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Analysis of Creative Thinking and Curiosity in X Class Students

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Abstract

In the learning, because the learning time isn't sufficient to convey material, teacher who concerned learning results than learning process made students just imitating teachers' problem solving. They aren't trained to solve new problems. This research aims, (1) finds out the mathematics creatie thinking ability of high school students; (2) finds out the characters of the students' curiosity; (3) finds out the influence of curiosity on students' creative thinking ability. This research method and design is a quantitative and comparison of approaches. The research is conducted at one of the state high schools in Semarang. The research population sample in a row is all students of classes of X MIPA and X MIPA 3. This population is given a creative thinking ability test. This sample is given a curiosity questionnaire. Creative thinking ability mean of the ten classes of X MIPA is 69,4. Curiosity mean of X MIPA 3 is 169,3. Therefore, (1) students' mathematics creative thinking ability is not optimal; (2) the character of the students' curiosity is not optimal; (3) curiosity positively affects creative thinking ability. That resulted in teacher developing learning media and processes and students' curiosity to their students' creative thinking ability.

Abstrak

Dalam pembelajaran, karena waktu pembelajaran tidak mencukupi untuk menyampaikan materi, guru mengutamakan hasil dari pada proses pembelajaran mengakibatkan siswa meniru proses pemecahan masalah dari guru dan tidak terlatih menyelesaikan masalah baru. Tujuan penelitian, (1) mengetahui kemampuan berpikir kreatif matematis siswa SMA; (2) mengetahui karakter rasa ingin tahu siswa; (3) mengetahui pengaruh karakter rasa ingin tahu terhadap kemampuan berpikir kreatif siswa. Penelitian menggunakan metode penelitian kuantitatif. Desain penelitian adalah comparison of approaches. Penelitian awal dilaksanakan di salah satu SMA Negeri di Semarang. Populasi dan sampel penelitian berturut-turut adalah seluruh siswa kelas X MIPA dan X MIPA 3. Populasi diberikan tes kemampuan berpikir kreatif. Sampel diberikan angket curiosity. Rata-rata kemampuan berpikir kreatif dari 10 kelas X MIPA adalah 69,4. Rata-rata rasa ingin tahu siswa kelas X MIPA 3 adalah 169,3. Kesimpulannya (1) kemampuan berpikir kreatif matematis siswa belum optimal dalam pembelajaran, karena guru menyusun pembelajaran matematika belum terfokus pada kemampuan berpikir kreatif; (2) karakter rasa ingin tahu siswa belum optimal; dan (3) karakter rasa ingin tahu berpengaruh positif terhadap kemampuan berpikir kreatif. Hasil penelitian mengakibatkan guru mengembangkan curiosity *dan media serta proses pembelajaran siswa untuk menumbuhkan kemamampuan berpikir kreatif mereka.*

Keywords*: Creative Thinking; Curiosity.*

INTRODUCTION

People have information technology and innovation abilities in the industry 4.0 (Puncreobutr, 2016). *Education 4.0* encourages humans and technology to develop possible progress (Hussin, 2018). H*ard skills formed in Education 4.0 are problem solving, collaboration, critical, creative, productive, literacy, innovation, and communication* (Hussin, 2018; Puncreobutr, 2016; Rochmad et al., 2019). S*oft skills* formed in Education 4.0 are leadership, responsibility, and social (Hussin, 2018; Puncreobutr, 2016).

The mathematics is studied by paying attention to students' way of thinking (Rochmad et al., 2018). Creativity is the ability to provide innovative, new, original and meaningful responses from a situation, but the responses are not necessarily new to other individuals (Aljarrah, 2020; Bicer et al., 2020; Wahyudi et al., 2019). Creative thinking is thinking of giving some answers or a completion process; innovate and connect mathematics with other sciences or real circumstances; and create new ideas (Hadar & Tirosh, 2019; Saltis et al., 2019). The ability of mathematical creativity is the ability to provide multiple answers or processes to solve a problem of mathematical concepts and operations (Tubb et al., 2020). Creative thinking can be developed using problem solving (Ayllon et al., 2016). Mathematics creative thinking ability is the ability to solve mathematics problems with new thoughts and experiences. Torrance's assessment of creative thinking through problem solving has the following three parameters: fluency, flexibility, and novelty (Mulyono et al., 2020).

