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The Effect of Guided Inquiry Learning Model Based on Deli Malay Culture Context towards Student's Mathematical Critical Thinking Ability

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Abstract This intervention study focused on: (1) analyzing whether there is a significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability or not and (2) analyzing whether there is a significant interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability or not. This study is a quasi experimental research that used mathematical critical thinking ability test. Population in this study are all students in SMPN 1 Tebing Tinggi Academic Year 2017/2018 and the samples are 32 students in class VIII-A taught by using guided inquiry learning model based on Deli Malay culture context and 32 students in class VIII-C taught by using expository learning. The data was analyzed by using Two Way Anova and found that: (1) there is a significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability and (2) there is no a significant interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability.

Keywords: *mathematical critical thinking ability, guided inquiry learning*

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1. Introduction

Mathematics is a provision for students to think logically, analytically, systematically, critically and creatively. These abilities are needed by students in problem solving. In addition, the use of mathematics in life of real world is also undeniable [1]. This is proven by the use of mathematics in all fields of study at various levels of education.

In teaching and learning process, Lunenburg [2] explains that if teachers teach using the concept of critical thinking in learning model, it will give new experiences for students, critical thinking is also as a stimulus to increase student's achievement. Therefore, critical thinking ability is used as one of the core competencies that must be achieved by students.

Student's critical thinking ability can be obtained with a mathematical mindset. According to Lambertus [3], mathematical material and critical thinking ability are two things that cannot be separated, because mathematical material is understood through critical thinking, and critical thinking is trained through learning mathematics. The ability to think critically, systematically, logically, creatively, and productively can be developed through the learning of mathematics in school because mathematical materials focus on systems, structures, concepts, principles, and links between elements and other elements.

This critical thinking ability is very important for students to be able to stand across life in the 21st century. Chukwuyenum [4] argues that critical thinking is one of the tools used in our daily lives to solve several problems because it involves logical reasons in interpreting, analyzing and evaluating informations to enable someone to make reliable and valid decisions. Mathematical critical thinking ability is important because it can support students in making the right decisions [5].

Although mathematical critical thinking ability is important, the facts encountered in the school show that student's critical thinking ability is still low. The low student's mathematical critical thinking ability is supported by the facts of the research conducted by Hasibuan and Surya [6] which stated that student's critical thinking ability is still in the low category.

Researchers had observed students in SMPN 1 Tebing Tinggi and found that student's mathematical critical thinking ability in working on math problems was still very low. This is indicated by almost of all students unabled to complete mathematical critical thinking ability test correctly. This case needs to get attention because mathematical material and thinking are two things that cannot be separated, to understand mathematics students must be able to connect ideas with one another.

Nowadays, learning mathematics in schools is still dominated by teachers. It causes student's critical thinking mathematics ability become low. Wasriono, Syahputra, and Surya [7] stated that according to the anatomy of implementation problems of 2013 Curriculum, teachers are still confused about how to manage learning according to the spirit of the curriculum, such as teaching materials used are still cognitivistic, lack of resources and media use, and conventional learning models that are widely applied by teachers so that they do not trigger student activity. Whereas the 2013 Curriculum currently demands a change in the paradigm in education and learning towards constructivists, as what is originally teacher centered become student centered, which is originally dominated by the expository model become participatory, and what is originally textual based become contextual based.

Therefore, an effort is needed in improving student's mathematical critical thinking ability. The efforts that can be applied are closely related to the learning process, such as the way the teacher teaches, presents the material, the learning approach, the types of questions given to students, student's involvement and other factors. One of learning models that can be used as an alternative in facilitating the complaints above is guided inquiry learning model. According to the National Research Council (in Sunismi and Nu'man) [8], guided inquiry learning model is a series of learning activities that emphasizes the process of thinking critically and analytically to search individually and find the answers of the problems given with teacher's guidance. In addition, guided inquiry learning model is a way to convey ideas by doing a finding process that involves students with critical thinking activities.

