective MbahMaridjan and many other people about the danger of Merapi, which seemed to contradict the opinions volcanologist, certainly does not appear suddenly. In Javanese cosmology, especially the region of Yogyakarta, where Mount Merapi and South Sea are two places that are considered participating menopong where the palace of Yogyakarta in the middle. In this case, the people who live in the volcano have more trust inherited customs of their ancestors rather than the views volcanologist. So the figure of the caretaker respected and respected very influential in public life.

Doctrine Mbah Maridjan in facing the threat of Merapi eruption

Java-laden nature of implicit symbol of MbahMaridjan way to explain what was going on Merapi. Mount Merapi, which is connected to the South Seas, and be from any of the imaginary line as a power Ngayogyakarta

Palace, is likened overlooking the palace of Yogyakarta. Being the front of the house meant, is the southern part of the mountain the city of Yogyakarta.

Not only Sarata symbols, should what has been believed for years, MbahMaridjan be very smooth to Merapi. Rituals and ordinances that he did was a form of homage to the creature guarded. To be "the" mountain always be patient, do not enter the hearts of the behavior of those cities that seem discouraging, meaning that the policy he thought, MbahMaridjan realize how the attitude of "smart people" have wounded Mount Merapi. Bring harm to people who living around the mountain. "Merapikuwi spirits, isongukumwong sing srakah (trim the spirits, can punish greedy), (interview with MbahMbahMaridjanHarto nephew of citizens Pelemsari Monday, February 1, 2016 date at home mbahHarto).

According to Mbah Suharto MbahMaridjan not only value-laden behavior always intend symbolic tradition behind humility and modesty, MbahMaridjan that open up to the world and love to speak to anyone saving wisdom. While MbahMaridjan activity that every year he would do as follows;

a. Labuhan ceremony traditions

The ceremony Labuhan preceded by Panembahansenopati as an act of gratitude for the survival of the kingdom of Mataram, also to pray for the personal safety of the Sultan, the Sultan Palace and the people of Yogyakarta, understood in depth series of ceremonies labuhanMerapi held every 30th of Rajab basically want to explain to us that this ceremony has values of local wisdom that must be maintained and preserved.

The values of local wisdom that can be learned from traditional ceremonies LabuhanMerapi is the First, the traditional ceremony labuhanMerapi is one concrete manifestation of synergy between nature, humans and plants in a mutual cooperation with the goal of maintaining safety.

Second, Giving offerings requested that the spirits come to pray for the welfare of the people of Yogyakarta shows the good relationship between the jinn and the men and believe that they are there and join the worship of God, it is in line with the sound of verses of al-Quran surah ad-Dzariyat verse 56 which means " and it is not I created the jinn and mankind except to worship me. "IbnKathir explains that this verse," God created man and jinn so that they worship Him ". (TafsirIbnKathir Ad letter Dzariyat: 56). Worship is important to know is the heart of worship such as prayer, fear, hope, trust, love and others. All forms of worship that great to be directed to God alone.

Third, Mr. Asihprovide information that prayers are being said in the ceremony of LabuhanMerapi has hope that the slopes of Mount Merapi as Cangkringan Yogyakarta region in particular and generally safe, calm, peaceful and happy. "Although such as Mount Merapi is no shortage, but still expected to secure peace Yogyakarta region fertile, prosperous. Amien, indicate the relationship with the creator (hablumminallah).

Fourth, the planting of trees Kanthil conducted during LabuhanMerapi ceremony, Mr. Asihexplain the meaning kumanthilKanthil tree-manthil, so that men are always close to nature. Fifth, ceremonies harbor trim also teaches us the importance of tolerance, mutual help, do not discriminate human dignity, mutual sacrifice and mutual cooperation, it is proved by their willingness to climb the steep mountain tens of kilometers does not look old, children , young, rich or poor women, they remain order and solemn in the harbor following the traditional ceremony.

b. Laku tradition TopoBisu

Mount Merapi, in view of MbahMaridjan is the navel of the universe in Java. On the other hand, Mount Merapi is mountain living constantly growing and changing, so if Mount Merapi erupted, he invites anyone Safety pleading to the Almighty. Request that he had done through penance by walking around DukuhKinahrejo three rounds or TopoBisu.

Topo mute, is a ritual performed by surrounding Hamlet Kinahrejo three times. Of Kinahrejo to Kali Adem, Ngrakah, and again via the gate in front of the Village Hall Umbulharjo. One round of a distance of approximately five kilometers. That is, three times round the reach of fifteen kilometers.

People who participated in this ritual, may not speak a word. "We also should not eat, drink, smoke, and more. What we do is walk while praying. If it breaks, it must be kept in a standing position ", lelaku is done as a form of supplication and prayers to the Almighty that we be given the protection of his (interview with gomet, youth Kinahrejo).

CRITICSM

Mbah Maridjan figures are not educated. However, its wisdom as a "parent" was not due to his age, eighties, but the "old man" who in Java idiom means "linuwih", or to have more power, put this figure often become role models of many people.

Mbah Maridjan probably the only figure who featured for the existence of Merapi. He exists as caretaker Merapi well as community leaders and prominent ritual. Mas PanewuSuraksohargo with his family living in the southern slope of Mount Merapi, which in Kinaherjo, PelemsariDusun, DesaUmbulharjo, Cangkringan, Sleman, Yogyakarta.

From birth to old as now, MbahMaridjan settled on the slopes of Mount Merapi. Emotionally, he felt being part of Mount Merapi. Culturally, MbahMaridjan who likes to run "behavior concerned and penance" believe that, at Mount Merapi volatile, defined as the activities of the "Bahureksa" which took Mount Merapi.

In the books of literature Java-Indonesia, the caretaker has the meaning assigned someone keep something or responsible for something. As caretaker of Mount Merapi, MbahMaridjan task is to maintain the mandate of Mount Merapi on kerato Yogyakarta.

Assignment as caretaker, he understood as captain of a ship. A ship captain would not leave the ship in a state of uncontrollable, the captain will choose to die and went down with his ship. In such contexts, MbahMaridjan as caretaker insisted would not leave Mount Merapi Mount Merapi is "coughing". In his heart, he chose died on the slopes of Merapi affected wedhus trash instead of "run" left

Merapi. Know at a glance MbahMaridjan, with cultural and traditional views attached to it, perhaps it will look portrait figure of a Javanese and wisdom.

Mbah Maridjan journey surely know Mount Merapi has been very long. Maridjan was born and raised in Merapi. Of the deceased father, Mas PanewuSuraksohargo, he inherited the position as caretaker of Mount Merapi. For over twenty years MbahMaridjan has served as courtiers Ngayogyakarta Palace, devoted as caretaker of Mount Merapi.

Merapi struggle with long distances. Since childhood, he lived slope of Merapi, have absorbed so much wisdom of father in the face of action Merapi. During the long journey most of his life, he learned to recognize the symptoms of nature related to the activities of Mount Merapi, learn to understand the desire of the mountain that never stops "giving". With tirakat behavior and modesty that never escape.

Mbah Maridjan behavior often run concern and pray. Pray a safety request. "KarepengonomanungsokonPodo concerned, (it wants humans to be concerned)". Not only for the people who live around Mount Merapi, but also for all citizens of Yogyakarta.

As a gatekeeper, MbahMaridjan credible and ruled Sultan as an elder, elders ceremonies, and capture and report signs of volcanic activity of Mount Merapi. As an interpreter resesik guard.MbahMaridjan often associated with the world of the occult, for rituals he does, he often prayed to the Almighty petition laden with traditional values, which have not been able to be explained by reason of knowledge and common sense. Things like this then by the perception of some people regarded as heresy.

Mbah Maridjan habit since Merapi status raised to alert, daily caretaker of this fasting mutih as behavior is concerned. Just eat a handful of rice and drinking water, in addition to his love of white smoke cigarettes regularly, he did penance behavior. Meditate at his residence, in paseban Sri Manganti (located in the post I GunungMerapi), or PasebanLabuhanDalem (heading II). Every 1st RejebSaka year, he did together -Same courtiers Ngayogyakarta Palace.

This ritual is usually accompanied by a group of lovers of nature and society. Prayer for Grandmother Professor Romo, Professor Permadi grandparent, grandparent Panembahan Sweep Jagat (also known by the name of Kyai Sweep Jagat), and all the lenggah on Mount Merapi. In addition, every corner of the living room he was met by heirlooms, photographs Sri Sultan Hamengkubuwono X, the Javanese calendar-Islam, and the photograph of Mount Merapi, but in daily life, the courtiers of the palace have never left the five daily prayers at the mosque that he built at the end yard.

For Mbah Maridjan, Merapi is a magical creature that breathes, thinking, and feeling. Do not utter words that hurt her, so always a message MbahMaridjan. "Mledhos, njeblug, wedhus trash", detailing the terms, according to MbahMaridjan, is commonly used, but for him remains "less common" or disrespectful. "*kanggo wong pinter mbok menawi kedah ngaten niku, nanging kanggo wong bodho kados kulo niki nggih mboten makaten*".

When the volatile Mount Merapi, MbahMaridjan also believe, magical figure grandparent Merapi is angry, give pepling or warning to mankind, especially around Mount Merapi. The wrath of the grandparent, translated MbahMaridjan as a result of human behavior are greedy.

From these expressions or other terms that seem vulgar, there is a belief that live in the surrounding communities of Mount Merapi, that mountain with all kinds of contents and living creatures that inhabit this region into a community. According to MbahMaridjan at Mount Merapi, that mountain with all kinds of contents and living creatures that inhabit this region into a community.

According to MbahMaridjan at Mount Merapi, enthroned number of "ruler".Among them, the masters romo grandparent, grandparent and grandparent Panembahan Professor PermadiSapujagad. Therefore, there is a relationship of mutual maintain and protect each other, when one member experienced or do something, then he

would give 'gesture' or tell others. Similarly, when Merapi "cough", he also gave the terms to others, including to MbahMaridjan because for him when the grandparent Mount Merapi have urination, everyone in the neighborhood of Merapi have patience, fortitude and resignation.

Through symbolization cleaning on the slopes of Mount Merapi, MbahMaridjan mean to suggest to everyone in the region of Merapi, in order to cleanse the liver so that it becomes sacred and not to do anything. MbahMaridjan refer to the act of the sand miners who use "machine" (begu), must repent in order not to destroy nature Merapi. He asked that "people who could latin" (meaning people who are educated) and dredge sand with begu, stop the activity altogether exploit nature. If Grandmother Merapi is ewuh, the danger is manglung (leads) to the south So we all spared the danger, do not destroy nature. We must preserve. When Mount Merapi maintained, the stones would get out anyway, "ugoMerapiisongarahkaro sing Perlon (Merapi could also lead to their destination), and the village will not be affected by heat clouds. We definitely survived, MbahMaridjan story in the Java language is still full of symbolic significance (interview with Wife MbahMaridjan, sinin dated 01 February 2016, MBH's wife dihuntapMaridjan).

Mount Merapi, in view of MbahMaridjan is satisfied universe in Java. On the other hand, Mount Merapi is mountain living constantly growing and changing, so if Mount Merapi will erupt, he invites for safety to the Almighty. Request that he has done through a form of penance, to walk around DukuhKinahrejo three rounds every night. In addition, community Kinahrejo also installed offerings starting reinforcements, in the form of rhombus outside contain salt and betel so that people get out of the Mount Merapi disaster (interview with a pack of Imam volunteers Merapi eruption in 2010, Monday, 01 February 2016, diwarungklontong wife MbahMaridjan).

Inside the diamond, MbahMaridjan'm so filled with salt and betel leaves. Symbolic meaning, "betel" is a symbol of Mount Merapi and the "salt" symbol of the Indonesian ocean or the South Sea. Both in view of the supernatural, is in one axis and a spiritual force for Keraton Yogyakarta.

MbahMaridjan figure that is close to nature, and very understanding of natural phenomena: rain, landslides, lava, or the shrinking of water in times of drought, as well as plant pests. Habits are often done to date is the cinchona plant that has begun extinct and also the origin of the name itself Kinahrejo (interview with Mr. Asih, a subsidiary of MBH Maridja, Monday dated February 1, 2016, Mr. Asihin her house).

Although the house is located atop the mountain, in the hamlet Peemsari, Cangkringan, Sleman, but as courtiers, MbahMaridjan always been to the palace. At least twice a year, at a time when submitting syawalan and souvenirs according Labuhan ceremony. Very young children mingle with MbahMaridjan, as a playful expression, logic upside down, and so the source of the phrase wise, for storing a myriad inner wisdom.

Position as caretaker, gave him a very minimal income from the palace. Monthly allowance, he said, always able to meet their daily living. To take a salary, he must go down the mountain, to the palace within 28 kilometers, life placed with the spirit of a simple life, perhaps even the spirit of asceticism (fasting himself). His joy only serves the Sultanate of Yogyakarta Sultanate until the end of life.

Dreams MbahMaridjan

In November, 1994, I was met by parents, which was the champion of my own, also at the same time, there are those tall yellow clean, nice people. And the people had said this: "We have money, please split" in Javanese means: "I duwedhuitdumna" (I had the money to share). But the meaning is not like that. What is meant dhuwit is "arta", designations of money in the Java language smooth. I mean the same arta with news "news". So I was told to say that Mount Merapi will be dangerous. The next day, 10 am, right there is an eruption, when I was there dilereng been fixing roads that will be passed on labuhan ceremony. Kept in front of me. Exactly there wedhus trash, heat haze that face, if I pray like this: "salamsalamualaikummualaikum", several times. Suddenly there is wind refused kept behind the heat haze. Thanks. Thank God they were given safety here. (Interview with a pack Asih, son of MBH Maridjan, on Sunday, January 31, 2016, at 15.30 at home father Asih).

So it went no stories of all sorts. News dangers of mountain physicians estimate. At my place, there is a newspaper whose contents, the place is secured, because of the danger, and the people had to be evacuated or moved. Then I wrote a letter to Kanjengsinuwun (call for Sri Sultan), I ask this: "I beg the wisdom that Kinahrejo safe-peaceful, untouched by the government's move also asked God Kinahrejo given salvation". Sinuwun agree, and dhawuh: "If I were menyeruh go ... do not go".

Various traditions of ritual to pay homage and tribute to Merapi and natural. Pacara indigenous tradition that is often done by the community to be a part of the tradition of ritual for Merapi and natural. Tirakatan well as do MBH Maridjan and Kinehrejo citizens to invoke safety and blessings of God Almighty on the activity of Merapi, also the culture of the community Cangkringan to get closer to God and nature.

Cangkringan community complete confidence in the legal pinasti or destiny. Humans die, Cidra, or loss of property due to the Merapi disaster understood as a destiny, besides the surrounding community also assumed that if

Merapi was erupting understood Merapi is have urination proximity based on the experience and knowledge as well as respect and appreciation to Merapi and nature led to the preservation of the environment , nature, culture fiber Merapi public life.

Understanding mythology Merapi cannot be separated from the philosophy of the city of Yogyakarta in Yogyakarta Kraton is as pancernya. The city is divided by the imaginary axis that connects the South Sea, Parangkusumo, Stage Krapyak, Kraton Yogyakarta, Tugu, and Merapi. In filosofid it is divided into two aspects, namely the universe and the universe ageng alit. Jagat alit, which break down the process of beginning and end of life with all the righteous manner so know as nature of life and human life, portrayed on stage Krapyaktill Tugu. Jagatageng, interpreted when man is dead it will be toward the place unseen, namely South Sea or Merapi.

CONCLUSION

MbahMaridjan a sultanate palace NgayogyakartaAbdi who was sworn in as caretaker Merapi, during the time that he lived an elder leaders and be a role model Cangkringan society. Low Profile, confidence, steadiness as Interpreter Lock Merapi is reflected in the activities of preserving the natural slopes of Mount Merapi with together with the community during his lifetime MbahMaridjan planting cinchona as nature conservation and also as a form of anticipation MBH Maridjan when the eruption of Merapi is expected cinchona can hold the lava flows. MbahMaridjan struggle to fight for the natural slope of Merapi to not be exploited because there are cases that harm public Golf MerapiCangkringan to exploit the environment by damaging the environment has long been the public case.

The influence of his charisma MbahMaridjan as an interpreter Key Keraton caused legitimacy that they believed the Java community, especially people Cangkringan as spiritual protector and role models in society. Kraton is still regarded as a petition, peace, harmony, harmony, and balance on society of the mythology of Mount Merapi which is still considered sacred to the community of Cangkringan because Merapi is something that turned deadly at the same time. Cangkringan community structures are still traditional, trust the customs inherited from ancestors rather than the views volcanologist, so that the community's trust as a gatekeeper MbahMaridjan very high.

REFERENCES

1. Armanto, D, Marzunita, Saprudin, Sudarja, M, Royan, A, Wijayanti, Didit, Iwan, dan Sarsih. 2007. *Bersahabat dengan Ancaman*. Jakarta: PT Gramedia Widiasarana Indonesia
2. Badan Pelatihan Orientasi Pengurangan dan Manajemen Risiko Bencana di Magelang 6-8 Desember. 2015.
3. BAPPENAS. 2005. *Draft Strategi Nasional Pengarisatamaan Pengurangan Risiko Bencana (SNP2RB)*. Tidak diterbitkan
4. BKKBN. 2002. *Data dan Informasi Penduduk Indonesia*, Jakarta: Bidang Pengembangan Informasi Kependudukan.
5. Blaikie. 1994. *Teori-teori kebencanaan*. Yogyakarta : Pustaka Pelajar
6. Buchori, M. 2001. *Pendidikan Antisipatoris*. Yogyakarta: Kanisius.
7. Chen, Liang. 2006. *Integrated Community-Based Disaster Management Program in Taiwan: A Case Study of Shang-An Village*. Jurnal : Springe.
8. Endraswara, Suwardi. 2013. *Falsafah Kepemimpinan Jawa*. Yogyakarta : Narasi
9. Endraswara, Suwardi. 2013. *Ilmu Jawa-Jawa*. Yogyakarta : Narasi
10. Gunawan, Rudy. 2006. Mbah Maridjan Sang Presiden Merapi. Yogyakarta : Kanisius
11. Hendra. 2010. *Bencana dan Kearifan Lokal*. Artikel, Pusat Informasi Bencana. htm diakses tanggal 14 November 2015.
12. Jim, ife 2006. *Community Development: Alternatif Pengembangan Masyarakat di Era Globalisasi*. Yogyakarta : Pustaka Pelajar
13. Keraf, Sony. 2006. *Etika Lingkungan*. Kompas, Jakarta
14. Koentjaraningrat. 1991. *Manusia dan Kebudayaan di Indonesia*. Yogyakarta: Pustaka Pelajar
15. Sasongko, Lukas. 2001. Manusia Jawa dan Gunung Merapi, Presepsi Sistem Kepercayaan. Yogyakarta : Kanisius.
16. Sudarsono, Ansory. 2008. *Kearifan Lingkungan, Dalam Perspektif Budaya Jawa*. Jakarta : Yayasan Obor Indonesia.
17. Supriatna, Jatna. 2008. *Melestarikan Alam Indonesia*. Jakarta : Yayasan Obor Indonesia

18. Suwarjo. 2009. *Peran Lansia Dalam Pelestarian Lingkungan Hidup, Laporan Penelitian*. Yogyakarta : Lembaga Penelitian UNY.
19. Swasono, Meutia Farida. 1995. *Peranan dan Kontribusi Usia Lanjut*. Laporan Penelitian, Jakarta : FISIP Sudarsono, Ansory. 2008. *Kearifan Lingkungan, Dalam Perspektif Budaya Jawa*. Jakarta : Yayasan Obor Indonesia Suharti. 2008. *Peran Lansia Dalam Pelestarian Budaya*, Laporan Penelitian. Yogyakarta : Lembaga Penelitian UNY.
20. Swasono, Meutia Farida. 1995. *Peranan dan Kontribusi Usia Lanjut*. Laporan Penelitian, Jakarta : FISIP
21. Tilaar. 2004. *Multikulturalisme, Tantangan-tantangan Masadepan dalam Transformasi Pendidikan Nasional*. Jakarta: PT. Gramedia Widiasarana Indonesia.
22. UNDP. 2006. *Kerangka Acuan Pelaksanaan Pelatihan Orientasi Pengurangan dan Manajemen Risiko Bencana*. Paper. Tidak diterbitkan.
23. Wahono, Francis. 2005. *Pangan, Kearifan Lokal dan Keanekaragaman Hayati*. Yogyakarta : Cindelas Pustaka Rakyat Cerdas.
24. Widyastuti, Sri. 2002. *Kearifan Lokal Masyarakat Jawa dalam Teks Jawa Abad XVIII s/d Abad XIX*. Laporan Penelitian. Yogyakarta : Universitas Negeri Yogyakarta.

The Transformation Management of Catholic Educational Institution-Based on Solidarity, Subsidiarity, Success Together Management (3SM) Guarantee The Existence, Quality, Quantity and Continuity

Fransiskus Janu Hamu^{a)} & Fransiskus Dheidae

Semarang State University

^{a)}Corresponding author:
fransisjanu@gmail.com

Abstract. Education is an effort that was done purposely to humanise the man. Through a process of human education is raised and honed by the environment in which humans live and is so able to demonstrate the capacity and quality of its existence as human beings are different from animals and other creations. The educational process is designed and carried out with the intention of deliberately lest someone grow and evolve into a personal dignity. Therefore, God conferred discretion and the ability to talk to humans to communicate something that thought, felt, and desirable in an effort to develop yourself as a person of quality. For the sake of reaching the noble ideals and expectations is, of course, requires the school as a place where human beings struggle to educate themselves and develop their potential. That is to say through the container school, people of every generation to manifest dream hopes hang on to being human that is knowledgeable, skilled and virtuous in the creative and innovation. According to the preamble of 1945 the 4th paragraph, national education aimed at the intellectual life of the nation. In an effort to achieve the goals of national education is meant, then the State involving the community for taking part in the faith, every citizen, as that of the Catholic Church as a part of society Indonesia participated in the feeding children Nations through education so there was born the Catholic schools ranging from elementary level education units to units of higher-education. History records that in the past the presence of Catholic schools is quite well known and his name was simply echoing the fact most people refer to it as your favorite school with the most viscous are the quality, cleanliness, neatness and discipline. No one is doubting the greatness of Catholic schools at that time. However gradually changed circumstances where Catholic schools face presents concerns at once inviting questions. What is it with Catholic schools nowadays? Is there anything wrong with the Catholic schools? Whether Catholic schools already lose its charm, even for Catholics alone? The reality of the above shows that there is a missing Pearl from Catholic schools, which should be sought and implanted back into the heart of every Catholic educational institutions citizens. The spirit is the distinctiveness of Catholic schools to educate the business faithful people; faithful to the provisions of the Church; and true to the founder's spirituality Based on the information gathered both internally and externally is found that the fundamental problems which resulted in the decline of Catholic school are: (1) the lesser-quality management system (2) Mentality is satisfied with what is so weak impact on the motivation and the power of innovation to continue to compete and do not follow the developments of the age (3) lack of spirit communication, interaction and soliditas among fellow Catholic institution with a result each Catholic institution operates more on the aspect of "important schooldays" still exist, grow and thrive. While from the outside environment or the external aspect of the Catholic school, among others; (1) Government policies tend to be discriminatory to private schools. (2) the attention of the Government thus greater focus to public schools. (3) has not yet been affected by the impact of the times and the demands of globalization. Awareness always comes too late, but better late than crushed! Awareness of the weak points of the current Catholic education system should follow up by changing the governance of traditional management to contextually brave means management system do change through model 3SM: Solidarity, Subsidiarity, Success Together Management. Shove off from the reality of the above, the claim transformation of Catholic education management system it is time to be thoroughly reviewed in order to respond to the challenges of the times are constantly changing each time. Related to that, the model 3SM: Solidarity, Subsidiarity, Success Together Management as a right choice that can be used as a foundation in renewing the institution of Catholic schools.

INTRODUCTION

Education is an effort that was done purposely to humanise the man. Through a process of human education is raised and honed by the environment in which humans live and is so able to demonstrate the capacity and quality of

its existence as human beings are different from animals and other creations. The educational process is designed and carried out intentionally it is certainly in line with the purposes of God created humans i.e. obtain welfare and happiness in life as personal dignity. Humans were given minds and the ability to talk to communicate something that thought, felt, and desirable in an effort to develop yourself as a person of quality in accordance with the intent and purpose of God created it. For the sake of reaching the noble ideals and expectations is, of course, human beings need schools as places of learning to educate themselves and develop themselves. This means that through the school, people from every generation to manifest dream hopes hang on to being human that is knowledgeable, skilled and virtuous as well as independently. In this context the existence of schools as institutions of formal education to be very important as the site of the development of the quality of human life.

According to the preamble of 1945 the 4th paragraph, national education aimed at the intellectual life of the nation. While article 28 B of paragraph (1) requires that "every person has the right to develop the fulfillment of needs, are entitled to education and benefit from science and technology, art and culture, in order to improve the quality of life, for the sake of the welfare of mankind. " In addition, the article 31 paragraph 1 requires that "every citizen is entitled to education" ⁴

The Constitution indicated that the people have the right and the same position to obtain educational services for the sake of free yourself from stupidity and led him to become a man. The word "any" in the Constitution means that everyone, without distinguishing the gender, social strata, ethnic, class, religion and status are entitled to getting an education. So the right education become the right of every citizen of Indonesia. When the right education can be implemented properly, then the nation of Indonesia will have a qualified human resource for the development and progress of the nation. In this context it is revealed that education is base on the life of the state. Education become key in advancing nation.

The Birth Of The Catholic Educational Institutions

In an effort to achieve the goals of national education as mandated in the Act, then the State involving the community for taking part in the enlightened citizens. The Roman Catholic Church as part of community participation established Catholic schools ranging from elementary level education units to units of higher-education.

Pope Paul VI⁵ suggested that the motivation of the Catholic Church taking part in established the ser4ta Catholic school because imbued by a sense of solidarity, subsidiarity for the sake of success passed along. The opportunity and the opportunities that the Church viewed as media to proclaim and to instill the values of truth.

The presence of Catholic schools is very influential and give color in admosfir of national education. Not overboard history notes that in the past the name Catholic institution fairly well known even as the Favorites with characteristic schools: good quality, clean, presentable, and discipline.⁶ No one is doubting the greatness of Catholic schools at that time. For many decades the community recognizes the Catholic school as a superior school. So many parents did not hesitate to place their child educated in Catholic schools. The pride will be the greatness of the Catholic schools are perceived both by the Catholic circles, alumni and even his family. Countless number of businessmen to bureaucrats is so proud to acknowledge her Catholic school alumnus.

The Challenge Of Catholic Educational Institutions

Along with the changing times and demands of current global change, the Catholic educational institutions face presents concerns at once inviting questions. What is it with these Adult Catholic institution? Is there anything wrong with the Catholic Institution? What is a Catholic institution has already lost its charm, even for Catholics alone?

Torpor is aware of the situation makes the Catholic school left in the competition. Excessive pride will be the big names of Catholic schools in the past have shut down the insight and awareness. Therefore reasonable If many invite comments and questions regarding the Catholic institution.

Florus Sarno,⁷ says that now it's been almost nothing else can be used as "excellence" of Catholic schools. The quality, cleanliness, neatness, beauty, discipline that used to be the identity of Catholic schools, it is now no longer a monopoly of Catholic schools. Probably fall asleep by the stories of the triumph of the past so forget to constantly

⁴ MPR. (2003). Undang-Undang Dasar Republik Indonesia, 1945 (Tambahan). Revisi

⁵ Pope Paul VI, 1965. Gravissimum Educationis. Declaraion Christian Education. The Vatican.

⁶ Ibid

⁷ Florus, Sarno, 2007. Building Excellence school. Educare Journal No. 6/IV/September 2007. P. 30

make changes. Forget that the development of the world so dynamic so that each institution is required to continually honing racing themselves.

If the initial establishment of the mission back to Catholic school that her presence was due to motivated by a sense of community to proclaim the Gospel values and imbued by the spirit of solidarity, subsidiarity and shared prosperity. But along with the times and demands of globalization the spirit of togetherness that was slowly fading can be proven with each Catholic school fight alone despite the label attached and be an integral part of Catholic educational institutions is the name Catholic. The phenomenon is easily found where some of the first Catholic educational institution notable now live memories, so that only a small portion of which still survive.

Based on the information obtained was found that fundamental problems which resulted in the decline of Catholic educational institutions diakibat by some of the following factors, namely the Catholic institution's internal factors:⁸

- a. The lesser quality management system
- b. The mentality was satisfied with what had been achieved impact on weak motivation and the power of innovation to continue to compete
- c. The lack of the spirit of communication, interaction and solidarity of fellow Catholic institution with a result of bearing attitude are less sensitive, shut down and indifferent.

While from the outside environment Educational Institutions Catholic or factor external IE:⁹

- a. The Government's policy tend to be discriminatory to private schools. Every year report the results ujian withkhir nasional always put private education institutions are generally less good condition. The question is, what does the Government against private institutions in order to achieve better results?
- b. The Government's greater Attention directed to public schools a " Public School Oriented." Even teachers who are already so many years nurtured in private schools when accepted as a civil servant is taken for granted.
- c. The society established the school though regardless of its quality.
- d. Government policy on free schools encourage community prefer education services cheap low quality though.
- e. The impact of the times and the demands of globalization.
- f. This aspect of the evaluation in the national education system tends to measure intellect in terms of intellectual intelligence-oriented figures so that educational institutions have dragged on the quality of the magnitude of the percentage of completion, the high value of national examination and other outward accomplishments. The impact caused is the mindset of learners tend to be instant, materialistic, konsumeristis, and hedonistis

The reality of the above shows that there is a missing Pearl from Catholic schools to look for and recorded emu right back. The spirit that is the hallmark of a faithful Catholic school on the intellectual effort of man; faithful to the provisions of the Church; and true to the founder's spirituality. But the loss of the spirit that resulted in a blurring of vision and mission, the loss of professionalism, idealism Ministry of love with due to the pursuit of quality is false. Frosted face Catholic education which seem to surface at the present certainly cause reactions and invited a number of fundamental questions that must be answered. Why is there such a problem? What were the factors behind their so Catholic school lose orientation? Who is the most responsible for the setbacks that? How the solution can be done?

The Demands Of The Reorganized The Management Of The Institution Of Catholic Education

Awareness always comes too late, but better late than crushed! Awareness of the weak points of present Catholic institution should addressed in a serious manner reorganized the management of the institutions of Catholic education. Why choose the management rearrangement? How do I reorganized the management of the Catholic Institution? Which parts need to get priority in the Setup? Who will do the Setup? Who is most responsible for the Setup process?

Therefore the correct knowledge and understanding about the meaning of management, management functions as well as its implications are important to know in order to capture and understand the purpose and intent of this paper.

James A. Stoner, says that:

⁸ KWI, 2010, Rencana Strategis Komisi Pendidikan KWI 2009-2012, Penebar Swadaya: Jakarta 2010

⁹ KWI, 2008, Sekolah Katolik, Komisi Pendidikan KWI: Jakarta, P. 65.

