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The Use of Higher Order Thinking Questions in Reading Comprehension to improve the Students' Critical Thinking

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Abstract

This research attempts to find out whether the use of higher order thinking questions in reading comprehension classroom activities is effective in teaching critical thinking. All participants were second-grade students of Ulul Albab Islamic senior high school in Makassar, Indonesia. This research was conducted through pre-experimental study design with one group as the sample consists of 20 students. The instruments were reading tests used in both pre-test and post-test. The research findings indicated that the use of higher order thinking questions in reading comprehension is can improve the students' critical thinking. It was proved by the mean score of pretest was 4.45 then improved to be 6.50 in post test. It is also proved with t-test value. The researcher found that the value of t-test (8.542) was greater than t-table (2.093) at the level of significances. It means that there is a significant difference between the result of the students' pre-test and post-test. Therefore, hypothesis H_0 was rejected and H_1 was accepted. Thus the researcher concludes that using higher order thinking questions in reading comprehension is effective in fostering critical thinking of the second year students of MA Ulul Albab Makassar.

Keywords: *Higher order thinking questions, critical thinking, reading comprehension*

1. Introduction

English is an international language which has been taught to students in Indonesia since secondary school up to the university level. There are four basic skills that students should be mastered to be able to communicate and involve in global relation, they are listening, speaking, reading and writing. These skills always become the focus or the final learning objectives of English as a foreign language. These days, the focus of learning objectives has been developed following the rapidly changing world and the students' needs. It is not enough to only master those language basic skills without having any skill which allows them to compete in the global economy world. The teachers are asked to teach more than the basic skills in their classroom (Lewis & Smith: 1993). The teaching learning process should involve not only how to use English to communicate with global world but also how to think following the world development. Triyoko in his article published by The Jakarta Post (2007) states that most Indonesian students in Australia feel reluctant to actively get involved in discussions or debates not because they are afraid of using English but because they are not used to debate and discuss that need deeper thought. They are more familiar with only memorizing tasks. Therefore, Australian universities have made critical thinking a focus in various bridging programs especially provided for international student to adapt with Australian academic culture. The students need to be able to think critically and strategically. Mendelman (2007:300) asserted that critical thinking should be taught in every course in the humanities. By critical thinking, the students are expected to be able to think critically not only memorizing and believing to everything the teachers told them. Mendelman claimed that in a day and age in which more and more children grow up engaged with primarily passive activities…teaching critical reading is one of the most important, and most difficult burdens of the classroom (p. 300). If students are not exposed to, and do not master, the ability to think insightfully and critically, they will be unable to compete in a modern, global economy.

Critical thinking skills do not occur randomly or without effort, it should be practiced deliberately and exposed repeatedly to develop it. But it is not extensively practiced in schools in Indonesia. The facts stated by Sutikno (2007) that Indonesian children only comprehend about 30

percent of reading text and they are difficult to answer the questions that need more explanation and critical thinking are the proofs. This condition is because they used to memorize and doing multiple choice work. We can also see the fact from the research conducted by Global Institute in 2007 that there are only 5% of Indonesian students able to accomplish high category (difficult) questions that need deeper thought. It's contrast to 71% Korean students' who can do it. 78% of Indonesian students can only answer low category questions that only need memorizing. In a study report conducted by United Nations for Development (UNDP) about Human Development Report 2004, Indonesia only placed the 111th from 117 countries, far behind the surrounding countries. To get Indonesian students out of this condition, there should be strategies that promote critical thinking. An experimental research was conducted by Hove to two groups of students in English classroom shows that those who receive explicit instruction in a critical thinking strategy performed better, with a higher percentage of students demonstrating critical thinking skills in the post reading assessment quiz. Given the above issues, several strategies have been suggested to foster critical thinking. Among them, posing high category (higher-order thinking) questions is one of the most recommended strategies. Pescatore (2007) states that questions like these encourage students to actively engage with text, going beyond simple comprehension. Through HOT questions, students are taught to identify and analyze a problem while evaluating potential solutions thoughtfully. The most recommended time in fostering critical thinking practice is high school. It is at the secondary level that students are ready to begin putting aside their own assumptions and prejudices, and instead think about issues from a different perspective (Senechal, 2010, p. 11).

Many researchers have conducted research related to critical thinking such as Hosseini et.al (2012) who found that there is a large, positive relationship between critical thinking and reading comprehension ability of Iranian EFL learners in general. They also found that effective strategies along with critical thinking and general reading strategy use were among the predictors of learners' reading comprehension ability. Also, Hove (2011) in his thesis showed that the experimental group students in English classroom who receive explicit instruction in a critical thinking strategy performed better, with a higher percentage of students demonstrating critical thinking skills in the post reading assessment quiz. This research went further by investigating whether or not the use of higher-order thinking questions in reading comprehension class effective to improve the students' critical thinking.