Research by Duran [9] showed the average score of student's mathematical critical thinking ability taught by using guided inquiry learning model is higher than students taught by using traditional learning model, which are respectively 19,68 and 15,32 with the significance obtained is 0,000, less than 0,05 (0,000 < 0,05). This is caused by discussion activities in inquiry learning model can improve student's critical thinking ability.

Besides depends on learning model, student's achievement in teaching and learning process is also influenced by student's prior mathematical ability (PMA), that is student's ability before the learning process begins. In this case, student's prior mathematical ability are grouped into three categories, they are high, medium, and low categories with the aim of seeing whether there is a significant interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability or not.

The Philosophical Foundation of the 2013 Curriculum Framework states that Indonesian education must be rooted in national culture to build the life of the nation nowadays and in the future. It suggests that the educational process is developed through learning activities expected to be able to integrate national cultural values. By presenting the Deli Malay culture context in guided inquiry learning, it makes students more helpful in investigating problems based on facts and concepts to find answers of the problems. This is strengthened and supported by the statement of Yusra and Saragih [10] that studying with learning based on Malay culture context provides a positive change in student's mathematics learning motivation. Thus, it is expected that student's mathematical ability can be improved by incorporating culture into mathematics learning besides motivating learning, it can also make student's positive characters reflect cultural values.

2. Research Method

This research is categorized into quasi experimental research with a Non Equivalent Postest Only Control Group Design. This study involved two classes, the experimental class and the control class which were given different treatments. In quasi experimental research, the population cannot be ascertained homogeneous, in other words the population is heterogeneous. In the quasi experimental research, it is not also possible to control all external variables that influence the study. In addition, in conducting grouping, research samples are based on pre-formed classes or existing classes. Therefore, this study used quasi experimental research methods with existing classes.

2.1. Population and Sample

Population in this study are all students of SMPN 1 Tebing Tinggi, Kab. Serdang Bedagai Academic Year 2017/2018. The samples of the study are students in class VIII-A as an experimental class taught by using guided inquiry learning model based on Deli Malay culture context and students in class VIII-C as a control class taught by using expository learning. The selection of eighth grade junior high school students as the research sample is based on the consideration of the cognitive level of students who have reached the formal operational stage, namely at the age of 11 years and over. In addition, it is also based on the consideration that students in class VIII are considered to have passed the adjustment period in the school environment compared to students in class VII. While students in class IX will be preoccupied with the preparation of the National Examination.

The sampling technique used is a simple random sampling technique. According to Syahputra [11], a simple random sampling is a sample selection method in which each unit in the population is given the same opportunity to be selected in the sample. This technique is also used on the consideration that the division of students in each class is divided heterogeneously.

2.2. Research Instrument and Data Analysis Technique

The data in this study was obtained from mathematical critical thinking ability test. Data analysis consisted of normality test, homogeneity test, and hypothesis test. The statistical hypothesis test used is Two Way Anova. All statistical calculations used SPSS 20. The statistical model in this study is as follows [11].

$$Y_{ijk} = \tau + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk} \quad (1)$$

where i = 1, 2, 3; j = 1, 2; k = 1, 2, ...
with:

Y_{ijk}: score dependent variable (student's mathematical critical thinking ability)
τ: average actual score (constant value)
α_i: additives effect from PMA-i (high, medium, and low)
β_j: additives effect from j-learning
$(\alpha\beta)_{ij}$: interaction between learning model and student's prior mathematical ability
$\varepsilon_{k(ij)}$: k error in treatment combination (ij).

2.3. Research Procedure

The steps taken in this experimental research are as follows:

First step, pre experimental measurement. Before giving the treatment, the experimental and control class students were given a prior mathematical ability (PMA) test in the form of multiple choice. There were 10 questions taken from the Elementary School National Examination. The student's PMA test can be seen from two values, they are the mathematics scores in the previous semester and the test scores. The PMA test aims to determine the level of student ability before being treated whether the prior ability is high, medium, or low.