*Management is the process of planning, organizing, and directing the surveillance efforts of the members of the Organization and the use of resources and the resources of other organizations in order to achieve the objectives of the organization which has been established.*¹⁰

Management is the process of planning, organizing, and directing the surveillance efforts of the members of the Organization and the use of resources and the resources of other organizations in order to achieve the objectives of the organization.

Ricky w. Griffin, says that:¹¹

Management is as a process of planning, organizing, and controlling resources to achieve objectives effectively and efficiently. Effectively means that the goal can be achieved in accordance with the planning, while efficient means that the task was carried out correctly, organized, and in accordance with the schedule.

Management is as a process of planning, organizing, pengkoordinasian, and controlling resources to achieve objectives effectively and efficiently. Effectively means that the goal can be achieved in accordance with the planning, while efficient means that the task was carried out correctly, organized, and in accordance with the schedule.

In line with the management functions and if associated with the situation and condition of the Catholic institution, then demands the transformation of the management of the institutions of Catholic education it was time to be thoroughly reviewed in order to respond to the challenges of the globalization era the continuous change at any time.

Raihani, in his research says that:

*First, in the framework of community involvement in education, socialisation of every policy and initiative taken need to be fully carried out. People cannot be left behind us if they are not one of the stakeholders of education and the schools. This needs to be followed by the empowerment programs of key stakeholders, parents in particular. Second, leadership at every level of education needs to be developed as the strongly suggests what is necessary at a time of rapid change is effective leadership that guides and provides directions. Third, the civil culture of Servan teachers needs to be changed into a professional culture. Teachers need to see their work as a profession with certain responsibilities and sufficient rewards.*¹²

The effort of realizing quality Catholic educational institution necessary rearrangement field organizers, field managers, implementing agencies and field of Catholic education based on rule-based quality management 3SM: solidarity, subsidiarity and shared management success.

According to the author, a spec-aspects that are seen as weak points that need to be dismantled in the process of rearrangement of the Catholic institution based on management areas that are:

a) Field Organizers Of Catholic Educational Institutions

Management in the field of rearrangement of organizers of the Catholic educational institutions is done by running the management functions are accountable, and policy transparency. That function consists of planning, organizing, controlling, and evaluating the moves the whole element of Catholic educational institution management include; Human resources, financial, sarana-prasarana, public relations and information systems.

b) The Field Of Catholic Educational Institution Manager

The management rearrangement in the field of management of Catholic institutions do with real effort improving the quality of academic quality and curriculum

c) The Field Of Catholic Educational Institutions Implementing

Rearrangement of the implementing agencies in the field of management of Catholic education is done by improving the quality of learning, supervision and assessment of the training and educational activities.

Management of solidarity, Subsidiarity and Shared Success as the Foundation of the Catholic institution's Management Transformation

Social capital education arising from the existence of interactions between people in community education. The interaction occurred for reasons of togetherness in mission, duties and responsibilities in the world of education to complement each other. Similarly happens to the Catholic institution.

Commonality of vision and mission and sense of togetherness evokes an attitude of solidarity, tolerance, cooperation, empathetic sense of willpower, it is the social capital that is inherent in the process of interaction. The loss of social capital can certainly be threatened the existence and continuity of education. Togetherness can lighten

¹⁰ James A.F. Stoner, Management (New York: Prentice/Hall International, Inc., Englewood Cliffs, 1982),8

¹¹ Ricky W. Griffin (Penj. Gina Gania), Manajemen Edisi 7, Jilid 1, Surabaya, Erlangga, 2004

¹² Raihani, *Education reforms in Indonesia in the twenty-first century*. International Education Journal, 2007, 8 (1), 172.

the load, share thoughts, so that certain increasingly powerful social capital, the higher the resistance, fighting power, and the quality of life of an institution will be higher quality.

The application of the the principle of management model s olid arity , s ub sidiaritas , and success together in a Catholic institution employee Administration can be done as follows:

Solidarity Management

K. Prent, Poerwadarminta¹³ Solidarity comes from the Latin solidus which means strong, steadfast, solid. Whereas in the language of the Netherlands, solidair meaning of solidarity.

Paul Johnson¹⁴ Solidaritas shows a State and between individuals or groups based moral feelings and beliefs that held together, which is reinforced by a shared emotional experience.

Robbert m. Z Mace¹⁵, characterized by the existence of the unity, friendship, mutual trust that arises from responsibilities and shared interests among the members.

Redfield¹⁶ give the view that solidarity influenced the existence of social interaction that takes place because the bonds of cultural, which is basically disebabkan the emergence of community sentiment (community sentiment). Community sentiment has the following elements: (1) Seperasaan, i.e. someone who attempted to identify theright itself as part of the Group. (2) That, that every individual is aware of its role in the Group of those. (3) Mutual need, namely the attitude of each individual who perceives himself relying on his community.

Soetoprawiro, Koerniatmanto¹⁷. "Solidarity put emphasis on the state of relations between individuals and groups and underlying attachment along in life with the support of moral values and the belief that lives in the community." The real form of relationship together will bear the emotional experience, so as to strengthen the relationships between them. Solidarity can occur due to a variety of common ground of race, tribe, and the feeling was that they had a strong desire in improving style and area or the surrounding environment so that they can improve things a bit in the vicinity by way of mutual help to each other, especially in terms of development.

Shove off from the view of experts then it can be inferred that solidarity is a commitment, a fixed and constant determination to cultivate kindness for every person/group or groups. In other words, solidarity is the sense of community, a sense of unity of interests, sympathy, as one member of the same class or can interpret the feelings or expressions in a group formed by shared interests. This solidarity principle can be applied in relations between human beings and between institutions or organizations.

The principle of solidarity can be applied in the management of the institutions of Catholic education. The process of the implementation of the principle of solidarity can be done by means of:

- a) Caring for and maintaining the mutual help between fellow Catholic institutions so that it can grow and flourish together for the sake of continuity of existence, quality, and continuity in accordance with the vision and mission of Catholic educational institutions.
- b) Cultivate an attitude of concern for a fellow Catholic institutions as well as other perceived less capable.
- c) Motivate fellow Catholic educational institutions of other weak self menggap so have a willingness to work with karas and reorganized the management of the institution.
- d) Have a sensitivity to the needs required by other Catholic Institutions
- e) Have the spirit of cohesiveness between the Catholic educational institutions

Management of The Subsidiarity

K. Prent,¹⁸ The word "subsidiarity" is derived from the Latin word "subsidium" which means aid, i.e. public institutions providing assistance to empower individuals to be able to perform his duty of realizing oneself.

Wiliam Chang,¹⁹ Subsidiarity is a rule of life of society and state, which governs relations between the institutions of the community or individual countries. This principle is then applied in relations between units that are more "low" or "small" with the more "high" or "overall", so this principle applies to all areas of social life.

¹³ Prent, K., Poerwadarminta, W.J. S, Kramers, Jacob. 1969. Dictionary Latin-Indonesia.p. 887

¹⁴ Johnson, Paul Doyle. 1986. Classic and Modern Theories of Sociology vol. 1. Jakarta: Gramedia.p.37

¹⁵ M.Z. Mace, Robert. 1994. Classical and Modern Social Theory. Gramedia, Jakarta, p.66

¹⁶ Nasution, Zulkarnain. 2009. Social solidarity and the participation of the villagers of the Transition. Malang: UMM ovement Press.

¹⁷ Soetoprawiro, Koerniatmanto., 2003. Not Capitalism, Not Socialism: Understanding The Social Involvement Of The Church. Yogyakarta: Kanisius Publisher.

¹⁸ Prent, K., Poerwadarminta, W.J. S, Kramers, Jacob. 1969. Dictionary Latin-Indonesia. P. 899

¹⁹ Chang, Wiliam, 2004. The meaning of Unity in diversity (in Ethos & Morality politics), Yogyakarta: Kanisius, 2004. P. 66

Shove off from the definition of the principle of subsidiarity which is described by experts over a conclusion that can be drawn in the principle of subsidiarity regulates the relationships between individuals, groups. The intervention group over smaller groups occur only when the last group was not able to complete with the means and capabilities.

The principle of subsidiarity be applied in the management of the institutions of Catholic education. The process of the implementation of the principle of subsidiarity can be done by means of:

- a) Every Catholic institution has a duty and a sense of responsibility towards their fellow Catholic institution
- b) Have an attitude to appreciate each other, support and improve the institutions of Catholic education.
- c) Maintaining autonomy and respect between fellow Catholic educational institutions. But higher unit or large need to provide possibilities and means for lower units or small to manifest itself. Higher unit just did things that are outside the ability of the unit underneath.

Management Success Together

Antony²⁰ Success is the ability to live your life the way you want to live it, doing what you most enjoy, surrounded by people who you admire and respect." Defines success as the ability to live life with the nda in accordance with the wishes of anda, do what is most enjoyed, surrounded by people withnda love and respect. Piet Go,²¹ defines success as an acquisition brings a person or group through the process or certain stages. More diingatkannya that:

- a) Success is a subjective thing. Most people are so obsessed with the meaning of success based on the perceptions of others. Everyone can define the meaning of success menuert himself. Don't ever try to live by other people's successful version because it never will be happy and satisfied to rely on other people's definition of success.
- b) Fall doesn't mean failure. Everyone surely never had failed to do anything. Do not mean that mistakes will never achieve success. Make such mistakes as learning achieve success. Many people achieve success due to learn from the experience and continue to encourage him to come forward. They never give up and always try to achieve success.
- c) Success depends on yourself. Never will be anyone who can make others successful. Although a person a salary with a wonderful job, not necessarily feel successful. Only yourself can determine the meaning of personal success and work hard trying to achieve it.

Based on the opinions of experts above it can be concluded that success is something that is acquired or reached after a person or certain stages. It means to achieve the success of a person or group to implement management functions such as planning, organizing, direction, supervision and evaluation. In addition, a joint success that has been achieved needs to be guarded, nursed, developed and improved its quality.

In the context of rearrangement of the Catholic institution's management application management success together can be done based on the principles of:

- a. Every Catholic institution has a duty and moral responsibility in pursuit of shared prosperity.
- b. Every Catholic institution required an action that is required for prosperity together.

CONCLUSION

The dream and hope of the founders of Catholic educational institutions is that Catholic schools continues to grow, flourish and bear fruit and the fruit can be enjoyed by many people. This means that Catholic schools remain, quality, developed and meaningful for human development and culture.

However it cannot be denied that the education system in Indonesia continue to undergo radical changes. Changes that affect Catholic education institutions join in. These changes, triggered by the socio-political situation, including at least three main aspects first, there is the redefinition of the national education goals, which put an extra emphasis on the importance of reaching citizens to live in a democracy. Second, the approach to the management of the school has changed from sentralis to the decentralist management. This shift is affecting into the implementation of school-based management (SBM). Third, there is a paradigm shift in the school curriculum by introducing a curriculum centered on 2013, in terms of: (a) the determination of National Competencies for students (b) makes

²⁰ Antony, Tujan, Jr., 2004. Transformative Education. IBON Books: Manila. p. 77

²¹ Piet, Go, 2005. Pendidikan Nilai di Sekolah. Dioma: Malang. P. 67

clear the relationship between graduate school and job demands, and (c) accommodate local needs by involving local school stakeholders throughout the development of the school.

Some of the recommendations related to the rearrangement of the Catholic educational institutions management: first, in order of involvement of fellow Catholic institution then the socialization of every policy and initiatives taken should be fully carried out. Second, care for and maintain the mutual help between fellow Catholic institutions so that it can grow and flourish together for the sake of continuity of existence, quality, and continuity in accordance with the vision and mission of Catholic educational institutions. Third, motivate teachers so see their job as a profession with certain responsibilities. Finally, a lot of research on every aspect of education in Indonesia need to be done as part of a comprehensive reform agenda to assess and evaluate the implementation of the reform.

Because it measures the Catholic educational institution Management Transformation into an urgent demands. In line with that then a reflection about the existence of a Catholic institution that framed in the theme of "*Transformation of Catholic Educational Institution based on Catholic solidarity, Subsidiarity, Success Together Management (3SM) Guarantee The Existence, Quality, Quantity, Continuity*" be meaningful and worthy of consideration.

REFERENCES

1. Antony, Tujan, Jr., 2004. *Transformative Education*. IBON Books: Manila.
2. Chang, Wiliam, 2004. *The meaning of Unity in diversity (in Ethos & Morality politics)*, Yogyakarta: Kanisius.
3. Florus, Sarno, 2007. *Building Excellence school*. Educare Journal No. 6/IV/September 2007
4. James A.F. Stoner, Management (New York: Prentice/Hall International, Inc., Englewood Cliffs, 1982)
5. Johnson, Paul Doyle. 1986. *Classic and Modern theories of Sociology vol. 1*. Jakarta: Gramedia.
6. KWI, 2010, *Rencana Strategis Komisi Pendidikan KWI 2009-2012*, Penebar Swadaya: Jakarta.
7. KWI, 2008, *Sekolah Katolik*, Komisi Pendidikan KWI: Jakarta.
8. M.Z. Mace, Robert. 1994. *Classical and Modern Social Theory*. Gramedia, Jakarta
9. MPR. (2003). *Undang-Undang Dasar Republik Indonesia, 1945 (Tambahan)*. Revisi
10. Nasution, Zulkarnain. 2009. *Social solidarity and the participation of the villagers of the Transition*. Malang: UMM November Press.
11. Piet, Go, 2005. *Pendidikan Nilai di Sekolah*. Dioma: Malang
12. Pope Paul VI, 1965. *Gravissimum Educationis. Declaraion Chiristian Education*. The Vatican.
13. Prent, K., Poerwadarminta, W.J. S, Kramers, Jacob. 1969. Dictionary Latin-Indonesia.
14. Raihani, *Education reforms in Indonesia in the twenty-first century*. International Education Journal, 2007, 8 (1), 172.
15. Ricky W. Griffin (Penj. Gina Gania), Manajemen Edisi 7, jilid 1, Surabaya, Erlangga, 2004
16. Soetoprawiro, Koerniatmanto., 2003. *Not Capitalism, Not Socialism: Understanding The Social Involvement Of The Church*. Yogyakarta: Kanisius Publisher.

Internationalization of Indonesian Local Culture Values

Pardi Suratno

*Post Graduate Program, Semarang State University
Balai Bahasa Jawa Tengah, Badan Pengembangan dan Pembinaan Bahasa*

Abstract. Indonesia has wealth of local culture values that contain local wisdom that spread in many tribes. Local culture values (e.g modesty, loyalty, dedication or hardwork, fairness, harmony or equilibrium, honesty, social, and religious) are present in local culture product in form of classic script or classic literature works, art, folklore, traditional expression, etc. As a nation that has high culture history, Indonesia local culture values can be used as the value of national and international life as a standard for high cultured world civilization in present time and future. In this study, for example is the internationalization of Java local culture values that emerge from a very old aged civilization. Values in Java literature made by past poet, for example are culture value in *Serat Centhini*, *Serat Wedhatama*, *Serat Wulangreh*, *Serat Jayengbaya*, *Serat Supanalaya*, *Serat Baratayuda*, *Serat Ramayana*, and many other can be used as an alternative for global culture development. Internationalization of local culture values can be done through scientific study, international publication, and transformation or adaptation of local values in national or international language works, and direct communication of Indonesian individual that are spreading wide through international mobilization, from economic line, politic, social, culture, religion, technology, and many other. Those step must be planned so that the existing obstacle can be resolved adequately and can improve self confidence of measured internationalization of local culture values.

INTRODUCTION

In the present times global context cross country communication has become a necessity. In global life it's impossible for a country to achieve its dignity without establishing relationships with another country. In fact, in every aspect of life every country need contribution from other country, either directly or not. In accordance with improvement of science and technology, especially communication technology, the world feel more tight so the relationship of countries in the world fell closer, even without distance. The event that happen in one part of the world, like Africa, America, Asia, and Europe today can be watched and responded by the society of other countries.

Cross country relation has made social and cultural communication. It means cultural symbiosis between country happen and Indonesia is no exception. In global life condition, Indonesia that follow open culture politic must be willing to accept foreign culture selectively. On the contrary, Indonesia need to do offensive steps to socialize Indonesia culture values to other country. In this context, a planned strategi is needed for internationalization of Indonesia culture values in international life. Meanwhile, Indonesian values are build by local culture values from all of Indonesian tribes. Therefore, internationalization of Indonesian culture can be ascertained as internationalization of Indonesia local culture values. Internationalization of Indonesia culture, although not yet thoroughly, has legally become Indonesia's government policy, especially the Indonesian language internationalization that are written in *Undang-Undang 24 Tahun 2009* (mentioned in article 44 paragraph 1 to 3: (1) government improve Indonesian language function as international language gradually, systematically, and continuously, (2) improvement of Indonesian language function to international language as mentioned in paragraph (1) is coordinated by language institute, and (3) further condition about improvement of Indonesian Language function to international language will be arranged in government regulation).

Cultural values internationalization, including language, must be oriented to high cultured world civilization building and keeping world life from low cultures characteristic. Next, Indonesia local culture value internationalization strategy must be based on effort to contribute in building global culture that represent high cultures. In this connection, Ibrahim (1913 in Suratno, 2015) said characteristic of high cultured nation are, oriented towards harmonic life, high solidarity with one another, socially ordered, abiding the law, appreciate environment, live hygienically, appreciate difference, intellectual, science oriented, and high tact. On the contrary, characteristic of low cultures are, disharmony (always fight, do violence, prefer to show physical than knowledge, etc),

individualistic and don't have high solidarity, far from socially ordered, not abiding law, destroying environment, far from living hygienically, selfish and agitative, not oriented on science, and low on tact.

Ground thinking for local culture values internationalization are (1) which local culture values that need to be internationalized, (2) local culture values internationalization media, and (3) the most basic, related with belief, is there any Indonesia local culture values that are worthy to be internationalized. The last question must be answered first. With taking a careful look on high culture characteristic, it can be ascertained that Indonesia local values can be offered as alternative culture for nations in the world. Therefore, it is ascertained that Indonesia local values should be internationalized and offered to the international world because the principle of Indonesian local culture follow a harmonic or equilibrium view of life, either between individual or social, harmony with the environment, even harmony in social and religious communication. Equilibrium view of life can be ascertained starts from respectful life attitude and oriented to future life. In this context, as an example for Java cultural values, Suyami (2014) suggest *memangun krayenak tyasing sasama* means *make everyone happy* can be offered as international culture values. All this time, cultural value and act of *making everyone happy* has become the attention of western scientist, like George Lakoff and Erving Goffmandari (University of California, Berkeley). Brown P. and S. Levinson (Cambridge University), and Geoffrey Leech, Cutting J., Thomas J. (New York).

Internationalization of Indonesia local culture values contain many moral lesson that intends to make people live and act good based on tradition, customs, teachings, certain ideology (Sudeno, 1987). Internationalization of Indonesia local culture values are in line with character education that are developed by Indonesia and expected able to spread seed for international character. Magnis-Suseno (1987) in Wibawa (2013:18) said that moral teaching is based on three principle, (a) good attitude principle, (b) fairness principle, and (c) self respect. Next, stated that moral virtue as standard of adequate personality is honest, responsible, independent, brave, and humble. Those life values can not stand on their own, but integrated as a whole (Bertens, 2011: 152-153). Meanwhile, characters are divided by three interrelated part, they are moral knowledge, moral feeling, and moral behaviour (Lickona, 2013). The three aspect of character if internalize on one personality that person will become a high cultured individual and avoided from low culture because every behavior that he has are controlled by conscience. Based on the thinking above, it can be stated that Indonesia local culture values can become global culture value because Indonesia local culture values are principally oriented to harmonic (equilibrium) social life and capable to give contribution to high cultured civilization.

2. Source of Indonesia Local Culture Values

Source of Indonesia local culture values are many. Broadly speaking, local culture values are present in folklore, proverb or local expressions, classic literature script, local custom, local art and culture (sound art, stage art, dance, sculpture, carving, etc), and local language. Therefore, local culture values can be found in local culture product of Indonesian tribes, for example local culture values of Javanese people, Sundanese, Minang, Dayak, Batak, Aceh, Bugis, Bali, Papua, and many other. Those local culture values contain local wisdom value that can be an alternative for local, national, and global character development and formation. In internationalization context local culture values are based on local culture values of Java.

As an old aged culture, Javanese culture contain local values that are universal. Those values evolve not only as culture of java, but in the progress developed into culture of wide array of society, including foreign country. It's proven by the presence of foreign observer that study Javanese culture like puppetry (*pewayangan*), *kerawitan*, literature, folklore, Javanese language, *batik*, Javanese expression, and many others. Therefore, as much as is proper if some party (expert, humanist, stakeholders, etc.) asses that javanese culture as the spirit of national culture, and it's possible to become as a reference for global culture. Hamengkubuwana X (2014:74) stated that in global situation the tendency to use local values are present. Meanwhile, Javanese culture values has contribution in arranging national life. *Asthabrata's* concept of leadership can be an alternative for leadership in global era because it contain harmonic leadership ideology (see:Suratno, 2006), and leadership with responsibility as its base (Harari, 2003). In context of building a harmonic world, Sugihartatmo (2014: 82) stated that nowadays life has a tendency to be disharmonic and need steps to harmonize national and global life with the utilization of local culture values.

Some of Javanese cultural works can be offered as global values, among others are moral values in Javanese literature work. Javanese literature work still store wealthy amount of old classic script. Among others are works of famous Javanese poet (Ranggawarsita, Mangkunegara, Yaas dipura, Pakubuwana, and many others). *Serat Centhini* (that are often called as *encyclopedia of Javanese Culture, master piece of Javanese literature*), *Serat Wedhatama*, *Serat Wulangestri*, *Serat Wulangputra*, *Serat Tripama*, *Serat Jayengbaya*, *Serat Sabdatama*, *Serat Wirid Hidayatjati*, *Serat Supanalaya*, *Serat Wedharaga*, *Serat Cemporet*, *Serat Baratayuda*, *Serat Rama*, *Serat*

Arjunasrabau, Serat Damarwulan, Serat Wirawiyata, Serat Warayadnya, Serat Nayakawara, Serat Darmawasita, Serat Salokatama, Serat Paliatma, Serat Sriyatna, Serat Tripama, Serat Sandi Wanita, Serat Darma Wasita, Serat Babad Demak, Serat Babad Mangir, Serat Babad Nitik, Serat Candrarini, Serat Wulangputri, and Serat Surya Raja, and Serat Wedhatama.

Serat Centhini made by Pakubuwana V recognized to contain many knowledge about Java and called as *encyclopedia of Javanese culture* (Adisasmita, 1974; Kamajaya, 1975; Mintorsih, 1991; Sukirman, 2013). *Serat Centhini* explain about knowledge, literacy, cultures, arts, philosophy, religions, mystic, prophecy, *pralampita* ‘symbol’ or ‘sign’, customs, human and animal characters, medicine, and many other (Sumidi, 1974; Sukirman, 2013:1). Meanwhile, Marsono (2008) stated that *Serat Centhini* as a masterpiece of Javanese poet and Nurnamingsih (2016: 12) also appraise *Serat Centhini* as a masterpiece. Famous Javanese works contain local wisdom values, such as philosophy education, moral, ethics, government politic, religion/belief, righteousness, and caring for other. This study will take focus on local values on Javanese script by poet, especially local values in *Serat Centhini* (work of Pakubuwana B), some work of Mangkunegara IV, work of Pakubuwana IV, which is *Serat Wulangreh*.

3. Internationalization of Selected Local Culture Values

This section will explain moral values in some of traditional Javanese literature works. The purpose of this explanation is to introduce local culture values to the national and international publics (because this seminar is national) in general. Some of those local values are Javanese local culture values in *Serat Centhini* (by Pakubuwana V), *Serat Jayengbaya, Serat Supanalaya, Serat Sabdatama, Serat Wedharaga* (all four of them are works of Ranggawarsita), *Serat Wulangreh* (by Pakubuwana IV), *Serat Wirawiyata, Serat Warayadnya, Serat Nayakawara, Serat Darmawasita, Serat Salokatama, Serat Paliatma, Serat Sriyatna, Serat Tripama, Serat Sandi Wanita, Serat Darma Wasita Serat Candrarini, Serat Wulangputri, and Serat Wedhatama* (by Mangkunegara IV). Those local culture values are adapted with the characteristic of high cultured nation so it can be oriented as an alternative of global culture development in present time or the future.

Serat Centhini contain many knowledge in Javanese life. In work of Pakubuwana V moral values that can be used for global culture development are contained. In Wibawa study (2013), especially discuss about moral philosophy in *Seh Amongraga* (before named Jayengresmi and later become husband of Niken Tambangraras), stated that moral values teaching related with individual, social, and divinity obligation. This is in line with the status of human as an individual and social being, also as a man who believed in God. If those three aspect can be done equally, one will achieve *urip tentrem* ‘peaceful life’ and achieve *netepi kuwajiban* ‘has done his obligation’ of life. It can be said that events and happening of moral values in *Serat Centhini* as a result of survey or observation of Javanese society life with all of its variation. For example, Javanese people use a careful calculation in finding match or spouse. Those thing are explained in *Serat Centhini*, with the importance of *bobot, bebet, and bibit* as a consideration for future wife (advice of Ki Ajar Sutikna to Cebolang). In *bobot* there are seven criteria of future wife. Those seven criteria are descendant of *priyayi* (noble), descendant of religious family, descendant of hermit, descendant of *sujana* ‘good people’, descendant of Intellectual/pious person, descendant of *perwira* (officer), descendant of *supatya* ‘a diligent farmer. In term of *bibit* it is preferred for the future wife to be *bongoh* ‘Beautiful’, *sengoh* ‘always smile’, *plongeh* ‘always smile’, *ndhemenakne* ‘pleasing’, *sumeh* ‘friendly’, *manis* ‘sweet face’, *merak ati* ‘captivating, *jatmika* ‘polite’, *susila* ‘good manner’, *kewes* ‘good at talking’, *luwes* ‘ethical talk’, *gandhes* ‘attractive talk and movement’, *dhemes, sedhet, bentrok, lencir, wire, gendruk, sarenteg, lenjang, dan rangkung* (Darusuprta, 1994: 53—55; Wibawa, 2013: 88—89; Kamajaya, 1996: 1—2; Suratno, 2016).

In general, works of Kasunanan Surakarta greatest poet, Raden Ngabei Ranggawarsita (*Serat Jayengbaya dan Serat Supanalaya*) contain cultural values that are related with determination as a foundation to start a profession or works (in *Serat Jayengbaya*) and the importance of awareness that every profession or work has its own risk. The tenacity to brace the risk of the chosen profession become important so that someone can live with it happily because in principle life is the same and there must be hard time and happy time (in Javanese culture *wong urip iku sawang-sinawang* ‘people live the same’, Suratno, 2004). *Serat Supanalaya* (*su* mean good, *pana* mean understand, *laya* mean dead) set forth values of everyone aware about the importance of believing in the afterlife (as the continuation from living in the world). Afterlife is the time to harvest the result of our deed in the world. Therefore, one must prepare death well, conscious, and planned. Ranggawarsita said that if someone able to do seven kinds of act (stated as *tapa*) he will find *pati patitis* ‘the right death’ with a guarantee of happy afterlife. These seven acts or *tapa* (*tapa brata pitung wektu*) are *tapa jasad* (act of no envy with another), *tapa budi* (act of avoiding lies), *tapa napsu* (act of forbearing, sincere even if hurt, and believe in God), *tapa rasa* (act to surrender and pray for the goodness of the Lord), *tapa sukma* (act of goodness, not hurting other), and *tapa urip* (act of carefulness, not feeling *sumelang* ‘worry’ and believe in God’s mercy).

Works of Mangkunegara IV (*Serat Jayengbaya, Serat Supanalaya, Serat Sabdatama, Serat Wedharaga*), in general offer moral values as follow. *SeratWedhatamaset* forth adviceor philosophy value related to *kasampurnaning urip* ‘life completeness’, in concept of *sembah raga, sembah cipta, sembah jiwa, and sembah rasa* that oriented in achieving peacefull life individually or socially and in line with the saying of *memangun karyenak tyasing sasama* as a form of equilibrium or harmonic culture. *Serat Wedhatama* are the most popular works of Mangkunegara IV therefore alot of adaptation in many art is found. And because of that. Because of that, *SeratWedhatama* script is reprinted an republish in Javanese character or in other character. The amazement of *Serat Wedhatama* can be seen in *Penerbit Indah Jawa* views as follow: *Nuwun, awit saking ngengeti bilih Serat Wedhatama anggitan dalem swargi KGPAA Mangkunegara ingkang kaping IV punika kathah ingkang ngalembana menawi punika kalebet serat ingkang sae. Menggah ingkang dipunwastani sae dening para maos punika: pangriptanipun, tembung-tembung ingkang kagubah kangge rerenggan endahing serat, luwesipun, dhapukaning ukara, purwakanthinipun, miwah isinipun piwulang sedaya nengsemaken* (Sala, June 1967).

Serat Warayagnya offer some consideration in chosing spouse carefully. This is seen in how Javanese people chose the spouse, especiall how the man chose his future wife. This book give basics of choosing son-in-law or daughter-in-law (husband-wife) which is not based on face, wealth, famous, or respectable, but choosing future wife based on *bobot* (outward social status), *bebet* (origin), *bibit* (original position in a descendant) with the purpose to build a peacefull family life (in *Serat Warayagnya* the term is couple that are *urip rahayu* ‘live happily and safely’). Consideration in choosing future wife in *Serat Warayagnya* is not too different with *Serat Centhini* by Pakubuwana V. Next, *Serat Tripama* and *Serat Wirawiyata* explain about moral values of a soldier. A soldier should have courageous, seflless, defending the country (not defending the lord who done crime), watchfull, honest, and loyal to the country, have faith in god, good in behavior and not *cidra* ‘lie’, and respect the soldier/general that have served the country in the past

Serat Nayakawara take moral values for public servant or state official. A state official should have good moral/high dignity, abiding the law, and a good character. *Serat Darmawasita* (*darma* means ‘good’, *wasita* means ‘advice’) contain teaching for the youth to achieve their dreams and to do that these attitude is needed *sugih ing pambudi* ‘clever and able to adapt with the dynamics of time’, *rigen* ‘handy, skilled, and resourcefull’, *gemi* ‘skimp and carefull’, *nastiti* ‘carefull and thorough’, *weruh petung* ‘have calculation’, *taberi* ‘keen, diligentm and not easy to give up’, *nyegah kayun* ‘self restraint’, and *remen ing sedya* ‘happy and focus toward the goal. These echaracters must be acted with totality or as a whole so it’s called *astagina* which mean *wolu-woluning atunggal* means ‘eight point in one’.

Pakubuwana IV monumental works, *Serat Wulangreh*, offer local wisdom values related to service to the country (compare with *Serat Tripama* dan *Serat Wiraiwyata* by Mangkunegara IV). Through *Serat Wulangreh* (*wulang* means ‘teaching’ and *reh* or *ngereh* means ‘govern’ or ‘lead’), Pakubuwana IV give advice to his son and his descendant (later also as teaching or education for the society) so that every individual that govern or serve the country have to understand what is right and what is wrong (*ngerti kalal* ‘khalal’ dan *karam* ‘haram’), not to act as a trader (behave like he didn’t give his power to the country), have a high dedication in *labuh labet marang negara* ‘serve the country, and live humbly (called *samadya* ‘ordinary’ or ‘moderate’).

