

THE EFFECTIVENESS OF HOTS (HIGHER ORDER THINKING SKILL) IN TEACHING READING COMPREHENSION

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Submission date: 24-Jan-2023 01:08PM (UTC+0700)

Submission ID: 1998305344

File name: HOTS_in_Teaching_Reading_Educalf.pdf (557.97K)

Word count: 3760

Character count: 19539

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ABSTRACT

This objective of this research is to find out whether or not Higher Order Thinking Skill (HOTS) is effective in teaching reading comprehension. Related to the educational issue in the International level, Indonesian government creates a higher education system. Indonesian student must be able to think creatively and critically to compete in the global competitions in 21 century. Several studies investigate in a different ways in practices higher order thinking skill used by the teacher. The teacher integrates of this skill into curriculum and the application methods. This research uses short answer questions test to know the effect of higher order thinking skill. This research took place at an Islamic junior high school Darul Huda in Blitar. Randomly sampling where used in the research and 50 participants were included. The research instrument test which divided into pre-test and post-test, and then statistical differences were tested based on the score of post-test on both group in term of significant.

Keywords: high order thinking skill, teaching reading, reading comprehension

INTRODUCTION

Comprehending reading text is important in the process for learning. In junior education, reading English as a foreign language (EFL) requires skill to comprehend the reading. In Indonesia, government emphasizes the higher order thinking skill (HOTS) for the students in the process of learning. Reading is often equated with students' knowledge of facts (Echevierra, 2008), it is the lowest thinking skill (Bloom, 1956, as cited in Ong & Wong, 1998). Thus, the thinking skills of comprehension which require interpretation and association of information in one's life tend to be left aside. Students would predict information with prior knowledge. The predictions are in the title, content and questions

presented in the reading text. Students make predictions, and organize important information from the readings. Additionally, teachers' questions would check students' knowledge of the topic. The teacher helps them to communicate their ideas and demonstrate their level of comprehension. The students then connect and apply what they learned to their lives, as well as reflect on learning. The researcher decided to explore if higher order thinking skill is effective in teaching reading comprehension. With this interest, the research question can be formulated, What is the effect of HOTS (Higher Order Thinking Skill) in Teaching Reading comprehension.

RELEVANT THEORIES

The Concept of HOTS

Higher order thinking skill (HOTS) is the ability to think critically, logically, metacognitive, and creatively (Maimun,2018). Higher order thinking are also called "critical" or "strategic" thinking, it can be described as the ability to use information to solve problems, analyze arguments, negotiate issues or make predictions (Wenglinsky, 2002). It involves examining assumptions and values, evaluating evidence, and assessing conclusions (Petress, 2005).

Reading strategies such as : questioning, graphic organizers, and collaborative learning groups were found to increase students' reading comprehension. Norato & Canon (2008) reported increased reading comprehension for junior high school with higher thinking skills developed through questioning and cooperative work. The students improve their reading comprehension beyond knowledge required an understanding of Bloom's (1956, as cited in Wong & Wong, 1998). Higher thinking skills are ability to understand, and use strategies to develop their learning. These skills have been classified into a hierarchy of educational objectives from less to more complexes: knowledge, comprehension, application, analysis, synthesis, and evaluation.

The teacher suggests in integrating these skills in order to direct students' level of thinking in learning activities. According to Bloom, the lowest thinking skill are knowledge, recognize and recall information, but to comprehend the learning of reading text the students can retell or translate what they understand in their own words in written or oral form, put information in order, compare and contrast it, and interpret it.

HOTS in teaching reading the process.

Critical thinking enables one to work out reading texts by generalizing and interpreting, analyzing according to prior or world knowledge and synthesizing. (Soo,2015). Reading comprehension skills should be taught beside all cognitive skills. It is start from recalling information schemata to comprehension, application, analysis, synthesis, and evaluation. It should be practiced through reading comprehension exercises.

Consequently, reading comprehension text should be provided with exercises to develop these skills. As a result there is an agitating need to successive evaluation of reading comprehension exercises to confirm their work. The effectiveness as a means of developing cognitive skills specifically higher order thinking skills (HOTS.) Students with poor reading comprehension skills may be able to answer concrete questions or recall details. One of the goals of reading is to make new connections to our life and world. Readers who can use higher order thinking not only show knowledge and understanding of the text, they can put the information in new contexts and form relations between ideas.