Second step, treatment. After the two groups were given a prior mathematical ability test, the next step was to provide treatment. Treatment in the experimental class was the application of guided inquiry learning model based on the context of Deli Malay culture, while the control class applied an expository learning model. Treatment will be carried out each time 3 meetings or 6 hours of study. Each class is held in 2 x 40 minutes each time.

The steps in the guided inquiry learning model in this study were: (1) proposing a situation or problem in the form of questions about the learning topic to be studied; (2) collecting data by conducting various activities either observation or measurement and analyzing the data obtained; (3) making a conjecture from the results of the analysis conducted by students; (4) checking the accuracy of conjecture by presenting the results of group discussions; (5) making conclusions on what students have discovered through verbalizing the conjecture; and (6) evaluating by giving follow-up in the form of questions to test students' mastery of the topic being studied.

Third step, post experimental measurement. This third or final step was the giving of posttest questions to students in both classes. The end result was data that is useful to determine the effect caused by the treatment given. The given test was mathematical critical thinking ability test, there were 4 questions in essay so that it can be seen clearly the steps of student's completion whether they are in accordance with the indicators they want to achieve or not.

3. Research Result

3.1. Student's Prior Mathematical Ability (PMA) Description

To obtain an overview of student's PMA, the average and standard deviation (SD) were calculated. The calculation results are presented in Table 1 below.

Table 1. Student's Prior Mathematical Ability Description

Class	Ideal Score	N	X_{min}	X_{max}	$\bar{X}$	SD
Experimental Class	100	32	40	90	64,69	14,81
Control Class		32	30	90	64,06	15,63

The grouping of student's prior mathematical ability (high, medium, and low) was formed based on the student's PMA scores. For students who have PMA score $\geq \bar{X}$ + SD were grouped in high ability, students who have PMA score between less than $\bar{X}$ + SD and more than $\bar{X}$ - SD were grouped in medium ability, while students who have PMA score $\leq \bar{X}$ - SD were grouped in low ability. The summary results are presented in Table 2 below.

Table 2. Research Sample Distribution

Class	Student's Ability		
	High	Medium	Low
Experimental Class	8	16	8
Control Class	9	18	5
Total	17	34	13

Based on Table 2 above, it was found that in the experimental class taught by guided inquiry learning models based on Deli Malay culture context there were 8 high ability students, 16 medium ability students, and 8 low ability students. Whereas in the control class taught by expository learning there were 9 high ability students, 18 medium ability students, and 5 low ability students.

3.2. Student's Mathematical Critical Thinking Ability Description

Mathematical critical thinking ability tests are essay questions related to the material being experimented, namely circular material. Test consisted of four questions represent four indicators of mathematical critical thinking ability, namely: analyzing, synthesizing, knowing and solving problems, and concluding.

Posttest data processing and analysis aims to determine student's critical thinking ability after being taught by guided inquiry learning model based on Deli Malay culture context in the experimental class and student's mathematical critical thinking ability after being taught by expository learning model in the control class. The results of the posttest for the two classes are described in Table 3 below.

Table 3. Student's Mathematical Critical Thinking Ability Description

Class	Ideal Score	N	X_{min}	X_{max}	$\bar{X}$	SD
Experimental Class	100	32	59,38	90,63	76,57	9,36
Control Class		32	53,13	84,38	67,87	7,62

Based on Table 3 above, it showed that the minimum posttest score of student's critical thinking ability in the experimental class was 59,38 and higher than the students in the control class whose minimum score was 53,13. For the maximum score of student's mathematical critical thinking ability in the experimental class was 90,63 and higher than the students in control class whose maximum score is 84,38. Furthermore, the average posttest score of student's mathematical critical thinking ability for the

experimental class was 76,57 and higher than the students in the control class whose average score was 67,87. The standard deviation of posttest data on student's critical thinking ability for the experimental class is 9,36 and 7,62 for the control class.