Lastly, this article want to show social-religious values in Kyai Ageng Sela advice (cited in *Serat Centhini* by Pakubuwana V), which called *Pepali Kyai Ageng Sela* ‘prohibition from Kiai Ageng Sela’. There are prohibition (all of the advice are started with the word *aja* means ‘do not’) that if obeyed will lead to the realization of good behaviour (individually, socially, and divinity), which are *aja jail, wong jail gelis mati* ‘do not envy, envious people die quickly’, *aja laku ngima* ‘do not do no good’, *aja saen wedi ngisin* ‘do not be proud off a good job, do not be ashamed with a humble/simple job’, *aja ngegungken awak* ‘do not boast yourself’ or *kemayu rumangsa ayu* ‘arrogant because of your beauty’, *aja mangeran emas* ‘do not boast your wealth’, *aja mangeran busana endah* ‘do not be proud of good cloth’, *aja mangeran ngelmu* ‘do not be arrogant with your knowledge’, *aja mangeran teguh neki* ‘do not be stubborn’, *aja mangeran japa* ‘do not brag about your *mantra*’, it’s better to work harder, *aja nggunggung laku* ‘do not be lulled in acting’, *aja sira angarah keringan* ‘do not be eager to be honored’, *aja manut ing napsu* ‘do not follow your lust’, *aja mrentah wong kaya kewan* ‘do not order people like you order animal’, *aja memuruk lamun durung sisip* ‘do not teach or lecture if you ado not understand/clever’, *aja seneng nutuh* ‘do not accused people’ (without proof), *aja seneng ngumpah-umpah* ‘do not like to pry’ (our deed to other people), *aja nganggo sadaya-daya* ‘do not be arbitrary’, *aja sira awatak wani* ‘do not be too brave’ (usually forget about *duga prayoga* ‘caution’), *aja sira watak dahwen* ‘do not blame other’ (student, husband/wife, children, and anyone else), *aja watak kumingsun* ‘do not be authoritian’ (*sapa sira sapa ingsun*), *aja watak ngaruh-aruhi* ‘do not scold, do not nacad’, *aja watak ngiwa* ‘do not cheat’, *aja nacah parentah marang wong cilik* ‘no not scorn the work of a small people’, *aja sawiyah-wiyah* ‘do not be arbitrary’, *luwih becik tepa slira* or tolerance’, *aja sira watak wani-wani* ‘do

not be brave foolishly’, *aja sira watak ngajak tukar* ‘do not be contentious’, *aja ngendelken ngelmu* ‘do not brag knowledge’, *aja sira angutuh* (*ngutuh* is mad, angry), *aja ladak aja jail* ‘do not hurt other’, *aja doyan sembranan* (*sembrana* mean forget about caution), *aja watak suka singgih* (*singgih* meansobedient, ranks, like to be misled by obedient, like ranks beside himself), *aja sira kepengin kedhaton* ‘*kedhaton* means *kraton* as symbol of power’, *aja seneng dhedhukun* ‘do not like to go to *dukun*’, *aja ndhalang aja ngrami* (*dhalang* means *sesorah* atau *umuk*, *ngrami ngrebut panguwasa*’, and *aja budi sodhagar* ‘do not be like trader (everything is measured its risk-benefit).

4. Effort and Obstacle of Local Values Internationalization

Internationalization of local culture values can be done in many ways. *First*, every steps can be done by using science and technology, especially information technology. Among the media for local culture values internationalization is by publishing local culture product (classic literature script, folklore, etc.) in International language. *Second*, oublicaiton trough scientific media, for example international scientific jpurnal. *Third*, the need to promote local culture product to international party through academic study. The more foreign scientis observed Indonesian culture works or script, the values or contents of classic script will be published more to international society. For Javanese script or literature, this academic track has been started for a long time, since the dutch scientisr start to observe classic script. Then, those academic study of Javanese scripst continue until present time, for example Noriah Muhammed, from Malaysia, study of *Serat Jayengbaya* by Ranggawarsita and Elisabet Inandiak with *Serat Centhini* by Pakubuwana V. Publication of scientific study in national or international journal is also a media for local Indonesia local culture values internationalization (for example study of *Serat Centhini* done by Junanah (2009, 2010), Hikmah-Lestari (2013), Wibawa (Indoneseian and English language, 2013), Nurnaningsih (2015, 2016), Purwadi (2012), Adisasmito (1974 dan 1979), Darusuprpta (1994), Hartini (2011), Fudyantanta (1974), Inandiak (2015, 2005, 2006, 2004), Kamajaya (1996), Marsono, dkk. (2005—2008), Muslifah (2004), Poerbatjaraka and Tarjan Hadijaya (1952), and Soekirman (2013).

Fourth, internationalization of local culture values can be done with modification of old script into modern read, either with Indonesian language or foreign language. In this relation, it is expected to internationalized Indonesian language, literatir work from adaptation can be an alternatice read for interantional society. With ready modifaceted works or adaptation, local culture values can be understood and internalized in reader mind. For example, international society who is able to use Indonesian language can learn the moral vaues of *Serat Centhini* by reading Indonesian novel adaptation by Inandiak (*Minggatnya Cebolang* (2005), *Ia yang Memikul Raganya* (2005), *Nafsu Terakhir* (2006), *Empat Puluh Malam dan Satunya Hujan* (2004), *Centhini: Kekasih yang Tersembunyi* (2015), and Indonesian novel by Gangsar R. Hayuaji (titled *Centhini 2: Perjalanan Cinta* and *Centhini 3: Malam ketika Hujan*). Adaptation of classic works can broaden the reading region for local culture values content.

Fifth, the need of effort that can encourage Indonesia educated generation (local and national) to do study that oriented to explain or socialize kicak values to people. That step can make local value source (old script, folklore, performing art, and many other) as reference for international and national culture development. The longer it goes the more works or product of local culture studied by national and international society.

In the effort of local Indonesia local culture values internationalization some existing obstalce need attention. *First*, government and society awarenes in appreciating and using local values as alternative ti live modern life is still low. *Second*, the quick flow of information made people dont have many time to study local culture that is based on reading tradition. Moreover,there are leap of lifestile in Indonesian society related to reading culture. Indonesian society evolve from oral tradition straight into listening and seeing tradition (not yet developed in reading tradition). *Third*, local culture values internationalization must be planned, directed, and measured in the middle of global competition in life aspect. It is important to pay attention to other country steps to internationalized its culture to other country. In context like this, we must do offensive step, and must not stand idle in defensive. *Fourth*, local culture internationalization need to be started (but not a *must*) with nationalozation of local culture. If that can be planned it is ascertained that international societu will know and used Indonesia local values quickly in line with the increase of Indonesian people that has mobility interantionally.

CONCLUSION

Indonesia has culture wealth that contain local wisdom values. These local values are present in classic script, art, folklore that are spread in tribe in the whole country. Local wisdom values need to be lifted into national value with plan and measurement. Those effort can be done with many ways, among themis through national publication

of local culture values study from all over the tribes. On his turn, those local culture values are internationalized so it has a chance to become global or world culture. That wish is not without reason when Indonesian culture works for a long is known as a product of high culture are kept in mind, for example historical heritage (Borobudur dan Prambanan temples), kerawitan, puppetry show, and many other). Indonesia also has literature product with high prestigious that can be world literature treasure (for example *Serat Centhini*, *Kitab Negarakertagama*, *Kitab Baratayuda*, *Serat Wulang* pada masa Kasunanan Surakarta [*Serat Wulangestri*, *Serat Wulangputra*, *Serat Candrarini*, *Serat Wulangreh*, *Serat Sasanasunu*, and *Serat Wirawiyata*], *Kitab Ramayana*, and *Hikayat Hang Tuah*). Indonesian culture product with international standard become an encouragement and pride to take a chance for local culture values internationalization.

Local culture values internationalization can be done with many ways. For example, it can be done through adaptation and publication of local values in present product (including the use of modern communication media). But, something that can not be put aside are efforts to build confidence and pride of national generation for Indonesia local culture values. From the forming of pride for own culture superiority (realized as national culture), those local culture values are globalized as planned (started by planned internationalization of Indonesian language). Chance to internationalized local culture values is open with the mobilization of Indonesian society in international networks.

In a massive context, local culture values internationalization effort need to emerge from government initiative with society support. The society itself are consist of academic society (classic literature expert including university policy [for example State University of Semarang that proclaimed itself as international-based conservation university], society of culture practitioners (to internationalize Javanese culture values literature artist, dance, kerawitan, pedalangan, and many other), and appreciation of the society that use product of local culture. If this effort can be done it will give two benefits. First, Indonesia will be placed as a nation with high culture seen from the dynamic of its cultural history. Second, Indonesia will become a contributor of international character forming in order to realized a high cultured world as a long term life preserver.

REFERENCES

1. Adisasmito, Sumidi. 1974. *Pustaka Centhini Selayang Pandang*. Yogyakarta: UP Indonesia.
2. ----- . 1979. *Pustaka Centhini Ikhtisar Seluruh Isinya*. Yogyakarta: UP Indonesia.
3. Darusuprpta. 1994. *Centhini Tambangraras-Amongraga*. Jakarta: Balai Pustaka.
4. Hamengkubuwana X. 2014. "Budaya Jawa sebagai Roh Bangsa demi Ketahanan Nasional" Proseding *Kongres Kebudayaan Jawa*". Semarang: Yayasan Kanthil.
5. Hartini. 2011. "Pengkajian Gender dan Nilai-Nilai Pendidikan Budi Pekerti dalam Sastra Wulang pada Naskah Jawa". Surakarta: Universitas Sebelas Maret.
6. Fudyantanta, R.B.S.. 1974. *Etika Intisari Filsafat Kesusilaan dan Moral*. Yogyakarta: Penerbit Warawidyani.
7. Hikmah, Lestari, dkk. 2013. "Refleksi *Serat Centhini* dalam Novel *Centhini* karya Gangsar R. Hayuaji: Suatu Kajian Semiotika". Artikel dalam Jurnal Penelitian Mahasiswa.
8. Inandiak, Elizabeth B. 2015. *Centhini: Kekasih yang Tersembunyi*. Jakarta: Penerbit Gramedia.
9. ----- . 2005. *Minggatnya Cebolang*. Yogyakarta: Galang Press.
10. ----- . 2005. *Ia yang Memikul Raganya*. Yogyakarta: galang Press.
11. ----- . 2006. *Nafsu Terakhir*. Yogyakarta: Galang Press.
12. ----- . 2004. *Empat Puluh Malam dan Satunya Hujan*. Yogyakarta: Galang Press.
13. Junanah. 2009. *Kata Serapan dalam Bahasa Arab dalam Serat Centhini*. Yogyakarta: Safiria Insani Press.
14. Kamajaya, Karkana. 1996. "*Serat Centhini* sebagai Sumber Inspirasi Pengembangan Sastra Jawa". Semarang: Kongres Bahasa Jawa II.
15. Marsono, dkk. 2005—2008. *Centhini Tambangraras-Amongraga* (Jilid V—XII). Yogyakarta: Gadjah Mada University Press.
16. Muslifah, Siti. 2004. "*Serat Centhini* Episode *Centhini*: Naratologi dan Pendekatan Gender Analisis Fabula". Yogyakarta: Universitas Gadjah Mada.
17. Nurmaningsih. 2016. "Metafora Alat-Alat Seksual, Aktivitas Seksual, dan Dampak Aktivitas Seksual dalam *Serat Centhini* Karya Pakubuwana V". Surakarta: Universitas Sebelas Maret.
18. Poerbatjaraka dan Tarjan Hadijaya. 1952. *Kapustakan Jawa*. Jakarta: Penerbit Djambatan.

19. Purwadi. 2012. “Konsep Wanita Utama menurut *Serat Centhini*”. Artikel *Jurnal Tradisi*: Yogyakarta: Asisoasi Pengajar Sastra Indonesia.
20. Soekirman, H. 2013. *Ensiklopedi Ilmu Serat Centhini*. Yogyakarta: Pura Pustaka.
21. Sugihartatmo. 2014. “Peranan Nilai-Nilai Budaya Jawa dalam Memperkaya Kebudayaan Nasional” makalah pada Kongres Kebudayaan Jawa. Surakarta.
22. Suratno, Pardi. 2004 & 2009. *Gusti Ora Sare*. Yogyakarta: Penerbit Tiara Wacana.
23. -----, 2006. *Sang Pemimpin*. Yogyakarta: Penerbit Adi Wacana.
24. -----, 2015. “Pemuliaan Kehidupan melalui Internasionalisasi Bahasa”. *Makalah Seminar Nasional bertema “Kajian Pragmatik dalam Berbagai Bidang”* yang dilaksanakan oleh Program Pascasarjana Universitas Sebelas Maret Surakarta, 13—14 November 2015.
25. -----, 2016. “Etika, Bahasa, dan Pemertabatan Bangsa”. Makalah pada Seminar Nasional di Universitas Muhammadiyah Purwokerto kerja sama Univ. Muhammadiyah Purwokerto dan Balai Bahasa Jawa Tengah. 24 April 2016.
26. Suyami. 2014. “*Memangun Karyenak Tyasing Sasama*: Intisari Kesantunan Jawa yang Layak Mendunia”. Proseding Kongres Kebudayaan Jawa. Semarang: Yayasan Kanthi.
27. Wibawa, Sutrisna. 2013.” Nilai Filosofi Jawa dalam *Serat Centhini*” (dalam *Jurnal Litera*. Volume 12. Nomor 2, Oktober 2013).
28. -----, 2013. “Filsafat Moral dalam *Serat Centhini* melalui Tokoh Seh Amongraga Sumbangannya bagi Pendidikan Karakter” (Disertasi). Yogyakarta: Universitas Gadjah Mada.

Natural Science, Social Science And Humanity

Suyahmo

Postgraduate Program, Semarang State University

^{a)}Corresponding author: suyahmo.ppkn@gmail.com

Abstract. Science has the status a fundamental in human life. The development of the science as an accompaniment to the level of the demands of the needs of that material affair, technical, humanitarian and social. Based on diversity and dynamics of needs the human, so has grown dicipline science like science and social science. The natural sciences as physics, biology, chemical, and so on born to meet immediate needs physical, material, and mecanic-tecnic of the people of nature. The social science as of philosophy, history, sociology, anthropology, and so on born to fulfill basic needs human are in nature non material, related to the meaning of life and social relations, as well as the relations between your neighbor who have the basic rights of to stay alive. The development of science and social science has accelerated and progress. This can not be separated from debate on the choice between scientists on the field of science which more rapid progressed. The scientists agreed that compared to the science of nature, social science considered far left behind. Social science will not be able to pursue the advancement of science nature, for, when social science trying to catch up, the science of the nature has already been jump so far. But with progress gradually social science will be able to catch up natural science. This is caused by social trend who became main study in social science develops very rapidly. Another side symptoms natural be main study natural science relatively stable. Transforming, the revisions not as fast as social trend. The contrast natural science with social science, it does not mean put that one more high or lower than another. In spite of the debate on the field of science which is more rapidly developing, so science and social science still in need of people in this life. Seen from the think material object, study, and functions different, be either natural science and social science capable of being mutually support. Explanation of the difference both intended to indicate the boundary them and shows that there has been the relation that affect each other in a reciprocal relation being commensurate. So either natural science or social science can bring humanity for human life.

INTRODUCTION

Today the they realize that understand and solve problems can no longer be only studied from just one point of view, for example be seen, but from the sociological, or relugius even other, but will be studied from various points of view. This means a discipline can no longer work alone in solving problems, in contrast science takes assistance from discipline other science.

The science has the status that is basic in human life. Studies development follow up the demands of the needs of the have a material, technical, humanitarian and community. Based on diversity and dynamics of needs the human, growing discipline science like science and social science. Of the natural sciences like physics, biology, chemical, and so forth born to meet the needs physical, material, and mekanis-teknis of humans against of this nature. The social science as of philosophy, history, sociology, anthropology, and so on born to fulfill basic needs human are in nature non material, related to the meaning of life and social relations, as well as the relations between your neighbor who have the basic rights of to stay alive.

The development of the science of nature and science of social has been accelerated and progress. This can not be separated from debate on the choice between scientists on the field of science which more rapid progressed. The scientists agreed that compared to the natural sciences, like physics, chemical, biology, astronomy, geology, and the like, social ilmu-ulmu as sociology, psychology, economic, political, history, anthropology, and so on, also the sciences and the humanities like language, literature, and art is considered far left behind. And some have thought more extreme, that the social science and the sciences the humanities will not be able to pursue progress the natural sciences. For, when the social science trying to catch up, the sciences the nature has already been jump so far. There are also who argued that gradually the social science will be able to pursue shot home with the natural sciences. This because symptoms of social be study major in the social science develops very rapidly. Another side symptoms natural be main study the natural sciences relatively stable. If changed, the changes not as fast as social trend. Could have this view right, but it can also any. The contrast natural sciences with the social science, it does not mean put that one more high or lower than another, or to which one better from another.

Under study science there are social fact and there is the definition of social. Natural science on duty study the fact social empirica, while the others social on duty study definition social abstract and symbolic. The difference material object between natural science with social sciences are also berbeda, differently also in methods and ways to earn knowledge. In philosophy the science it can be said that, if ontology different, so epistemology must be different. In spite of the debate on the field of science which is more rapidly developing and better, good science and social science still in need of people in this life. Seen from the think, material object, study, and functions different, be either natural science and social science capable of being mutually support. Explanation of the difference both intended to indicate the boundary them and shows that there has been the relation that affect each other in a reciprocal relation being commensurate. In in this paper the will be explained about the senses of science and social science, the difference science and social science, and how it works the natural sciences and the social science for humanity.

PROBLEMS

In this paper, with the theme the natural science, social science and humanity will simple into three problems

1. What the senses of science and social science !
2. Whether the difference between science and social science !
3. How it works natural science and social science for humanity !

DISCUSSION

Natural science (english: natural science; or science the worlds was a term used referring to a thicket the science where this object is natural objects to the laws of definite and common apply whenever anywhere. Science (science) taken from the latin words scientia who meaning harfiahnya is knowledge. Sund and trowbribe formulate that science is a collection of knowledge and the process .While kuslan stone said that science is a pile of knowledge and ways to get and have such knowledge. Science is a product and processes inseparable. real science is both product and process , inseparably joint (Agus .S .2003: 11).

Science as the process are steps taken scientists to investigate in order to find an explanation of symptoms nature. The effort is formulate problems, formulate hypothesis, design experiment, collect the data, to analyse and finally concluded. From here it appears that the characteristic of being inherent about science it means is the quantification of symptoms of nature can shaped the quantity .The science of nature studies the physical aspects & amp; non human about the earth and the natural surroundings. Of the natural sciences forms the foundation for applied science, both of whom distinguished from social science, the humanities, theology, and the arts. Mathematics is regarded as natural science, but used as providers instrument/devices and framework used in the natural sciences. The term natural science also used to recognize the science as disciplined who follow the scientific method, different from the philosophy of nature.

The level of certainty natural science relatively high remember this object that concrete, because it natural science customarily also called the science must be. In addition to the use of traditionally above, now the term natural science sometimes used approaching the country more suitable in a colloquial sense. From this angle, natural science can be meaning an alternative for biology involved in biological processes, and distinguished from physical science (associated with the laws of physics and chemical underlying of the universe).

Social science is of science that studies man in all aspects of life, typical, behavior, good individual as well as groups, in scope small or large. Material object social science different from material object in natural science. Material object in social science be behavior in an typical man, free and independent deterministik (Tim Dosen Filsafat Ilmu, 2007: 49).

According to hempel, an indication distinction epistemology between science and social science, namely social science associated with something unique, not recurring, phenomena (as a claim sejarahwan or to statistics phenomenon is required in carbon the possibility). The theory positivist science and revision (hempel and popper) has been abandoned, but unity the science still have big support among scientist social and philosopher. Broad beck said, the possibility of social science sesempurna physics when the premise capable of mostly of the now social scientists.

Claims to the social science sometimes is considered to have failed in catching complex symptoms, based on failure to differentiate between statement and systematic of used in social trend that is expressed by the statement. Not all argument about the complexity of social trend cause impossibility the social science. The series of argumentation another based on allegations that scientific method not capable of capturing uniqueness social

symptoms and humane. Check social attracted to uniqueness every social scene, and scientific method is only able to systematic based on a generalization, so this situation cause to be the establishment of a method of another in the social science (Jujun S, 2006: 143).

Henry c.Carey said, scientist social united most prominent of pra-perang thought, in principle study phenomena social science have to parallel with newtonian mechanics, by reason, malthusian theory inhabitant of shown to be false by law conversion of matter. In the 1878, francis galton proposed that the science of economics must be removed from the list, because not appropriate to a the science and rejected with the reason that that the science of economics unscientific , just over difficult of natural science.

On problems the second will be discussed on the differences between natural science and social science. Object review of epistemology is questioned how something came and to come, how distinguish with another. So with regard to the situation and condition space and time about something.The epistemology is the process of what is allowed gained knowledge logic, ethics, aesthetic, and the method and procedure elicit truths scientific, good moral and the beauty of art, and all the definition is. Epistemology exploring moral evaluation epistemik about moral judgments and moral theories .In epistemology occurs several the flow of thought, namely.

1. Empirism :
Which means experience (empeiria), where human knowledge obtained from experience town.
2. Rasionalism :
Without refuse the size of the benefits experience senses in human life, but perception one only used to stimulate work sense .So sense was sitting on experience from before emphasis on a method of deductive.
3. Positivism :
Is sistesis of empiricism and rationalism .By taking turning point of empiricism, but had to sharpened with experiment, capable of objectively determine the validity of knowledge and reliability.
4. Intuisionism;
Intuition not the same as feeling, but is the result of evolution understanding tall only people varied .This capability who can understand the truth whole, that is fixed and unique.

Epistemology or theory pengetahuan membahas in depth all the process engaged in the business of to acquire knowledge.The science is the knowledge gained through certain processes of which was called scientific method .A method of this is what distinguish the science dnegan fruit thought the other (Jujun S, 2006: 9). The emergence of the epistemology is not about a procedure scientific investigation, but by questioning why this procedure, not another. In the context of social science, philosophy questioned the methods and procedures in which work is done social researchers, discipline of social science. The science of nature is related in a staple in positivistic, to know something objective, does not live, and the physical world. Study the community, the results of human reason, is subjective, emotif is subjective. Behavior the people are always contains value, and knowledge reliabel on culture, can only be achieved by means of isolate ideas common, opinion or a special purpose the community. It makes the act of society is full of meaning subjective.

An instrument for acquiring knowledge is highly dependent of assuming the towards an object .Similarly review of in philosophy the science, facilities and an instrument for process the science have to be consistent with the character of an object material the science. Based on these conditions there is a difference the paradigm that caused by the character of an object different .For example between science and of social science that there is a different methods and facilities used. Material object is the among the target investigation (for example: of medical science, the science of literature, psychology), whereas the object formal is a particular viewpoint towards an object materialnya, for example of medical science, object formal physical state man.

The validity of that is evidence that a science is right in epistemologis is not something that come from outside, but the results of investigation. Because that is a problem the validity of do is suitable, depending on methods and the character of an object, the the science which each other not at. In other words, one cannot test methods and the results of the science which one with use the knowledge other.

Study it could become the foundation distinction the natural sciences and social based on perspective epistemology:

1. Natural Science

Natural science is the science of the study empirical objects in the universe. Natural science studying the range of symptoms and event that advantageous for human life .Based on object Study, so the science be identified as knowledge empirical. The objects that are out of range experience people do not including the field of penalaahan science (Jujun S, 198:6).

Natural science have the assumption about object, among other:

1. Consider certain objects have likeness each other, namely in the thing the form of the structure and of the nature of, so that the science not talking about individual cases, but a a certain class.
2. Consider that an object is not likely to experience a change in a given period of time. Sustainability relatively in a given time period this allows done scientific approach against an object which is being investigated.
3. Consider every symptoms is not a scene that is chance, every symptoms have a specific pattern which are permanent and sequence case a similar (Jujun S, 1981:7).

In the sight of empiricism the science do not ask the connection causality absolute, so that an certain events to be followed by the second bringing. The science of object empirical is basically of abstraction that simplified. This must be because of what happened nature is extremely complex. Activity that is performed in natural science not is the object of research natural science, for practices natural science is a human activity peculiar. Of man is could be involved as the subject and as an object. This means, man practic and practices.

2. Social Science

Social science is of science that studies man in all aspects his life, his trademark feature, caprice her ways, good individuals and corporate, in scope small and huge shift. Object social science others of the same to do with material object natural science. Object material in social science be behavior in an typical man, free, and not deterministic. Different study to the, are the consequence of the differences in object formal. Object social science those as a whole. Research in social sciences are also create distinction approach. In social science, the practice of scientific as human activity is also object research man, for example psychology, sociology, and history.

Claims against the social science sometimes is considered to have failed in catching complex symptoms, based on failure to differentiate between statement and systematic of used, with social trend that is expressed by the statement. Not all argument about the complexity of social trend, that causes impossibility social science. A series of yet another, based on an allegation that scientific method unable to catch uniqueness social trend and humane. Study sosial interested in keunikantiap-tiap social scene, and scientific method is only able to systematic based on generalisasi, so this situation cause to be the establishment of a method of another in social science (Jujun S, 2006: 143).

According to the opinion of Jujun S .2006, that the object check social science have character as follows:

a. The research object complex

Social trend more complex than dnegan symptoms nature. The people of natural science associated with one kind of symptoms, the symptoms as physical. Social trend has studied physical characters, but it takes a more in to be able to make clear the symptoms. To explain this based on the laws such as one found in natural science, is not enough.

The people of natural science relating to physical symptoms general. studies includes several variable in a relatively small amount, that can be measured exactly. The social science studies man as individuals and as a member of a social group that causes situation has complicated. Variable in check society is relatively many, sometimes confused researchers. When a chemist mixing two chemicals and exploded, it can be explained by right in natural science. But if there is evil, so kajiannya there are faktoryang a lot of to explain. level scene an event social always made it difficult for the zoologists social to establish aspects what was involved , pattern approach which the most appropriate , and variables whatever which included.

b. Trouble in observation

Direct observation social trend harder than the gejala the natural sciences. The zoologists social not might see, hear, felt, kiss, or tasted the symptoms those which have occurred in the past. Educationists who is studying system schools in the colonial era, cannot see own days during that time. The situation is different from seoramng chemist who can repeat days similar every time and at a certain events directly.

c. Object check that happening

Physical symptoms in general uniform, and symptoms of it can be observed now. Social trend many are unique and difficult to happen again. Abstraction exactly can be implemented towards symptom physical through the formulation quantitative and law generally accepted. Social problems often is specific and its historical context certain. The incident is independent. Variety days of social, plus with the difficulty of observation directly time check carried out cause diffucult develop and test the laws social.

d. The relationship between experts and object check social

Physical symptoms such as a chemical element is not an individual, but goods dead. The zoologists nature did not needs to take into account purpose or motives from planet. Social scientists studying human beings which is full of purpose in compartment. Human acts in accordance with her and had the capability to carry choices with the act of he will take. This means that people can change in their actions. This condition causing objects check social science is strongly influenced by desire and choice man, so social trend changed very will be in accordance with

human actions which is based desire and the choice. The people of natural science investigate natural process and composing law general on the process. The people of natural are not going to change nature or must agree with the process. Expert natural science just hope that knowledge of physical symptoms and nature is going to has allowed humans to make take advantage of a natural process. The zoologists social not be as a spectator who watched a process social scene.

The people of natural science studies the fact and focused important in the occurring in the nature .The zoologists social also learned the fact, like on the conditions under which it there are in a society. However, sometimes researchers develop based on the matter of its discovery, to can be applied to the community. Of the differences in epistemology can become the assumption that on for the assessment of natural science and social science cannot be equated. A method of been studying natural science different its object, so that it will causes the difference way studies.

On the third will be discussed in the manner of work science and social science for humanity. Different from natural science, social science evolve more later and progress not as fast as natural science. This is because, the object of the study social science not merely physical and material but more behind being physical and materials and are more complex .In addition, compared with the science of nature, the social science of manfaatnya value could not be immediately perceived because they have to process in discourse that is long and requires negotiation , a compromise , and the consensus. Seen of the nature of its object, how to work social science can been concluded in principle as follows:

1. Social trend is non-physical , life and dynamic

Different from natural science, symptoms natural review are in nature dead either those located dialam, the mind of (mathematics) and in man, symptoms observed in social science is life and moving in a dynamic.

2. The research could not be repeated

Social problems and humanitarian often is very specific its historical context certain.

Observation relatively more difficult and complex.

Remember of the nature of social trend that moves even changed, it can be imagined social science in observing it would is harder and complex due observed by social science are is what is behind physical appearance of humans and forms their social relations.

3. The subject of an observer also as an integral part of an object observed

In natural science, subject observer can take distance and focus on objectivity observed, but in social science, because the subject who observes and objects are observed is a man who had motives and purpose in every way her ways so subject who observes or researcher not likely to be take the distance from the object dimati and apply the principle of objektivistik and apparently be transformed into the principle subjektivistik.

4. Owns prediktif power is relatively more difficult and uncontrollable creative impulses.

A theory as a result observation social does not necessarily can easily to predict any social scene next must be fulfilled. .It was because in social science pattern of behavior social same not necessarily will result in case a similar. The science of nature aimed at studies the substance that forms the universe, while the science of nature then budded again become physics (studies mass and energy), chemistry (studies substance a substance), astronomer (studies of the heavenly bodies, and the earth science that studies the earth (Jujun S, 2005: 93).

Natural sciences sometimes described as the most prominent empirical appearances. The methods by which it is found in natural science willed can be used as a pattern to the sciences empirical the other. Natural science is the science empirical in the sense that an expert natural science in the last round have to get materials essentially of nature as the fact empirical. But experience scientific not to receive direct like pre scientific colloquial or the catch intuition over experience that dihayati discussed in phenomenology phyloshopia. On the other hand scientific experience deeply not direct in the sense that the experience happened to operational through the action of, through instrumentalities think as well as by wearing instrumentalities work. By the hand of instrumentalities think and work a room to find more who do not directly being apprehended or reach with walk in a way twist and besides that also possible to establish the state of interconnected that is round out of all the materials last. Item will be the state of systematic is a prominent attribute on all manner of work and the way to think in natural science. The state of interconnected to be set to the repeating and change observation that in turn would deprive circumstances which could result in disorder, with the road supervise the many times based on with the conditions of supervised fibers controlled carefully , also in the way of each other have set and each other match in systematic pegamatan results obtained from the fields of physics. Natural science is of science that studies about emperik objects that is in the universe .The objects it is understandable through experience. The objects that are out of range of human experience not including the field of check science (Jujun S, 1981:6).

