

The implementation of science inquiry-based website oriented by cultural deviance solution to instill students character and independence

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**THE IMPLEMENTATION OF SCIENCE INQUIRY-BASED WEBSITE
ORIENTED BY CULTURAL DEVIANCE SOLUTION TO INSTILL
STUDENTS' CHARACTER AND INDEPENDENCE**

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ABSTRACT

This research aims to determine the influence of science learning website oriented by cultural deviance solution (CDS) based on inquiry to grow students' character and independence on the learning material theme of Classification. This research design is Posttest Only Control Design by using Cluster Random Sampling technique to draw the sample. Based on the results of data analysis, it can be concluded that the website was effective to be used to instill students' character and independence.

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Keywords: Website; CDS; Inquiry; character; independence of students

INTRODUCTION

Education in the globalization era is one of the major determinant of human resources quality. Education has important role in shaping the national character as written in Law No. 20 year 2003, but now Indonesia is in the middle of cultural crisis that causes character declining of as a result of the negative impact of globalization, the term to describe this phenomenon is cultural deviance. These problems can be overcome by instilling character education in better way through education. Baroroh (2011) stated that character associated with character education is part of nation moral formation process. Character education can be integrated through learning activity, especially Natural Sciences learning process for junior high school (SMP) students. Science contains knowledge dealing with daily life phenomena that is appropriate to be integrated to character education.

Listyawati (2012) research results mention-

ned that science is related to discover the nature systematically, so science is not focusing on knowledge of facts, concepts, or principles, but also a process of discovery. Science in Curriculum 2013 demand learning process based on scientific learning and contextual approach. Science is also closely related to the method learning of inquiry.

Miranita (2012) stated that the inquiry is a main part of contextual-based learning activities. Zawadzki (2010) also mentioned that some general results that can be observed after the implementation of guided inquiry learning is deeper understanding of material and improving students' learning outcomes. Praptiwi, Sarwi and Handayani (2012) stated that inquiry can improve the performance and mastery of students' concept mastery. Purnamasari, Rahayuningsih and Chasnah (2012) have proved that inquiry learning in Classification of Living Things material was effective to improve students' learning outcomes and activities. Asyhari, Sunarno, and Sarwanto (2014) stated that inquiry could be one of appropriate methods to integrate character in studying science. Besides character formation, in-

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quiry also can improve students' independence as it was proven by research of Febriastuti, Linuwih, and Hartono (2013).

Students need learning media to support inquiry learning that is also be able to be used to instill their independence, one of media that can be used website. Web-based learning is one of ICT (Information and Communication Technology) and e-learning application. Asabere and Enguah (2012) in their study mentioned that ICT is set of tool, facility, process and equipment needed in the environment through infrastructure and physical services for the transmission, process, storage and dissemination of information into voice, text, data, graphics and video. The use of ICT in education is focused on the process of applying the tools of principles, rules and appropriate techniques in teaching and learning. According to Alessi and Trollip as quoted by Puteh & Salam (2011), learning using ICT has many advantages such as students can obtain the learning materials wherever and whenever they are, learning materials can be integrated to existing sources of additional references in the world, the maintenance of each learning material is easy, and a variety of communication media can be provided for the purpose of students and teachers.

Sandi (2012) in his study found that e-learning can instill independence. Suryadi (2007) based on his research noted an important point to make effective learning. One of important points is to integrate technology (ICT) in the learning process because the technology can provide enjoyment, simplicity and speed of learning. Akhlis & Dewi (2013) previously had development research of science learning set oriented by cultural deviance solution, based on inquiry to develop students' character and creativity in 3-D (define, design, develop) stage according to Thiagarajan model.