Trigonometry is a new and difficult material (Gerhana et al., 2017; Kamber & Takaci, 2018; Mensah, 2017). It is abstract. Students have not been able to connect concepts and principles whose are relevant to learn trigonometry (Yang & Sianturi, 2017). Students have difficulties to choose steps of problem solving. Solution steps are trigonometry comparisons, trigonometry inverse, equalizing denominators, algebraic operations, and factoring on trigonometry.

The results of 2015 PISA research at mathematics abilities show that Indonesia is ranked 64^{th} of 72 countries. Indonesia has score 386 points of score 490 points (OECD, 2016). The results of 2015 PISA research at mathematics abilities show that Indonesia has 379 points of score 487 points. Indonesia is ranked 73^{rd} of 79 countries (OECD, 2019). Mathematical literacy has positive influences in the amout of 46,5% on creative thinking ability (Fitrianawati, et al., 2020). Since literacy ability is less optimum, the creative thinking ability becomes less optimum, too. This is in accordance with a research conducted by Isnaeni et al (2020) and Nurhayati & Wahyuni (2020) stating that the ability of creative thinking is not optimum.

Some students become less active during the learning process because they ask other smart and diligent students to complete their tasks. On the other hand,

it is also found that there is also an individualistic student in a group. Based on the 2013 curriculum, mathematics learning process needs a long period of time due to the large amount of material to be taught. As a result, teachers try to complete the tasks based on the result and not on the process (Wahyudi et al, 2019). Trigonometry learning process focuses on memorizing (Fiallo & Gutierrez, 2017). This gives an influence on the student's creative thinking ability on mathematics materials, especially trigonometry.

In the learning process, there should be a high level of curiosity on creative thinking ability (Isnaeni et al, 2020). Since the development of information changes from time to time, students need to develop curiosity (Gorlewicz & Jayaram, 2019). Curiosity gives support students to learn (Goldspink & Engward, 2019). Many people can get information about unexpected, interesting, confusing and new experiences (Kidd & Hayden, 2015; Silvia, 2017). One factor for students to understand a concept is curiosity (Mouromadhoni, Atun, & Nurohman, 2019). Jones states that creativity is formed through personality characteristics, the ability to think, mental process, attitude, as well as curiosity, adventurous feeling, bravery and thinking personality traits of an individual (Hu, Wu, & Shieh, 2016). Curiosity supports students' creativity to seek unsolvable new knowledge (Hagtvedt, et al, 2019). There is no correlation between curiosity and creativity based on the score. Meanwhile, curiosity has an indirectly positive relationship with creativity (mediation/interview) (Schutte & Malouff, 2020). Investigation on the relationship between curiosity and creative thinking ability is conducted in this research.

Curiosity is an individual's personality in connecting new experiences with his/her abilities (Ainley, 2019; Kidd & Hayden, 2015). Curiosity on mathematics is a curiosity about mathematical truth and problem solving (Rahayu et al., 2019; Toptas, 2019). The personality to solve math problems and prove the truth with the knowledge possessed is curiosity. Curiosity is formed when students ask friends or teachers about the difficulties; and make hypotheses, explore, search, construct and investigate new knowledge (Ertando et al., 2019; Wade & Kidd, 2019). Curiosity indicators of mathematics learning are organic, social, and cognitive (Ainley, 2019).