Seen of the nature of its object, how to work natural science can be concluded in the following principles:

1. Symptoms nature is fisik-statis
The natural sciences pertaining to symptoms natural which are physical observed and measurable .It is physical measured and observed , symptoms nature having of the nature of static or keep from time to time .Because static a variable quantity of symptoms of nature as an object observed are more simple and a little.
2. Research can object recurring
It is static make an object of research in natural science are permanent or has not changed .To the nature of this object research in natural science observable repeated by researchers.
3. Observation realatif more easy and simple
Observation in natural science easier because can be done directly and pardon whenever .Ease that is because there are the results of the formulation on research an event that has been observed .So as to conducting research repeated, researchers were able to observe the results of previous studies to match her research.
4. The subject of observers more as a spectator.
The principle observation in natural science s the principle objective it means the truth inferred based on object observed.Observer not engaged in or has not been affecting the object observed.
5. Has a predictive who is relatively easy controlled.
Natural science should draw if only to gather information on symptoms natural alone, and then built on the theory, but to predict any scene that is made possible will arise from the symptoms.

CONCLUSION

From writing this paper it can be concluded that the man can use everything grounded in another positive so in life bersosialnya could be promoted a harmonious, balanced, harmony. Social science is of science that studies man in all aspects of life.Material object social science of behavior in an typical man, free and independent deterministic. How to work social science among other: social trend is non-physical, life and dynamic.Natural science is of science that studies about empirical objects that is in the universe.The objects it is understandable through experience.How to work natural science among other: symptoms nature is fisik-statis, research can repeated object, observation is relatively easy and simple.

Writer only can give advice to the reader bahwasannya the science capable of exposing reality life, so to the science of so people do not be in error .In in this paper the there may be errors and flaws hence writer asked may the reader also provided criticism and suggestions to make may papers this could be more perfect.

REFERENCES

1. Bachri Ghazali, dkk, *Filsafat Ilmu*,2005,Yogyakarta:Pokja
2. Akademik UIN Sunan Kalijaga.
3. Beerling dkk. 1990. *Pengantar Filsafat Ilmu*. Yogyakarta:
4. PT.Tiara Wacana Yogya.
5. Ghazali, Bachri dkk. 2005. *Filsafat Ilmu*. Yogyakarta:
6. Pokja Akademik UIN Sunan Kalijaga.
7. Suriasumantri, Jujun S. 2005. *Filsafat Ilmu*, Jakarta: Pustaka Sinar Harapan.
8. Suriasumantri, Jujun S. *Filsafat Ilmu:“Sebuah Pengantar Populer”*. 1998.

Implementation of Scientific Approach Through Learning Art Dance Model Management at Elementry School

Wahira

Educational Administration Department of Makassar State University

^{a)}Corresponding author: wahira_art@yahoo.co.id

Abstract. The objective of this study was to determine the extent results of applying the scientific approach were valid and effective on the learning management of the art dance in primary school. With the application of a scientific approach to the learning management dance, the teacher can gain double benefit, namely the mastery of learning the art dance, and the increased capacity and understanding of the art dance. Specific targets to be achieved is a model of learning management of the art dance by using a scientific approach. To achieve these targets will be used designed development models Borg and Gall (1983: 775-776) were 10 steps. Based on the 10 steps, in Sukmadinata (2006: 176) modified into three steps of research and development, the research phase developed, namely: (1) the preliminary study stage as needs and content analysis, (2) the development stage as the design, development, and evaluation, (3) stages of testing the effectiveness of the product as a semi-summative evaluation. To assess the quality of the learning management that meets the validity and effectiveness. For quality testing, the model of learning management of the art dance with a scientific approach will be tested by individuals and groups with teachers and primary school students in Gowa district.

INTRODUCTION

The regulation of the minister of education and culture of the Republic of Indonesia number 81A in 2013, it is stated that : to achieve a quality which has been designed in curriculum documents , learning activities need to use principle (1) centered on the learner, (2) develop the creativity of learners, (3) create fun and challenging conditions, (4) uncharged values, ethics, aesthetics, logic, and kinesthetic, and (5) provide a diverse learning experience through the application of various strategies and methods of learning fun, contextual, effective, efficient, and meaningful.

Expected competencies in management activities of learning the art of dance in primary school are to develop the attitude of honest, conscientious, tolerance, the ability to think systematically, express opinions succinctly and clearly, and language development is good and right. Learning the art of dance, especially in the cultivation of local moral values still requires a better handling in order to target more easily achieved at the end of the education management system of local moral values become increasingly flexible.

The art of dance in the overall learning process of students in primary schools is very important because dance is an intelligent expression of human experience and is an important resource that contributes to the growth of cognitive, emotional and physical in multicultural understanding. Dance is an art form by using the human body as a transport of expression. Dance as an exciting art that can be used in education to assist the growth of the aspects of physical, mental, and emotional man.

Problem Statement

1. How do the results of individual testing implements scientific approach through training management model of learning the art of dance through a scientific approach in elementary school ?
2. How does group Testing implement scientific approach through training management model of learning the art of dance through a scientific approach in elementary school?

Objective of The Research

1. To know the results of individual learning management through a scientific approach to the art of dance in primary school.
2. To know the test results management group learning the art of dance through a scientific approach in primary school.

Significance of The Research

1. As the development of knowledge in the field of education, especially in matters of learning and learner motivation.
2. As an information and reference material for those who wish to examine the management of learning more about the art of dance with other approaches.

REVIEW OF LITERATURE

Management

Terry (2006:1) stated "the management is a process or framework, which involves guidance or direction of a group of people toward organizational goals or intentions are real. Daft (2002 : 8), the management is the achievement of targets organizations with effective and efficient manner through planning, organizing, leadership and control of organizational resources. In Mahtika (2007:11) stated that management is a process or a joint effort of the people in order to achieve a goal that has been set. From the descriptions above, it can be said that management is a process involving all management functions of two people or groups in order to achieve the set goals effectively and efficiently. Management with regard to the process of planning, organizing, leadership, and control in which there are the efforts of all members of the organization to achieve the goals that have been set together.

Study of some authors uses management approach Terry (2006:73) where the four elements of management functions, namely: (1) planning, (2) organization,(3) implementation , (4) evaluation . The opinions above shows some of the main aspects of the management functions , so the authors are more likely to be guided by the opinion of Terry to be used as guidelines for further discussion. Managerial functions such as planning, organizing, implementation, and evaluation.

Art Dance

Haukins in Sorell (1993 : 37) stated that dance is an expression of the human soul that is transformed by the imagination and given form through the medium of motion so as to form a symbolic movement as an expression of the creator. Indirectly here Haukin emphasizes that the dance expression of the soul into something that a born with media said that camouflaged.

Sudarsono (2002 : 126) said that dance is an expression of the human soul that is transformed by a beautiful rhythmic motion. In line with the opinion of the character, in principle, a soul expression is still a fixed price that is not negotiable, Soeryodiningrat in Kussudiardja (200:21) stated that it is more about dance rhythmic gestures. It is like something that dance is the movement of limbs in harmony with the sound of music or gamelan governed by rhythm according to the purpose of dance. CurtSach (1978) in Sorell (1993:4) that the dance is a rhythmic motion . Waking (2007) stated that the local traditional arts in Indonesia are the basis of learning the art, especially the art of dance education. This work is done so through arts education, learners can have an identity of his nation. Of course, efforts to reform education in the arts is a shared responsibility both from practitioners, policymakers, and the general public.

a. Scientific Approach

Understanding of models and strategies for learning the art of dance needs to be understood by primary school teachers, with the understanding of the learning process on Curriculum 2013 for all levels implemented by using a scientific approach (scientific). Step-by- step scientific approach (scientific approach) in the learning process includes digging through observation , questioning, experiment, and then process the data or information , presenting data or information , followed by analyzing, reasoning, then concluded, and create.

The scientific approach to learning was presented as followed:

b. Viewing (observation)

The method of observing very useful for the fulfillment of the curiosity of learners. So that the learning process has a high significance. Expected competencies were trained seriousness, rigor, and search for information.

c. Asking

The question became the basis for seeking further information competence expected in this activity is to develop creativity, curiosity, the ability to formulate questions to form the critical thinking necessary for intelligent life and lifelong learning.

d. Collecting Information

By "collecting information" is the follow-up of asking. This activity is done by digging and collecting information from various sources through a variety of ways.

e. Associate / Rework Information / reasoning

By "associate / process information / reasoning" in learning activities that have been collected either limited from the activities of collecting / experiment and the results of the activity observed and information gathering activities. The experiences that have been stored in the memory of the brain relate and interact with prior experience are already available.

f. A conclusion

The activities concluded in learning the scientific approach is a continuation of the activities of process data or information. Having found a link between the information and find patterns of this association, taken together in one single group, or individually make conclusions.

RESEARCH METHOD

Research Approach

This research was used research and development procedural (R&D) because this research was more directed to the depiction of the steps that need to be taken in generating models and its peripheral device. The design by the model Borg and Gall (1983: 775-776), there are ten steps. Based on the ten steps it by Sukmadinata (2006 : 176) modified into three steps of research and development, the research phase developed, namely: (1) the preliminary study stage as needs and contents analysis, (2) the development stage as the design, development, and evaluation , (3) stages of testing the effectiveness of the product as a semi - summative evaluation. This stage is expected to function as a research , development and validation functions.

Design Testing

The design of testing in test phase models and products is done with a pilot phase, namely: (1) individual testing (6) the elementary school teachers, (2) small group Testing (15) the primary school teachers in the regency of Gowa of South Sulawesi.

Target and Location

The target in this research was the wish fulfillment of primary school teachers to the understanding of dance that includes: (1) the elements of dance, (2) the function of dance, (3) the function and purpose of dance education with a scientific approach. The next target was the implementation of a learning management model development of dance based scientific approaches for teachers in Gowa.

Technic of Collecting Data

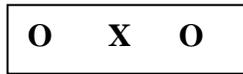
The instrument used to collect data were questionnaires is using Likert scale, open questionnaire, format/rubric score of the test results, observations and format remarks on the focused discussion.

1. Likert scale questionnaire was used to collect data about the content expert evaluation, expert training, and teacher groups after careful examination of the products developed , such as the criteria of answers: 5 means excellent ; 3 means good answer ; 2 means less good ; 1 which is not good. The formulation of the criteria of adjusting the sentence answer these types of questions.
2. Open Questionnaire was used to collect data on (1) (2) criticisms and suggestions expert content at elementary school teacher, after looking at the results of the test were developed in the form of a column sheet blank line to be filled comments, suggestions, and criticisms.
3. Questionnaire responses of teachers to test models of learning management dance with a scientific approach in the form of the answer choices either closed or description open answers .
4. Format observation was used to collect data on the activities of participants and instructors when implementing a pilot model of learning management developed the art of dance .

- Format recording records used to collect data from the study investigators through focus group discussions (FGD) with primary school teachers on the application of management models better teaching dance using a scientific approach , in the form of a column sheet blank lines for the condition corresponding recording the discussion.

Technic of Analyzing Data

Experimental testing method widely by design " Single one shot case study " it can be seen in the following figures;



X : Treatment of the application of the model

O : Observation / result of applying the model from beginning until end

Certainty regarding the improvement of test results management model of learning the art of dance through scientific approach developed can be known with t-test results. T-tests were used for this analysis is a non-independent t-test. If the t-test showed coefficients greater than t table, it can be stated that the management model of learning dance as a scientific approach based learning management model developed dance can improve teacher competence significantly.

Analyzing Statistic

Data about the condition of the development of the management model of learning the art dance through a scientific approach, technical analyzed by percentage, while evaluations through Likert scale questionnaire. The close questionnaire will be analyzed using analysis of average. Data from the open questionnaire will be analyzed with descriptive qualitative analysis techniques by (1) data reduction, (2) data, and (3) verification of data. Criteria for evaluation of the average value of the draft product development, namely : (1) either from 3.20 to 4.00, (2) 2.20 to 3.19 is quite good, (3) 1.20 to 2.19 is not good, (4) 0.00 to 1.19 is not good. (Arikunto 2002:180), while the conversion of the value of the test results management model of learning art of dance using the conversion guidelines as follows: (1) A = 90-100 very good, (2) B = 70-89 good , (3) C = medium 55-69, (4) D = 40-54 less , (5) E = 0-39 is very less.

Analyzing Description

In accordance with the characteristics of a study conducted, data derived from questionnaires were analyzed using descriptive analysis techniques to look at the trends that occurred. Whereas qualitative data were analyzed by using qualitative data analysis interactive model that simultaneously consists of the following steps: (1) data collection, (2) data reduction, (3) presentation of data, and (4) conclusion /verification.

RESULT AND DISCUSSION

Results

The research found two principal findings : (1) the results of individual Testings ; (2) the results of the test group. Each of these findings can be followed in the following description.

The Results of Individuals Testing Implementation of Scientific Approach through Learning Management Model Dance at Elementry School.

The Results of Individuals Testing Implementation of Scientific Approach through Learning Management Model Dance at Elementry School can be seen as following the tabel;

Table 4.1. Score Average Rating Individual by Testing

Aspect Rating	Average(N=6)	Category
Training Model	3,11	Good
Training Program	3,22	Good
Training Material	4,00	Very Good
Training Textbook	3,90	Very Good
Total	3,55	Very Good

Source; Research Data (2015)

In the table above the aspect of the training model assessment categories either category mean score of 3.11 , the average of individual assessment of the management model of learning the art of dance with a scientific approach . In the aspect of the training program average ratings of 3.22 both categories. In the aspect of training materials, category means score of 4.00 is very good. In the aspect of training textbooks, rating category average score of 3.90, a very good category. On average ratings of participants to the management model of learning the art of dance with a scientific approach to the very good category.

The Result Group of Testing Implementation Scientific Approach Through Model Management Art Dance Learning at Elementry School

The resulting group of Testing implementation scientific approach through model management art dance learning at elementary school can see the Tabel;

Table 4.2. Score Average Rating Group Testing

Aspect Rating	Average(N=15)	Category
Training Model	4,10	Very Good
Training Program	4,09	Very Good
Training Material	4,00	Very Good
Training Textbook	4,15	Very Good
Total	4,08	Very Good

Source: Research Data (2015)

Based on Tabel above the aspect of the training model assessment categories mean score of 4.10 category very good , on the average ratings of participants to the management model of learning the art of dance with a scientific approach. In the aspect of training program assessment category average of 4.09 was very good. In the aspect of training materials, category means score of 4.00 was very good. In the aspect of training textbook, category ratings mean score of 4.15 was very good category. On average ratings of participants to the management model of learning the art of dance with a scientific approach was the very good category.

DISCUSSION

The Testing results of individual and group application management model of learning the art of dance with a scientific approach illustrates that the majority of primary school teachers in the district Gowa enthusiastic provide inputs to the management model of learning the art of dance with a scientific approach. Although the various aspects of learning the art of dance have not been planned and implemented well in elementary school, yet the desire of teachers to teach the art of dance is very high by using a scientific approach. More details can be seen on the recapitulation response answers on the test results of individuals groups:

4.2.1. Learning Management Model To Dance Art Through Scientific Approach (Scientific, Test of Individuals, and Groups)

Aspect Rating	Average Score		
	N= 6	N=15	Total
Training Model	3,11	4,10	3,60
Training Program	3,32	4,09	3,70
Training Material	4,00	4,00	4,00
Training Textbook	3,90	4,15	4,02
Total	3,58	4,08	3,83

Source: Research Data (2015)

The results are suite with the base which confirmed the existence of the training according to Mujiman (2009:13), namely: (1) The base philosophical, training should be based on a value system that is recognized and focused on providing qualified personnel to be able to carry out the tasks and role in organization or community; (2) platform that is humanistic training based on a view that focuses on freedom, values, kindness, self-esteem, and personality intact; (3) grounding the psychological, human characteristics can be translated into a set of behaviors that are based on psychology training, cybernetic psychology, behavioristic psychology and system design; (4) The base socio-demographic, economic and social welfare improvement associated with the provision and improvement of the quality of the workforce that is relevant to the demands of employment and development; (5) The base culture, namely the integrated training that serves to develop human resources that is an important part of efforts to cultivate human.

CONCLUSION

1. The Results of individual testing management model of learning the art of dance based scientific approach it is considered to meet the requirements of research and development which include: accuracy, realistic, and benefits. Data and information analyzed according to scientific techniques such as validity and reliability of the instrument, documentation , and fulfillment of conditions precedent or other research.
2. Theoretically, the management model of learning the art of dance by using a scientific approach (scientific) is the scientific findings of the scientific process that includes: a preliminary study that used material model development, teaching literature, planning model to be developed, test validity and reliability.

REFERENCES

1. Arismunandar.2005. *Manajemen Pendidikan*. Makassar: Badan Penerbit UNM.
2. Borg, Welter R. Dan Meredith D. Gall. 1983. *Education Research: An Introduction*. New York dan London: Logman.
3. Daft, Richard L, 2002. *Manajemen*, Jakarta: Erlangga.
4. Kussudiardjo, Bagong. 2000. *Dari Kalsik Hingga Kontemporer*. Yogyakarta: Padepokan Press.
5. *Mahtika, Hanafie*. 2007. *Pengambilan Keputusan Strategik*. Makassar: Badan Penerbit UNM.
6. Mujiman, Haris. 2009. *Manajemen Pelatihan Berbasis Belajar Mandiri*. Yogyakarta: Pustaka Pelajar.
7. Salam, Sofyan. 2004. *Pendidikan Seni Tingtaktas*. Orasi Ilmiah Dies Natalis ke 43 UNM.
8. Soedarsono, R.M. 2002. *Seni Pertunjukan Indonesia Di Era Globalisasi*. Yogyakarta: Gadjah Mada University Press.
9. Sukmadinata, N.S. 2006. *Metode Penelitian Pendidikan*. Bandung: PT. Rosdakarya.
10. Sorell, Walter. 1993. *Tari Dari Berbagai Pandangan*. Diterj. Agus Tasman. Surakarta (tanpa penerbit).
11. Terry, G.R..2006. *Prinsip-Prinsip Manajemen*. Jakarta: Bumi Aksara.
12. Wahjosumidjo. 2001. *Kepemimpinan Kepala Sekolah*. Jakarta: Raja Grapindi Persada.
13. Wahira. 2012. *Pengembangan Model Pelatihan Apresiasi Seni Tari Tradisi Lokal pada Guru Sekolah dasar*. Disertasi Program Pascasarjana Universitas Negeri Semarang.

Teaching and Evaluating Writing in Literacy-Based Program

Debora Tri Ragawanti

Universitas Kristen Satya Wacana

^{a)}Corresponding author: *dera03@yahoo.com*

Abstract. In order to develop EFL learner's ability in writing, they are commonly exposed to either process—like brainstorming, drafting, editing, revising, and proofreading— or product such as accuracy of language and text structure. The practice commonly done is to emphasize one of them so students are helped only in one, process or product. Literacy-based program, differently, accommodate both process and product. This, of course, will help students to develop their literacy level since they are equipped with a process of writing to produce a certain level of writing. This paper is aimed at illustrating how to teach writing and how to asses students' performance on writing based on a literacy-based teaching curriculum.

INTRODUCTION

In EFL writing, there are two mainstreams of writing: Product-based and process-based writing. The former demands an end-product and demands accuracy in terms of the language (Pincas: 1982 as cited in Sarala, Abdul hakim, and Fauziah: 2014). The later, however, emphasizes on the process of writing such as brainstorming ideas, drafting, editing and revising (Steele: 2004 as cited in Sarala, Abdul hakim. And Fauziah: 2014). In another word, they become two distict activities. In literacy-based teaching, writing is to integrate the two product and process based-instructions (Kern: 2000). This paper is aimed at illustrating how to teach writing and how to asses students' performance on writing based on a literacy-based teaching curriculum.

TEACHING WRITING IN A LITERACY-BASED PROGRAM

In a literacy-based curriculum, there are four curricular components that become a reference for teaching writing in literacy-based program, namely Situated Practice, Overt instruction, Critical framing, and transformed practice (Kern: 2000).

Situated Practice

This component brings the students to immerse in writing in order to achieve the ideal of writing as a meaning design. This is believed to be helpful in developing writing ability. The examples of situated practice are letter writing, journal writing, free writing, and creative writing.

Overt instruction

This kind of instruction is applied by giving a direct instruction. It is believed to be helpful for generating ideas, to organize, and to edit their writing effectively. Activities that can be used are like mapping, teaching genres, use of models, and revising and editing.

Critical framing

Critical framing is paying a deliberate attention to relationship between linguistic forms, and social contexts and purposes. Some activities that can be done are sensitization through reading, shifting contextual parameters, peer-group response/editing.

Transformed practice

This component involves redesigning what has been written into an adapted text in order to suit new contextual consideration. The examples are redesigning stories, stylistic reformulation, genre reformulation, inventing story continuations, and using writing (and reading) for speaking.

EVALUATING LEARNERS' PERFORMANCE IN WRITING

Kern (2000) defined evaluating learners' performance in writing as "responding to and grading student's writing". In literacy-based curriculum, grading student's writing requires more than assigning a single grade (holistic). Instead, it should take a broader range of areas (analytic) that cover a variety of dimensions of student's writing to be assessed. For example, grammar, ideas, organization, and vocabularies).

Another way that can be employed to assess students' writing is using portfolio assessment. Portfolio defines portfolios as "a cumulative collection of work students have done" (Johnson: 1996 in Nezakatgoo: 2011). Kern (2000) mentions that it can include writing sample (creative writing, successive drafts, etc), reading response journals. It not only includes the work but also student's statement about the goals of writing the included-pieces and reflections on the process of writing them. More to that, Kern argued that Portfolio assessment is beneficial for recognizing the broad variety of kinds and purposes of writing, and leads teachers and students away from the notion that a single piece of writing could ever represent something as complex as a student's ability to write in a new language. In addition Johnson (1996) adds it gives both teacher and students a chance to evaluate how much the students' writing has progressed. From the two kinds of assessments above, we can see that the assessment also covers both assessing the product (analytic assessment) and the process (portfolio) which is in line with the principle of teaching writing in a literacy-based curriculum.

TEACHING WRITING IN A LITERACY-BASED PROGRAM

Student's profile:

Student	: University students
Student's origin	: Indonesian EFL students
Level of English proficiency	: upper intermediate
Age	: 17-18 years old

Description of the lesson:

Subject	: Writing class
Topic	: describing tourism resort
Objective	: in the end of the lesson, students will be able to:

- Identify the structure and linguistic features of a descriptive text through Literacy curricular components.
- write a descriptive text on one particular tourism resort through Literacy curricular components.

Pre-teaching activity

Literacy curricular component :Situating Practice-creative writing.

1. Introduce the idea of describing place through an Adjective poetry. Initially, provide an example of Adjective poem about Borobudur Temple.

Borobudur

Borobudur is huge
Borobudur is huge, ancient,
Is huge, ancient, famous Huge, ancient, famous,
magnificent Temple

2. Ask the students to read the poem and what Borobudur is like and elicit : ancient, and famous Borobudur is. This activity is useful to elicit the main supporting supporting details of the resort.



3. To relate this activity to the student's own life, ask them to think of one tourism place they now or like best and create their own adjective poem about the place. This activity is useful to prepare them to write a descriptive text on a tourism resort they know or like best.

Pattern

- Line 1 : Noun
 Line 2 : Same noun + is or are + adjective 1
 Line 3 : Same noun + is or are + adjective 1, adjective 2
 Line 4 : Is or are + adjective 1, adjective 2, adjective 3
 Line 5 : adjective 1, adjective 2, adjective 3, adjective 4
 Line 6 : New related noun
 Holmes, Vick L and Moulton, M.R. (2001)

4. The following pattern of an Adjective poem can also be given to make them easier in putting adjectives to the poem.
5. After they finish writing, ask them to keep it until later they need it for writing their descriptive writing.
6. Introduce the topic: writing a descriptive text on a tourism resort.

Whilst teaching

Literacy curricular component: Overt Instruction-teaching genre.

5. Provide students with a descriptive text about *Borobudur* (see appendix 1).
6. Explain the generic structure and linguistic features of descriptive text.

Generic structure:

Identification
 aspect/description
 and/or conclusion

linguistic features:

use simple present tense
 use attributive process

7. Provide a graphic organizer for the students to classify the information in the *Borobudur* text into some components stated in the organizer (see appendix 2).
8. Discuss the answer together and provide the correct answer.

Literacy curricular component: Situated practice-creative writing

9. It is time now for students to write a descriptive text on one tourism place that they know or like best. But before, ask them to look at the adjective poem that they have written in the pre-teaching stage and ask them to share it to their classmates.
10. Ask them to take turn to elicit more description about the place in order to get the idea of what it is like.

Literacy curricular component: Overt instruction-use of model

11. Ask the students to write a three-paragraph descriptive essay on one tourism place they know or like best using the model given (*Borobudur* text).

Literacy curricular component: Critical framing-peer response

12. After the students finish writing their draft, ask them to exchange their work to at least three classmates, and take turn to review each other's draft. The peer reviewing is based on the peer-review sheet (see appendix 3).
13. After the peer review, ask them to revise the draft. In this stage, assist them how to accommodate or not to accommodate their friend's feedback.

Literacy curricular component: Transformed practice-using writing(and reading) for speaking.

14. Ask students to make groups of five.

15. Within the group, ask each student to take turn describing their own tourism resort written in their descriptive essay. During this describing process, encourage them to act as a tour guide and to ask each other about the tourist resort being described.
16. Finally, ask them to choose what tourist resort they prefer for their vacation and why.

EVALUATING STUDENTS' WRITING IN A LITERACY-BASED PROGRAM

Based on the lesson presented in the previous section, there are several ways used to assess students's performance in writing. The first one is using scoring rubric. This rubric cover several components (content, word choice, grammar, punctuation) that can be used to assess students' descriptive essay (see appendix 4).

The second tool used to assess students' process of writing in the above lesson is protfolio . In this portfolio, students need to include their adjective poem, drafts of descriptive writing (before and after getting feedback), and peer-feedback sheet which has been completed by classmate-evaluators. In this portfolio, they not only compile the documents but also give explanation on what they did in each of them. Lastly, the final section of the portfolio is their reflection on how they deal with the writing process using those documents until finally they can produce a descriptive essay, what their problems are, and how their writing skill is improved or challenged. This portfolio is then assessed using rubric as well (see appendix 5).

CONCLUSION

As demonstrated in the lesson and assessment plan above, we see that teaching writing and evaluating student's performance in writing based on literacy-based curriculum is to integrate both process and product. In this case, students should undergo series of processes involving lower level to high level of thinking to produce a product (a particular genre). By so doing students's ability in writing can be well developed. Such a teaching process is highly needed for EFL students and highly recommended for EFL teachers.

REFERENCES

1. Holmes, V.L and Moulton, M.R. (2001). Adjective poems. Chapter 1. In Ur, Penny (Ed.). *Writing Simple Poems*. Cambridge: Cambridge University Press.
2. Kern, R.. (2000). *Literacy and Language teaching*. Oxford: Oxford University Press.
3. Nezakatgo, B. (2011). The Effects of Portfolio Assessment on Writing of EFL Students. *English Language Teaching* 4(2). In . www.ccsenet.org/elt
4. Sarala,T, Abdul hakim, B.S. & Fauziah, Bte Ismail. (2014). Comparative analysis of process versus product approach of teaching writing in Malaysian schools. *Middle east J.Sci Res*, 22/6

The Effectiveness of Discovery Learning Model by Recitation Toward Critical Thinking Abilities of Seventh Grade Students

Eny Sulistiani

State University of Semarang, Sekaran, Gunungpati, Semarang

Corresponding author: enysulis006@gmail.com

Abstract. The aim of this study is to know the effectiveness of discovery learning model by recitation toward critical thinking ability. The population of this study was the students of grade VII at SMP Negeri 1 Jati Kudus 2014/2015. Research design was experimental research. Using cluster random sampling technique, it was selected two sample classes, they were experiment class that uses discovery learning model by recitation and the control class that uses expository learning model. The data in this study were obtained by using the method of documentation, test and observation. The result of the study shows that discovery learning model by recitation is effective toward student's critical thinking ability on experimental class, because they have achieved mastery learning individually or classically; and the critical thinking ability of the students in experimental class are better than the students in control class.

INTRODUCTION

The principle of mathematical teaching according to the National Council of Teachers of Mathematics or NCTM (2000) based on two basic ideas, namely learning mathematics with understanding is important and learning mathematics is not only require calculate skill but also needs skills in thinking and reasoning mathematically to complete new questions and learn about new ideas. That is, students are required to think critically to achieve the principle of mathematical learning. According to Ennis (1993), critical thinking is the ability to think rationally and reflective based on what is believed or do. Whereas, according to Rahmawati (2014), critical thinking is rehearsal to process information with skilled, accurate, and with exact of manner until achieve believable result, reasonable, and responsible. This is in line with Depdiknas (2006), which requires junior and senior high school graduates to have the ability to think logically, analytical, systematic, critical, and creative, and have the ability to work together.

Talking about critical thinking ability and math achievement, Indonesia's position is still below the national standard. In the study Trends in International Mathematics and Science Study (TIMSS) revealed that Indonesian students are weak in solving non-routine matters related to justification, solve problems that require mathematical reasoning, finding generalizations, and find relationships between provided data or facts.

Based on interviews with teachers of mathematics at SMP Negeri 1 Jati Kudus obtained data of a daily test score from class VII F and VII G in SMP Negeri 1 Jati Kudus, only 22% of students who achieve Mastery Minimum Criteria (KKM) on aspects of critical thinking. Researchers also noticed that students still have difficulty in learning the material of linear inequality in one variable. Based on data from junior high school national exam results at the level of Central Java Province, explained that in the math test in the school year 2013/2014, the ability to solve problems relating to the linear equation or linear inequality in one variable has a relatively low percentage is 5 1.36% (BSNP, 2014). The above problems, caused mainly by the low student critical thinking abilities and student's passive response, is also caused because there are still some students who are lazy to do the tasks assigned by the teacher. Students tend to do their homework at school and rely on the answers of friends. Because of that problem, in this study the authors focus attention on one of the topics of algebra is material of a linear inequality in one variable (PtLSV).

In relation to the low level of critical thinking and independence of students, it is necessary to select a method and model of learning that can develop critical thinking abilities and student's independence. According to Johnson

(2006), there are eight steps (indicators) that must be mastered in order that students can think critically well. Solve the problem to draw conclusions consistent with the evidence is a very important element and also a part of critical thinking. To be able to solve the problems posed by the teacher, students require to think that reasoning with systematic process. One model of learning that can help direct students to think logically and systematically is a discovery learning model. Learning steps in the model of discovery learning can help students to solve problems and find a new knowledge based on real evidence. According to Syah (2008), the syntax discovery learning model that begins with a teacher give a stimulation, then ask students to problem statement, data collection, data processing, verification, until generalization is steps of systematic sequence. The sixth step in discovery learning can be an element of support, help, and train students to develop critical thinking ability.

Discovery learning model accordance with Bruner theory that teaches children to have the ability of mastering concepts, theorems, definitions, etc, then the child should be trained to perform the preparation of representation. In this case, the teacher should be able to direct the student to find a concept that they are learns (Takaya, 2008). This is in line with the opinion of Piaget who said that students would form his own knowledge in accordance with the experience.

