Research Paper

The Analysis of Critical Thinking Ability and Self-Effacement Toward Carousel Feedback Learning Model

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ABSTRACT

This research is aimed to find out the presence of causality by analyzing students' critical thinking ability in applying Carousel feedback learning model. This research employed quasi experimental research. The subject of the study was the fifth grade students of elementary1 and 4 Naira. There were 39 students. The instrument of the research was essay test that used to test the cognitive aspect with the purpose to measure the result of students' conceptual mastery in their critical thinking ability. Besides test, there were two questionnaires that used in order to get information about students' response toward the implementation of Carousel feedback learning model and the second questionnaire was used to analyze students' self-efficacy. The result of critical thinking ability with nonparametric test and the Wilcoxon test showed that there was significance 0.000 < 0.05. Therefore, Ho was rejected and H1 was accepted. This means that there were differences in students' critical thinking skills before and after the implementation of Carousel Feedback learning model. Moreover, the result of students' self-efficacy showed that the result of paired sample test was significance 0.016 < 0.05. Thus, it was decided that Ho was rejected and H1 was accepted. It can be said that there was difference about the ability of students' self-efficacy before and after implementing Carousel feedback model in learning.

Keywords: critical thinking, self-efficacy, carousel feedback

INTRODUCTION

The national system of education is a system in a country that ruled education in order to create an intelligent, noble character and have higher critical thinking skill. Through the process of critical thinking ability which started early, the students are involved in real problem and they make decision to solve the problem. This way can help them to become critical thinkers. Students' Critical thinking must be balanced with the development of self-confidence, so what they have can be honed well. [1] Critical thinking is a reflective thinking, based on reason or make sense that focus on determining what is believed and done [2] critical thinking is skilled and active interpretation and evaluation of observations and communications, information and argumentation.

[3] The ability of critical thinking is a thinking skill that needed in 21st century. [4] the ability to think critically is something important and as a key element a person becomes educated. [5] Critical thinking has a central role in learning, because it is a student's need to be more successful both in the academic field and in real life. [6] Critical thinking involves a number of abilities such as problem identification and assumptions based on the focus of the problem, analyzing, understanding, and utilizing inductive conclusions and deductive logic, and assessing the validity and reliability of assumptions and data sources. The students are expected not only to have abilities in cognitive aspects, but they also should have other skills to face future challenge such as critical thinking, have social attitude, and higher self confidence. [7]The ability to think critically should be developed early. In fact, there are few schools or educational institutions that involve critical thinking as needed in the 21st century to their students in their learning activities in classroom. Therefore, [8] nowadays there are very few of schools that apply their learning that leads to the development of critical thinking skills. [9] One of schools' goals is to improve students' ability to think critically, make rational decisions about what is believed and done.

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[10] Making decision and believe in what has been decided is an attitude of self-efficacy. [11] Self-effacement is associated with confidence to achieve what someone wants. Therefore, efficacy is closely related to motivation. Individuals who have high self-efficacy can motivate themselves to learn consistently in achieving better results. [12] They are more persistent and never give up when facing challenges. In contrast, students with low self-effacement are easier to give up when facing problems. [13] believed that self-effacement is an important factor in determining whether the students are achieved their goals of learning or not.

Based on field observation, it was found that the teachers were rare assessing the ability of students' critical thinking skill. There were many students who have high ability but it was not supported with learning activities that promote students' critical thinking especially in Social Science class. This was proven from the low level of questions that given to students such as questions of knowledge and understanding. So the ability like applying, analyzing, synthesizing, and creating have not applied in learning activities. [14] In learning social science, it is needed to criticize social problems that occur in societies. the teachers are rare to involve the students to criticize the authentic problems that occur in society and the teaching is emphasized on cognitive aspect, it is preparing the students to work in answering the test items. [15] Formal education recently is trapped in lower order of thinking questions to sharpen remembering and understanding aspects. Therefore, learning should emphasize in developing critical thinking skill or higher order thinking that needed by students to face future challenge.

It was also found that the teacher did not assess students' self-effacement. This can be seen when the students were able to answer the questions or finished doing their tasks, but the teacher did not assess them. Various activities and students' self-effacement is important since it helps the students to absorb materials optimally. [16] Self-effacement is influential toward motivation and achievement. Also, learning outcomes are influenced by students learning activities.