Creative thinking ability develops mathematical creativity to solve problems in a new way (Wahyudi, et al., 2020). Creative thinking can be enhanced using problem solving (Ayllon, et al., 2016). Curiosity on mathematics is a curiosity about mathematical truth and problem solving (Rahayu et al., 2019; Toptas, 2019). Curiosity develops students' creativity to gain new knowledge (Hagtvedt, et al., 2019). Creative thinking ability is measured from fluency, flexibility, and novelty (Mulyono et al., 2020).

The student's condition means the student's cognitive and affective ability towards mathematical creative thinking ability and curiosity. Manipulation media in mathematics learning is used to develop high-level thinking ability (Hidayah, et al., 2021). Mathematics learning will be good if the learning is equipped with adequate media. One of the interactive media that can be used is the Student Worksheet and Student Assignment Sheet.

METHOD

Design

This research uses quantitative research with multivariate analysis design. It aims to find out whether the creative thinking ability and curiosity average of students is optimal or not, in turn, can determine the effect of curiosity on students' creative thinking ability (Queirós et al., 2017).

Instruments

This research instruments are a curiosity questionnaire and a creative thinking ability test. A curiosity questionnaire contains 74 statements. There are indicators of curiosity. Indicators of curiosity are organic, social, and cognitive. Organic indicator is the ability to explore knowledge. Social indicator is the ability to ask and search for all people and learning media. Cognitive indicator is the ability to connect results of exploration with results of asking and searching.

A creative thinking ability test contains 4 questions. There are indicators of creative thinking ability. indicators of creative thinking ability is fluency, flexibility, and novelty (Mulyono et al., 2020). Fluency is developing ideas. Flexibility is providing many kinds of ways and solutions. Novelty is creating new solutions. The material of a creative thinking ability test is trigonometry comparisons.

Participants

One of Semarang state high schools, academic year 2020/2021, is the place where this research was conducted. The research population in a row is all students of classes of X MIPA. The number of X MIPA classes is 1. Each class has 36 students. Purposive sampling is used to choose a research sample (Campbell et al., 2020). The research sample is X MIPA 3 class because X MIPA 3 has the creative thinking ability as same as every class.

Each class takes mathematics lessons in the even semester of the 2021 academic year. Mathematics is a compulsory subject in the 2013 curriculum. The creative thinking ability and curiosity help students understand mathematics. A creative thinking abiity is influenced by the teacher's condition in preparing the Learning Implementation Plan.

Research Procedure

The research population is observed for two weeks. In the planning

stage, the researcher and two lecturers make and discusse about a curiosity questionnaire, and a creative thinking ability test for two weeks. References of leading journals, a curiosity dan creative thinking ability indicator, and a preparation of questions and materials are prepared at this stage.

The implementation stage, this population is given a creative thinking ability test. The results of the creative thinking ability test are used to take a research sample. X MIPA 3 has the creative thinking ability as same as every class. This sample is given a curiosity questionnaire. Two lecturers observe the results of creative thinking ability test and curiosity questionnaires indirectly.

The evaluation stage, The results of the creative thinking ability test and curiosity questionnaire are discussed that they can solve math problems. The implementation and evaluation stages are carried out for 3 weeks.

Data collection

Multivariate studies are used to examine the differences in students' creative thinking ability in each class, determine the curiosity of X MIPA 3 students and determine the effect of the curiosity on the creative thinking ability. The dependent variable is the matematics creative thinking ability. The independent variable is students' curiosity.

The first test is the test of creative thinking ability. The test contains 3 description questions to assess each indicator of students' creative thinking ability (Mulyono et al., 2020). The first test is given to each class X MIPA. The second test is a curiosity questionnaire. The questionnaire contains 74 questions with a Likert scale to assess each student's curiosity indicators. A curiosity questionnaire is given to class X MIPA 3 after carrying out the first test.

The creative thinking ability test and curiosity questionnaire are tested for discriminatory power, level of difficulty, validity, and reliability. The data of the two tests are obtained then it is used to obtain the magnitude of the effect of the curiosity on the creative thinking ability.