The discovery learning model will be a maximum if it applied in learning by using methods recitation (assignment). This is based on Ausubel learning theory, which states that learning is will be meaningful when the information that will learned by students are prepared in accordance with the cognitive structure of the students so that the students can relate new information with its cognitive structure (Hudojo, 1988). Recitation (assignment) is used to recapitalize all student's activity in applying knowledge which has been obtained before to solve the problem, and able to interact directly in the field to gain a more meaningful understanding and help develop critical thinking abilities. Discovery learning model by recitation is one instructional model that involves students work together in groups to share their ideas and demands critical thinking and to improve student learning independence through the provision of specific tasks to the student in a predetermined time. Through these assignments, students are required to have a responsibility for the assigned tasks.

Based on this background, the authors wanted to do research by lifting the title "The Effectiveness of Discovery Learning Model by Recitation toward Critical Thinking Abilities of Seven Grade Students". It is expects that after doing this research, writer may know that the discovery learning by recitation can effect on students' critical thinking abilities.

The research problem in this study are (1) Is the critical thinking abilities of students who use the discovery learning model by recitation of the material of linear inequality in one variable (PtLSV) can reach KKM? (2) Is the critical thinking ability of students who are taught to apply discovery learning model by recitation better than critical thinking skills of students who are taught by applying expository learning model?

METHODS

This research is an experimental research which is a research method used to find a specific treatment effect against the other in a runaway condition (Sugiyono, 2010). The population in this study is the second semester of seventh grade students of SMP Negeri 1 Jati Kudus in school year 2014/2015. Cluster random sampling technique is used to do the sampling, namely two classes were randomly selected from the population. By using the technique obtained two samples, those are class VII F as an experimental class, which is the discovery learning model by recitation is used in the class, and class VII G as the control class, which is the expository teaching model is used in the class. The independent variable in this study is the discovery learning model by recitation and expository. Whereas, the dependent variable is the students' critical thinking abilities. The design of this research is pre-experimental design with a comparison group static form.

The data were obtained using the methods of documentation, test and observation. Documentation methods is used to the experimental class and control class to obtained the student's name and grade of semester test in school year of 2014/2015. Observation methods used to obtain activity data of teachers and students in the experimental class activity and control over the learning process. The test is used to obtain data on the value of critical thinking abilities of students as the sample. This test consists of eight items containing indicators of critical thinking. Before the abilities test of critical thinking is given to students, test tested beforehand to determine the validity, reliability, discrimination, and the level of difficulty of the eight questions. From the test results that have been calculated, the eighth question is eligible to serve as a test of critical thinking ability at the end of the test execution.

Then, collected data is analyzed to test the hypothesis. The Analytical techniques that used are: (1) the right t test, to test the level of completeness individual; (2) z test, to test the level of completeness classical; and (3) t test

average difference, to examine differences in the ability of critical thinking between the experimental class and control class.

RESULT

Based on initial data analysis showed that the initial data of the experimental and control class is in normal distribution, having homogeneous variance and there is no difference between the two classes prior knowledge. This means that the samples come from the same initial conditions. While the results of the final analysis of the final data obtained that the end data of the experimental class and control class has a normal distribution and homogeneous variance.

Results of the first hypothesis testing conducted to determine the discovery learning model by recitation has achieved mastery learning, provide results that for individual mastery test values obtained the value of t counting = 4.8577 and the value of t table = 1.69. So t counting $\geq t$ table, then H_0 is rejected. This means that the grade of experiment students abilities in critical think individually is complete. In the classical test show results z counting = 1.98 and z table = 1.64. So z counting $\geq z$ table then H_0 rejected, which means the critical thinking skills students achieve mastery of classical experimental class. Based on the description above can be concluded that the abilities of the experimental class students' critical thinking has reached KKM characterized by students completed classically and individually. Results of the analysis of second hypothesis testing by using the equality test two averages obtained counting = 5.5992 and t table = 1.67. So t counting $\geq t$ table, then H_0 is rejected. This means that experimental class students' critical thinking abilities is better than control class students' critical thinking abilities.

Discovery learning models by recitation applied in the experimental class learning. The model can make students actively participate in learning activities, because students designed for group discussions about the material section in the practice which is later they will construct their own knowledge, and exchange knowledge with other groups.

Implementation of learning in the experimental class begins with the delivery of learning model, motivation, learning objectives, and gain prerequisites knowledge that must be owned by the students. At the core activities, it divided into six stages. The first stage is stimulation, at this stage the teacher ask question to the student about related issues that will be studied. Students are faced with a problem that the desire to investigate will increase and to determine which students is ready to learn. The second stage is the problem statement, at this stage the teacher provide opportunities for students to identify as many issues that are relevant to the subject matter. This stage is in accordance with the implementation of the first step in the process of critical thinking that students are expected to identify an issue, problem or activity their self.

The third stage is data collecting. At this stage the teacher divides the class into nine heterogeneous groups, then the teacher give recitation, such as worksheets in each group. Teachers give students the chance to collect data / information as much as possible by reading literature, books, and others. At this stage is expected that it can train students' critical thinking abilities in second step that students can identify the standpoint of the problem presented.

The fourth stage is the data processing. At this stage students begin to examine and answer the questions in LKS. This stage is a form of implementation of the third and fourth step in critical thinking that students are expected to answer the questions posed in LKS, provide arguments as needed and explain the assumptions to identify the information in question in the matter into the language of mathematics.

The fifth stage is verification. At this stage students perform a careful examination to prove the truth of the submitted answers. This stage is in line with the fifth and sixth step in critical thinking, where students can give a reason of the submitted answers by convincing evidence then prepare a report with a coherent and clear sentence structure.

The last stage on core activities is generalization, which is the process of drawing conclusions that can be used as a general principle. At this event there is a process of critical thinking in the seventh and eighth steps, where students are required to be able to infer from the description of questions answer, then be able to evaluate the results of the obtained conclusions. After all students can reach this stage, the teacher asks students to responsible for given recitation (task) orally by appointing one of the groups to present the results of their discussion, then ask another group to respond and enhance what has been presented. Teachers give awards to groups and students who are active with providing additional points on the activity book. After that, the teacher gives a confirmation, then give an individual recitation (assignment) in form of a QUIZ to know the progress of students after participating in the learning ability.

In the end of learning activities, teachers along with the students draw conclusions from the material they just studied. Then the teacher asked students to reflect, provide motivation, then give a recitation (assignment) individual

outside of school hours in the form of LTS that should be collected at the next meeting. After that, the teacher presenting the material for next meeting and ask the students to learn. In general, the activity of the students in the experimental class during the process of teaching showed an increase at every meeting. Students tend to be active during learning activities take place.

As for the control class, students are given expository learning. The learning process includes five phases: preparation phase, presentation phase, correlation phase, concluding phase and applying phase. The learning process in the classroom control begins with the teacher delivering the material, giving the example problems and exercises. Activity of students during the learning process in the control class is noted, answered questions from the teacher, and work on the problems of teachers. Learning process on the control class is also lead to train students' critical thinking abilities. In general, learning on grade control of the first meeting went smoothly, but the activity of the students tend to be static in every meeting.

The effectiveness of a learning process, is influenced by many factors. One important factor that supports the learning success is the activity of teachers in applying methods and learning models. Based Permendiknas No. 20 of 2007 on the Standard Assessment of Education, explained that the assessment of student learning outcomes in primary and secondary education implemented by educational assessment standards that apply nationally. Assessment of student learning outcomes have minimal or completeness limit is often referred to as a minimum completeness criteria (KKM).

In fact, the student's success in learning process, among others, characterized by achievement level of mastery learning, both individually and classical style. Mathematics courses have different characteristics with other subjects. This causes the math has a different assessment standards. These characteristics can be seen from the mathematical educational purposes as revealed by Suherman et al., (2003) which states that two important things that are part of the goal of mathematics education is the formation of characteristic patterns of thinking critically and creatively. To achieve this, students must be given the opportunity to ask and argue until the expected learning of mathematics become more meaningful.

Critical thinking abilities is an indicator of the effectiveness of discovery learning model by recitation in this study. Thus achieving the level of mastery learning is also seen from the level of students' abilities in solving a mathematical problem. This study shows that discovery learning model by recitation has reached a level of completeness individual with an average value of 81.53 that greater than the specified KKM that is 75. Of these 36 students, 32 students have obtained individually mastery and 4 students have not reached completeness. So more than 75% of the total number of students in the experimental class can be said to be complete. This suggests that the ability of critical thinking in class experiment achieved the desired results. Based on the findings in the classroom, all the stages or steps of critical thinking and its indicators have been achieved. At working on questions, all phases of critical thinking has been fulfilled. This can be observed in Figure 1 below.

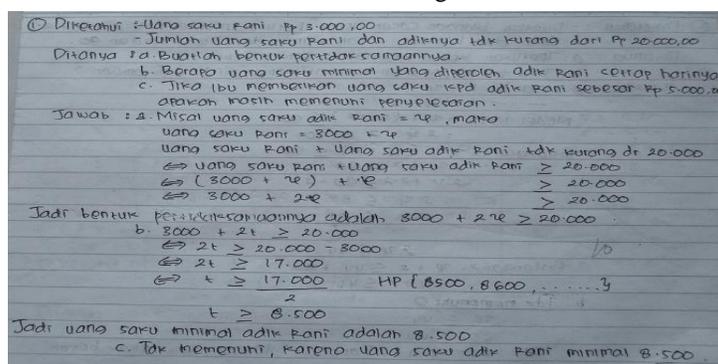


Figure 1. Results of Student Work Class Experiment

In Figure 1 shows that the student has reached the eighth step with good critical thinking. It is seen that students already passed the stage of identifying the problems that characterized the students can write the proposed subject matter. Then the students also have reached the stage of identifying view points, as indicated by the students know the essence of the matter by writing down the problems in question. Next, on stage to explain the assumptions, the students are able to identify the information in question into the language of mathematics. Then at the stage of identifying the presented reasons, students have to answer the questions asked in the matter clearly. Students may also disclose the reasons on convincing evidence. In addition, students are also able to formulate conclusions using coherent and clear language. Up until the last stage is to mention the implications of the conclusion, students can

answer questions correctly and analysis with a clear explanation. Results of this study support the findings of previous research by Rahayu (2014) which broadly concluded that the percentage of students who are taught completeness discovery learning model can reach a value above KKM.

Results of testing of the hypothesis II showed significant differences between the experimental class and control class, meaning the ability of students critical think who obtain discovery learning model by recitation better than students who received expository. It can be seen in Figure 2 and 3 below.

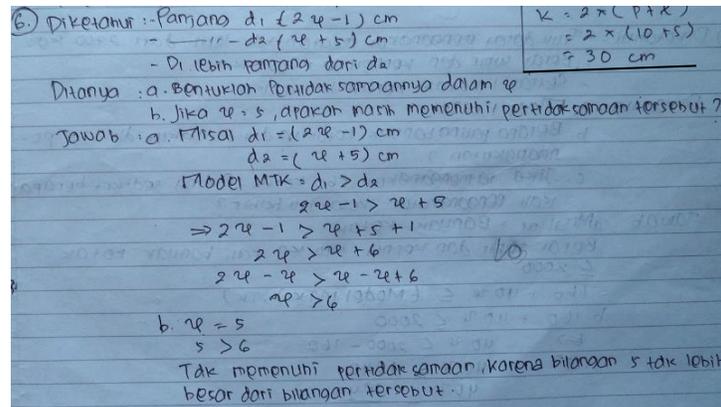


Figure 2. Work Student Class Experiment

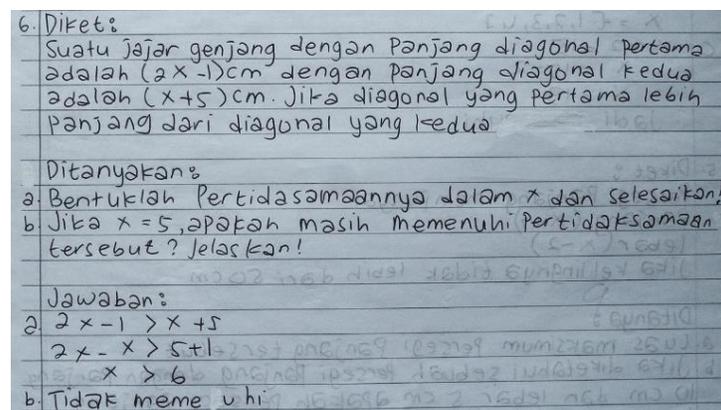


Figure 3. Work Student Class Control

In Figure 2 shows that the student has reached the eighth step with good critical thinking. Whereas in Figure 3 can be seen that the students in the control class has not fully reached the eighth step with good critical thinking. In Figure 3 the students are able to identify problems and viewpoints contained in the matter. Students are also able to identify the reasons put forward and answer the questions with convincing evidence. However, students are still lacking on stage to explain the assumptions, formulate conclusions and mention the implications of the conclusion. In addition, students also have not been able to draw up a clear explanation of the language in the process of matter.

The research findings through statistics prove that the critical thinking abilities students acquire learning by discovery learning models by recitation better than students who received expository. These results prove that the use of models designing discovery learning students construct their own knowledge in accordance with Piaget's theory that says that the cognitive view of the child will be more meaningful when students are actively involved in getting the information and construct their own knowledge. It is also supported by Bruner's theory that says that studying mathematics will be more successful if the process of teaching is directed to concepts or structures that are made in the subject being taught. In learning activities, students are demanded to master concepts by trying or do it by themselves. Furthermore, as said by Ausubel which revealed that learning to say meaningful if the students will learn information prepared in accordance with the cognitive structure of the students so that the students can relate new information with its cognitive structure. This has been linked with the recitation aided model of discovery

learning, learning where students are exposed to the problems of finding a concept and complete the task (recitation) of teachers so that students can apply previously acquired knowledge to solve problems in order to get a more meaningful understanding.

Therefore, the discovery learning model by recitation is more effective than the expository models. The reason for the difference in average critical thinking abilities among students who study with discovery learning model by recitation with students getting learning with expository models are as follows: (1) By using a model of discovery learning, students can construct their own knowledge and acquire new knowledge from the work group. This causes the students to have a better understand and remember the material that has been studied since discussed it with colleagues. While on expository, students rely on teachers' notes, knowledge received by students do not last long in the memory of the brain and students tend to forget it quickly. (2) By using the method of recitation, students can find out how the learning progress over the years. In the implementation of the method of recitation, in addition students are required to take responsibility of their own assignment, the teacher will also continue to assess the tasks that assigned to students so that students will be motivated to work and be able to determine the extent of the development of his ability. The results support the findings of research conducted by Pratama (2014), Darminto (2014) and Atmojo (2009), which essentially says that the results of learning critical thinking abilities using a discovery learning model by recitation is better than the expository models.

CONCLUSION

Based on the findings of research and discussion, the conclusion of this study were (1) The results showed that the critical thinking abilities of students who are using the discovery learning model by recitation achieve significant results in the individual and classical mastery. It can be interpreted that discovery learning model by recitation in learning achieve mastery Minimal criteria, and (2) critical thinking abilities of students who are taught by applying the discovery learning model by recitation is better than critical thinking abilities of students who are taught by applying the learning expository model.

REFERENCES

1. BSNP. 2014. *Laporan Hasil Ujian Nasional SMP/Mts Tahun Pelajaran 2013/2014*. Jakarta: BSNP.
2. Darminto, B.P. & Prasepta, I. 2014. Eksperimentasi Model Pembelajaran Penemuan Terbimbing Berbantuan LKS Komunikatif Ditinjau Dari gaya Belajar Siswa. *Ejournal Ekuivalen Pendidikan Matematika*. Vol 12 (2). Tersedia di http://ejournal.umpwr.ac.id/index.php/_ekuivalen/article/view/1745 [diakses, 16-3-2015]
3. Depdiknas. 2006. *Peraturan Menteri Pendidikan Nasional (Permendiknas) No 23 Tahun 2006 tentang Standar Kompetensi Lulusan Untuk Satuan Pendidikan Dasar dan Menengah*. Jakarta: Badan Nasional Standar Pendidikan Nasional (BNSP).
4. Depdiknas. 2007. *Peraturan Menteri Pendidikan Nasional (Permendiknas) No 20 Tahun 2007 tentang Standar Penelitian*. Jakarta: Badan Nasional Standar Pendidikan Nasional (BNSP).
5. Ennis, R. H. 1993. *Critical Thinking Assesment*. Theory Into Practice, 32(3): 179-186.
6. Hudojo, H. 1988. *Mengajar Belajar Matematika*. Jakarta: Departemen Pendidikan dan Kebudayaan.
7. Johnson, E. B. 2002. *Contextual Teaching & Learning: what it is and why it's here to stay*. Translated by Setiawan, Ibnu. 2006. Bandung: MLC.
8. NCTM. 2000. *Principles and Standards for School Mathematics*. Amerika: The National Council of Teachers of Mathematics, Inc.
9. Pratiwi, F. A. 2014. *Pengaruh Penggunaan Model Discovery Learning Dengan Pendekatan Saintifik Terhadap Keterampilan Berpikir Kritis Siswa SMA*. Artikel. Penelitian. Pontianak: Universitas Tanjungpura
10. Rahayu, L. 2014. *Model Pembelajaran Discovery Learning Menggunakan LKS Untuk Meningkatkan Hasil Belajar Siswa Kelas X di SMKN 1 Cidaun*. Skripsi. Bandung: Fakultas Pendidikan Teknologi dan Kejuruan. Universitas Pendidikan Indonesia. Tersedia di <http://repository.upi.edu/11643/> [diakses 14-1-2015].
11. Rahmawati, D. 2014. Implementasi Group Investigation Dengan Scientific Approach Berbasis Portofolio Terhadap Kemampuan Berpikir Kritis Matematis. *Unnes Journal of Mathematicx Education*. 3(3).

12. Sugiyono. 2010. *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
13. Suherman et al., 2003. *Strategi Pembelajaran Matematika Kontemporer*. Bandung: FMIPA UPI.
14. Syah, M. 2008. *Psikologi Pendidikan dengan Pendekatan Baru*. Bandung: PT Remaja Rosdakarya.
15. Takaya, K. 2008. Jerome Bruner's Theory of Education: From Early Bruner to Later Bruner. *Interchange Springer*, 39(1): 1-19.

Bernard Lonergan's Learning Model for Higher Education

Aloysius Rusmadji

Abstract. Based on observation on the praxis of learning process in Papua in which (1) student frequently just learn the subject matter by remembering, (2) teacher has minimum role in guiding the students to arrive at a meaningful understanding of the subject matter, I argue that the critical engagement in academic inquiry proposed by Bernard Lonergan (with my minor modification) could be an alternative solution for the problem. Lonergan formulated a cognitional theory, based upon the self-assembling dynamic invariant structure of human knowing, that unfolds the complex relation among knowing, objective knowledge, and intending subjects. The Lonerganian model elaborates structure of knowledge which can be employed to investigate pedagogical questions and models that address how students can be encouraged to be aware of their process of learning.

INTRODUCTION

The objective of this article is to explore the idea of Bernard Lonergan on understanding in *Insight. A Study of Human Understanding* and *Methods in Theology* and to attempt to implement the theory in educational science, especially in constructing a model of higher order of learning.

The pre-history of the article can be traced back in the author's observation on the praxis of learning process in Papua in which student frequently just learn the subject matter by remembering. Moreover, the teaching activity, teacher has minimum role in guiding the students to arrive at a meaningful understanding of the subject matter. The result is evident: many students do not regard the learning process to be meaningful and the knowledge achieved from the school stays outside of their life and therefore easily forgotten. The observation leads me to re-account on how I have been teaching, what the student have gained from the school? What knowledge remains in the students' understanding on the subject matter I have taught to them after they graduated? Honestly I have a hope that student gets meaningful understanding from their school period and that understanding becomes integrated in their life. The endeavor of the student has to cope with various subject matter has to be fruitful and relevant to their professional life.

Reading the books of Lonergan gives me insight to the problem above. His cognitional theory offers clues to construct a model of learning in which I as a teacher can consciously guide step by step the students in achieving a meaningful understanding. This paper deals with, firstly, the cognitional theory of Lonergan and, secondly, an attempt to extend the theory in educational science.

LONERGAN'S COGNITIONAL THEORY

Levels of Consciousness

Like most of philosophers concern with fundamental structure of reality, so Lonergan is interested in analysis of the dynamics of understanding rather than the content of human understanding. He does not set forth a list of the abstract properties of human knowledge but rather he intends to assist us to be aware of concrete dynamic structure of our knowing. (Lonergan B. F., 1992, p. 11). He begins his analysis with question: what am I doing when I am understanding, what am I doing when I am knowing? Why is doing that knowing? What do I know when I do it?

Lonergan understands that the process of knowing is accumulative and progressive in character. Progressive, it is because the process of knowing begins from a lower level of consciousness and move forth to higher one. The process of knowing starts from experience and goes forward to the theoretical and universal. The process is also accumulative because as the knowing progress forward, it does not leave behind what has been achieved in the previous level, but enrich it. What is already known gets relationship with the new. The figure bellow illustrates how the process of knowing proceeds from the lower level of consciousness to the higher one

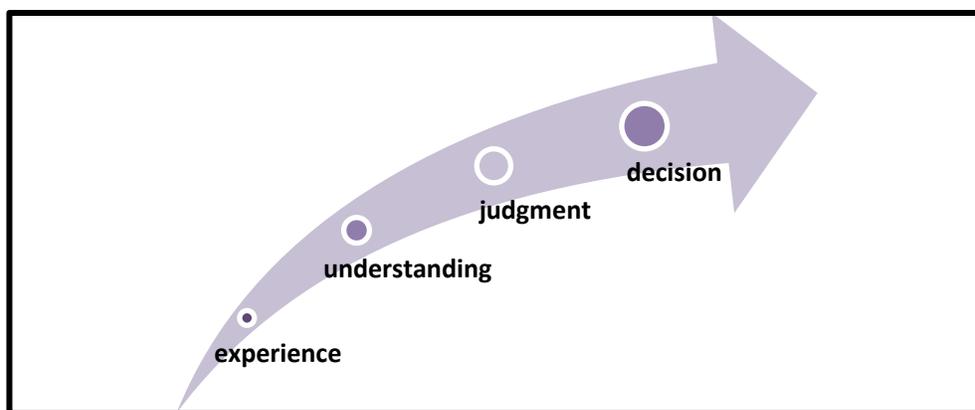


Figure 1 Levels of Consciousness

The subsequent section deals with levels of consciousness in the process of knowing.

Experience

Experience is the gate of knowing, but the experience cannot be limited to sensory experience, though it has significant role in the process of knowing. The object of knowing, consequently, is not merely sensory things. The objects of experience are not only deliverances of sense, of acts of sensation, of seeing, hearing, touching, tasting, and smelling. The objects of experience include also mental things: thoughts, images, memories, prior insights and judgments. (Melchin, 2008)

Objects of experience are not knowledge data, yet. The object of experience, both sensory and mental, will be data of knowledge when knower is interested to them, posing questions on them. Data are not “the building blocks of reality already out there” (Fitzpatrick, 2013). Data are what we ask questions about. They are what we experience but do not yet known or understood.

Understanding

Intentionality and drive to know are fundamental factors which transforms experience to knowledge. Questions like what is really touched, smelled, seen, heard? what is going on, or why things are happening in this particular way. Those questions give signs that one is trying to make sense of one’s experience, one is attempting to figure out what is going on.

Loneragan remarks that the series of questions open the process of knowing and lead to understanding. To understand means to be able to make relationship between data: the data coming from the recent experience and from the past. One frequently does not grasp the understanding easily. Sometime one has to go through times of doubts, even darkness of unknowing. One often has to struggle to grasp the understanding. The moment when one sees links and connection between data is a moment of insight. “Every insight unifies and organizes”. (Loneragan B. F., 1992, p. 5) Again, insight comes mostly in a surprising way and time. It hardly comes in a full packed activity or in the laboratory. It mostly comes suddenly, unexpectedly, and in a moment of relaxation. It is true also that insight comes after one struggles for a certain time, with difficult problem.

Loneragan indicates five main universal characteristics of insight (Loneragan B. F., 1992, pp. 28-32):

1. Insight as release of tension of inquiry. It comes after a struggle of knowing, understanding, seeing why, discovering the reason, finding the cause, explaining. It blows the mind after separating, distinguishing, relating to. After one goes through the darky moment, then comes the “ahaa moment” in which one sees all clearly, unified and organized.
2. Insight comes suddenly and unexpectedly. It comes in a flash, o a trivial occasion, in a moment of relaxation. It interrupts the routines, the standard procedures and rules. Insight cannot be identified with a forgotten solution but suddenly remembered. (Marroum, 2004, p. 525; Cronin, 1999, p. 62) Insight makes what is not comprehended before is now understood.
3. Insight is a function of inner mind, not of outer circumstances. The outer circumstances somehow trigger the capacity of mind to figure out what is at stake. As Joseph noted, “the seed of great discovery are constantly floating around us, but they only take root in minds well prepared to receive them.” Moreover,

Lonergan boldly says that insight “depends upon native endowment, and so with fair accuracy one can say that insight is the act that occurs frequently in the intelligent and rarely in the stupid.” (Lonergan B. F., *Insight. A Study of Human Understanding*, 1992)

4. Insight pivots between the concrete and the abstract. It has its starting point from the abstract but its relevance and significance reaches beyond the concrete and the sensible. Insight moves from the particular and concrete data to the universal and abstract.
5. Insight passes into the habitual texture of one’s mind. Once insight comes what was insoluble and complex problem now becomes incredibly simple and obvious

The third key operation at this level is formulation. Insight, “a grasp of relations” (Melchin, 2008, p. 109) empowers the knower to build a coherent understanding involving other experiences and “stock of knowledge”. The new gained insight enables the knower to interpret and explain experiences and his stock knowledge in “clear and sharp formulation” (Lonergan B. F., 1992, p. 411) in thoughts, words, images, or other sensible or imaginable symbols.

The clear and sharp formulation in words, images and symbols, in turn, serves to explain and interpret other concomitant or subsequent experiences as well as the already gained concepts and other past experiences in a refreshed feature. In such dynamics of understanding, a new insight in the end builds a new web of relations of concepts and constellation of data, which can be re-enacted or re-presented independent of the original experiences that occasioned the insight in the first place.

Judgment

Knowing does not end with the formulation of given experience. Formulation has to be proceeded to judgment whether the formulation is correct linguistically, true in term of its coherence with the full data of experience. At this level one comes to the question whether my understanding correct or incorrect? Is it true or false?

The questions lead to reflection through which one marshals and weights the evidence. The questions fall into two main classes. The first are questions for reflection which has to be answered yes or no. they are question on the formulation to be accepted or denied, agreed or disagreed. The other kind of question of judgment is questions for intelligence. This kind of question need to be answered by giving sound reasons

Decision

Achieving true understanding is not the end of understanding. Lonergan posits one more level, a moral level built on the cognitional dynamics. He mentions that each step/level in knowing contributes an expansion or deepening of understanding. The horizon of the latter level always broadens the previous one. The higher level of understanding implies broader horizon of understanding. On this topic Lonergan also deals with “intellectual conversion”, in so far as the new gained insight corrects old understanding and conception.

On the fourth level, one advances question not only the validity of the understanding, but the implication of the understanding: is the understanding good? What is the gained understanding for? should it be done or not done? These questions are directed not to object of what is understood, but rather to the knowing subject. At this level, consciousness truly becomes self-conscious. The knower not only takes a stand of an onlooker, but he actually stands up for what he believes in. The knower, in his freedom and then also his personal commitment, has to make a decision about the new understanding. At this level of decision is to become fully self-authoring, to choose one’s own course beyond the imposed rules and guidelines of others through a “prior, more basic interior grounding to morality that accounts both for the origin of the rules themselves and for the way in which they function. (Kelly, 2014, p. 20) This full citation of offer clear account of the idea:

I am more implicated in understanding than I am in merely gazing at something, or simply floating in the lotus land of sensation. In the same way, I am more implicated in making a knowledge claim than I am in simply entertaining an intellectual explanation. But I am most implicated in making value judgments and arriving at moral decisions based on what I know to be the truth. (Fitzpatrick, 2013)

Taking a responsible decision leads to fifth level, transcendence. At this level, the knowing subject gets caught to the immediacy of the earliest level; he comes to an understanding in the clear light of indescribable. One undergoes conversion: intellectual, moral, affective and religious. One experiences “a structural transformation of the self”, “humanity’s final *telos*” (Kelly, 2014, p. 20). This quotation describes well what Lonergan means by transcendence:

To say that this dynamic state is conscious is not to say that it is known. For consciousness is just experience, but knowledge is a compound of experience, understanding and judging. Because the dynamic state is conscious without being known, it is an experience of mystery. Because it is being in love, the mystery is not merely attractive but

fascinating; to it one belongs; by it one is possessed. Because it is an unmeasured love, the mystery evokes awe. Of itself, then, inasmuch as it is conscious without being known, the gift of God's love is an experience of the holy. (Lonergan B. F., 1996, p. 106)

To sum up the exposition, the figure bellow will help us to understand the complexity of the dynamics of understanding:

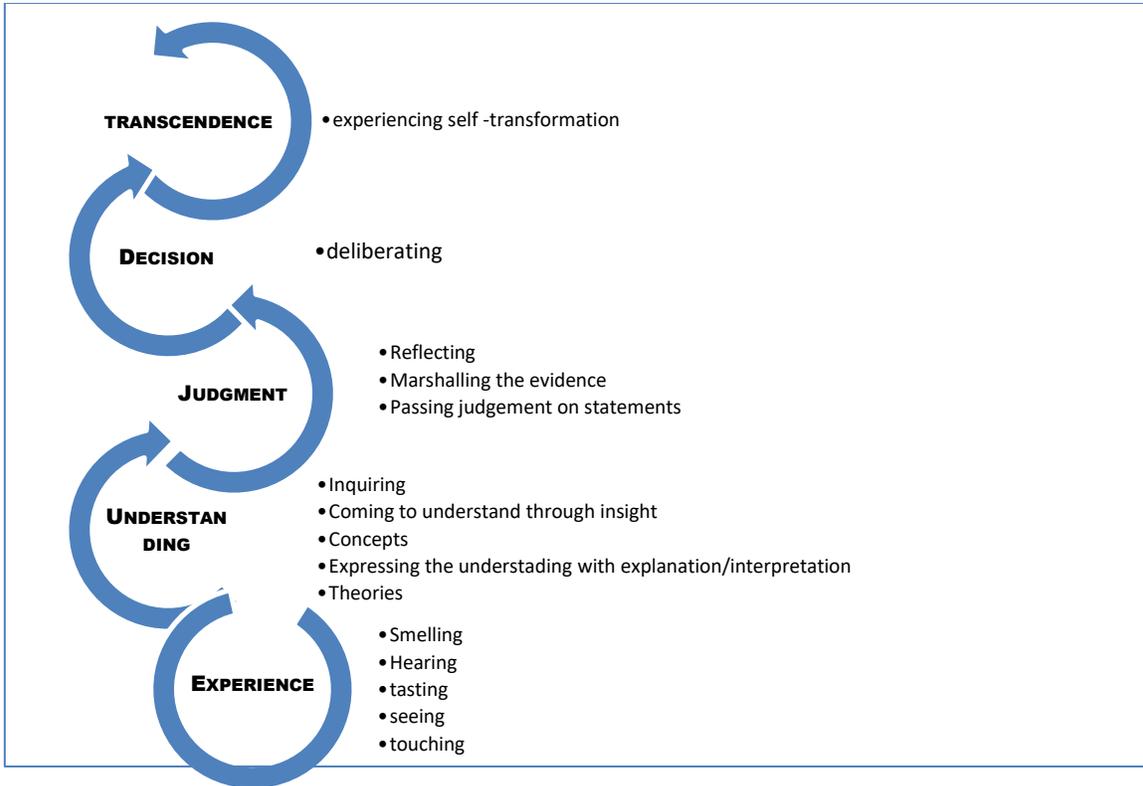


Figure 2 Operational Keywords

Precepts of Understanding

The fourth level of the cognitional theory actually has already goes beyond the line of the scientific theory as such because it deals with the knowing person rather than the object of the cognition. The Lonergan's cognitional theory, indeed, underlies integral approach in which the process of knowing is grounded on the knowing subject as a steady rock. He notes:

There is then a rock on which one can build.... Any theory, description, account of our conscious and intentional operations is bound to be incomplete and to admit further clarifications and extensions. But all such clarifications and extensions are to be derived from the conscious and intentional operations themselves. They as given in consciousness are the rock; they confirm every exact account; they refute every inexact or incomplete account. The rock, then, is the subject in his conscious, unobjectified attentiveness, intelligence, reasonableness, responsibility. The point to the labor of objectifying the subject and his conscious operations is that thereby one begins to learn what these are and what they are. (Lonergan B. F., 1996, p. 5)

Consistent with the stream of flow of consciousness in four levels, Lonergan delineates 4 precepts along with the dynamics of understanding. On the level of experience, he warns us to be attentive, that the details of the given data, fine points of the experience, could be collected. The fuller collected data from the experience provides the richer content of the experience. In turn, rich content of the experience offers more information upon which inquiry will be carried out.