2. Method

In this research, the researcher used the pre-experimental by using one group pre-test post-test design. The 20 senior high school students as the sample was selected using purposive sampling with consideration from the teacher of the school. In collecting the data, the researcher gave essay reading test which was held twice, in the pre-test and post-test test. The test was used to assess how good their critical thinking through higher order thinking questions can be improved. The researcher only assessed their analyzing and evaluating answers by using rubric of criteria of analyzing and evaluating, there were clear thesis, selection of evidence, and clear reasoning that adopted from Brookhart (2010, p.45). This set of criteria was modified to be matched with the instruction and the intended learning target. In this case, the learning target is to be able to think critically by answering the analyzing and evaluating question. There are three criteria: thesis, evidence and reasoning. Thesis means the students main statement or argument about the question or problem at hand. Every time the students state or write an argument, the thesis should be fully supported by evidence to back up their point of view. Reasoning means the way evidences support and explain the thesis. The result of the tests were then calculated and used to find the mean score, the improvement of the students' score, the standard deviation, and the value of the t-test using the formula in Gay (2006, p.320-329). The researcher compared the t-test and t-table to find the significant different and test the hypothesis.

3. Result and Discussion

The result of this research showed that the use of higher order thinking questions in reading comprehension activities is effective in improving the student's critical thinking. It was proved by the result analysis of the data in the pre-test and post-test. To see further interpretation of the data analysis were given below:

The Effectiveness of using higher order thinking questions

The effectiveness of using higher order thinking questions in reading comprehension is indicated by the difference mean between the pre-test and post-test score and the t-test to see the different between the results of pre-test and post-test. The following results of pre-test and post-test show the students' improvement in critical thinking by answering analyzing and evaluating questions which consists of three indicators; thesis, evidence, and reasoning:

Table 1: The Students' Achievement

No	Indicators	Students' Scores & Mean Score in Pre-test		Students' Scores & Mean Score in Post-test		Improvement (%)
1	Thesis	39	1.95	57	2.85	46.2%
2	Evidence	25	1.25	39	1.95	56%
3	Reasoning	25	1.25	34	1.70	36%
	Total Score & Mean Score $\overline{X}$	89	4.45	130	6.50	46.1%

The data in the table above shows the students' scores in analyzing and Evaluating questions in pre-test and post-test. The students' pre-test mean score **4.45** and **6.50** in post-test**.** The achievement of post-test is greater than pre-test (6.50 > 4.45). Based on the table above there are significant developments of the students' scores before and after treatment. It can be compared there are significant difference of results between the pre-test data and post-test data. In this case, the students' score of post-test is greater than students' score in the pre-test. The total score of students' critical thinking in pre-test based on all the indicators of critical thinking (thesis, evidence, and reasoning) is 89 and the total score in the post-test is 130.

The improvement of Students' Critical Thinking

To find out the answer of the research question in the previous chapter, the researcher used an essay reading test twice. A pre-test was administrated before the treatment, which aimed to know whether there was a significant difference of the students' reading comprehension before and after treatments were given to the students. The table above indicates that there are differences of students' score of pretest and posttest in answering critical thinking questions. The data analysis shows the students' mean score improves from pretest to posttest. The students' mean score of pretest was 4.45. However, after applying treatment the students' reading comprehension improved. It is proved by students' mean score in posttest was 6.50. By this achievement, the improvement of students' critical thinking is 46.1%.

The following diagram will show the increasing of the students' critical thinking skills:

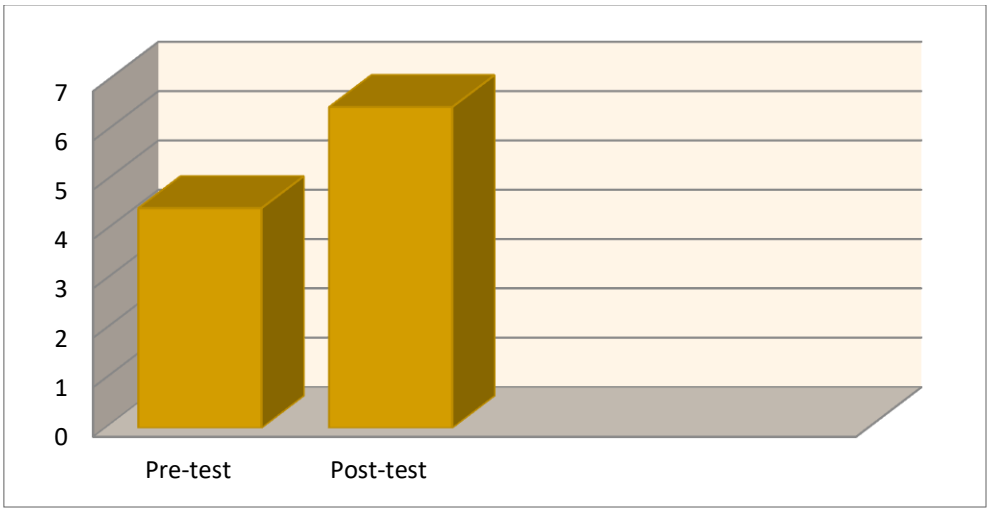

Chart 1: The Improvement of Pre-test and Post-test

The diagram above shows that mean score of the students increase. The improvement of the students' critical thinking was indicated from the mean score of pretest (4.45) raise up until (6.50) in post-test. The 46.1% improvement ensures the significance of the students' critical thinking by posing higher order thinking questions.