Based on the previous description, the researchers will analyze the effectiveness of science inquiry-based website oriented by cultural deviance solution instill students' character and independence on the theme material of Classification in SMP N 1 Ungaran. This is the dissemination stage (D-4) of previous developed media by Akhlis and Dewi. According to the observed students' character of students in SMP N 1 Ungaran, they were lack of discipline in collecting assignment. Beside that, teacher of SMP N 1 Ungaran told that learning hour given was not sufficient so they need effective learning media to learning hour effectively used. Web-based learning is an innovative and fun new learning strate-

gy that can be done anywhere, anytime and it is easily accessible. The use of website is expected to make learning hour to be effective instill the students' character and independence value.

METHOD

This type of research is experiment research with Posttest Only Control Design as part of Quasi-Experiment design. The population was first semester students of grade VII, SMP N 1 Ungaran Academic Year 2014/2015. Preliminary analysis of data was seen from the previous test scores, that showed the samples both of class VII A and VII B, SMP N 1 Ungaran was normally distributed and homogeneous. The technique used to draw the sample was probability sampling-cluster random sampling.

In implementation stage, experiment group used website as media in learning process while control group used power point. Data collection method used validation, test, observation, questionnaires and documentation methods, then the data was analyzed by using t-test and correlation test.

RESULT AND DISCUSSION

The normality test was performed for all of collected data (character, independence, and posttest questionnaire). The overall result showed that they were normally distributed, so they parametric statistics can be performed to analyze. Table 1 shows that the average of students' character percentage score of every aspect in four meetings in experiment group is higher than control group.

First aspect of students' character is praying attitude when class was started and ended, this aspect is a reflection of the first principle of Pancasila. When the learning process begins, both experiment and control groups showed good attitude in praying time. But this is different in the end of learning process, students in experiment group tend to be more quiet while praying than the control group they were still busy with their own activities.

Other observed character aspects are respecting older people, this is a reflection of second principle of Pancasila, making cooperation with their friend as the reflection of third principle, being active in learning process as the reflection of fifth principle, helping friends in the learning process as a reflection of fifth principle, being responsible to do the work on time as the reflection of fourth principle, being discipline to

follow learning process as a reflection of second principle, loving peace by not making noise in the classroom as a reflection of third principle, being creative by asking new questions as the reflection of second principle, and being communicative as a reflection of 3rd principle.

The novelty of the questions given to students in learning process was obtained from previous article related to the theme of learning they opened learning website. The use of learning website as a complementary media can make students to be independently active to read articles related to discussed learning theme of Classification. After being analyzed by using t-test, the results showed that average score of experiment group character is better than control group.

The data of experiment and control group was tested by using the right sided t-test. After analyzing character data, it was obtained t_{count} as 3.61 and t_{table} was 1.671 (df = 69, $\alpha = 5\%$) so $t_{count} \geq t_{table}$ then it can be said that H_0 is rejected and H_a accepted. Then, the accepted hypothesis is the average score of experiment group character was better than control group. The difference of average score of students' character value indicates that inquiry-based science learning website oriented by cultural deviance solution was effective to instill students' character. The characters integrated in this learning process are expected to be cultural deviance solution in education so graduates are not only good in intellectual concept but also morally attitude.

The data of character were also correlated to the website. Correlation test was performed to determine the relationship between website and students' character. After analyzing the data character and effectiveness questionnaire, it was obtained r_{count} of 0.62. It indicates that there was

direct perfect strong linear relationship between the characters and the use of website, it means in general, if the total score of effectiveness questionnaire is high so the character score is also high. Besides the calculation of correlation coefficient, the data is also analyzed by using independent test. It was obtained t_{count} of 4.53 and $t_{0,975}$ 2.04 (df = 33, $\alpha = 5\%$) so $t_{count} \geq t_{table}$ then it means H_0 is rejected and H_a is accepted. Then the accepted hypothesis is there is a dependent relationship between the website effectiveness and the character. If students feel the use of the website as media of learning is effective, the students' character score is getting higher. This is caused by Pancasila values were integrated to the introduction part of LTM in learning website. Those values of the character were based on website initial orientation of the cultural deviance solution. This website is expected to instill noble values of Pancasila for students personally.