At the level of understanding, the important disposition is being intelligent. One need to be intelligent in grasping the why, how, when of the data. Intelligence looks for intelligible patterns in presentations and representations. Once the unity and the relationship of the given data are reached, insight occurs.

In asking “is it so or not so?” one need to be reasonable. Being reasonable, the knowing subject deliberately weights the evidences to make exact and balanced judgment which affirms things as they are.

reasonableness and groundedness are the obverse and reverse of the third level of knowing. Reasonableness is reflection inasmuch as it seeks groundedness for objects of thought; reasonableness discovers groundedness in its reflective grasp of the unconditioned; reasonableness exploits groundedness when it affirms objects because they are grounded. (Lonergan B. F., 1992, p. 347)

At the fourth level, Lonergan gives advice to be responsible. Following the drive to know, one actually develops also oneself to be an intelligent, reasonable, and responsible person. Inasmuch as he is, one accepts, affirms, and executes his own personal development.

Reflection never settles the issue; it can determine that a given course is valuable or pleasurable or useful; but only the decision makes the course actual; nor does the decision follow because the reflection ends, but the reflection ends because the decision is made. Because man determines himself, he is responsible; because the course of action determined upon and the process of determining are both contingent, man is free. (Lonergan B. F., 1992, p. 715)

At the side of the knowing subject, “genuine objectivity is the fruit of authentic subjectivity”. So understood, authentic subjectivity involves direct apprehension of all four operations consisting in all of the four levels: to be attentive to sensory presentations, to be intelligent in understanding, to be reasonable in judgment, and to be responsible in deliberate decision. Those four operations not only are exercised over the object, but also involve active objectification of the interiority of the knower. One who has reached this fifth level achieves an authentic subjectivity as well as authentic understanding. This authentic understanding becomes an integral part of one’s subjectivity. Lonergan offers a precept for this level: be in love. When a man – woman are in love, they are bounded together; the one sees the other as an integral part of oneself. So it is the relationship between authentic subjectivity and authentic objectivity.

To say that this dynamic state is conscious is not to say that it is known. For consciousness is just experience, but knowledge is a compound of experience, understanding and judging. Because the dynamic state is conscious without being known it is an experience of mystery. Because it is being in love, the mystery is not merely attractive but fascinating; to it one belongs; by it one is possessed. Because it is an unmeasured love, the mystery evokes awe. Of itself, then, inasmuch as it is conscious without being known (Lonergan B. F., 1996, p. 162),

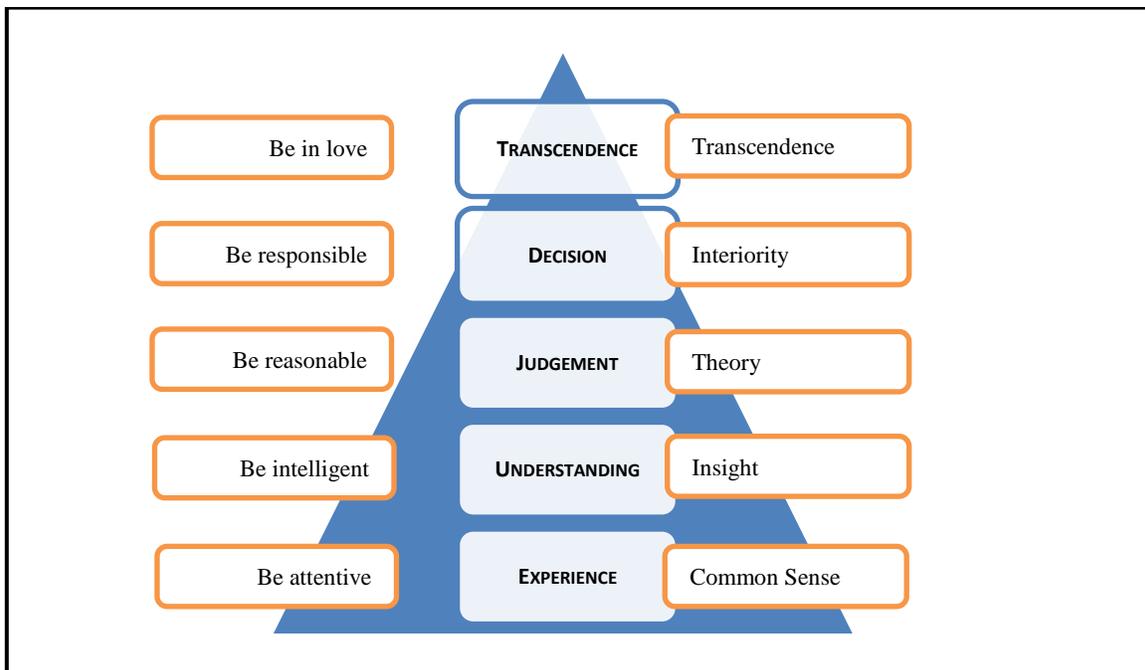


Figure 3 Precepts of Understanding

Implementation in learning science

Lonergan's idea may be not new at all, but it provides a clear and firm framework to develop a learning model with which lecturer leads learners to understand the subject matter of study. According to Mayer (2013), learning activity falls into three categories: non learning, non-meaningful learning, and meaningful learning. In the first category, student learns very little, if any, from the academic activity. In the second, student may get something from the class, remember something, but he cannot implement nor develop the achieved knowledge in a new situation. In the end, meaningful learning makes student retain new understanding and capable of implement it in various situation.

Those categories reflect also situation of teaching. There are non-teaching, non-meaningful teaching and meaningful teaching. Non-teaching means that teacher delivers subject matter of study to meet immediate objectives, such as; students are able to answer the test and pass the grade. For this purpose, teacher often gives test exercises or obliges students to remember certain formulas. Students grumble over this burden, as they do not see the meaning of it. The second category is a non-meaningful teaching. The teacher imparts knowledge and skill, but not guides the student to be independent and critical.

"A person may be highly trained and skilled and yet remain uneducated. If there is no development of one's critical intelligence and independence of judgment, one tends to accept uncritically what one reads and hears; one tends not to lead but rather be led. lead but rather to be led. (Kelly, 2014, p. 520)

The third category is meaningful teaching. Imparting academic subject matter, teacher leads the students to have courage to think creatively and critically. The teacher escorts the student to achieve a practical know how in solving the problem. In so doing, the teacher leads the students to be long-life learner: learner of knowing, learner of doing, learner of living together, and learner of being oneself authentically.

From the elaboration of Lonergan's cognitional theory, the center point of the dynamics of understanding sits in the moment of insight. This moment is so determinate in constructing an integral understanding, that without it, understanding remains fragmented and "out there" of the knower. Unfortunately, insight cannot be imparted nor taught; therefore, the insight belong to the teacher cannot be simply delivered to the students. The teacher has to guide students in order that they come to the same understanding. Lonergan does not give a recipe to be used to come to the moment of insight. The five levels of understanding with their operational activities, however, give some clues to construct a model.

The Task of the Student

Currently models of higher order of learning are still lacking. One which is modeled by Ohlsson (2011) is worthy of noting because it contains fundamental tasks proper to the higher order of learning, such as, describing, explaining, predicting, arguing, critiquing, explicating, and defining. In the following section, I will present a tentative to construct a lonerganian model of higher learning, based on his notion of understanding. First, it will be presented the model itself and then will be followed with the subjective dimension of the model, of which is a necessary complementary to the model.

Lonerganian model is constructed on the base of five levels of consciousness. At the level of experience, students need to concern how things relate to them: how they see things, hear, feel, taste, and smell them. The task of the students is giving a thick description about the thing they experience.

The description paves a path to explanation. Arriving at explanation, one actually has already taken a step into the realm of understanding, but this step is also accompanied with some difficulties because students frequently do not consciously differentiate explanation based on common sense, which belongs to the level of experience and explanation based on theory. The former is strictly related with concrete experience, the latter is detached from experience; therefore it is abstract in character. Another difference between those kinds of explanation is that common sense explanation sees things in relationship with experience, yet theoretical experience sees things in relationship with other things. Therefore, the former is subjective and the latter is objective. Unless students are able to explain how x relates to y , even if they experience how x relates to themselves, they have not truly understood. The end of the second level is achieved when students are able to explain their experience viewed as object in relationship with other objects. They are able to define a concept abstracted from their own experience in a web of other concepts.

Forming a concept and gaining an objective knowledge is not the final station. Students need to reflect whether the gained understanding matches experience; whether x truly relates to y . Group discussion may help to weigh the evidences objectively. This is the task of the third level.

At the fourth level, teacher leads student to ask what am I doing when I am knowing? Why is doing that knowing? What do I know when I do it?' . The question seeks to integrate the knowledge (what is known) with the knower.

The fifth level checks whether the student's understanding has already been integrated with the new understanding. Student often think they understand but are unable to apply the principle, unable to tell what they know. Integration is accomplished to a degree to which student is able to communicate meaningfully and effectively what he has understood to other in his own linguistic expression.

To sum up the exposition, the matrix bellow will help us to have an overall view

• Level of consciousness	• Students' Task	• Objectives
• Experience	• observing, listening, noticing, collecting data, imagining, and paying attention	• Thick description of the experience
• Understanding	• thinking, abstracting, correlating, defining, getting an insight, and forming concepts.	• Mind map of the concept
• Judgment	• weighing the evidence, reflecting, and asking the question 'is it so?' to determine whether the understanding matches the experience	• Group's deliberation
• Decision	• Make a commitment related to the new understanding	• Group's commitment
• Communication	• Delivering the new understanding to the peer students	• Peer teaching or/and • Social praxis to a small community as implementation of the understanding.

Table 1 Table of Student's Task

The Task of Teacher

The golden rule of the task of the teacher is to foster an environment that will increase the possibility of insight. Understanding cannot be carried out by the teacher in behalf of the student. The student has to do that by themselves.

Teaching is the communication of insights. It throws the clues, the pointed hints, that lead to insight. It cajoles attention to drive away the distracting images that stand in insight's way. It puts the further questions that reveal the need of further insights to modify and complement the acquired store. It has grasped the strategy of developing intelligence, and so begins from the simple to advance to the more complex. Deliberately and explicitly, all this is done by professionals that know their job. (Lonergan B. F., 1992, p. 192)

While understanding has to be done personally by the student, teacher has to communicate to students what he knows, he need to teach them how to come to know, and help them savor the joy of learning and applying their knowledge. Teacher cannot expect the student to pursue the understanding on their own simply by asking questions and acquiring hands-on experience through interviews and tutorials. It is not enough for students to conceive, nor is it enough for them to formulate their understanding, or make judgments based on their perceptions. . The task of the teacher is motivating the student to pursue understanding.

Regarding the strategy of giving motivation to the student to pursue understanding, the traditional way of instruction --, teacher initiates a question, student responses, and finally teacher evaluates the responses of the student -- does not meet the characteristics of the lonerganian model. The model demands more reflection which

gives students responsibility for their thinking and for reflecting upon their problem solving. The model is a student centered learning rather than teacher centered learning.

Still need to be developed is assessment tool that addresses components of the learning process. The assessment tool has to cover five levels of understanding of which more than a tool emphasizing recall and memory (level of experience), or ability to find scientific resources (level of understanding), or self-assessment (level of judgment). The tool needs to include assessment for decision and communication.

CONCLUSION

Loneragan's cognitional theory maybe does not add a totally new element in scientific research in education. The theory, however, makes explicit what is in operation the process of understanding. It shows the dynamics of understanding whose structure consists in five levels, that is, experience, understanding, judgment, decision, and transcendence.

What is distinctive in the cognitional theory of Lonergan is that the operational key words in each level are formulated in imperatives: be attentive, be intelligent, be reasonable, be responsible, and be in love. Those precepts function to raise consciousness in the knower in the process of understanding.

Extension of Lonergan's cognitional theory in education is a tentative to enrich existing models of higher order learning. Lonerganian model of learning underlies the importance of paying attention to the inner dynamics of understanding. Adopting Lonergan's approach, therefore, does not necessarily imply that teachers need to change their teaching styles radically, because the real issue of teaching strategy is that students' discovery of themselves as knowers and this cannot be achieved without the teacher self has been a man of understanding. The fundamental task of the students is to be a learner and the teacher's is to motivate the student to pursue that goal.

REFERENCES

1. Cronin, B. (1999). *Foundations of Philosophy. Lonergan's Cognitional Theory and Epistemology*. Nairobi: Consolata Institute of Philosophy.
2. Fitzpatrick, J. (2013). *The Structure of Cognition*. Dipetik May 15, 2016, dari Lonergan Institute: www.lonergan.org
3. Kelly, N. A. (2014). Conscious Cosmopolis. Bernard J.F. Lonergan's Critical Realism as a Complementary Approach to Integral Theory. *Journal of Integral Theory and Practice*, 12-37.
4. Lonergan, B. F. (1992). *Insight. A Study of Human Understanding*. New York: Harper.
5. Lonergan, B. F. (1993). *Topics in Education. Collected Works of Bernard Lonergan*. Toronto: University of Toronto.
6. Lonergan, B. F. (1996). *Methods in Theology*. Toronto: University of Toronto.
7. Lonergan, B. J. (2005). *Collected Works of Bernard Lonergan Vol. 10. Topics in Education*. Toronto: Bernard Lonergan Estate.
8. Marroum, R.-M. (2004). The Role of Insight in Science Education: An Introduction to the Cognitional Theory of Bernard Lonergan. *Science & Education*, 519-540.
9. Melchin, D. B. (2008). *Insight, Learning, and Dialogue in the Transformation of Religious Conflict: Application from the Work of Bernard Lonergan*. McGill University.
10. Ohlsson, S. (2011). *Deep Learning: How the Mind Overrides Experience*. New York: Cambridge University Press.
11. Roscoe, K. (2004). Lonergan's Theory of Cognition, Constructivism and Science Education. *Science and Education*, 13(6), 541-551.
12. Teevan, D. (2004). Tradition and Innovation at Catholic Universities: Ideas from the Bernard Lonergan. *Catholic Education: A Journal of Inquiry and Practice*, 7(3), 308-318.

Utilizing Mobile Phone Video in Teaching Sepak Takraw Gunting Spike

I Ketut Semarayasa

Physical Education, Health, and Recreation Department, Sport and Health Faculty, Ganesha University of Education

Corresponding author: semarayasaiketut@yahoo.com

Abstract. This article aims at describing how videotape can be used to utilize students' sepak takraw learning, particularly in performing Gunting Spike. It is important to be used in learning process since it can give students more space to become autonomous learners and increase their self-study. In addition, it can help students to reach their competencies and skills maximally. Through video, they can develop their awareness to assess their own performances both their strength and weaknesses. This is very beneficial insight provided not only for the students themselves, but also for teachers/trainers.

INTRODUCTION

Sepak takraw games is a team sport whose implementation is the same as those which use net, ball, pitch, and regulations. Sepak takraw sport is a mix of soccer and volleyball games, played on a badminton doubles court and the player may not touch the ball with his hands (Kurniawan, 2011: 107). Zahari (2008) also states that sepak takraw game uses body parts such as head, shoulders, back, chest, thighs, legs, but not the hands. Recently, sepak takraw game is gaining its popularity. Many people of all ages love and play this game. It begins entering schools as one of extracurricular programs. A lot of sepak takraw clubs are arise. In addition, sepak takraw tournaments are often scheduled regularly. Nevertheless, its popularity has not yet followed by its achievement.

There are problems which are still exists like the lack of basic skills mastery. These problems are caused by three main factors. The first is the nature of the game itself. Sepak takraw sport is soccer game which has been modified to be used as a competitive game. Football sports as the basis of sepaktakraw game is a traditional Indonesian game sport played by 6-7 people in a circle. The term Sepak takraw is originated from two words namely football and takraw. " Football " means something with legs kicking motion, by means of swinging the leg in front or to the side, while " Takraw " means a round ball or items made of woven rattan. Therefore, sepak takraw sport is football that has been modified to make it as a competitive game. Further, it has been agreed that that sepak takraw ball is kicked to the side of the foot, the inner side of the foot or the outside of the foot is made up of three players, hence they need both teamwork skills, good physical condition which include strength, speed, agility, endurance, coordination, balance, explosive power, and others, and performance skills.

Among the prerequisites of being a good sepak takraw player, performance skills are still considered as the most important area to be taken into account since they cannot be achieved by nature only but also by nurture. It is important to note that students are still lacking in their performance skills. One of those skills is spike. Spike in sepak takraw has a level of complexity and varying complexity, from simple skills to the complex ones. In light of the level of difficulty and complexity, spike has a high level of difficulty and complexity because it includes elements; hand and foot-eye coordination, timing, tempo, rhythm step, dynamic balance and accuracy. In order to do a good *gunting* spike, it needs a good learning methods or an effective training method as well as a systematic progression. By giving a suitable strategy in the training implementation, it is expected that the goal of exercising can be achieved optimally. Without a proper technique, the desired goals can be reached effectively.

The second problem is deriving from the instructor's side. From this side, it is seen that the instructors are not able to facilitate the prospective players with the effective techniques to master the intended competency. It is no doubt that they master the skills very well, however, they have problems in delivering those skills to their prospective players. They tend to use the traditional way like lecturing and giving model to them. They often forget to provide feedback for their students. Moreover, giving feedback is an essential factor in practicing. By reviewing the feedback, the students can evaluate their performance to be better.

The third problem is coming from students' side, the problem is coming from the intrinsic motivation. Students are often confused about how to master the basic skills. Sometimes they feel reluctant to practice. They think that basic skills of sepak takraw especially *gunting* spike is a hard skill to master. It can be acceptable since this spike is very unique and very important in gaining score quickly. However, it is a fact that it is not an easy skill to perform. *gunting* spike is one technique that is very important (fundamental) in sepak takraw which has fairly high complexity of movement making it more difficult to be learned by the prospective sepaktakraw athletes, especially for those who do not have enough skills. Of course, great efforts are highly demanded to improve the ability of the *gunting* spike.

Having known the factors that lead to the problems of the low achievement of Sepaktakraw, it needs to create an atmosphere which can arouse students' motivation to practice. One way to motivate students is by providing a technique which can stimulate students' interest and motivation to practice. One effort which can be implemented by administering a proper way in exercising. It is better for the trainers to establish an effective exercising strategy and environment to help the learners to gain their competences in mastering *gunting* spike. Therefore, it needs to be designed a method and appropriate learning strategies so that students can learn easily, manage student and pick appropriate methods and instructional strategies that can stimulate student interest in learning so that students do not get bored in the learning process.

Among many techniques exist, Mobile phone video simulation is one technique which can be employed by the instructors to help their students in mastering the basic skills of sepak takraw. Due to its importance, this article then is intended to describe the nature of *kedeng* spike and how to practice it using Mobile phone video simulation technique. Hopefully, it can be beneficial for those who practice sepaktakraw game and can give insight on the sepaktakraw games on techniques which can be employed in order to help their learners in mastering basic sepaktakraw skills, especially *gunting* spike.

DISCUSSION

Sepak Takraw Games

Sepak Takraw is a kind of mixture of sports from soccer and volleyball played on a badminton doubles court, and the player may not touch the ball with his hands. Sepak takraw much in demand by the public for sepak takraw game can be played indoors and outdoors even now also be played on the beach or often called Beach Takraw (Aji, 2013). The game is derived from the Malay Sultanate era (634-713) and is known as the Football Venues in Malay. The ball is made of woven rattan and players stand in a circle. Sepak takraw game is a game that combines two traditional football game played in the volleyball court size is like the size of doubles badminton court (Sofyan, 2009: 1). Sepak takraw is a game that uses a ball of rattan or plastic (synthetic fiber) is done on a rectangular field, flat, open or closed, and the field is limited by the net (Solomon, 2008: 19). In short, it can be said that sepak takraw is a blend of soccer, volleyball, or badminton. The body parts used to play the game is the same as those of football (ie; legs, head or other body parts except the arms). The tools used are the same as volleyball and badminton (the net and the court size) (Engel, 2010: 23).

The game is played by two teams, each team consisting of 3 people and 1 person each team comes up and the team consists of 3 teams and a team of reserves and the number 1 team should not be more than 12 people (PSTI, 2007:31). According to Solomon (2008), playing sepak takraw goal of each party is to return the ball so that the ball can fall on the ground to make the opponent or the opponent causing offense or an opposing player makes a mistake.

In order to be able to play sepak takraw well and properly, one is required to have a good ability or skill. It means that without having good skills, it is impossible for the sepak takraw athlete to perform the game very well. How to play the ball in the game sepak takraw namely, by using the feet, head, or body provided that in case of bouncing. To be able to return the ball to the field or to the opponent each team allowed to touch, kicking or heading the ball three times, whether it is done by the three players the team members or just one of these things does not matter, the important thing is every team in the sepak takraw game has the right to touch the ball three times takraw or kick the ball around using foot parts, plays ball with the head (around the head), the chest, the thighs, the shoulder, (shoulder), and with the sole of the foot and the ball should have been heading to opponents field (Solomon, 2008:45).

As cited in http://takraw.webark.org/basic_skills.html, there are basic skills which must be mastered by prospective athlete sepak takraw. 1) **Knee/Thighkick.** The knee and thigh is used when the ball comes fast towards the area between the the player's knees and his waist. This skill is used to "bump" or deflect the ball up enough to use an inside kick to control the ball. It is also used

when kicking consecutive kicks or in a circle and the ball gets to close to your body. The motion is like a high step marching motion.2) Header. The header is probably the second most important skill to have, especially in the net game. The header is used to pop up a ball that comes higher than the waist. The best way to learn the header is like the inside kick. The contact point should be just above the forehead at the hairline, not too much on the forehead and not too much on the top of the head, right in between. 3. **Front kick/Toe kick.** The toe kick is a defensive kick, great for saving a ball that has gotten out in front of the player. It is not, however, a good control kick. Those who play soccer may disagree, but in sepak takraw the inside is the right way. Learn the toe kick for saves, the inside for control. The toe kick is achieved by placing the foot out for the ball and depending on the height of the, either lifting the foot with your hip or just letting the ball bounce off.

Gunting Spike

Spike is smash punch made with legs sticking up chasing the ball, made with a round body (without overhead) in the air (Solomon, 2008: 33). Spike is a form of attack that is most widely used for the attack in an attempt to score points, a team or in a game. Meanwhile, according to Sulaiman (2008), smash opens a series of movements that include the pre activity, while jumping, while hitting the ball and landing. Smash is strongly influenced by the coordination ability and level of sensitivity using the senses.

From the above statements, it can be concluded that the technique of smash or spike is to play with the ball efficiently and effectively in accordance with the rules of the game to reach the hard knocks that are usually lethal to the sepak takraw game. It is actually the quickest time to win the game to get maximum score. In playing sepak takraw, the activities involved are actually a series of activities that involve a large number of muscles in torso and limbs of the top and bottom. Smash movements in desperate need of organizing a number of large muscles of the body and also great exertion. Skills in sepak takraw is classified on the type of coarse motor skills because the sepak takraw game and contraction involved using large muscles. These motor skills are not only determined by genetic factors, but is also determined by training factors (Bompa, 2000: 43).

Gunting spike is performed by sticking a leg up chasing the ball (Solomon, 2008: 33). Gunting spike is done by hitting the ball with the right foot or the left. There are some steps in performing kedeng spike. First, body posture must stand against the net, the initial action must be done quickly by means of a small step or run towards the direction of the ball, and then repel to rest on top of the first one leg, then immediately followed by lowering the body by way of bending the knee slightly downward, upward repulsion pivot foot explosively with the help of arms, straighten the legs and turn the body (hips, back, shoulders) to the inside then do kedeng spike with round hips and back. The following actions start from rotating limbs, legs, backs, shoulder and arm outwards simultaneously, then the leg is pulled down and landed with two feet.

Utilizing Mobile Phone Video in Practicing Gunting Spike

Mobile Phone video is a strategy which will familiarize instructors with their training practice and behaviors. Studies of mobile phone video as a reflective tool have shown that participants gain independence, gain the personal and practical knowledge of teaching, and enhance their reflection (Armstrong, 1999) in (Riordan & Marshall, 2008). Instructors who viewed video recordings of their students came to view teaching as a process, and many reconsidered their teaching beliefs and practices. Additional research by McIntyre & Pape (1993) showed that students perceived that interactive videodiscs made them more reflective in their analysis of classroom life.

Providing mobile phone video as a form of knowledge of performance to learners is a common instructional tool in teaching and coaching. It is intended to provide learners with information concerning errors in skill execution and has been described as “a fundamental component in the process of coaching and instruction” (Franks & Maile, 1991, p. 232) in (Menickelli, 2004). Consequently, there have been many recommendations concerning the proper implementation of videotaped feedback instructional strategy. Providing mobile phone video feedback to learners is intuitively appealing, as one would expect learners who view their performances would detect their errors and thus improve.

There are some steps in performing mobile phone video feedback in sepak takraw practice, especially in gunting spike. Those are: 1) the instructor shows and gives model on how to perform gunting spike in proper way ; 2) the instructor asks the students to practice performing gunting spike by themselves by autovideotaping their performance; 3) the instructor asks students to do peer review about the video. In this case, the students have to make a report about their peer progress. It is done 8 meetings; and 4) The instructor gives feedback to all students related with their performance.

By performing the above steps, the instructor can facilitate students to practice the skills, especially gunting spike more effectively. Both instructor and students can review from the result of videotaping. The students can reflect and assess their performance, watch and analyze their weaknesses and improve it to be better. This is a fun activity for students also, in which students can videotape themselves, in addition this also provides students with positive interaction with their friends in the form of peer review. In this case, student can learn from their friends.

CONCLUSION

Finally, it can be concluded that in order to perform the game very well, every player of sepak takraw must know and able to apply all basic skills in sepaktakraw, include gunting spike. Gunting spike is not actually a difficult skill to master unless the learner has a high commitment and discipline to practice. Besides, it also needs a good effort from both parties, either the learner and the trainer to obtain the intended goal of every practicing activity. Mobile phone video feedback then can be a rewarding technique to employ in facilitating students to master gunting spike. It provides space for students to reflect and assess their own performance so that they can perform better.

There are two parties noted here. First is for the learners. It is strongly recommended for the learners to build a strong motivation in practicing the skills. Motivation is actually the key to run the effort smoothly. It is the root to success including the success in mastering the gunting spike. It needs his patience, courage, and persistence to practice. Second, is for the trainers or coaches. It is suggested that they should be a good motivator for their learners, monitor every progress made by their learners, and facilitate them to achieve their intended practice goal by finding new way or technique in exercising. Therefore, the exercise atmosphere can be conducted in positive environment which always encourages their motivation to practice.

REFERENCES

1. Anonym. 2012. Basic Skills of Sepaktakraw. <http://takraw.webark.org> (Accessed on March 17 2016).
2. Aji. 2013. *Pola Pembinaan Prestasi Pusat Pendidikan dan Latihan Pelajar (PPLP) Sepak Takraw Putra Jawa Tengah Tahun 2013*. Jurnal Media Ilmu Keolahragaan Indonesia Volume 3. Edisi 1. Juli 2013. ISSN: 2088-6802.
3. Azhari Taga. 2008. *Effect of Diameter on the Aerodynamics of Sepaktakraw Balls*. Malaysia: <http://www.worldacademicunion.com/journal/SSCI/SSCIvol02no02paper07.pdf> [Accessed on 15-1-2016].
4. Bompa. 2000. *Total Training for Young Champion*. Champaign: Human Kinetics.
5. Engel, Rick. 2010. *Dasar-dasar Sepak Takraw*. Jakarta: PT Intan Sejati.
6. Lutan, dkk. 2000. *Manusia dan Olahraga*. Bandung: FOK IKIP Bandung.
7. Kurniawan, Feri. 2011. *Buku Pintar Olahraga*. Jakarta: Laskar Aksara
8. Magill, Richard A. 2014. *Motor Learning and Control: Concepts and Applications* Tenth edition. New York: Mc. Graw-Hill Companies.
9. Maselena A dan Hasan M. 2011. *Fuzzy Logic Based Analysis of the Sepak takraw Games Ball Kicking with the Respect of Player Arrangement*. World Applied Programming, Vol (2), Issue (5), May 2012. 285-293 Special section for proceeding of International E-Conference on Information Technology and Applications (IECITA) 2012. ISSN: 2222-2510 ©2011 WAP journal. Tersedia pada www.waprogramming.com. [Accessed on Januari 18, 2016]
10. Menickelli, Justin. 2004. The Effectiveness of Videotape Feedback in Sport: Examining Cognitions in a Self-Controlled Learning Environment. Retrieved from <http://etd.lsu.edu> on June 4, 2014.
11. PB PSTI. 2007. *Peraturan Permainan Peraturan Perwasitan dan Peraturan pertandingan Sepak Takraw*. Jakarta: PB PSTI.
12. Riordan, Kim and Marshall, Emily. 2008. *Using Videotaped Interactions to Promote Reflective Practice in Early Childhood Teachers: An Undergraduate Research Opportunity Project*. Retrieved from <http://www.nssa.us/journals/2008-31-1/2008-31-1-17.htm> on June 4, 2014.
13. Semarayasa, I Ketut. 2010. *Pengaruh metode pembelajaran dan Tingkat Motor Educability terhadap keterampilan teknik dasar bermain sepak takraw*. Jurnal Pendidikan dan Pengajaran Jilid 43 No 1 Hal 1-88 Singaraja April 2010. ISSN 0215-8250.
14. Simanjuntak, Victor G. 2008. *Pendidikan Jasmani dan Kesehatan*. Jakarta: Dirjen Tinggi. Depdiknas.