MATERIAL AND METHODS
Methods

[17] Type of the research was quantitative that belongs to positive philosophy because this research is used to examine specific population and sample, instrument is used to collect the data. Data collection and data presentation are in form of numbers, in table and chart. [18] This research also included descriptive type of research that used to investigate situation, condition, or other things about an event in which the report of the result will be presented in the form of research report. The research used quasy experimental research. [19] Experimental research is used to find out the causality between two factors. Thus, the aim of this research is to find out if there is causality between the ability of students' critical thinking and self-efficacy by applying Carousel Feedback learning model.

The variables in this research were the level of students' critical thinking, students' self-efficacy, and their learning outcomes by applying Carousel Feedback learning model. The variable of students' critical thinking level could be traced from the questionnaire that given in pre test and post test. The variable of self-efficacy also was taken from the questionnaire that distributed in pre and post tests. While students' learning outcomes was the difference between the score in pre and post tests, so the data of this research are 1) the data from questionnaire about students' critical thinking in pre and post tests, 2) the data from questionnaire about self-efficacy in pre and post tests, 3) students' learning outcomes about Social science in pre and post tests.

Instrument

The instruments used in this study consisted of: Cognitive Aspect Tests using essay tests aimed at measuring the results of students' mastery of concepts in critical thinking skills. [20] Cognitive aspects measured were the process dimensions of Bloom's revised cognitive taxonomy including C1 (remembering), C2 (understanding), C3 (applying), C4 (analyzing) C5 (evaluating) and C6 (creating) (Anderson & Krathwohl, 2001). However, it only uses 3 dimensions from 6 dimensions of cognitive aspects, namely the dimensions of C4 (analyzing), C5 (evaluating), and C6 (Creating). Before the question instrument is used, the validation, reliability, difficulty test and different power test are done first. In addition, tests will also be conducted to determine the level of critical thinking skills of students. In addition to the test instruments, there were 2 (two) questionnaires used in this study, the first to obtain information on student responses to the application of the Carousel Feedback learning model, the second to questionnaire analysis of student self-efficacy.

Procedures

In analyzing students' critical thinking skills, the **steps** used are as follows:
a) Detecting Problems. Helps think critically. Very **important** to analyze. At first the fifth grade students of SD Negeri 1 Naira and SD Negeri 4 Naira were given a preliminary test to find out their critical thinking

level. After the students finish the initial test on critical thinking, students are asked a question by the teacher, "What if the natural appearance in Banda Naira is damaged by human activity?", "Give reasons, find out, look for islands in Indonesia, look for tourist attractions? ". Students start by thinking about a problem that occurs around the questions asked;

b) Collecting Data for Factual Proof. Students who have the ability to think critically can not only give answers that get it straight away easily. Banda Naira and looking for information from teachers and looking in library books;

c) given issued and Suggestions. In the Carousel learning model Student feedback to solve problems that exist in each group. In this study there were 4 groups, each group working on 3 questions from the other 3 groups. Each student in the group provides input to each other to answer the questions in the group that came;

d) Making Interpretations of Original New Definitions and Ideas. Some students who find it difficult to think of answers, they discuss and exchange opinions about some of the problems given to students in the group. Students who have the ability to think critically high will put forward new ideas learned by the group so that members can add these ideas into an answer idea that makes sense and can be accepted. Furthermore, if the task has been completed in group one, the group will go along with the cue from the teacher to do the assignments from other groups until the whole group has answered the question.

e) e) Register Alternative Troubleshooting. Students are invited to think to find out how problems can occur and find solutions based on the results of reasoning that have been done. Students' thinking activities increase more, when critical thinking from some students begins to grow. This is proven when some students start expressing their opinions to their peers and some students also ask the teacher what they want to understand from a problem. Students are given space and opportunities so that students can think critically through the process of reading, understanding, digesting, thinking, discussing, and analyzing the possibilities that can occur;

f) Draw Conclusions. If the whole group has solved the problem by turning around as many as three groups, then the group will return to the original group and draw conclusions from the answers of other groups. This conclusion is also discussed with group members and the teacher to determine whether the other group's answers are wrong or right, or there are things that need to be addressed or added;

g) Present the results and Account the Achievement Results. After the whole process has been carried out, the final step is to present the results of the whole group's thinking by the respective group leaders. The result is that there is one group whose answers are correct, and two groups are still lacking or still wrong. So the group leader gives the right answer and adds the less.