The aspects of students' independence were also measured, those were obtained through observation. Data of students' independence can be seen in Table 2. Table 2 shows that the percentage scores of students' independence aspects for four meetings students in experiment group is higher than control group. Aspects of independence that were assessed including honesty, activeness to ask question, extensive knowledge, self-confidence, learning time management, responsibility, discipline, learning awareness, and paying attention during the teaching and learning activities. The achievement of whole aspects in experiment group reached 90% that was including in very good category, while control group reached 81% including in good category. Three aspects that got the highest score in the experiment group were honesty (100%), paying attention

Table 1. Percentage Score of Characters Aspects

Aspects	Experiment group		Control group	
	Score (%)	Category	Score (%)	Category
Praying Attitude	97	VG	91	VG
Respecting older people	93	VG	86	VG
Cooperation	91	VG	84	VG
Democracy attitude	90	VG	84	VG
Helping friends	89	VG	82	VG
Responsibility	89	VG	82	VG
Discipline	90	VG	83	VG
Loving peace	89	VG	82	VG
Creativity	90	VG	82	VG
Being communicative	93	VG	85	VG
Average	91		84	

Description : VG : Very Good

on during the learning process (92%) and discipline in obeying the appropriate timing of teacher based on lesson plans (90%). This happened because, students knowledge of experiment group was increasing after they get more learning time and process.

The learning process did not take place only in school but also at home when students open the website in doing homework. Students knowledge was increasing and it made them was able to answer the question card, honestly and confidently or trusting themselves. While, students attention during learning process also got high percentage, this is possible because before the meeting or learning process, students learned what would be studied in the next meeting through a structured task of studying outside of class by using learning website.

High discipline level of managing time was also indicated to students felt more interested in learning of using website as complementary media in finishing structured task outside of class. It made students not 'empty' when attending the class but already had material concept got from website that would be learned to deeper in learning process. Students said that learning they can learn everywhere by opening website and exploring material related to Classification theme online, so they can learn it frequently. It makes students of experiment group have more curiosity and motivation to learn independently, so it result different high percentage on aspects of learning awareness between experiment and control group.

Independence data of experiment and control groups' score were tested by using right sided t-test. After analyzing the independence data, it was obtained t_{count} of 4.98 with t_{table} 1.671

($dk=69$, $\alpha=5\%$) so $t_{count} \geq t_{table}$ then it means H_0 is rejected and H_a is accepted. Accepted hypothesis is average score of experiment group independence was higher than control group.

The data were also correlated of students' independence and website. Correlation of learning website and students' independence was used to determine the relationship between the website with the students' characters. After analyzing students' independence data and effectiveness questionnaire, it was obtained that r_{count} 0.64. It indicates that there was direct perfect strong linear relationship between students' independence and website used. It means generally, if the total score of effectiveness questionnaire is high so the score of students' independence is also high.

Based on independent test it was obtained that t_{count} 4.73 with $t_{0.975}$ of 2,04 ($dk = 33$, $\alpha = 5\%$) so $t_{count} \geq t_{table}$ then it means H_0 is rejected and H_a is accepted. So, the accepted hypothesis is there is dependent relationship between the effectiveness score of website and students' independence indicating students' independence and website influenced each other. If students feel the use website as learning media is effective, then the independence score is higher. This relationship occurs because the use of website can make students actively involved in the learning process according to their learning level. This is consistent to Wijaya (2012), that learning website can encourage students to be creative, active and able to learn based on their own speed.