Creative thinking ability test has test results of discriminatory power, level of difficulty, validity, and reliability. The discriminatory test result is .388 which shows a good criterion. The difficulty level test result is 55%. It is moderate criteria. The result of the validity of the first, second and third questions is .418, .722, and .8. The result of the reliability test is .39. The table correlation coefficient is .329. All questions are valid and reliable because they are more than .329.

The curiosity questionnaire has test results of discriminatory power, difficulty level, validity, and reliability. The discriminatory test result is .522 which shows a good criterion. The difficulty level test result is 69%. It is moderate criteria. In the 74 questions stated in the Curiosity Questionnaire, the correlation coefficient results are not displayed. The result of the reliability test is .366. The table correlation coefficient is

.329. All questions are valid and reliable because they are more than .329.

Data Analysis

The quantitative analysis stages use two stages. The first stage, Testing Assumptions of Parametric statistics use the normality test, homogeneity test, linearity test, autocorrelation test, and heteroskedasticity test with 5% of significant levels.

The second stage is One Way ANOVA, the proportion test (one side z test), the average test (one side t test), and the regression analysis with 5% of significant levels. One way ANOVA is used to know mean differences in students' creative thinking ability in each class. The proportion test is used to know whether the percentage of students' creative thinking ability score more than equals 75 is more than 75%. The average test is used to know whether the students' creative thinking ability average is more than 75. The regression analysis is used to know that curiosity positively affects creative thinking ability

RESULTS AND DISCUSSION

Results

The results of the research at one of the state high schools in Semarang are creative thinking ability and curiosity results. Three questions were used in this research. The solution of the questions is analysed with a level of mathematical creative thinking ability (Siswono, 2011). The creative thinking ability test is carried out for 30 minutes on the ten classes of X MIPA. Test results can be observed in Table 1.

Table 1 Student's Creative Thinking Ability Description

Class	N	Mean
X MIPA 1	36	68.0000
X MIPA 2	36	68.1111
X MIPA 3	36	69.8611
X MIPA 4	36	66.3333
X MIPA 5	36	67.8889
X MIPA 6	36	67.6667
X MIPA 7	36	67.6944
X MIPA 8	36	69.2500
X MIPA 9	36	74.6111
X MIPA 10	36	75.0000

Normality test uses One Sample Kolmogorov Smirnov Test. The result of the significant value of normality test on

Table 2 Result of Sig. from LSD on The Student's Creative Thinking Ability

Class	X M 1	X M 2	X M 3	X M 4	X M 5	X M 6	X M 7	X M 8	X M 9	X M 10
X M 1	-	.967	.492	.539	.967	.902	.910	.645	.015	.010
X M 2	.97	-	.519	.512	.935	.870	.878	.674	.017	.011
X M 3	.49	.519	-	.194	.467	.418	.424	.822	.080	.059
X M 4	.54	.512	.194	-	.566	.623	.616	.282	.002	.001
X M 5	.967	.935	.467	.566	-	.935	.943	.616	.014	.009
X M 6	.902	.870	.418	.623	.935	-	.992	.559	.011	.007
X M 7	.910	.878	.424	.616	.943	.992	-	.566	.011	.007
X M 8	.645	.674	.822	.282	.616	.559	.566	-	.049	.034
X M 9	.015	.017	.080	.002	.014	.011	.011	.049	-	.886
X M 10	.010	.011	.059	.001	.009	.007	.007	.034	.886	-

Note: M is MIPA

creative thinking ability of the ten classes of X MIPA in a row is .601, .63, .150, .644, .724, .789, .088, .642, .271, and .131. Data on each student's creative thinking ability has a normal distribution, because asymp. Sig (2-tailed) more than .05.

Homogeneity test of creative thinking ability uses One Way ANOVA. The result of students creative thinking ability using sig. of test of homogeneity of variances is .966. Data variance of students' creative thinking ability is homogeneous, because sig is more than .05.