Strategy of HOTS

Strategies to develop comprehension and application in this study were activating students' background knowledge, having them make predictions, complete graphic organizers, and answer questions. These strategies were suggested in the literature and by knowledgeable others, related to personal interest. Activating background knowledge for learning involves helping English learners make "connections between their own knowledge and experiences and the new information being taught" (Rumelhart, 1994, as cited in Echevarría, Vogt, & Short, 2008, p. 23). These connections can

be made with motivating and relevant materials for students (Echevarría et al., 2008).

Prediction as a strategy for improving comprehension "...helps the reader set a purpose for their reading" (McKown & Barnett, 2007, p. 17). Pesa & Somers (2007, p. 31) expand that before reading, prediction can "...activate prior knowledge, set a purpose for reading, and engage the reader from the outset". Introducing the title of the reading, pictures associated with its content, and key words can prompt prediction (McKown & Barnett, 2007).

Questioning as a strategy can develop different levels of thinking skills for deeper learning (Marzano, Pickering & Pollock, 2001) and help students to prepare for reading and to understand while reading (Hendricks, et al., 1996). Questioning can be facilitated with the Directed Reading-Thinking Activities Approach (DRTA) described by Haggard

(1985) and Question-Answer Relationship (QAR) technique proposed by Raphael (1984). Kelty (1999) explains four types of questions that differ in how their answers are related to the material. 'Right there' or literal questions have answers stated directly in the reading, 'Think and search' or comprehension questions also have their answers in the text but require inference. 'Author and you' and 'on your own' questions require students to respond and look within themselves to find the answers. The former relates students' prior knowledge and inferences from the text, while the latter is related to students' life experiences. With these questions, students apply what they read to their lives before and after reading.

METHODOLOGY

Research Design

This research is a true experimental research design. It is compare the two score in the pre-test and post-test.

Table 1. The experimental design

Class/Group	Pre test	Treatment	Post test
E	Y1	X	Y2
C1	Y1	-	Y2

E: Experiment group

C1: The control group

Y1: Pre-test for the experimental and control group

X : Treatment

Y2: Post-test for experimental group

Table 1 shows the experimental and the control group. The experimental one was teaching with higher order thinking skill and the control group was teaching without using higher order thinking skill.

Participants

The participants of the study are 50 students who are select based on their level of proficiency from MTs Darul Huda

Wonodadi Blitar 2017-2018. The selection was made out of 100 students. They consist of the boy and girl students. They were randomly selected in the age range of 13 to 14. The participants were divided into 2 groups, each having 25 students. It made to got effective sample size in experimental study. Every class gets two times in a week with 45 minutes in every meeting.

Instruments

The researcher use administering test to collect the data. Two instruments were employed in this study. They included pre-test and post- test. The try out use in each group to identify that they were get the lesson of recount text. The purpose of try out to assure the homogeneity of the groups in terms of language proficiency. One of the instruments used in this experimental research was pretest which was prepared beforehand. In the pretest, 20 short answer questions are tested before carrying out the study. The second instrument in the form of sho²⁰ answer questions give to all the students at the end of the study (post-test).

The researcher analyse the test from content validity. The content validity of the test must representative structure and skill that will be tested. Additionally the test must be appropriate with the grade. The content of questions are using form of questions that suitable with the theme on their guide book “ When English Ring a Bell “ A high coefficient indicates high reliability. There is a significant difference between score of students’ use higher order thinking and not use higher order thinking skill. The result of this research is reliable. The researcher use Pearson product moment to measure the test.

Procedure

The research was done at MTs Darul Huda Blitar from January to April 2018. This school was chosen due to the problems of the students’ constraints in reading during teaching the subject of reading comprehension. The population took from the two classes, the first class was taught by using higher order thinking skill as an experimental group and the second class was taught traditionally without using higher thinking as a comparison group. Researcher conducted pre-test from two classes before treatment. Both groups were given the same pre- and post-tests.

The test consists of short answer questions. The students' previous knowledge was assessed by the pre-test administered to both groups (control and experimental) before the study started. The objective of the pre-test was to assess the students' background knowledge of words. The same post-test was used at the end of the study as to assess the students' achievement on the topic, that is the acquisition of the new reading text. The objective of the post-test was to assess the effect of both instructional methods.