15. Sofyan, M. 2009. Permainan Sepak Takraw. Jakarta: CV Ricardo.
16. Sukintaka. 2004. *Teori Pendidikan Jasmani*. Cetakan Pertama. Bandung: Yayasan Nuansa Cendekia.
17. Sulaiman. 2007. *Permainan Sepak Takraw*. <http://sulaiman-fikunnes.blogspot.com/2007/10/sepak-takraw.html> [Accessed on March 14, 2016].
18. -----, 2008. *Sepak Takraw: Pedoman Bagi Guru Olahraga, Pembina, Pelatih, dan Atlet*. Semarang: UNNES Pres.
19. Widodo, Dwi Cahyo. 2010. *Pendidikan Jasmani dan Bermain*. Tersedia pada <http://onopirododo.wordpress.com/2008/11/14/pendidikan-jasmani-olahraga-atau-bermain-ya/>. [Accessed on March 14, 2016].

The Role of Beauty Care Education in Developing Beauty Creative Industry

Marwiyah

Home Economics Department, Faculty of Engineering, State University of Semarang

Corresponding author: marwiyah.awik@yahoo.com

Abstract. Beauty Care Education is one of the existing study programs at Department of Home Economics, Faculty of Engineering, State University of Semarang. Beauty care education is aimed at creating graduates with undergraduate qualification in beauty care who are excellent, professional, skillful and sensitive to the sustainability of environment, nature, society and culture, preparing educators in beauty care (formal and non-formal) who have professional competence in beauty product and service, preparing professionals who are adaptive, creative, innovative and business-minded to create job opportunities in beauty care. Beauty care education implements KKNI based-curriculum, which is business-and-industry oriented and conservation-minded, providing students with opportunities of job trainings. The development of beauty creative industry is very rapid, whether in the scope of regional, national or international level. The competition of beauty care industry is very significant and tight in the era of globalization. The main challenge ahead is to improve the competitiveness and excellence of competence in all sectors of industry and service by relying on human resource, technology and management. In addressing qualified human resources in accordance with the demands of job market's needs or business and industry sectors, beauty care education is required to create graduates who are ready to enter the workplace of beauty creative industries. The scope of beauty creative industry is to produce beauty products (cosmetics, herbal medicine, bun), beauty service products / beauty salons (skin care, hair care, make-up and spa), and entertainment industries (film, dancers, singers, clowns, and acting) at regional, national, and international level.

INTRODUCTION

S Ministry of National Education's vision to 2025 is creating intelligent and competitive individuals. Intelligent individuals should be spiritually, emotionally, socially, cognitively, and kinesthetically smart; while competitive individuals means that they should be independent, highly motivated, excellent, persistent, receptive to change, constructive, productive, innovative, quality-conscious, globally oriented, and interested in life-long learning (Department of National Education - Secretariat General, 2006:3)

National development in the field of education is an integrated effort from the government and society to develop the nation's intellectual life and improve the quality of Indonesian human capital in realizing a just and prosperous society. Education is not merely as a means to prepare for the upcoming needs, but for the life of a person who is undergoing a development towards maturity, which is being responsible for himself biologically, psychologically, sociologically, and pedagogically. Formal education includes primary, secondary and tertiary education. Secondary education is divided into: Senior High School and Vocational High School.

Beauty care tertiary education includes:

- 1) Undergraduate Academic Program (Bachelor's Degree) specializing in beauty care education, aimed at preparing educators in beauty care (both formal and non-formal) who have professional competence in the area of beauty product and service.
- 2) Professional Academic Program (Associate Degree) specializing in beauty care, aimed at preparing adaptive, creative, and innovative professionals who have ethics, aesthetics, and entrepreneurship insight to create job opportunities in beauty care.

The cooperation between beauty care formal education with business and industry sectors must be improved in developing KKNI-based curriculum which is business and industry oriented and conservation-minded to provide students with job training opportunities.

Facing increasingly intense competition in the era of globalization, the main challenge ahead is to improve the competitiveness of industry and service sectors by relying on human resource, technology and management. In addressing qualified human resources in accordance with the demands of job market's need, industries and training

institutions, whether which are formal, informal, non-formal, or managed by the industries, should be able to work together. The form of such cooperation may take the form of formulating standard human resource qualification requirements, formulating KKNI-based curriculum which are industry oriented and conservation-minded, and providing students with opportunities to undergo job training to ensure the continuity of the industries. In the era of free trade, human resources specializing in beauty care have gone international. Beauty care industries play a role in controlling the flow of non oil and gas commodity export-import, while the development of beauty care at regional, national, and international level is very rapid and competitive.

Beauty creative industries engaged in production and service in Indonesia are growing very rapidly. The scopes of beauty industry are: 1) beauty products (cosmetics, herbal medicines and bun), 2) beauty service products / beauty salons (skin care, hair care, make-up and spa), 3) entertainment industries (film, dancers, singers, clowns and acting).

In its curriculum, beauty care education tries to equip students with technology as well as dynamic and creative skills through courses in traditional bun, traditional cosmetics, garden and white-coconut-leave decor. In writing thesis, students do experimental manufacture of cosmetics (make-up, treatments), accessories, and bun with natural materials and waste (such as waste of hair, papaya seeds) etc. Beauty care education prepares its graduates to compete in beauty creative industries at regional, national and international level by providing training facilities and infrastructure, following the development of beauty creative industries.

DISCUSSION

Beauty Care Education

State University of Semarang has 7 Pillars of Conservation: 1) Conservation of Biodiversity; 2) Green Architecture and Internal Transportation System; 3) Waste Management; 4) Paperless Policies ; 5) Clean Energy; 6) Conservation of Ethics, Arts and Culture; 7) Conservation Regeneration , which is reflected in curriculum and learning systems.

Beauty Care Education is a study program at Department of Home Economics, Faculty of Engineering, State University of Semarang. Beauty care education is a study program at Department of Home Economics, Faculty of Engineering, State University of Semarang. Beauty care education is a formal education with undergraduate qualification, which aims to prepare students as professional, productive, adaptive, creative, and innovative educators in the area of beauty care (both formal and non-formal). In addition, students are expected to have professional competence, ethics and aesthetics, and business insight to create job opportunities or to set up a professional business in beauty industry.

Beauty care education implements KKNI-based curriculum, which is business-and- industry oriented and conservation-minded. These courses offer 163 credits consisting of 145 credits of compulsory courses and 18 credits of elective courses. Students are required to take 68 courses. Students majoring in beauty care education are high school graduates who pass one of the entrance examination held by State University of Semarang. The curriculum equips students with competitive excellence in facing global competition, the ability of logical thinking, the ability to use science and technology, the ability to communicate, the ability to work together as well as the ability to use data and information. Students' competencies are formed by subjects according to the field of beauty care, among others: English, Computer, Make-up, Special Skin Care , Haircut, Chemical Cosmetics, Hair Colouring, Traditional Bun, Traditional Cosmetics , Body Treatment and Spa, Fantasy Make-up , Curly Hair Design, Hair Colouring, Beauty Care Business Management, and enriched by job trainings.

The Vision of Beauty Care Education

Educational institution which prepares professional, healthy, excellent and prosperous undergraduates, mastering technology in the area of conservation-oriented beauty care at international level, 2020. (Beauty Care Education 2016)

The Mission of Beauty Care Education

- 1) Organize excellent, international, conservation-based higher education in the area of beauty care.
- 2) Organize conservation-based vocational education in the area of beauty care.
- 3) Conduct conservation-based research in the area of beauty care.
- 4) Apply conservation-based noble values, science, technology, art and culture for community empowerment.

6. Establish national and international scale cooperation in the area of beauty care. (Beauty Care Education 2016)

The Profile of Beauty Care Education Graduates

1. As an educator at formal education (Junior High School, Senior High School/Vocational High School)
2. As an educator at non formal education in the area of Beauty Care (Institute of Professional Skills, Training Center)
3. Professionals in beauty care industries (Trainer, Beauty Consultant, Hair Stylist, Make Up Artist)
4. Beauty Care Business Practitioner (Salon, SPA, Bridal Make-up). (Beauty Care Education 2016)

Graduates Have Attitude

- a. Fear of the Almighty God
- b. Possess good morality, ethic, and personality in completing tasks.
- c. Act as citizens who take pride and love of their homeland and support world peace.
- d. Able to cooperate and possess social sensitivity and concern towards society and environment.
- e. Appreciate cultural diversity, views, beliefs, religion and opinion of others.
- f. Uphold the rule of law and have the spirit to put the interests of nation and wider community.
- g. Internalize the spirit of independence, effort and entrepreneurship.
- h. Show responsibility for work in the field of beauty care education independently.
- i. Able to internalize proper academic values and norms related to honesty, copyright, confidentiality and proprietary of data. (Beauty Care Education 2016)

Graduates Have Knowledge Mastery

- a. Mastering the concepts and theories of pedagogy.
- b. Being able to utilize science and technology that are relevant within the scope of Beauty Care Education.
- c. Being able to design, manage, facilitate, and evaluate feasibility and supervision as well as sustainable development in the practical implementation of Beauty Care Education.
- d. Mastering the basic concepts of beauty care education theory, with the support of some knowledge, such as health, cosmetology, math, science, management, sociology, anthropology, art and design, as the basis of analyzing and implementing educational services for students in the area of beauty care.
- e. Mastering the ability to demonstrate the knowledge of beauty care for beauty care practices.
- f. Mastering the basics of planning, management, and evaluation in beauty care by using learning strategies appropriate to the field of science. (Beauty Care Education 2016)

Graduates Have Specialized Skills

- a. Mastering and implementing a curriculum for formal beauty care education (Vocational High School) and non-formal beauty care education (Skin Care, Hair Care, and Bridal Make-up Training Center).
- b. Being able to plan, implement, and evaluate variety of beauty care education services.
- c. Demonstrating effective communication skills in the practice of beauty care education.
- d. Being able to describe and analyze beauty care issues, as well as taking the right decision to choose the settlement of the issues encountered.
- e. Being able to carry out research in the field of beauty engineering based on scientific assessment and or technology.
- f. Being able to plan, implement, and evaluate a form of self-employment in a wide range of services and beauty care products either independently or in groups. (Beauty Care Education 2016)

Graduates Have General Skills

- a. Able to take strategic decisions based on the analysis of information and data in determining the various alternatives for meeting the needs of learners studying beauty care.
- b. Able to work independently and take responsibility for a beauty care job assigned.
- c. Able to develop and think logically in resolving the problems faced professionally in beauty care.

- d. Able to demonstrate performance in the practice of beauty care education that can be held accountable to service users, stakeholders, and public by applying the basic principles of critical thinking, humanitarian, and empowerment in beauty care practice.
- e. Able to conduct research to solve learning problems in the area of beauty care by applying the basic principles of critical thinking, humanitarian, and empowerment through inter and multi-disciplinary way and develop innovative work and communicate research findings and work regionally and nationally.
- f. Able to work together in teams to solve problems of education and learning for learners.
- g. Have the ability to disseminate innovative ideas to develop and improve the quality of vocational education in beauty care at regional, national and international level.
- h. Have noble personality and strong character as an educator in beauty care education. (Beauty Care Education 2016)

THE ROLE OF BEAUTY CARE EDUCATION

Improving the quality of Human Resources for beauty creative industry at higher education can be achieved through:

1. The availability of substantial operational funds for higher education.
2. Complete facilities and infrastructure (materials and lab equipment, adequate laboratory)
3. The availability of competent and professional educators who have completed professional competence test.
4. Implementing KKNI-based curriculum which is business-and-industry oriented and conservation-minded.
5. Working with business and industry sector in the form of job training.
6. Cooperating with vocational schools to carry out job training.
7. Maintaining active communication with business and industry sector to develop a curriculum, defining vision, mission and competence to be achieved by educational institution. Industry sectors as users (stakeholders) are concerned with specifying job qualifications.
8. Equipping participants with faith and devotion to The Almighty God, noble character, strong personality, independence, desire to move forward, toughness, intelligence, creativity, skill, discipline, professionalism, responsibility, productivity, as well as physical and mental health.

THE DEVELOPMENT OF BEAUTY CREATIVE INDUSTRY

The need of beauty treatment has recently become a trend, especially in urban areas. It has led to the emergence of many businesses which offer beauty care products and services. Beauty creative industries provide a significant opportunity, as well as a place to absorb skilled labor and professional in beauty care. Beauty creative industries include:

Beauty products (cosmetics, herbal medicines and bun)

Cosmetics have been used widely in Indonesia. Science and technology in the world of cosmetics are also growing. The main purpose of using cosmetics in modern society is for personal hygiene, increasing attractiveness through make-up, improving self-esteem and peaceful feeling, protecting skin and hair from the damage of UV rays, pollution, and environment, preventing aging and helping people enjoy and respect life more. Cosmetics are of two kinds, namely traditional cosmetics and modern cosmetics. The former are made from natural materials, processed manually or semi-traditional while some use a mixture of chemicals. The later are made from chemicals. Cosmetics must be safe and does not damage skin.

Herbal medicine is traditional medicine to maintain health and stamina. It is ancestor's heritage, made using natural materials without any mixture of chemicals. It is hygienic and safe for body. Indonesians' ancestors have used plants for the purpose of medication, treatment, and beauty care for thousands of years. At palace, it has become a tradition. Beauty is an expression of harmony between outer appearance and conditions inside body. Society has driven the use of yard to plant medicinal plant. It is a positive activity that people can take steps to prevent and treat disease, as well as to perform beauty care independently, safely and economically.

Traditional bun is an asset of Indonesian culture. There are many local variations of bun models which becomes the art of hairstyling. A bun can be created directly on a head with real hair or a wig. *Dewi bun* is a bun made from

a wig worn by attaching it on a head with a pin. *Ukel bun* and *Tekuk bun* are normally used for the purpose of national costume.

Beauty service products / beauty salon (skin care, hairstyling, make-up and Spa).

Beauty salon is a public service facility for skin, hair and body care with manual, modern, or traditional cosmetic treatments without surgery. The development of beauty salon both in Indonesia and in the world is very significant due to public demand. a) Beauty salons vary in types based on their services. There are skin care beauty salon, hairstyling beauty salon, and a combination of both skin care and hairstyling beauty salon. b) According to the type of cosmetic material used, beauty salons are divided into modern beauty salon, traditional beauty salon, and a combination of both traditional and modern beauty salon. c) According to the amount of cosmetics used, beauty salons are classified into three categories. First, beauty salons which use a single type of cosmetics products from certain factory. The salon is responsible for promoting the factory's products. Second, beauty salons which use more than one type of cosmetic brands registered in Department of Health. Third, beauty salons which use homemade cosmetics. The cosmetics do not use forbidden substances which are not traded.

Beauty salons are classified based on the knowledge, skills and facilities they have:

A) Beauty salon type D (small business). Its service activities include, hair washing, hair cutting, hair drying, hair curling, hair painting, scalp/hair treatment (cream bath), facial skin care, hand treatment, feet treatment without abnormalities, daily make-up (morning, afternoon and evening), b) Beauty salon type C (small and medium enterprise). Its service activities include hair washing, hair cutting, hair drying and hair styling , hair curling, hair painting, scalp and hair treatment (cream bath), hair treatment with mild abnormalities (dandruff, hair loss, baldness), non-problematic facial skin care, hand treatment, feet treatment, daily make-up, unwanted hair removal , c) the beauty salon type B (medium enterprise). Its service activities include hair washing, hair cutting, hair drying and hair styling, hair curling, hair painting, scalp/hair treatment (cream bath), hair treatment with mild abnormalities (dandruff, hair loss, baldness), problematic facial skin care (comedo, acne, spots), hand treatment, feet treatment, daily make-up, stage make-up, special make-up and beauty massage, d) Beauty salon type A (medium-to-large enterprise with additional special treatment). Its service activities include hair washing, hair cutting, hair drying and hair styling, hair curling, hair painting, scalp and hair treatment (cream bath), hair treatment with mild abnormalities (dandruff, hair loss, baldness), problematic facial skin care (comedo, acne, spots), hand treatment, feet treatment, daily make-up, stage make-up, special make-up and beauty massage, shiatsu / acupuncture, aroma therapy, spa, *reflekzone*, treatment with an electrical appliance, bridal make-up, and maternity care.

Entertainment industry (Film, dancers, singers, clowns and acting)

Entertainment industries both in Indonesia and in the world are growing very rapidly.

Entertainment industries such as film, dancers, singers, clowns and acting require skilled and professional beauty care expert to support stage performance. Stage make-up is a make-up created for stage performance. Stage layout can affect the make-up. It is affected by the distance of the stage with audience, so that make-up artist can determine gloss, lines and colors in accordance with the role that the performer brings. Appropriate stage lighting will help the appearance of make-up. By contrast, inadequate stage lighting can ruin the make-up. Types of stage make-up used for stage performance:

Corrective make-up is a make-up which can make stage performers look more beautiful, younger than his actual age, or older than his actual age. It can turn their looks as expected, such as more oval or round, with *shading* or *highliter* techniques.

Character make-up is applying make-up to fit the desired character in the story, such as: a) fictional characters, which is a face depiction based on the fantasy of make-up artist. It can be customized by the interpretation and creativity of the make up artist in realizing the make up in his visualization. For example, the character of Nyi Blorong will be interpreted with a make-up of a beautiful woman wearing sparkling clothes and various accessories or will be made-up as a woman with creepy black clothes with loose disheveled hair b) Legendary character, namely a legendary character that does not actually exist. Its make-up can be visualized according to self-interpretation. For instance, the character of Dayang Sumbi is interpreted with a beautiful make-up. c) Historical character, which is a make-up depiction, based on historical figures. Their faces and figures are found in documents, photos and reliefs, for example, the character of Bung Karno. The make-up is made like Bung Karno with the clothes he was wearing at that time. *Shading* or *highliter* technique, and *body painting* cosmetics are mostly used.

Fantasy make-up is a make-up which changes face based on the fantasy of make-up artist. Fantasy make-up can be realistic or non-realistic added with the creativity of make-up artist. Fantasy make-up can be obtained from

personal ideas and nature, such as flora and fauna, which are then showcased in a make-up, accompanied with appropriate hairstyling and fashion. The technique used is drawing body painting make-up design by applying *body painting* cosmetics on the design.

Clown make-up is a make-up to make more interesting and funny faces. Clown make-up is liked by kids to entertain at birthday events and entertainment venues. Hairstyling and clothes are adjustable. The technique used is drawing make-up design on a face by applying body painting cosmetics on the design, equipped with a nose, a pair of eyelashes, and a colorful wig to be more attractive and funny. Clowns can be expressed as cheerful clowns and sad clowns

Human Resources In Beauty Creative Industry

Creative human resources determine the development of beauty industry.

The characteristics of creative human resources include (Munadar Utami, 1999: 36):

1. Have great curiosity, broad interest and passion, and love creative activities.
2. Quite independent and have a strong sense of confidence.
3. Dare to take risks (but with a calculation), in the sense of doing something very meaningful, important and preferable. They are shrugging off criticism and ridicule of others.
4. Dare to be different and noticeable, make a surprise or deviate from tradition.
5. Confidence, tenacity and perseverance which will not let them easily desperate to achieve goal.
6. A great desire to try new and yielding activities.
7. Have a sense of humor, able to see problems from different perspectives, and have the ability to play with ideas, concepts, or imagined possibilities.
8. The tendency to be more interested in complicated and mysterious things.

Creative human resources in beauty industry can be seen from their behavior. Indicators of creativity include: like creative or imaginative activities, independent in thinking, dare to take risks, firm, confident, motivated to work, and able to bring original new ideas.

CONCLUSION

Beauty care education is a study program at Department of Home Economics, Faculty of Engineering, State University of Semarang. Beauty care education is a formal education with undergraduate qualification, which aims to prepare students as professional, productive, adaptive, creative, and innovative educators in the area of beauty care (both formal and non-formal). In addition, students are expected to have professional competence, ethics and aesthetics, and business insight to create job opportunities or to set up a professional business in beauty industry. Beauty care education implements KKNI based-curriculum, which is business-and-industry oriented and conservation-minded, providing students with opportunities of job trainings.

The development of beauty creative industry is very rapid, whether in the scope of regional, national or international level. The competition of beauty care industry is very significant and tight in the era of globalization. The main challenge ahead is to improve the competitiveness and excellence of competence in all sectors of industry and services by relying on human resources, technology and management. In addressing qualified human resources in accordance with the demands of the job market's needs or business and industry sectors, beauty care education is required to create graduates who are ready to enter the workplace of beauty creative industries. The scope of beauty creative industry is to produce beauty products (cosmetics, herbal medicine, bun), beauty service products / beauty salons (skin care, hair care, make-up and Spa), as well as entertainment industries (film, dancers, singers, clowns, and acting).

REFERENCES

1. Department of National Education, 2003. National Competency Standards of Beauty Care Expertise, Jakarta: PPPG.

2. Djen Moch Soerjopranoto, Titi Poerwosoeno, 1984. *Afternoon, Evening, Stage and Fantasy Facial Make-up*, Jakarta: Karya Utama.
3. Wardiman Djojonegoro, 1998, *Human Resource Development through Vocational High School*, Jakarta: Directorate of Secondary Vocational Education.
4. Retno Iswari Tranggono, Fatma Latifah, 2007. *Cosmetics*, Jakarta: Gramedia.
5. Sujatmiko 2003. *Competency-Based Curriculum*, Directorate General of Primary and Secondary Education, Department of National Education.
6. Utami Munandar, 1999. *“Creativity Development of Gifted Children”* Jakarta. PT. Rineka Cipta.
7. Wena, Made. (2009). *Contemporary Innovative Learning Strategy. Conceptual and Operational Review*. Jakarta: PT Bumi Aksara.

Contribution of Educational Technology in the Development Constructivistic Learning Model Culture Based and Character

R. Mursid

Postgraduate Education Technology, The State University of Medan

Corresponding author mursid.tp@gmail.com

Abstract. Educational technology is the study of the theory and practice to help the learning process to improve performance by creating, using, and managing processes and resources adequate technology through learning theory and learning includes the processes and systems. Educational technology includes systems used in the process of developing human capabilities by leveraging existing resources. The learning model is a system to motivate students connect knowledge acquired in the classroom and their application in the lives of students as members of families, communities and later as labor. Through the development of construct and contextual learning model is one part in creating a useful student character education, culture, and useful for the formation of a civilized community. So the purpose of education is not just educate people so well-informed, but to know and master the culture and mastering science, intellectual development which means the developer itself in the future.

INTRODUCTION

Education is a conscious effort to develop the potential of learners optimally. The conscious effort not to be removed from the environment of the learners are, especially on the cultural environment, because students live inseparable in their environment and act in accordance with the rules of the culture. Education is not based on the principle that will lead learners uprooted from their cultural roots. When this happens, then they will not know their culture so well that he became a "foreigner" in a cultural environment. In addition to being a foreigner, was more worrying was he was someone who did not like culture.

In principle, the development of culture and national character is not included as a subject but integrated into subjects, self-development and school culture. Therefore, teachers and schools need to integrate the values developed in the nation's culture and character education into the curriculum and the curriculum or K-13 syllabus and lesson plans that already exist.

Learning principles used in the development of cultural education and national character to it that learners recognize and accept the values of the culture and character of the nation as their own and are responsible for the decisions taken through the stages of familiar options, assessing options, determine the establishment, and then make a value in accordance with such confidence. With this principle, students learn through the process of thinking, being, and doing. The third process is intended to develop the ability of learners in social activities and encourage students to see themselves as social beings.

Technology education is a discipline applied, meaning that it developed for their needs in the field, namely the need for self-study learning more effective, more efficient, more, more comprehensive, faster and so on. For that there are businesses and products that are intentionally made and there are discovered and exploited. But the development of information and communication technology very rapidly lately and offers a number of possibilities previously unimaginable, has turned our way of thinking with "how to take advantage of these technologies to address the problem of learning".

The learning problems experienced by anyone in his whole life, everywhere: at home, at school, at work, in places of worship, and in the community, as well as take place in any way and from anything and anyone. The development of educational technology, of course, vary according to the condition and needs. Given that the object of education is learning technologies (in humans).

Issues of national character and lack of meaningful learning, could be caused due to wrong teaching and wrong students. Errors that could occur because of the practice of learning overbehavioristic, many teachers who use the theories applied stimulus response among the learned that in fact the son of man. Yet human beings different from animals. Humans are active and creative, so when the children of men in their learning process is determined by external forces, then do not be surprised if later incarnated so many humans mechanical behavior such as robots, do not want to do anything that is not in order, he determined the choice in elections and the election of regional heads is driven by the power of money, discipline, honesty, willingness to work hard when obtaining the pressure of external forces. Once the external force weakens then there is less discipline, corruption, and lazy.

Problems characters and less meaningful learning could also be because the practice learning overcognitive. Aspect affective, and psychomotor konasi somewhat neglected. Learning tends to focus on the intelligence of the mind, able to make educated think smart, they know, but are less willing to do what they know. Various empirical knowledge they have mastered, it think they are intelligent but lacking in intelligence of the mind with the heart, hence the birth control behavior "less intelligent" behavior that is less controlled by religious teachings. The Importance of Character Education is a national commitment, it has been stipulated in Law No. 20 of 2003¹ on National Education System Article 3 to the national Education serves to develop the ability and character development and civilization of the nation's dignity in the context of the intellectual life of the nation, aimed at the development potential participants learners in order to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and accountable. To that end, the character education material should be soft skills in each subject. Subjects compulsory in schools is one vehicle that is appropriate to establish character education for students.

Character education is not a separate subject, but must be integrated in every lesson. But until now there is still no integrated character education model with the subject were valid.

Education Technology in Development Efforts Instructional Constructivistic Model

Contribution of educational technology in education development can be divided into three categories, namely the concept, energy professions and activities. In this discussion of the principle benefits of educational technology as a scientific discipline has been stated that educational technology has donated at least five concepts in the renewal of the national education system. The term and concept of "learning" has been created and used in the educational technology since 1978. The term was initially ignored by many other schools. However, the Education Law of 2003, the term and the concept was confirmed as a necessity in the educational process. Definition of "lessons learned" in the Education Law is "the process of the interaction of learners with educators and learning resources in the learning environment". While the concept of educational technology, I define it as "systematic and systemic process performed by a person or group of people so that others can actively learn so as to achieve the expected competencies."

Use of the term "learning" is not just the replacement of the term "teaching". Based on Government Regulation No. Explanation 19 Year 2005 on National Education Standards, stated that the paradigm of teaching that is more focused role of educators in knowledge transformation shifts the paradigm of learning which enables more learners to develop the potential and creativity itself. While educational technology vision that was formulated in 1987 has been focused on the interests of the students with the formulation of "the creation of conditions that enable everyone develops potential optimally, with the development and utilization of various strategies and learning resources"

The application of educational technology can manifest in various forms to solve problems for education and learning, particularly in expanding access and improving the quality of education, namely: (1) apply the procedure of learning development in the preparation of the curriculum, structure and curriculum, educational calendar, syllabus and learning devices other , such as the RPP; (2) implement procedures development of learning in the preparation of study materials, modules, textbooks, or an electronic book (e-book); (3) implement teaching methods that emphasize the application of the latest learning theories, such as the theory of constructivism learning and other educational new paradigm; (4) develop and utilize various types of media that suits your needs and with due regard for the principles of their use effectively and efficiently and (5) develop learning strategies to build and finding identity through a process of active learning, interactive, creative, effective and fun.

By using the approach of educational technology, it appears that efforts to improve the quality of education can be realized, because in essence the technology education is a strategy used to analyze, design, implement, assess and manage business-solving learning problems faced by individuals, by utilizing a wide variety of resources (human , procedures, ideas, tools and organization). In educational technology, there are three basic principles as a reference in the development and utilization, which is oriented to students, use of learning resources, and the systems

approach. Student-oriented principle means that the learning should be focused on the learner by taking into account the characteristics, interests, the potential of the students. The principle use of learning resources in the learning means students should be able to take advantage of learning resources to access the knowledge and skills they need. The principle of a systems approach means that education and learning needs of design/design by using a systems approach. In designing the learning necessary procedural steps include: identifying problems, analyzing the situation, identifying objectives, learning management, the establishment of methods, establishment media, and evaluation. Instructional

Technology is the study and ethical practice of facilitating learning and improving performance through the creation, use, and regulation processes and technology resources. This is the latest definition which states that education technology is the study and ethical practice in facilitating learning and improving performance by creating, use / exploit and manage processes and sources of appropriate technologies. Obviously, the ultimate goal remains to facilitate learning (to be effective, efficient and engaging/joyfull) and improve performance.

Based on the definitions above can be concluded that: (1) educational technology is a discipline/field (field of study); (2) the term learning technology is used interchangeably with the term educational technology; (3) The main purpose of learning technologies are (a) to solve learning problems or facilitating learning; and (b) to improve performance; (4) in the realization of the use of systems approach (approach holistic / comprehensive, not partial approach); (5) regional learning technologies can include activities related to the analysis, design, development, utilization, management, implementation and evaluation of both processes and learning resources; (6) the learning technology is not only engaged in schooling but also in all human activities (such as companies, families, community organizations, etc.) as far as the effort to solve the problem of learning and performance improvement; and (7) is the technology here is the technology in the broadest sense, not just the physical technology (HardTech), but also soft technology (SoftTech) Gani²

Element Elements of this definition: (1) Study. Theoretical understanding, as in the practice of educational technology requires the construction and improvement of sustainable knowledge through research and reflection of practice, which is included in the term of study; (2) Ethical Practice. Referring to the practical ethical standards as defined by the Ethics Committee AECT about what should be done by a practitioner of Education Technology; (3) Facilitation. The paradigm shift towards ownership and responsibility of the learner greater technology has changed the role of the controller becomes estab-facilitation; (4) Learning. Understanding learning is now changed from a few decades ago. Learning other than with respect to the memory also concerned with understanding; (5) Improvement. Increased respect to product improvements, which led to more effective learning, changes in capabilities, which have an impact on real-world applications; and (6) Performance. Performance with regard to the learner's ability to use and apply the new skills acquired.

Creating, using and managing appropriate technological process and resources. Section above definition states that the Education Technology is engaged in the production, management of resources and appropriate technologies to the learning process. Thus, the Educational Technology simplify the process of learning that can take place anywhere, such as in schools with provision of instructional media following associated aspects. In addition, referring to technology for learning, then Education Technology also provides related technology information technology used for the learning process such as the use of the Internet or network. The term resources does not specifically refer to the existence of physical or environmental. Resources can be defined something tangible or not, humans, a process or a system.

In addition to three of these things, Technology Education adopted the term effective and efficient. Effective means that Technology Education should be appropriate and useful. Efficient reflect economic factors contained in Educational Technology that shows the cost (from cheapest to most expensive), time (ranging from scheduled to unscheduled, from the old to the most brief). Efficient means also the human resources involved in it optimized and professional roles well.