Average test of creative thinking ability uses One Way ANOVA. The result of sig one way anova is .011. There is an average difference in creative thinking ability from ten classes, because sig is less than .05. Advanced Test result uses tukey HSD and LSD from Post Hoc. Mean result of creative thinking ability advanced test can be observed in Table 2 and 3.

Table 3 Result of sig. from Tukey HSD on the student's creative thinking ability

Class	Subset for alpha = .05	
	1	2
X MIPA 4	66.3333	
X MIPA 6	67.6667	67.6667
X MIPA 7	67.6944	67.6944
X MIPA 5	67.8889	67.8889
X MIPA 1	68.0000	68.0000
X MIPA 2	68.1111	68.1111
X MIPA 8	69.2500	69.2500
X MIPA 3	69.8611	69.8611
X MIPA 9	74.6111	74.6111
X MIPA 10		75.0000
Sig.	.072	.174

Because sig. > .05 so that the results of some student's creative thinking ability are similar. Based on Table 1 and 2, the conclusions are as follows: the creative thinking ability average on the ten classes of X MIPA are similar. Each pair of eight classes of X MIPA has similar average on creative thinking ability. They are X MIPA 1, 2, 3, 4, 5, 6, 7, and 8. Each pair of three classesof X MIPA has similar average on creative thinking ability. They are X MIPA 3, 9, and 1.

Because data on each student's creative thinking ability has a normal distribution, the proportion test uses the one sample proportion test and the mean test use the one sample average test. A z arithmetic score and z table of the proportion test is -6.1586 and 1.645. Because -6.1586 < 1.645, the percentage of students' creative thinking ability score more than equals 75 is less than 75%. A t arithmetic score and t table of mean test is -2.67207 and 1.6935. Because -2.67207 < 1.6935, the students' creative thinking ability average is less than 75. Because the percentage of students' creative thinking ability score more than equals 75 is less than 75% and the students' creative thinking ability average is less than 75, students' creative thinking ability mean is not optimal.

Seventy four questions were used in the research. The curiosity questionnaire is carried out for 60 minutes on X MIPA 3. The average questionnaire result of curiosity character on X MIPA 3 is 169.361 from 296. The standard deviation result of curiosity character on X MIPA 3 is 11.88.

The significant value of Normality test result is obtained .607 > .05. It shows that Data on student's curiosity has a normal distribution. Because that, the proportion test uses the one sample proportion test and the average test use the one sample average test. A z arithmetic score and z table of the proportion test is -4.333 and 1.645. Because -4.333 < 1.645, the percentage of students' curiosity score more than equals 192.4 is less than 75%. A t arithmetic score and t table of mean test is -11.63 and 1.6935. Because -11.63 < 1.6935, the students' average curiosity is less than 192.4. Because the percentage of students' curiosity score more than equals 192.4 is less than 75% and the students' average curiosity is less than 192.4, students' average curiosity ability is not optimal.

Normality test of curiosity on the creative thinking ability uses Kolmogorov-Smirnov test. The normality test result uses normally distributed data. Linearity test uses Lagrange Multiplier test. The result of linearity test is obtained chi square arithmetic = 32.688 < 49.765 = chi square tabel. It shows that the regression equation is linear. Autocorrelation test uses Durbin Watson test because 2.968 = 4 – dW > dW = 1.531 > 1.525 = dU > 1.411 = dL, no autocorrelation occured. Heteroskedasticity test uses Glejser test because sig = .303 > .05, regression model doesn't have Heteroskedasticity.

The linear regression is used. The significant value of the linear regression analysis result is .00 < .05 so that there is positive influences of curiosity on the creative thinking ability in the amout of 3.12%.