Significant score between students' pretest and posttest.

The significant score between students' pretest and posttest can be known by using t-test. The result of t-test can be seen in table 2 as follows:

Table 2. Distribution of t-test and t-table

Variable	t-test value	t-table value
Student score	8.542	2.093

The result of the statistical analysis at the level of significance (P) 0.05 with degrees of freedom (df) = n-1, where n = 20 indicated that there was a significant difference between the value of t-test (8.542) and t-table (2.093). It means that that t-test value is higher more than three levels than t-table value. It is very significant different. By this data the significant increase of the students' critical thinking through the use of higher order thinking questions has been procured.

Hypothesis Testing

Table 3. Hyphotesis Testing

Variable	t-test value	t-table value	Remark
Students' score	8.542	2.093	Significantly different

The table above shows that t-test value was greater than t-table. The result of the test shows there was significant difference between t-table and t-test (2.093<8.542), it means that, t-table was lower than t-test. The result of the t-test statistical analysis showes that there was significant difference between the student pre-test score before got treatment by using higher order thinking questions with the student posttest score after. The statement was proved by the t-test value (8.542)

which higher than t-table value (2.093), at the level of significance 0.05 and the degree of freedom (N - 1) = (20 – 1) = 19. The result of the statistical analysis at the level of significance (P) 0.05 with degrees of freedom (df) = n-1, where n = 20 indicated that there was a significant difference between the mean score of the pre-test was (4.45) and the mean score of post-test was (6.50). In addition the t-test value was greater than the t-table value that is (8.542 > 2.093) it means that the null hypothesis (H_0) was rejected and alternative hypothesis (H_1) was accepted. Seeing the result above, it can be concluded that the null hypothesis (H_o) was rejected and while alternative hypothesis (H_1) was accepted. Therefore, using higher order thinking questions can improve the students' critical thinking at the second grade students of MA Ulul Albab Makassar.

Discussion

The essay question tests aim to know the students' critical thinking in answering the analyzing and evaluating questions. The first question is analyzing which requires the answer of attributing and the second is evaluating which requires the answer of checking and critiquing. Having analyzed the data of pre-test and post-test, the result shows that there are significant different between students' answer in both questions before and after posing higher order thinking questions in reading comprehension classroom activity. It means that the students' answers have clearer thesis, supported by evidences, and sound more reasonable. In this case, it can be said that using this questioning strategies (fostering higher order thinking questions) is effective to improve the students' critical thinking.

The result then seems in line with Hove and Hand's findings that the students who received higher level questions perform significantly better in their responses than those who were not. These findings are consistent with Binkler's statement in Nesbitt-Hawes (2005) that the right type of questioning will foster critical thinking in students. This result also shows that there is a large positive relationship between critical thinking and reading comprehension (Hosseini et.al: 2012). Through reading comprehension activities, posing higher order thinking questions can help fostering students' critical thinking. Based on the result of this research reflected in the related previous findings, it can be concluded that the use of higher-order thinking questions in reading comprehension is effective to improve the students' critical thinking at the second year students of MA Ulul Albab Makassar. It is shown in the data result of pre-test and post-test and the significant different of T-table and T-test.

4. Conclusion and Suggestion

Posing higher order thinking questions in reading comprehension classroom activities is effective in teaching critical thinking. It is proved by the improvement of the students' mean score from 4.45 in pre-test to 6.50 in post test, all the way because it forces the students to think deeper in answering higher level of questions, in this case, analyzing and evaluating levels. The students who used to answer these kind of questions tend to think more critically.

Based on the result of the research, it is suggested that: (a) Instead of using lower order thinking questions, it is better for the English teachers and students to use the higher order thinking questions on their teaching-learning process especially in reading comprehension activities since it will have a very big benefit for the students. These questioning strategies can be implemented by asking them questions which require them to think deeper and independently. The students will find it fun because they are free to state or write their argument since there is no absolute right answer. The teachers only need to guide them to internalize the universal intellectual standards by posing questions which require them to it. They should learn to provide proofs for their every arguments or statements. The teachers' instructions and questions will shape the students' mind. They think as what they require to. In this case, reading comprehension activities, which usually made the students finding the right

answers in the reading text, should be better changed to finding the answer of the questions through their analyzing and evaluating process. (b) The students are suggested to have their own fair share from the implications of this research, and the outcomes may pave the way for better improvement of critical thinking. It is hoped that the results of this research could shed some light on the process involved between the teaching approach and students' critical thinking. Afterwards, the students should know their own ways while learning what needs to be known to solve current problems. (c) The researchers are suggested that they make good use of these research findings to investigate the better way in fostering critical thinking. Future researchers may combine this questioning strategy with other strategies in an experimental research.

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