DATA ANALYSIS

The data analysis in this research is using t test. The researcher will compare mean difference between the score of three sets posttest without treatment and using treatment through SPSS 25.0

RESULT

The data obtained were of two distinct categories: prior to the main experiment and posterior to the experiment. The results of the reading comprehension test in the two groups were compared using an independent *t*-test. First, to see if there is any difference on the performance of the participants in each group on the posttest,

two paired-samples t-tests were run on the performance of the experimental group on

the pretest and the posttest. Table 1

Descriptive Statistics for paired sample

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before	79.64	25	2.782	.556
	After	83.44	25	2.274	.455

Table 2

Descriptive Statistics for paired sample correlations

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Before & After	25	.836	.000

Table 3

Paired Samples T-test for Experimental group in the Pretest and posttest

		8 Paired Samples Test							
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before - After	-3.800	1.528	.306	-4.431	-3.169	-12.438	24	.000

The hypothesis

$H_0 : \mu_1 \leq \mu_2$ or the mean of the experimental group is smaller than or equal to the mean of the control one

$H_1 : \mu_1 > \mu_2$ or the mean of the experimental group is bigger than to the mean of the control one

Notes : μ_1 is the one set of the score obtained after the students are given the treatment, and μ_2 is the one obtained prior the treatment

The significance level is $\alpha = 5\%$

As displayed in table 3 the output confirms that the means of the students prior after the treatment are respectively

79.64 and 83.44. The result of the t-test reveals that the t-value is - 12.438 with the df 24. The p-value is 0,000 and it has to be divided into two since have one tailed test. $0.000/2$ is equal to 0, and it is smaller that $\alpha = 0.05$. in consequence, the null hypothesis is rejected.

In other word, the hypothesis saying that the mean after the treatment is smaller than or equal to the one before the treatment is rejected. It automatically accepts the alternative hypothesis saying that the mean after the treatment is bigger than the one before the treatment. In conclusion is that higher order thinking skill is effective for teaching reading.

Table 4

Descriptive Statistics for paired sample

		3 Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before	70.24	25	4.065	.813
	After	72.32	25	4.171	.834

Table 5

Descriptive Statistics for paired sample correlations

3 Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Before & After	25	.971	.000

Table 6

Paired Samples T-test for Control in the Pretest and posttest

9 Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before - After	-2.080	.997	.199	-2.491	-1.669	-10.435	24	.000

The output confirms that the means of the students prior after the treatment are respectively 70.24 and 72.32. The result of the t-test reveals that the t-value is -10.435 with the df 24. The p-value is 0,000 and it has to be divided into two since have one tailed test. $0.000/2$ is equal to 0, and it is smaller that $\hat{\alpha} = 0.05$. in consequence, the null hypothesis is rejected. It is meant that the mean in the pretest is smaller than the mean in the posttest.

The hypothesis

The output confirms that the means of the students prior without the treatment are respectively 79.64 and 83.44. The result of the t-test reveals that the t-value is -10.435 with the df 24. The p- value is 0,000 and it has to be divided into two since have one tailed test. $0.000/2$ is equal to 0, and it is

or the experimental group is not different from the control one

$H_1 : \mu_1 \neq \mu_2$ or the experimental group is different from the control one

The hypothesis for the F-test :

$$H_0 : \sigma_1^2 = \sigma_2^2$$

$$H_0 : \sigma_1^2 \neq \sigma_2^2$$

The significance level is $\alpha = 5\%$

smaller that $\hat{\alpha} = 0.05$. in consequence, the null hypothesis is rejected.

In other word, the hypothesis saying that the mean after the treatment is smaller than or equal to the one before the

treatment is rejected. It automatically accept the alternative hypothesis saying that the mean after the treatment is bigger than the one before the

treatment. In conclusion is that higher order thinking skill is effective for teaching reading.