Posttest data were used as supporting data besides students' character and independence to determine the usefulness level of website as students' supporting concept understanding. Posttest data of experiment and control groups were analyzed differences by using right sided t-test. Based

Table 2. Percentage Score of Independence Aspects

Aspects	Experiment group		Control group	
	Score (%)	Category	Score (%)	Category
Honesty	100	VG	92	VG
Actively asking	89	VG	82	G
Having extensive knowledge	89	VG	81	G
Actively answering	88	VG	80	G
Confidence	88	VG	80	G
Time Management	88	VG	80	G
Responsibility	88	VG	80	G
Discipline	90	VG	80	G
Learning awareness	88	VG	74	G
Pay attention to the learning process	92	VG	83	VG
Average	90		81	

Description: VG: Very Good, G: Good

on analysis result obtained it was obtained that $t_{count} > t_{table}$ 2,30 with t_{table} 1,671 ($dk = 69$, $\alpha = 5\%$) so $t_{count} > t_{table}$ then it means H_0 is rejected and H_a is accepted. Accepted hypothesis is the average score of experiment group posttest is higher than control group.

Correlation of website and students' learning outcomes (concept understanding) was used to determine the relationship between the website and concept understanding of students measured by giving posttest. After analyzing the data of concept understanding and effectiveness questionnaire, it was obtained r_{count} of 0,65. It can be seen that there is direct perfect linear relationship between the strong concept understanding and the use of website. It means generally, if the score of total questionnaire of effectiveness is high, the score of learning outcomes is also high.

Based on independent test it was obtained that t_{count} 4,96 with $t_{0,975}$ 2,04 ($dk = 33$, $\alpha = 5\%$) so $t_{count} > t_{table}$ then it can be said H_0 is rejected and H_a is accepted. Accepted hypothesis is there is dependent relationship between the effectiveness of website the understanding concept, it means learning outcomes and website influence each other. If students feel website use as learning media is effective, the score of students' learning outcomes is higher. The use of website as supplementary learning media that can be accessed anywhere and anytime makes learning process does not only take place in one place but everywhere, it can increase their learning hours. The increasing of learning time makes students have more extensive knowledge. This is consistent to Taffardi (2005) statement that the use of e-learning in website can enrich students' knowledge and understanding.

The students' classical completeness was measured where the minimum completeness criteria in SMP N 1 Ungaran was 80. Final score used in determining Classification material themes completeness was calculated by using the average proportion of the assignment score (Independent Work Sheet and Question Card) of 40% and the daily test score (posttest) of 60% adopted from Arikunto (2012) in 0-100 scale where the proportion of assignment score: daily test score: final test score is 2: 3: 5. Analysis of the data showed that 100% of students both of control and experiment groups reached minimum completeness criteria. The control group average final score was 83.94 while the experiment group was 90.55. The score difference comparison of control and experiment groups was not high, it is indicated for several reasons, for example the input of students' ability of SMP N 1 Ungaran was

in good category or there were a lot of students who wants to study there. Besides that the treatment given to both groups was fair enough by using ICT in learning process provided the same content but different presentation media.

CONCLUSION

Based on the analysis, it can be concluded that inquiry-based science website oriented CDS is effective to instill SMP N 1 Ungaran students' character and independence on the learning theme of Classification. This website has strong perfect linear relationship to the students' character and independence.

Selain itu, pemasangan kamera sebagai alat bantu observer dalam penelitian ini hendaklah dengan memori yang cukup memadai agar video yang dihasilkan tidak terputus-putus. Saran yang terakhir yakni lembar tugas mandiri yang digunakan dapat diunggah melalui website dalam bentuk soft copy untuk melatih peserta didik lebih canggih dalam menggunakan perangkat ICT.

To follow up the study, online attendance checking needs to be performed to see the frequency the use learning website by students. The installation of camera as helping tool for observer should have sufficient memory in order to result perfect resolution video. The last suggestion is independent worksheet should be uploaded via website in soft copy file to train students to be sophisticated in using ICT tools.