The description of student's posttest critical thinking ability based on the student's prior mathematical ability (PMA) can be seen in Table 4 below.

Table 4. Posttest Critical Thinking Ability Description Based on Student's Prior Mathematical Ability (PMA)

Class	PMA	N	Average Score
Experimental Class	High	8	83,99
	Medium	16	76,76
	Low	8	68,75
Control Class	High	9	76,04
	Medium	18	65,28
	Low	5	62,50

The description can be described in the following diagram.

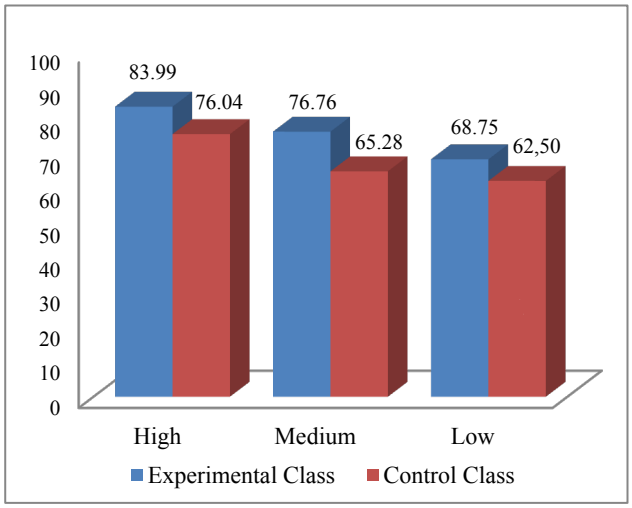

Figure 1. Average Score Posttest Based on Student's PMA

Based on Table 4 and Figure 1, it can be seen that students with high PMA in the experimental class were 8 students with an average score of 83,99, students with medium PMA were 16 students with an average score of 76,76, and students with low PMA were 8 students with an average score of 68,75. While students with high PMA in the control class were 9 students with an average score of 76,04, students with medium PMA were 18 students with an average score of 65,28, and students with low PMA were 5 students with an average score of 62,50. It showed that student's critical thinking ability with high, medium, and low PMA in the experimental class were always higher than the students with high, medium, and low KAM in the control class. Thus it can be stated that the mathematical critical thinking ability of experimental class students were better than those of control class students.

3.3. Two Way Anova Test Result

Research results showed that there is a significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability. It can be seen in Table 5 below.

Table 5. Two Way Anova Test Result of Critical Thinking Ability

Tests of Between-Subjects Effects					
Dependent Variable: Kemampuan Berpikir Kritis					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3004,277[a]	5	600,855	12,810	,000
Intercept	276473,118	1	276473,118	5894,315	,000
PMA	1611,313	2	805,657	17,176	,000
Learning	970,542	1	970,542	20,692	,000
PMA*Learnng	75,988	2	37,994	,810	,450
Error	2720,493	58	46,905		
Total	339525,610	64			
Corrected Total	5724,770	63			

a. R Squared = ,525 (Adjusted R Squared = ,484)

Based on the results of the Two Way Anova test in Table 1 above, the significance value for learning is 0,000 which is smaller than the significance 0,05 or sig. < 0,05 (0,000 < 0,05), it means that H_0 rejected. It can conluded that there is a significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability. In other words, the effect of guided inquiry learning model based on Deli Malay culture context on student's mathematical critical thinking ability is better than expository learning on student's mathematical critical thinking ability.

Furthermore, the results of the Two Way Anova test show that the significance value for PMA*Learning is 0,450 which is greater than the significance 0,05 or sig. > 0,05 (0,450 > 0,05), it means that H_0 accepted because there is not enough evidence to reject H_0. In other words, there is no influence given by the learning model with student's PMA on student's mathematical critical thinking ability. Differences in student's mathematical critical thinking ability are caused by differences in learning that are applied not because of the student's prior mathematical ability. So it can be concluded that there is no significant interaction between learning model and PMA towards student's mathematical critical thinking ability.