Table 7

Descriptive Statistics for the Final Posttest experimental and control group

Group Statistics					
	Group 2	N	Mean	Std. Deviation	Std. Error Mean
Group 1	1	21	83.38	2.439	.532
	2	25	72.32	4.171	.834

Table 8

Descriptive Statistics Independent Samples Test for the Posttest experimental and control group

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
Group		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
1	Equal Variances assumed	4.600	.038	10.702	48	.000	11.061	1.034	8.978	13.144
	Equal variances not assumed			11.179	39.635	.000	11.061	.989	9.061	13.061

The hypothesis or the experimental group is not different from the control one

¹³ $H_1 : \mu_1 \neq \mu_2$ or the experimental group is different from the control one

The hypothesis for the F-test :

$$H_0 : \sigma^2_1 = \sigma^2_2$$

$$H_0 : \sigma_1^2 \neq \sigma_2^2$$

The significance level is $\alpha = 5\%$

In the t-test for independent samples, the F test or the Levene's test is done prior to the t-test. This test is intended to know whether the variances or standard deviations of the two group are equal. The result of the F-test shows that p-value (sign) is 0,014 and it is bigger than 0,005. In sequence, the null hypothesis is not rejected. As such, equal variances assumed is used.

On the basis of the result of the f – test , the t-test with equal variances assumed is used. This test reveal that t t-value is 11,074, with the df = 48, and the p value (two tailed) is 0.000. Given that the p value is less than the $\alpha = 0.05$ so the null hypothesis is rejected.

On the basis the statistical calculation, it can be stated that the Higher order thinking skill effective for teaching reading.

DISCUSSION

The research question of this study is whether the treatment of higher order thinking skill has an effect on teaching reading.

After collecting and processing the data taken from the tests, the data were analyzed. It was found that the scores of students increased after the implementation of higher order thinking skill. The score of the pre-test and post-

test could be an evidence of students' improvement.

The result indicates on the table 1 and 2 that there is a difference between the means in the pretest on the experimental group when they had not given treatment which was 79.64, and the means in posttest when they had been given treatment was 83,44. The means difference is 3.800, as the p- value is 0.000, less than $\alpha = 0.05$, reaches statistical significance which tells that higher order thinking skill is effective way in teaching reading.

Based on the result table 4 and 5 indicates that the difference between the means in the pretest on the control group when they had not given treatment which was 70.24, and the mean in posttest when they got controlling was 72.32. The means difference is 2.080, as the p- value is 0.000, less than $\alpha = 0.05$.

It also showed in table 8. The result indicates the significant difference between the mean in the posttest on the experimental group was 83.44, and the mean on control group was 72.32. The means difference is 11.06, as the p- value is 0.000, less than $\alpha = 0.05$, reaches statistical significance difference which tells that the mean in the control group is smaller than on the experimental group.

This finding is in line with the result of study done by Acosta (2010) who also used higher order thinking skills in teaching reading. He found that by using higher order thinking skills, his students could activate their prior knowledge, apply their higher-level of thinking, and enhance their interest and participation in the learning and teaching process.

Furthermore, another previous study conducted by Sheif (2013) also obtained similar findings. She states that there was a significant difference of her students' ability in reading comprehension after they were taught by higher order thinking skills.

In addition, there was a significant improvement for the means score of each reading comprehension skill. In the pre-test, the score for each aspect are: social function (2), generic structure (3), language feature (5), content (10). Meanwhile, in the post-test the score were; social function (1), generic structure (3), language feature (3), content (13). These increasing points indicate that the strategy was effective to be used in teaching the aspects of reading comprehension.

Moreover, there were numbers of reasons why students got better scores in their post-test. First, higher order thinking skills had stimulated the students to be able to understand the content of the text through intensive reading. Secondly, the researcher gives questions to measure the understanding of students to the reading text. This reason is in line with the statement of Keshta and sheif (2013) who state questions can be used to support the gradual thinking process which passes from lower to higher level. Third, the students could find the information as a discussion material. Students could get the information in the text that merged with the students' knowledge or experiences. The last, the effective in use of higher order thinking skill is awareness the students' to have this skills since students have made and considered reading as important to get the whole information in the text to deeply understand it.

CONCLUSION

Based on the previous discussion, it can be concluded that higher order thinking skills is one of the way to be used in teaching reading. By using higher order thinking skills, students can think creatively and critically. The students can activate their prior knowledge, apply their higher-level of thinking, and enhance their interest and participation in the learning and teaching process.

Of course, this study was conducted not without weaknesses. It employed only two classes from one school to conduct the experiment. Therefore, the findings cannot be generalized to other students from other schools or educational levels. To cover these limitations, therefore research with larger samples and more schools in different educational levels are recommended for future research in this topic.

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