Data Analysis

[21] Data analysis is an activity grouping data based on variables and types of respondents, tabulating data, presenting data, and doing calculations to answer the problem formulation. Data analysis techniques are used to determine the level of student self-efficacy and to determine the level of critical thinking of students. The data collected was analyzed using statistics with the following steps:

1. Critical Thinking Scale Variable on Carousel Feedback Learning Model
   a. Formulate research hypotheses
      Ho: There is no difference in students' critical thinking skills before and after learning is implemented using the Carousel Feedback model.
      H1: There is a difference in students' critical thinking skills before and after learning is implemented using the Carousel Feedback model.
      In making decisions to test hypotheses, the criteria for decision making using α = 0.05 (5%) are, if sig. (2-tailed) is smaller than α then Ho is rejected and H1 is accepted.
   b. Before analyzing the difference in the level of critical thinking of students, before (pre test) and after (post test) get learning with Carousel Feedback learning model, the prerequisite test is first performed: Normality Test and Homogeneity Test
   c. Test using the Dependent Sample T-test with the Paired Sample Test. However, if the assumptions are not met then use Nonparametric Statistics with Wilcoxon test types.

2. Self-efficacy variables using the Carousel Feedback Learning Model
   a. Formulate research hypotheses
      Ho: There is no difference in students' self-efficacy abilities before and after learning is implemented using the Carousel Feedback model.
      H1: There is a difference in students' self-efficacy abilities before and after learning is implemented using the Carousel Feedback model.
      In making decisions to test hypotheses, the criteria for decision making using α = 0.05 (5%) are, if sig. (2-tailed) is smaller than α then Ho is rejected and H1 is accepted.
   b. Before analyzing the difference in students' self-efficacy levels, before (pre-test) and after (post-test) learning through the Carousel Feedback learning model, the prerequisite tests are first performed: Normality Test

and Homogeneity Test

   c. Test using the Dependent Sample T-test with the Paired Sample Test. However, if the assumptions are not met then use Nonparametric Statistics with Wilcoxon test types.

3. Learning Outcomes Variable using the Carousel Feedback Learning Model
   [22] looking at the differences in student pretest and posttest learning outcomes before and after getting treatment in the form of learning with the Carousel Feedback learning model, N-gain is used with the following formula.

$$Normalized\ gain = \frac{posttest\ score - pretest\ score}{maximum\ possible\ score - pretestt\ score}$$

Furthermore, the results of these calculations are confirmed by the Table below. Table. 3.2 N-gain criteria :

N-gain (<g>)	Classification
g ≥ 0,70	High
0,30 ≤ g < 0,70	Medium
g < 0,30	Low

RESULTS AND DISCUSSION
RESULTS

1. There are some consideration to do in analyzing students' self efficacy as follow
   Students can express their ideas based on their beliefs. Students who believe to his/her capability will answer the questions. We can see their comment toward question about favorable

   I'm sure it is easy for me to understand the material if I study with appropriate teaching model.
   I'm sure I will get benefits from group studying.
   I believe I can complete the task independently.
   I believe I could finish my task in group

2. Students could finish their task based on level difficulties of questions.
   There were some students who were difficulties in answering questions in each group, but their friends could help them through their textbooks or asked the teacher. The concept of answering questions based on level of difficulties can be seen in the questionnaire about favorable and unfavorable:

   I believe I could implement the lesson I studied in my daily live.
   I believe if I do not study hard I could get bad grade
   If I have problems in doing task I could ask the teacher
   I could answer the most difficult question as long as I can
   I could read lot of books without any understanding/comprehension