Graphically, the interaction between learning model and PMA towards student's mathematical critical thinking ability can be seen in Figure 2 below.

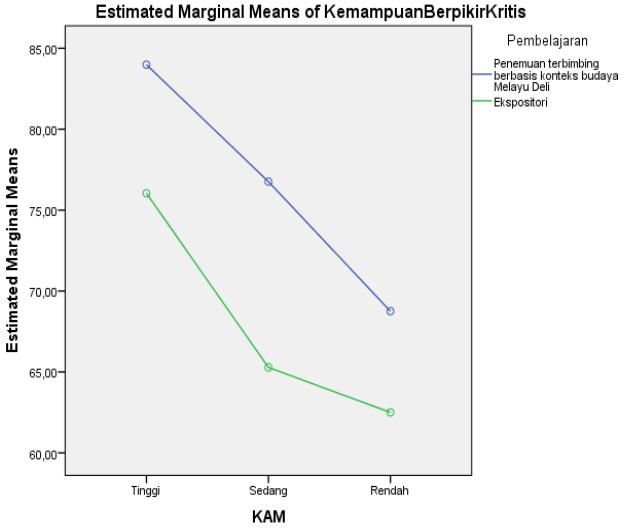

Figure 2. Interaction between learning model and PMA towards student's mathematical critical thinking ability

Based on Figure 2 above, it can be concluded that there is no a significant interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability.

4. Discussion

4.1. Mathematical Critical Thinking Ability

Based on the calculation results obtained that the average posttest results of mathematical critical thinking ability in the experimental class is 76,57 while in the control class is 67,87. It shows that the average score of student's critical thinking ability in the experimental class is higher than the students in the control class. The results of the Two Way Anova test calculation give a significance value for learning is 0,000 which is smaller than the significance 0,05, it means that H_0 rejected so it can be concluded that there is a significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability.

The significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability can be studied theoretically by observing the principles, characteristics, advantages and steps of guided inquiry learning model. According to Eggen and Kauchak [12], guided inquiry is an effective learning model to encourage student's involvement and motivation while helping them to gain n depth understanding of the topics being studied. Research by Pasaribu, Surya, and Syahputra [13] stated that by applying guided inquiry model, student's activities during the teaching and learning process are more active than student's activities in expository learning.

One of a lot of factors that causes student's mathematical critical thinking ability better with guided inquiry learning is the sintaxes of guided inquiry learning that gives a greater effect in training and developing student's critical thinking ability. For example, at the data collection stage, when a problem is given, students will think about how to find something related to the problem they face. In this process, students will indirectly connect problems with their knowledge to find answers based on facts and supporting concepts. Syahputra and Surya [14] said that by applying learning that presents problems, students can communicate with each other and relate the information they have to find a solution so that students cannot do activities that have nothing to do with the learning process.

Activities in guided inquiry learning process that require students to be actively involved in the problem solving process can improve student's critical thinking ability. This was conveyed by Martaida, Bukit, and Ginting [15] that the problems presented in learning process were able to be answered by students through research activities or through experiments conducted. From these activities, students are trained to think logically and systematically.

In addition, the provision of student's activity sheets (SAS) for the experimental class students that are done through group discussion contributes positively to student's critical thinking ability. Students are trained to arrange conjectures through activities carried out in solving problems in guided inquiry learning. Azizmalayeri, Jafari, Sharif, Asgari and Omidi [16] said that collaborative group discussion was considered as an important condition in the implementation of guided inquiry learning model so that the results showed that there was a significant effect between guided inquiry teaching methods on student's critical thinking ability.

It is very different from expository learning process which is teacher-centered where students become passive and absorb directly what teacher says without practicing their thinking ability. It causes students not to be able to solve questions that are slightly different from the usual routine questions given by the teacher.

From the theory described above, it is found that guided inquiry learning model has a significant effect on student's mathematical critical thinking ability. In addition, the combination of learning with culture also has a positive influence on student's mathematical critical thinking ability, as expressed by Arisetyawan, Suryadi, Herman, and Rahmat [17] which revealed that the application of culture-based learning can not only improve student's cognitive but also can build positive character for students.