REFERENCES

- Akhlis, I. & Dewi, N.R. 2013. Pengembangan Perangkat Pembelajaran Science Berorientasi Cultural Deviance Solution Berbasis Inkuiri Menggunakan ICT untuk Mengembangkan Kreativitas dan Karakter Peserta Didik. *Jurnal Pendidikan IPA Indonesia*. 2 (5): 231-235.
- Arikunto, S. 2012. *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Asabere, N.Y., & Enguah, S.E. 2012. Use of Information & Communication Technology (ICT) in Tertiary Education in Ghana: A Case Study of Electronic Learning (E-Learning). *International Journal of Information and Communication Technology Research*. 2(1): 62-68.
- Asyhari, A., Sunarno, W., & Sarwanto. 2014. Pengembangan Perangkat Pembelajaran Fisika SMA berbasis Inkuiri Terbimbing Terintegrasi Pendidikan Karakter. *Jurnal Inkuiri*. 3(1): 62-75.
- Baroroh, K. 2011. Upaya Meningkatkan Nilai-nilai Pemahaman konsep Peserta Didik melalui Penerapan Metode Role Playing. *Jurnal Ekonomi & Pendidikan*. 8 (2): 149-163.

- Febriastuti, Y.D., Linuwih, S. & Hartono. 2013. Peningkatan Kemandirian Belajar Siswa SMP Negeri 2 Geyer melalui Pembelajaran Inkuiri berbasis Proyek. *Unnes Physics Education Journal*. 2 (1): 27-33.
- Listyawati, M. 2012. Pengembangan Perangkat Pembelajaran Ipa Terpadu di SMP. *Journal of Innovative Science Education*. 1: 61-69.
- Miranita. 2012. Pendidikan Karakter melalui Pembelajaran IPA. *Jurnal Pendidikan IPA Indonesia*. 1 (2): 204-210.
- Praptiwi, L., Sarwi & Handayani, L. 2012. Efektivitas Model Pembelajaran Eksperimen Inkuiri Terbimbing Berbantuan *My Own Dictionary* untuk Meningkatkan Penguasaan Konsep dan Unjuk Kerja Siswa SMP RSBI. *Unnes Science Education Journal*. 1 (2): 86-95.
- Purnamasari, H., M. Rahayuningsih, & Chasnah. 2012. Kunci Determinasi dan Flashcard sebagai Media Pembelajaran Inkuiri Klasifikasi Makhluk Hidup SMP. *Unnes Science Education Journal*. 1 (2): 103-110.
- Puteh, S.N. & Salam, K.A.A. 2011. Tahap Kesiapan Penggunaan *ICT* dalam Pengajaran dan Kesannya Terhadap Hasil Kerja dan Tingkah Laku Murid Prasekolah (Level of Readiness in Using *ICT* for Teaching and Its Effect on the Work and Behaviour of Preschool Pupils). *Jurnal Pendidikan Malaysia*. 36 (1): 25-34.
- Sandi, G. 2012. Pengaruh Blended Learning terhadap Hasil Belajar Kimia Ditinjau dari Kemandirian Siswa. *Jurnal Pendidikan dan Pengajaran*. 45 (3): 241-251.
- Suryadi, A. 2007. Pemanfaatan *ICT* dalam Pembelajaran. *Jurnal Pendidikan Terbuka dan Jarak Jauh*. 8(3) : 83-96.
- Taffardi. 2005. Meningkatkan Mutu Pendidikan melalui E-Learning. *Jurnal Pendidikan Penabur*. 4 (4) : 85-97.
- Wijaya, M. 2012. Pengembangan Model Pembelajaran *e-Learning* Berbasis Web dengan Prinsip *e-Pedagogy* dalam Meningkatkan Hasil Belajar. *Jurnal Pendidikan Penabur*. 11 (19): 20-27.
- Zawadzki, R. 2010. Is processoriented guided inquiry learning (POGIL) suitable as a teaching method in Thailand's higher education?. *Asian Journal on Education and Learning*. 1 (2): 66 – 74.

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