3. Students have high motivations for their abilities.
   Students who have high expectation toward their capabilities is one of the indicator of self efficacy. This can be seen in question like "Do they enjoy learning while playing?". All students were agree. They hoped the lessons are given without coercion and are not monotonous. They also hope that they could do tasks through the use of various teaching strategies in class. It could be seen in questionnaire about favorable and unfavorable:

   I prefer learning while playing
   I'm happy presenting my task in front of class
   If there are complicated and unclear tasks then I will leave and work on other tasks

4. Students have broad areas of behavior where they feel confident in their own abilities.
   Students who are confident in their ability to complete their assignments at school will make decisions quickly and there is no doubt in themselves. Some students focused to finish the assignment immediately. Whether the work is wrong or right, the most important thing is they could complete the task according to their own abilities. This can be seen in questionnaire about self efficacy:

   I'm not sure if I could finish the task immediately if I was doubt in making decision.
   I'm sure I could finish the task if I focus my attention on it

   This study applied the Carousel Feedback learning model with the following learning steps: a) *The team*

stands in front of the assignment project. In this activity all students stand in front of group desk. All chairs are removed so the students are free to move from one group to another. b) *The team rotates clockwise to the next project*. The members in group A walk to group B desk, the members in group B walk to the desk of group C, the members in group C move to the desk of group D and the members in group D move to the desk of group A. c) *The* team *discusses the project without writing anything.* All team members discuss the answer in certain group they visit without writing anything. The reason is that they could pay attention to the answer and those who don't know nothing can contribute ideas. So finally if there is sign given to write the answer they could write the answer individually. d) *The teacher gives the signal that the first student records feedback on the feedback board*. The first student is tasked to write input from the results of discussions with group members. Each student may give feedback, inputs and ideas. e) *The team rotates, observes, discusses, and provides feedback on the next project*. New notes will be selected every round. After all groups finish working on the assignments in the next group, then get ready to rotate clockwise to the next group. Group A moves to group C, group B to group D, group C to group A, and group D to group B. So continue until each completes the task in each group until returning to the original group. f) *The team continues until each team rotates back to the original project, or until the teacher gives the signal*. The team checks the feedback received from the other teams. After each group has completed all the tasks in other groups, each group stands in its own group to check the work from the other groups.Next provide feedback from all answers from other groups and present conclusions from the answers from other groups.After that the teacher gives a reflection about the results of discussions that have been carried out by applying the Carousel Feedback learning model.

The ability of students' critical thinking was tested in pre and post tests through their answers on critical thinking scale by applying Carousel Feedback learning model. Then the scale data of students' critical thinking was analyzed using Dependent Sample T-test. Before analyzing was done to see the difference about students' critical thinking ability with the application of Carousel Feedback learning model, the normality and homogeneity of scale data was tested. Based on the test result of normality and One-Sample Kolmogorov-Smirnov, the significance value was $0,001 < 0,05$. It can be concluded that the ability scale of students critical thinking before and after treatment was not normal, because one of the requirements was not fulfilled. Then nonparametric and Wilcoxon tests were used and the result shows that there was significance $0,373 > 0,05$. The criteria of making decision used $\alpha = 0.05$ (5%) is if sig. (2-tailed) is smaller than α, so Ho is rejected and H1 is accepted. Therefore, Ho is rejected and H1 is accepted. It means that there is difference from students' critical thinking ability before and after applying Carousel Feedback learning model.

The following describes the student's initial ability test data before being given competency by applying the Feedback Carousel learning model. The frequency distribution of students' initial abilities is given in Table 1.1.

Table 1.1 Initial Capability Data Frequency Distribution (Pre-test)

Range of learning outcomes	Frequency	Persentase (%)	Quantity
0 – 20	2	5,12	Quantity = 1988
21 – 40	6	15,38	Mean = 50,97
41 – 60	17	43,58	SD = 15,13
61 – 80	14	35,89	
81 – 100	-	-	
Quantity	39	100	

Based on Table 1.1 Frequency distribution of students' initial ability data (pre-test) through the application of the Carousel Feedback learning model it can be seen that the results of the initial ability of students (pre-test) in the range of 0-20 are as many as 2 students, the percentage is 5.12%, at range 21-40 as many as 6 students with a percentage of 15.38%, in the range of 41-60 as many as 17 students with a percentage of 43.58%, and in the range of 61-80 as many as 14 students with a percentage of 35.89%. The total number of initial values is 1988, while the average value of a student's initial ability is 50.97. The standard deviation of students' initial abilities is 15,13.