4.2. Interaction between Learning Model and Prior Mathematical Ability towards Student's Mathematical Critical Thinking Ability

Based on the calculation results obtained that the significance value of PMA*Learning towards student's mathematical critical thinking ability is 0,450, greater than the predetermined significance level, 0,05, it means that H_0 accepted and H_a rejected. In other words, there is no a significant interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability.

The results of the analysis obtained in the field caused the researchers to reject the hypothesis that was determined before. There are several factors that cause it to happen, one of them is a factor of learning activities carried out especially in the experimental class. Learning guided inquiry learning model based on Deli Malay culture context has an effect on student's activity (for all PMA categories) in the class during the learning process. The application of guided inquiry learning model based on Deli Malay culture context in this study done through group discussion and the provision of SAS in accordance with the material. Learning in groups can give a positive effect on student's mathematical critical thinking ability because instead of being able to exchange information, students can also play an active role in learning.

Researchers also observed the response of students who were enthusiastic about the guided inquiry learning model based on Deli Malay culture context, it can be seen from the student's activities during the learning process and after the learning process. The observations made researchers conclude that guided inquiry learning has a positive effect on students. During the learning activities took place, there is a strong interaction between students and students with the teacher. Students compete to be the best group.

In addition, the teacher in guided inquiry learning is not a center of learning. The teacher only acts as a facilitator who helps students who face difficulties during the learning process, so that students are trained to be an independent student during learning process through interaction with other students in their study groups.

Whereas in expository learning process, students were not given SAS, so students have difficulties in completing tests that measure mathematical critical thinking ability. In this learning, the teacher acts as the center of learning, so that students only carry out what is instructed by the teacher.

The use of different learning model can be one factor that causes no interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability. It caused by expository learning that couldn't develop student's critical thinking ability in all PMA categories, so that in the PMA category students who taught by using expository learning model still got low score on mathematical critical thinking ability test. Whereas students who taught by using guided inquiry learning based on Deli Malay culture context obtained good mathematical critical thinking ability scores for all PMA categories.

Research by Muhlisin, Susilo, Amin, and Rohman [18] also stateed that there is no interaction between learning model and student's prior mathematical ability towards student's mathematical critical thinking ability with a significance value greater than 0,05, which is 0,905. This is due to: 1) learning activities that require student's responsibility at each stage of learning process are proven to be effective in improving student's critical thinking ability in all PMA categories, and 2) social interactions in group activities that collaborate and share are also able to increase student's responsibility in thinking processes that also have an effect on mathematical critical thinking ability of each student. This is confirmed by Syahputra [19] which stated that learning model and student's prior mathematical ability group are mutually independent of the enhancement of student's ability.

5. Conclusions

Based on the results of the analysis and discussion that have been described in the previous section, it could be concluded as follows:

1. There is a significant effect of guided inquiry learning model based on Deli Malay culture context towards student's mathematical critical thinking ability.
2. There is no a significant interaction between learning model and prior mathematical ability towards student's mathematical critical thinking ability.

6. Suggestions

Based on the results of the research and the conclusions above, researchers give some suggestions as follows:

1. Guided inquiry learning model based on Deli Malay culture context can be expanded to its use, both in its application towards student's mathematical critical thinking ability and in its application to other mathematical abilities.
2. The ability examined in this study is student's mathematical critical thinking ability in circular material, so that the next researcher can apply guided inquiry learning model based on culture context on different materials and different subjects.
3. For further research, this research should be supplemented by incorporating various different factors, such as student's attitudes and interest factors, student's family economic background, and so forth. So research on student's mathematical critical thinking ability was not influenced by learning model and student's prior mathematical ability only.

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References

[1] Sundayana, R, *Mathematics Learning Media*, Alfabeta, Bandung, 2013.