Character education with a comprehensive approach that is integrated into learning, supported by the development of school culture, proved to be effective to improve the practice of target values to be achieved, as well as improving learning outcomes. These findings support the view that the success of the approach Kirchenbaum³ characters can only be achieved by using a multi-approach (comprehensive). Comprehensive term which is intended to include the contents, methods and strategies, actors or educators, and place.

In terms of the development of the school culture, Lickona⁴ suggest the development of a positive culture in the six elements, namely school leadership, school discipline and exemplary, a sense of brotherhood, the practice of democratic leadership, the atmosphere of moral life, and increased awareness of the importance of morality.

Nation Building Character in Education Quality Improvement

National education goals was the formulation of Indonesian human beings should be developed by each educational unit. Therefore, the formulation of national education goals form the basis for the development of cultural values and national character in school, based on Pancasila, the 1945 Constitution and the national culture of Indonesia.

Character development which is an effort to mandate embodiment of Pancasila and the 1945 Constitution was motivated by the reality of growing national problems today, such as: disorientation and have not internalized the values of Pancasila; limitations of integrated policy tools in realizing the values of Pancasila; shifting the value of ethics in the life of the nation; waning awareness of the cultural values of the nation; the threat of national disintegration; and the weakening of national independence.

To support the realization of the ideals of character development, as mandated in the Pancasila and the 1945 Constitution as well as overcome the problems of nationality today, the government designated the character development as one of the priority programs of national development. The spirit was implicitly affirmed the National Long-Term Development Plan (RPJPN) 2005-2025, in which the characters are placed education as the foundation for realizing the vision of national development, which is "to create a society that has high morals, ethics, culture, and based on the philosophy of Pancasila ".

With the continuous passing of the process of globalization accompanied by rapid advances in science and technology will affect the thinking and acts of people in various parts of the city and the countryside. Sociologically and psychologically, in addition to impact on the wider community, the communities most susceptible to the influence of the global phenomenon is among young people, especially teenagers, which in this phase teenagers are entering the life of the transition of children into adolescence relatively unstable condition emotions, while he was also looking for her identity as a teenager. People consider that the portrait of our education is getting blurred. Education in Indonesia recently assessed loaded with cargoes of intellectual and materialistic, that the exclusion of moral values and moral culture in shaping the character of students, so as to produce students who are smart but not immoral.

This phenomenon is actually a challenge for educators, teachers and education professionals, and of course also the challenge of the Indonesian nation. Identity of Indonesia is now being tested its efficacy. Is this globalization process will result in the decline of cultural values and national character of the young generation who became the nation's assets in the future.

Related to character education, has conducted several studies, among others by Ghufron⁵ stated that one of the crucial problems the Indonesian people, especially those related to the preparation of ready SDM Air-competitive in the global era is a crisis of character values of the nation. Therefore, the need for integration of the nation's character values in the learning activities for all subjects in school.

Research Wardhani⁶ stated that efforts to realize the civilization through character education is never apart from good educational environment in the family, school, and community. Teachers have a great responsibility to produce the next generation of character, cultural, and moral. To realize Indonesian man of strong character, it would need to apply the concept of education Ki Hajar Dewantara Among system, Tutwuri Handayani, and Tringa (ngerti, ngroso, nglakoni).

Cultured and Character Education

Insight into the meaning of culture and national character education should be mentioned sense of the term culture, national character, and education. Understanding expressed herein presented is technically and used in developing these guidelines. Culture is defined as the whole system thinking, values, morals, norms, and belief recombinant human society. Systems thinking, values, morals, norms, and beliefs that are the result of human interaction with each other and their environment. Systems thinking, values, morals, norms and beliefs that are used in human lives and resulted in social systems, economic systems, belief systems, knowledge systems, technology, art, and so forth.

Character or personality are formed from the internalization of virtues (virtues) who believed and used as a basis for perspective, think, behave and act. Virtue consists of a number of values, morals, and norms, such as honesty, courage to act, trustworthy, and respectful to others. Interaction person with another person grow the community character and national character. Therefore, the development of the nation's character can only be done through the development of one's individual character.

Education is a conscious and systematic effort in developing the potential of learners. Education is also a business community and the nation in preparing the young generation for the sustainability of public life and a better nation in the future. It is characterized by the continuity of cultural inheritance and characters that have been owned by the community and the nation. Therefore, education is a process of cultural inheritance and national character for the younger generation and also the process of developing the culture and character of the nation to improve the quality of people's lives and the nation's future. In the process of the nation's culture and character education are actively learners develop her potential, the process of internalization, and appreciation of the values into their personality in the mix in society, improve people's lives more prosperous and develop a dignified life of the nation.

Character is a blend of morals, ethics, and morals. Moral is more focused on the quality of the act, conduct or behavior-whether human or what action it could be said to be good or bad, or right or wrong. Instead, pass judgment on the ethics of good and bad, based on the norms prevailing in a particular society, while the moral order is emphasized that in essence in human beings that have been embedded beliefs which are both (good and bad) that exist.

Therefore, character education is defined as the value of education, character education, moral education, educational character, which aim to develop the ability of learners to provide good decision bad, preserve what is good, and realize the goodness in everyday life with a vengeance.

Rohman⁷ suggests that character education itself is a system of cultivation of character values, which includes knowledge, awareness or volition, and actions to implement these values. In character education in schools, all components must be involved, including the educational components itself, namely the content of the curriculum, learning and assessment, treatment or management of subjects, school management, the implementation of activities or extracurricular activities, empowerment of infrastructure, financing, and the work ethic of the entire school community.

The formation of character is one of the national education⁸ goals. Article 3 of the Education Law of 2003⁸ states that among the objectives of national education is to develop the potential of learners to have the intelligence, personality, and noble character. In order to further strengthen the implementation of character education has identified 18 values derived from religion, Pancasila, culture, and national education goals, namely: (1) religious, (2) honest, (3) tolerance, (4) discipline, (5) hard work, (6) a creative, (7) independent, (8) democratic, (9) curiosity, (10) the national spirit, (11) love of the homeland, (12) the achievements, (13) friends / communicative , (14) love peace, (15) likes to read, (16) care about the environment, (17) social care, and (18) responsibilities (Curriculum Center)⁹.

Culture is defined as the entire system of thinking, values, morals, norms, and beliefs recombinant human society (Kemendiknas)¹⁰. Systems thinking, values, morals, norms, and beliefs that are the result of human interaction with each other and their environment. Character is character, character, character, or personality are formed from the internalization of virtues (virtues) who believed and used as a basis for perspective, think, act, and act (Kemendiknas)¹¹. Virtue consists of a number of values, morals, and norms, such as honesty, courage to act, trustworthy, and respectful to others. Interaction person with another person grow the community character and national character. Therefore, the development of the nation's character can only be done through the development of one's individual character. However, for people living in certain social and cultural environment, the development of individual character of a person can only be done in a social environment and culture are concerned. Social and cultural environment of the nation is Pancasila; so the nation's culture and character education should be based on the values of Pancasila. In other words, educating the culture and character of the nation is developing the values of Pancasila on self-learners through the education of the heart, brain, and physical.

Character education is a system of cultivation of character values to the school community, which includes knowledge, awareness or volition, and actions to implement these values, both against God Almighty, ourselves, others, the environment, or nationality so that a man perfect man (Kemendiknas)¹².

Based on the understanding of culture, national character, and education has been stated above, the education culture and national character interpreted as an education that develops cultural values and national character in the self-learners, so it has a value and character, applying these values in life, both as a member of society, as well as citizens religious, nationalist, productive and creative. The development of educational values and the culture of the nation karakter integrated in every subject from each subject. Those values included in the syllabus and lesson plans.

At the level of an ideal, the reference education is empowerment for autonomy and excellence, while at the level of instrumental, the values that are important to be developed through education are autonomy, competence, awareness of democracy, creativity, competitiveness, aesthetics, wisdom, morality, dignity, dignity, and nationality. The cornerstone of sociology also dyeing process of development and implementation of education given that

education is a process of socialization, the interaction between two or more individuals, and even between the two generations, which enables young people to develop themselves (Umar Tirtarahardja)¹³. Education always involves psychological aspects of learners, therefore the psychological foundation should be a reference in the development and implementation of education. Psychological grounding primarily concerned with human nature, especially on the process of child development and learning processes.

The development of science, technology and art (science and technology) should also be used as a reference in the development and implementation of education in Indonesia, because it will happen inheritance through education and development of science and technology. With reference to the five are expected to be built human resources spiritual intelligent, smart emosioanl, intellectually smart, and intelligent kinesthetic, competitive, competitive and character.

The negative influence of science and technology development and globalization seems to be quite significant in the entire world, including in Indonesia. Lickona¹⁴ identifies ten points tendency of teenagers who appear in the behavior of everyday namely: (1) increase in teenage rebellion, (2) increasing dishonesty, (3) diminution of respect for parents, teachers, and leaders, (4) increased peer groups cruel and ruthless, (5) the rise of crime and robberies, (6) speak decently, (7) the decline of ethics and work ethic, (8) increased the properties selfishness and lack of a sense of responsibility, (9) the emergence of a wave deviant behavior, such as sexual behavior premature, drug abuse and suicidal behavior, and (10) the growing ignorance of manners, including ignoring the moral as the basis of life, such as love squeeze, do not respect the rules, and behaviors endanger yourself and other people. Therefore, character education needs to be improved intensity and quality at all levels of education pathways and, through integration into all subjects in school.

Character Education and cultured Through School Pillar

Implementation of the pillars of character education through school based on three important reasons: (1) The need for a good character to become an integral part in human beings. Every human being should have a strong mind, conscience, and the will to quality such as honesty, empathy, attention, self-discipline, perseverance and moral encouragement; (2) The school is a good place and conducive to carrying out the process of learning and educational values; and (3) Character education is essential to building a moral society.

Character education has two main objectives of the policy and goodness. Education about kindness is the basis of democracy, since the two important moral values that should be taught in character education is respect and responsibility (respect and responsibility). In addition there are a number of values that need to be taught through character education Licona¹⁵, namely: (1) honesty (honesty), (2) openness (fairness), (3) tolerance (tolerance), (4) prudence (prudence), (5) self-discipline (self-dicipline), (6) to help with sincere (helpfulness), (7) compassion (compassion), (8) in collaboration (cooperation), (9) courage (courage), and (10) values of democracy (democratic values). The values of these characters need to be built and nurtured through the process instructional in school. Character associated with moral knowledge (moral knowing), a sense of morality (moral feeling), and moral behavior (moral action). Good character consists of the knowledge of the good, the desire to do good, and do good. The third thing is what determines the moral life.

The low quality of education in Indonesia is influenced by one factor, namely the HR (Human Resources) teachers are still low, and many people who think that education is not important, which resulted in a lack of social interaction within the community. Supposedly from an early age should be inculcated social attitudes, able to interact with the environment to develop the character of a person, especially in education. As known education were increasingly growing. A change of paradigm from teaching into instructional students are already being developed in primary schools, the school usually too focused on academic education.

One aspect that needs to be addressed is to foster social relations among students, between students' educational program, inter-group depends on the student's social structure. Whether there is a minority among them affect inter-group relations, especially in the school environment. The function and role of the teacher ahead not only as a figure of educators merely exemplary and imitated but as a human resources professional and as a facilitator to the students in the learning process in order to develop a culture of critical thinking in society, mutual acceptance in diversity of opinion and to agree for a common goal and able to change the social situation, by the way can be done through the provision of information, discussion groups in the learning process.

In the context of the broader education teachers are responsible and act as conservator, transmitters, transformers, and organizers, in a context of limited (learning) teachers are responsible and act as planners, implementation. Assessor learning and education. The role of the teacher as an educator of no less importance is as motivators, role models, and director of the learners and community members in running the educational process.

The role of teachers is also very influential to the success of a diverse student learning outcomes in schools, this is due to the characteristics of different students absorb, apply their knowledge and discover new things in learning for learning to be active.

Teachers in addition to be creative in delivering lessons to students, teachers must also have extensive knowledge in the field of science. Teachers help the reconstruction process runs smoothly knowledge by students, teachers do not transfer the knowledge they already had but to help students to form his own knowledge. Teachers are required to better understand the way the mind or perspective students in learning, teachers can not claim that the only right is the same with his ability. Rusman¹⁶ states "the key role of teachers in the interaction of education is the control that include, the following: (1) The teacher made a diagnosis of early behavior of students, (2) foster the ability to take decisions and act to improve the knowledge and skills of students, (3) Teachers as communicator, (4) Teachers develop skills of self, (5) Teachers can develop children's potential.

Model-Based Learning Character and Culture

Jacobsen, Eggen, and Kauchak¹⁷ stated that the learning model is intended as a learning perspective strategy designed to achieve the learning objectives. Arends¹⁸ stated that the learning model refers to the learning approach will be applied. There are four characteristic learning model proposed by Arends, namely: (1) the theoretical rationale is logical that comes from the design; (2) The basic idea of learning tasks to be achieved and how students learn to achieve these goals; (3) the activities of teachers needed for the learning model can be implemented; and (4) the learning environment needed to achieve the learning objectives.

From the formulation of the above can be seen that the learning model is a guide for teachers in planning and implementing the learning in the classroom. Furthermore Joyce, Weil, and Showers¹⁹ express their five essential elements of a learning model, the five elements are syntac, social system, principle of reaction, and instructional support system and nurturent effects.

Associate with teaching models, Joyce, Weil and Calhoun²⁰ argued that there were four family / clump, namely: (1) social clump, (2) a clump of information processes, (3) personal grove, and (4) clumps of fairy behavior. History-Based Learning Model High School Character Education refers to the model proposed by Joyce, Weil and Calhoun²¹ as noted above, the change in behavior to the expected direction, both in cognitive and affective aspects. Therefore, this model refers to a cluster of Conduct with the expectation that students can ta mites behave according to the norms in force.

Therefore, to be able to give birth to learners who are able to pick and choose intelligently to moral values or the values of the characters is the value clarification approach (Values Clarification Technique = VCT). Values clarification approach (VCT) is an approach that aims to raise awareness and develop the ability of learners to identify their own values and the values of others (Zuriah and Zaim)²². The process of understanding the value is done through a process of analysis previously existing value in the self-learners and then sync them with the new values to be imparted to students (Sanjaya)²³.

Education reform should be started on how students and teachers learning and cultural deviations become a global issue that is very troubling today. Dewey emphasized that the purpose of education is not just educate people so well-informed, but to know and master the culture and mastering science, intellectual development which means the developer itself in the future (Karwati)²⁴ it is in line with the goals of education in Law No. 20 of 2003. Deviations culture rife due to the rapid industrialization including internet use without filter (Supriadi)²⁵ as well as the abandonment of the values of Pancasila as the nation's cultural roots (Sukadi)²⁶ PR .Berdasarkan these data we are learning how to formulate a strategy that is capable of meeting koqnitif needs and direction of development towards a better character so as to create learners who humanist without avoiding the benefits of using the internet itself.

Interest in learning the application of the humanistic approach is to develop a positive self-direction (character) and freedom (independence) the self-learners (Arsury)²⁷. Alvin (in Haglun)²⁸ states that one of the characteristics of humanistic class is putting the learner as an investigator in theory Peaget requires experience physical and social transmission. While Gordon J. Wimmernam (Setiawati)²⁹ argues that in the entire social interaction can be used to control a person's physical and psychological environment. Reality on the ground, based surve early, there are fewer learning tools that support teachers' efforts to develop the fullest potential of learners including the character formation of students. To that end, the development of devices based sociohumanistic especially Pancasila values indispensable for prevention of cultural biases by learners.

The following will discuss the theories used to review the success of the influence lesson study on the characteristics of the students:

1. Character Bilding in learning

Character education is integrated in the learning process is the introduction of values, awareness of the importance of values, and internalization of values into the behavior of students daily through a learning process (Aqib, Zainal and Sujak)³⁰. Implementation of character education based learning oriented to the knowledge, skills, attitudes, and actions. The first is knowledge which means the knowledge which means that learners are able to understand the material and its value. Both are skills which means that learners are able to see what can be done after studying the materials and the values of character education. The third is the attitudes which means learners can feel what they have learned in the material and the values of character education. Fourth is the actions which means that learners are able to do what has been learned in the material and the values of character education. However, in reality, the implementation of such learning usually takes place partially. Many teachers who only teach the material and the values of character education is only on the order of mere knowledge.

2. Deviations Cultural Theory

There are three main theories in the theory of cultural biases (Supriadi)³¹, namely: (1) Social Disorganization. The theory focuses on the development of the disintegration of the conventional value due to rapid industrialization, increasing immigration and urbanization; (2) Culture conflict theory. Affirming that different groups learn new norms that might clash with the old norm; and (3) diferential association theory. The theory argues that people learn to commit crimes as a result of the relationship values and anti-social attitudes and patterns of criminal behavior.

3. Integration Value Pancasila as the roots of National Culture in Education

Mack.D (Karwati)³² emphasize the learning objectives associated with the life and culture "There is only one subject matter for education and that is live in all it is many Investation". Dewey emphasized that "education is the actualization of the art of the utilization of knowledge" is therefore the purpose of education not only has science verbalistis but emphasized on how the utilization of the cultural life and are in a cultural context (Karwati)³³. It is said also to him that: "culture is activity of thought and receptiveness to beauty and human felling". The purpose of education is not just educate people so well-informed, but to know and master the culture and mastering science, intellectual development which means the developer itself in the future. In Indonesia alone, the nation's cultural values embodied in the ideology of Pancasila (Kaelan)³⁴.

Pancasila as an ideology of the nation and also the characteristics of Bangsa Indonesia contains some sense include (Aqib and Sujak)³⁵: (1) religious and honestly represent sila Almighty God; (2) tolerance, discipline, creativity, and curiosity represents sila just and civilized humanity; (3) cooperation, unity represents the precepts Indonesia; (4) deliberation, democratic, and the responsibility of representing the democratic precepts led by the inner wisdom of deliberations representative; and (5) the hard work that represents the precepts of social justice for all Indonesian people.

4. Socio-based learning Humanism

Flow humanistic conception explains that the learners are actors active in formulating strategies with the transactional environment. Rogers³⁶ believes learning should be centered on the learner (learner centered). According to Gage and Berliner (in Arsury)³⁷ there are five fundamental objective application of the humanistic approach in education, namely: (1) develop positive self-direction and independence (independence) the self-learners; (2) establish the ability to take responsibility for what has been learned; (3) developing creativity, (4) establish a sense of curiosity; and (5) build interest in math or create math sensitivity. In socio humanism-based learning has four principles that underlie all activities (Lloyd)³⁸: (1) trust each other influential individuals with the welfare of the public welfare; (2) belief in the capabilities of each individual; (3) freedom of thought for every individual; and 4) the development of cooperation and the use of knowledge can provide shared prosperity.

5. Based Learning socio humanistic Assisted Learning Website

From the above description, the researchers concluded that the study of mathematics-based socio humanistic assisted learning website is learning that meets the principles of socio humanism (Lloyd)³⁹ which aims to develop self-direction that is positive by planting the values of Pancasila (Aqib and Sujak)⁴⁰ as the basis for the character of the participants learners so that it can be a solution of one problem that is global cultural aberration by utilizing learning website.

Constructivism Learning Model

Contextual learning is a concept of learning that help teachers link the content of the subject matter with real-world circumstances. This learning motivates students to link the knowledge acquired in the classroom and their application in the lives of students as members of families, communities and later as labor. Contextualization is one part in creating a useful character education, culture, and useful for the formation of a civilized community⁴¹

Seven main concept of contextual learning as follows: (1) Constructivism; In the view of this concept, learning is an active process of constructing knowledge of abstraction of natural and human experience of the student personally and socially for meaning character education to process the information that they seem reasonable in accordance with the framework of thinking has. Through this learning students find their own knowledge familiarized with the packing of learning for students in the knowledge of ideas (concepts and principles) is new, implementing ideas, then students seeking to learn effective strategies in order to understand and appreciate the values of character education; (2) Inquiry (find); Steps to find (inquiry) competencies and values of character education was found by formulating problems, make observations, data analysis, and then communicating the results. In the implementation of character education, students may be invited teachers to discover the problems of life are often encountered, such as the problems of poverty, cleanliness and so forth. Then, the teacher asked us to various places associated with problems that have been formulated, and from that place students assigned to analyze the event and formulate answers obtained; (3) Questioning (ask); Learning encourages students to dare to ask. It is intended that the teacher is able to stimulate, guide, assess students, digging up information about understanding, attention and knowledge of students; (4) Learning Community (Learning Community); Learning is done through collaboration between students, teachers, parents and the community. With the learning communities are empowered to maximum, internalization of character education is also developing rapidly; (5) Modelling (give examples); Modelling done by teachers (as an example), learners and other figures. What are the patterns of attitudes of teachers, will be reference behaving students. Likewise interests, emotions and values up to feeling a part of a teacher who was taken as a model example be students; (6) Reflection; An activity about new ways of thinking what is learned and the results of the construction of new knowledge. This may be as impressions, notes or works; (7) Authentic assessment; An activity assess attitudes, knowledge, and skills that take place during the learning process integrated. Autentic assessment done to determine whether students have absorbed the lessons. The assessment is one of the scope of learning that serves to measure the success of teachers manage student learning and absorbing material are given.

The attitude indicator honest in this study include: (1) Do not imitate the answers friend (cheating) when a repeat or do the work in the classroom, (2) Writing data from the lab in accordance with what they have learned when practical and when promoted to the experimental results and the results of group discussions , The attitude indicator responsibilities in this study include: (1) Listen to the explanation of the teacher, (2) Working carefully, (3) Working on the assignment of teachers, (4) Commitments in the following study

CONCLUSIONS

The model integrates character education science learning can be developed through the model selection or instructional strategies, assessment model selection, the selection of instructional media, and the selection of learning materials. The model predicted science learning contribute significantly to the development of students' character is a model of cooperative learning, contextual learning model, problem based learning, problem-solving model, improved model of intensity and quality through education in schools. Most science teachers intend to develop and increase the intensity and quality of character education through the integration of aspects of character

education into learning programs, both explicitly and implicitly. However, the mechanism of integrating character education into the syllabus and learning program is still a problem for science teachers. inquiry learning, learning model of science-technology-society, a model portfolio based learning, project-based learning model, and the model of the learning cycle.

To build the character of a civilized nation and character obviously require efforts and strengthening the culture and character of the nation itself, because besides being a capital, culture is also an element forming a national identity that includes intellect, civilization and knowledge. The national identity of a nation has certain characteristics that distinguish it from other nations. Indonesia as one nation in the world, also has a national identity to distinguish between the Indonesian nation with other nations, both physically and values (values), while the character of the nation is the internalization of values that originally comes from the environment to be a part of his personality.

In order for the culture and character of the Indonesian nation can be maintained and not to fade again due to the impact of globalization, it is necessary efforts to maintain it, including through education, aims to prepare children to become citizen good, teach children how to think, and deliver cultural heritage to the children, the scope of which covers aspects of social and cultural systems, people, places and the environment, economic behavior and well-being, time, continuity and change, as well as national and state system.

Education as an alternative preventative for education to build a new generation of better nation. As an alternative preventative, education is expected to improve the quality of the nation's youth in various aspects that can minimize and mitigate the causes of the problems of culture and national character. Admittedly, the results of the study will see the impact in the not immediate, but has the durability and strong impact on society. Therefore, character education is not only to be in the concept level, but should be at the level of application that can be used by all levels of society and education. Thus, the need for a model of character education to foster cultural values of the nation.

REFERENCES

-
- ¹ Departemen Pendidikan Nasional Republik Indonesia. 2003. Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang *Sistem Pendidikan Nasional*
 - ² Lilik Gani, Peran Teknologi Pendidikan dalam Meningkatkan Akses, Mutu dan Relevansi Pendidikan di Indonesia. Bandung. Disampaikan pada *Seminar Nasional dan Kolokium Teknologi Pendidikan* di Bandung (04-05 Desember 2008)
 - ³ Kirschenbaum, H. 1995. *Enhance Values and Morality in Schools and Youth Settings*. Boston: Allyn and Bacon.
 - ⁴ Lickona, Thomas. 1991. *Educating for Character*. New York: Bantams Books.
 - ⁵ Ghufron, Anik. 2010. Integrasi Nilai-Nilai Karakter Bangsa Pada Kegiatan Pembelajaran. *Cakrawala Pendidikan*. Mei 2010. Tahun XXIX. Edisi Khusus Dies Natalis UNY.
 - ⁶ Wardhani, Kristi. 2010. Peran Guru dalam Pendidikan Karakter Menurut Konsep Pendidikan Ki Hajar Dewantara. *Proceeding of The 4th International Conference on Teacher Education; Join Conference UPI & UPSI Bandung*, 8-10 November 2010, diunduh 21 Juni 2012.
 - ⁷ Rohman, Muhammad. 2012. *Kurikulum Berkarakter*. Jakarta: Prestasi Pustakaraya.
 - ⁸ Undang-Undang Nomor 20 Tahun 2003 tentang *Sistem Pendidikan Nasional*.
 - ⁹ Pusat Kurikulum. 2010. *Pendidikan Karakter di SMP*. Jakarta: Kementerian Pendidikan Nasional.
 - ¹⁰ Kementerian Pendidikan Nasional. 2010a. *Bahan Pelatihan Pengembangan Pendidikan Budaya dan Karakter Bangsa*. Jakarta: Badan Penelitian dan Pengembangan Pusat Kurikulum
 - ¹¹ Kementerian Pendidikan Nasional. 2010b. *Pembinaan Pendidikan Karakter di Sekolah Menengah Pertama*. Jakarta: Kemendiknas.
 - ¹² Kementerian Pendidikan Nasional. 2010b. *Pembinaan Pendidikan Karakter di Sekolah Menengah Pertama*. Jakarta: Kemendiknas.
 - ¹³ Umar Tirtarahardja dan La Sulo.S.L. (2005). *Pengantar Pendidikan*. Jakarta: PT. Rineka Cipta
 - ¹⁴ Lickona, T. 1996. Eleven Principles of Effective Character Education. *Journal of Moral Education*.
 - ¹⁵ Lickona, T. 1991. *Educating for Character*. New York: Bantams Books
 - ¹⁶ Rusman. 2012. *Model-model Pembelajaran*. Jakarta: Raja Grafindo Persada.
 - ¹⁷ Jacobsen, David A, Eggen, Paul, and Kauchak, Donald. 2009. *Methods For Teaching*. New Jersey: Pearson Education, Inc.

-
- ¹⁸ Arends, Ricahrd I. 2000. *Learning to Teach*. New York: Mc Graw Hill.
- ¹⁹ Joyce, Bruce; Weil, Marsha, & Showers, B. 2002. *Models of Teaching. Seventh Edition*. Boston: Alylyn & Bacon.
- ²⁰ Joyce, Bruce, Weil, Marsha, and Calhoun, Emily. 2009. *Models of Teaching*. New Jersey: Pearson Education, Inc.
- ²¹ Joyce, Bruce, Weil, Marsha, and Calhoun, Emily. 2009. *Models of Teaching*. New Jersey: Pearson Education, Inc.
- ²² Zuriyah, Nurul. 2007. *Pendidikan Moral dan Budi Pekerti dalam Perspektif Perubahan*. Jakarta: Bumi Aksara.
- ²³ Sanjaya, Wina. 2010. *Strategi Pembelajaran Berorientasi Standar Proses Pendidikan*. Cetakan ke-7. Jakarta: Prenada Media Group.
- ²⁴ Karwati, Euis. 2010. Pelestarian dan Pengembangan Budaya Melalui Manajemen Pendidikan. *Jurnal Ilmiah Kopertis IV: Wawasan Tridharma*. No.1, tahun XXIII.
- ²⁵ Supriadi. 2010. *Intisari Teori Kriminologi*. Tersedia di <http://excellent-lawyer.blogspot.com/2010/04/intisari-teori-kriminologi.html?m=1> [21/03/2016]
- ²⁶ Sukadi. 2010. Pemahaman dan Orientasi Nilai Pancasila Mahapeserta didik Sebagai Wahana Pendidikan Karakter Bangsa. Tersedia di <http://ejournal.undiksha.ac.id/index.php/JPP/article/view/131> [25/01/2016]
- ²⁷ Arsury. 2007. *Pendidikan yang Humanistik*. <http://arsury.blogspot.com/2007/12/pendidikan-yang-humanistik.html>[14/04/2016].
- ²⁸ Haglun, R. 2004. Humanistic Mathematics Teaching Can Make a Difference: Using Humanistic Content and Teaching Methods to Motivate Students and Counteract Negative Perceptions of Mathematics. *The Humanistic Mathematics Network Journal Online*, 27. Tersedia di http://www2.hmc.edu/www_common/hmnj/haglund.doc [diakses pada 25/03/2016].
- ²⁹ Setyawati, Ira. 2008. *Peran Komunikasi Massa dalam Perubahan Budaya dan Perilaku Masyarakat*. Fokus Ekonomi, 2(3).
- ³⁰ Aqib, Zaenal dan Sujak. 2011. *Panduan dan Aplikasi Pendidikan Karakter*. Bandung: Yrama Widya.
- ³¹ Supriadi. 2010. *Intisari Teori Kriminologi*. Tersedia di <http://excellent-lawyer.blogspot.com/2010/04/intisari-teori-kriminologi.html?m=1> [21/03/2016]
- ³² Karwati, Euis. 2010. Pelestarian dan Pengembangan Budaya Melalui Manajemen Pendidikan. *Jurnal Ilmiah Kopertis IV: Wawasan Tridharma*. No.1, tahun XXIII.
- ³³ Karwati, Euis. 2010. Pelestarian dan Pengembangan Budaya Melalui Manajemen Pendidikan. *Jurnal Ilmiah Kopertis IV: Wawasan Tridharma*. No.1, tahun XXIII.
- ³⁴ Kaelan. 2004. *Pendidikan Pancasila*. Yogyakarta: Paradigma offset.
- ³⁵ Aqib, Zaenal dan Sujak. 2011. *Panduan dan Aplikasi Pendidikan Karakter*. Bandung: Yrama Widya.
- ³⁶ Rogers, C. R. 1969. *Freedom to Learn*. <http://www.panarchy.org/rogers/learning.html>[29/04/2016].
- ³⁷ Arsury. 2007. *Pendidikan yang Humanistik*. <http://arsury.blogspot.com/2007/12/pendidikan-yang-humanistik.html>[14/04/2016].
- ³⁸ Lloyd&Morain, Mary. 2007. *Humanism As The Next Step*. Washington: Humanist Press.
- ³⁹ Lloyd&Morain, Mary. 2007. *Humanism As The Next Step*. Washington: Humanist Press.
- ⁴⁰ Aqib, Zaenal dan Sujak. 2011. *Panduan dan Aplikasi Pendidikan Karakter*. Bandung: Yrama Widya.
- ⁴¹ Sahlan dan Prasetyo. 2012. *Desain Pembelajaran Berbasis Pendidikan Karakter*. Yogyakarta: Ar-Ruzz Media.