The following describes the student's final ability test data after being treated with the application of the Carousel Feedback learning model. The frequency distribution of students' final abilities is presented in Table 1.2.

Table 1.2 Frequency Distribution of End Capability Data (Post-test)

Range of learning outcomes	Frequency	Persentase (%)	Quantity
0 – 20	-	-	Quantity = 1988
21 – 40	-	-	Mean = 68,8
41 – 60	10	25,6	SD = 14,4
61 – 80	17	43,5	
81 – 100	12	30,7	
Quantity	39	100	

Based on Table 1.2 the frequency distribution of students' final ability data (post-test) through the application of the Carousel Feedback learning model it can be seen that the results of the student's final ability achievement (post-test) in the range of 0-20 and the range 21-40 of 0 students. This means that there are no students whose grades are in that range. In the range of 41-60 there were 10 students with a percentage of 25.6%, and in the range of 61-80 there were 17 students with a percentage of 43.5%, in the range 81-100 there were 12 students with a percentage of 30.7%. The total number of students is 2684, with an average value of the student's final ability is 68.8. The standard deviation of students' final abilities is 14.4.

The ability of students' self-efficacy was tested based on the result from the questionnaire that was given in pre and post tests. The result was tested using Paired Sample Test. Before analyzing the difference, the normality and homogeneity of test was tested. Based on the normality test that used One-Sample Kolmogorov-Smirnov Test the significance value was 0,200 > 0,05 meaning that the ability of students' self-efficacy before and after implementing Carousel Feedback learning model was normal. So Paired Sample Test was used. The result shows that there was significance 0,016 < 0,05. The criteria of making decision of hypothesis test used $\alpha = 0.05$ (5%) is if sig. (2-tailed) is smaller than α, so Ho is rejected and H1 is accepted. Therefore, Ho is rejected and H1 is accepted. It means that there was difference about students' self-efficacy ability before and after implementing Carousel Feedback learning model.

The conclusion of learning outcomes from the application of the carousel feedback learning model will be calculated using the Gain Normalization formula. The purpose of using N-gain in this study is to determine the category of improvement in learning outcomes with 3 times of testing before and after learning by applying the Carousel Feedback learning model, as follows:

Table 1.3 N-Gain Learning Outcomes

Validation Test Learning Outcomes		
Test to -	N-gain	Category
1	0,364	Is
2	0,455	Is
3	0,660	Is
Rata-rata	**0,493**	Is

Based on table 1.3 above the validity test of learning outcomes from the application of the Carousel Feedback learning model using the N-Gain formula can be seen that in the first test the results are 0.364 with the Medium category. In the second test the results are 0.455 with the Medium category. Finally the 3rd test results are 0.660 in the Medium category. Based on the average of the three tests of the validity of learning outcomes above the results are 0.493 with the Medium category. It can be seen that from the first test to the third results continue to increase even though the third test is still with moderate results. So it can be concluded that the Carousel Feedback Learning Model is very effectively applied to improve the learning outcomes of fifth grade students at SD Negeri 1 Naira and SD Negeri 4 Naira.

CONCLUSION

Based the analysis data from students' ability in critical thinking by applying Carousel Feedback learning model, there was significance 0,000 < 0,05. Therefore, it can be said that there was significance of students' critical thinking ability after and before applying Carousel Feedback learning model. It also found throughout the result of students' self-efficacy 0,016 < 0,05. Thus, it can be seen that there was difference of students' ability in self-efficacy after and before applying Carousel Feedback learning model. Based on the result of students' outcomes analysis, the validity was tested using N-Gain formula and found that the result of test 1 is 0.364 with medium category. The result of second test is 0.455 with medium category, and the last test is 0.660 with medium category. The average from the three results is 0.493 with medium category, and it also shows that there was significance increasing numbers from test 1 until test 3. All in all, it can be concluded that Carousel Feedback learning model was effectively applied for the fifth grade students of elementary schools 1 and 4 in Naira in learning Social science.

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