[2] Lunenburg, F.C, "Critical Thingking And Constructivism Techniques For Improving Student Achievement," *National Forum Teacher Education Journal*, 21 (3). 2011.

[3] Lambertus, "The Importance of Practicing Critical Thingking Skill in Mathematics Subject in Primary School," *Forum Kependidikan*, 28 (2). 136-142. 2009.

[4] Chukwuyenum, A.N, "Impact of Critical Thinking on Performance in Mathematics among Senior Secondary School Students in Lagos State," *IOSR Journal of Research & Method in Education*, 3 (5). 2013.

[5] Hassoubah, Z.I, *Developing Creative & Critical Thinking Skills*, Penerbit Nuansa, Bandung, 2004.

[6] Hasibuan, S.H. and Surya, E, "The Analysis of Student's Critical Thinking Ability in Grade X SMKN Binaan Province North Sumatera, Medan Y.A 2015/2016," *Jurnal Pendidikan Saung Guru*, 8 (2). 2016.

[7] Wasriono, Syahputra, E, and Surya, E, "Learning Tools Based on Autograph to Increase Student's Mathematical Understanding Concept by Using Guided Inquiry Learning Model," *Jurnal Paradikma*, 8 (3). 52-61. 2015.

[8] Sunismi and Nu'man, M, "Development Learning Material of Geometry and Measurement by Using Computer Assisted - Guided Inquiry in Strengthening Student's Conception," *Cakrawala Pendidikan*, 31(2). 2012.

[9] Duran, M, "The Effect of The Inquiry-Based Learning Approach on Student's Critical-Thinking Skills," *Eurasia Journal of Mathematics, Science & Technology Education*, 12 (12). 2016.

[10] Yusra, D.A. and Saragih, S, "The Profile of Communication Mathematics and Student's Motivation by Joyful Learning-based Learning Context Malay Culture," 15 (4), 1-16. 2016.

[11] Syahputra, E, *Applied Statistics of Quasi and Pure Experiment in Education, Biology, Agriculture, Technique, etc*, Unimed Press, Medan, 2016.

[12] Eggen, P. and Kauchak, *Teaching Learning Model and Strategy Content and Thinking Skill, Edition 6*, PT Indeks, Jakarta, 2012.

[13] Pasaribu, E.Z, Surya, E, and Syahputra, E, "Improving Student's Mathematical Understanding Ability and Disposition by Using Guided Inquiry Learning Model in MTSN 1 Padangsidimpuan," *Jurnal Paradikma*, 9 (2). 2016.

[14] Syahputra, E. and Surya, E, "The Development of Learning Model Based on Problem Solving to Construct High-Order Thinking Skill on the Learning Mathematics of 11th Grade in SMA/MA," *Journal of Education and Practice*, 8 (6). 2017.

[15] Martaida, T., Bukit, N, and Ginting, E.M, "The Effect of Discovery Learning Model on Student's Critical Thinking and Cognitive Ability in Junior High School," *IOSR Journal of Research & Method in Education* (*IOSR-JRME*), 7 (6). 2017.

[16] Azizmalayeri, K., Jafari, E.M., Sharif, M., Asgari, M, and Omidi, "The Impact of Guided Inquiry Methods of Teaching on The Critical Thinking of High School Students," *Journal of Education and Practice*, 3 (10). 2012.

[17] Arisetyawan, A., Suryadi, D., Herman, T, and Rahmat, C, "Study of Ethnomathematics: A Lesson From The Baduy Culture," *International Journal of Education and Research*, 2 (10). 2014.

[18] Muhlisin, A., Susilo, H., Amin, M, and Rohman, F, "Improving Critical Thinking Skills of College Students through RMS Model for Learning Basic Concepts in Science," *Asia-Pacific Forum on Science Learning and Teaching*, 17 (1). 2016.

[19] Syahputra, E, "Improving Student's Spatial Ability by Applying Realistic Mathematics Learning," *Cakrawala Pendidikan*, November. 2013.