Discussion

At most schools, Teachers have students' problems in their learning. Obvious problems can foster new ideas. Students' problems are at psychological, cognitive, and environmental conditions. Thus, environmental conditions support psychological and cognitive students. Therefore, this study found conditions of students' creative thinking ability and curiosity and the influence of curiosity to creative thinking ability at X Classes. The research, in which the material was trigonometry, was conducted in one of public high school in Semarang.

The results of creative thinking ability test have three groups at X MIPA 3 class. The first group has two students. Two students don't have creative thinking ability indicators. The second group has 29 students. 29 students have fluency indicator, but don't have flexibility and novelty indicators. The third group has 5 students. Five students have fluency and novelty indicators, but don't have flexibility indicator. The percentage of students' creative thinking ability score more than equals 75 is less than 75% and the students' creative thinking ability average is less than 75. Thus, students' creative thinking ability average of X MIPA 3 Class is not optimal. The creative thinking ability average is not optimal (Isnani et al., 2020).

Learning media has supported students to construct their knowledge. Students are guided on prerequisite materials. They are used to solve problems but few students cannot use some prerequisite material. Learning media help students find information and conduct discussions (Wang et al., 2020). Therefore, a lot of students have fluency indicator.

Because the large number of learning materials is not in accordance with the learning time, the teacher sometimes uses lecture methods or the teacher does not explain some of the materials in the Student Worksheet. Teachers only think about the results of completing materials instead of paying attention to the process of solving them (Wahyudi et al., 2019). Trigonometry learning focuses at memorization (Fiallo & Gutiérrez, 2017). Students' activities are low, students do not scientific activities (Yaniawati et al., 2020). Students do not have the opportunity and freedom to find new ideas in learning. Students are not trained to solve new problems. Students are satisfied to get one solution. Therefore, students don't have flexibility and novelty indicators

Creativity provides innovations in problem solving (Carbonell-Carrera et al., 2019). Students have known creative thinking ability, but students don't practice it. The Student Worksheet in the Learning Implementation Plan (RPP) has Discovery Learning model, scientific approaches, and lecture method, but the worksheet has not focused on students' creative thinking ability. Two factors influencing students' problem solving ability are the thinking and studying processes in cognitive field. (Mefoh, et al., 2017; Salido, et al., 2020).

Teachers have to know students' characteristics to prepare learning media (Kintu et al., 2017). Manipulative learning media enhances creative thinking ability in accordance ith the student's condition (Sugiman et al., 2020). Creativity can be increased through social media. Social media is means of sharing and gathering information in learning (Berestova et al., 2021). The worksheet has to contain developments of creative thinking ability.

Students potential is developed by their positive affective (Yaniawati et al., 2020). Because of the development of information and technology, curiosity is needed by students (Gorlewicz & Jayaram, 2019). It encourages students to know about information and problem solving in the future. Curiosity encourages students to study (Goldspink & Engward, 2019).

The results of curiosity questionnaire in X MIPA 3 have four groups. The first group does not have any curiosity indicator. The second group has an organic indicator, while the third group has both organic and social indicators. Finally, the fourth group has organic, social, as well as cognitive indicators. The percentage of students' curiosity score more than equals 192.4 is less than 75% and the students' average curiosity is less than 192.4. Students' average curiosity is not optimal.

Curiosity is developed by environmental conditions (Lamnina & Chase, 2019). A number of information encourages individuals to want information so individuals develop curiosity. Curiosity is formed when students ask to others and make hypotheses, explore, search, construct, and investigate new knowledge (Ertando et al., 2019; Wade & Kidd, 2019). The worksheet has a monotonous appearance. If teachers pay attention to learning media based games, curiosity can be formed. Digital games increase students' motivation and engagement in learning (Behnamnia et al., 2020).

The linear regression analysis result is a positive influence of curiosity on creative thinking ability, which is 3.12%. Curiosity is a positive factor to encourage students' problem solving (Leo, et al, 2019). Creative thinking will grow if students are encouraged to have curiosity. Curiosity encourages students' creativity to seek new, unresolved knowledge (Hagtvedt et al., 2019). The students must grow curiosity in learning so that students have a desire to learn and develop creative thinking ability.

Students give s creative behavior, if students have curiosity. Students connect ideas and information. Information is obtained because students search and explore new problems (Gross et al., 2020). Curiosity helps students to start creative activities so they get solutions of problems.

Two students who don't have curiosity indicators don't have creative thinking ability indicators. Two students do not pay attention and do not focus on learning, because two students weighing problem-solving on smarter students in their groups. They can't apply the prerequisite of trigonometry comparisons. They have some trouble but they don't ask questions to someone. Smart students have an individual nature to their group members. However, students need other students in learning (Hussin, 2018). Students do not want to explore information, if students do not develop their abilities.

29 students who have organic indicator or organic and social indicators have fluency indicator, but don't have flexibility and novelty indicators. Students are active in learning. Students can solve problems. Problems have been solved in learning. Students follow the guidance. They imitate problem solutions and develop their knowledge. Students only use learning materials from the teacher. Learning materials has systematic stages, but does not develop students' creative thinking ability. Learning has to have high curiosity to make creative thinking ability (Isnani et al., 2020).

Five students who have organic, social, and cognitive indicators have fluency and novelty indicators. They can use prerequisite materials to solve problems. The lack of learning time and competition in each group causes students to have only a narrow view of solving problems. Some students who succeed in the test are students who use tutoring services. Curiosity helps students to solve, find out, and seek everything

(Rahmantiwi & Rosnawati, 2018). Curiosity is a desire to find out infomation, improve competency and memory (Gruber & Ranganath, 2019).

Curiosity positively affects creative thinking ability. Because the character of the students' curiosity is not optimal, students' mathematical creative thinking ability is not optimal. Teachers have to make learning multimedia. Learning media develops curiosity and creative thinking.

Curiosity must be considered to develop the creative thinking ability. The creative thinking ability is also very important to train students. Students are trained to solve problems in the future. Research implications are the discovery of creative thinking ability's descriptions or patterns on curiosity and learning models and multimedia. There are many kinds of learning models and multimedia to develop creative thinking ability. There are other studies on the impact of the implementation of learning models in order to develop creative thinking ability. Creative thinking ability can improve using math adventure educational game (Kartika et al., 2019). The RBL method with Scientific Approach using e-Learning media improve creative thinking ability (Yaniawati et al., 2020). Digital educational games make motivation, creativity and skill children (Behnamnia et al., 2020).

Future researches may address research limitations. Limitations are the results of a research. Results contain only the influence of curiosity on creative thinking ability at the learning. The learning used Discovery Learning Model and a simple learning media. Discovery Learning Model has flaws. Learning process takes a long time. The research uses quantitative methods with multivariate analysis design. A study suggests using different methods and designs. They analyze the effect of curiosity of creative thinking ability. Because the percentage of positive influences on curiosity of creative thinking ability is 3.12%, there are positive influences of some character education on creative thinking ability. The research suggests that teacher has to see some character education on creative thinking ability.

CONCLUSSION

The learning time doesn't sufficient to convey material, teacher concerned results than process. Students can't apply the prerequisite material to solve new problems. The learning media does not develop students' creative thinking ability. The percentage of students with creative thinking ability score more than 75 is less than 75% and the students' creative thinking ability average is less than 75. These indicate that students' creative thinking ability average is not optimal.

Learning media has a monotonous appearance, so that students' curiosity can't be formed. The percentage of students with creative thinking ability score more than 75 is less than 75% and the students' creative thinking ability average is less than 75. These show that

students' creative thinking ability average is not optimal. The percentage of curiosity positive influences on creative thinking ability is 3.12%. Organic, social, and cognitive indicators of the curiosity have positive influences on fluency and novelty indicators of the creative thinking ability.

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