Journal of Primary Education
10 (1) (2021) : 89–98

https://journal.unnes.ac.id/sju/index.php/jpe

The Effectiveness of Think Talk Write Models on Student Motivation and Thinking Ability

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Article Info

History Articles
Received:
5 December 2020
Accepted:
4 January 2020
Published:
31 Maret 2021

Keywords:
high-order thinking skills, learning motivation, think talk write

Abstract

The ability to think critically is an important component in facing the era of society 5.0. There needs an effort to optimize these abilities for students in the context of learning in elementary schools. The purpose of this study was to analyze the effectiveness of the Think Talk Write (TTW) cooperative learning model on students' motivation to learn high-order thinking skills. The type of research used is quantitative research with a quasi-experimental type. Data collection techniques used higher-order thinking skills tests, questionnaires, interviews, and documentation. The data analysis uses quantitative analysis techniques. Quantitative data analysis techniques include independent sample t-test and paired sample t-test. The research subjects were 76 students. The results showed that the TTW type of cooperative model was effective against learning motivation and higher-order thinking skills. This is indicated by the higher-order thinking average score in the experimental class is higher than the average score in the control class. This research concludes is that learning with the TTW cooperative model is effective and has a positive effect on students' learning motivation and higher-order thinking.

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p-ISSN 2252-6404
e-ISSN 2502-4515

INTRODUCTION

Guidelines for educators' mindset to be more advanced along with the development of education. The government continues to try to improve the quality of education. However, in reality, this policy has not been able to change the quality of education. As the purpose of National Education Regulations No.20 of 2003, namely, to educate the nation's life and develop Indonesian people as a whole, namely humans who believe and have faith in God Almighty and have a noble character, have knowledge and skills, physical and spiritual health, personality and independent and a sense of social and national responsibility. One of the problems of educators today is fostering student motivation comprehensively and sustainably amid the COVID-19 outbreak.

Learning motivation is an effort for every individual who is consciously capable of creating optimal learning activities, which guide learning goals and the achievement of effective learning goals both with intrinsic and extrinsic motivation (Mulya & Lengkana, 2020). Lestari et al. (2018) argued that students need to be motivated to learn, in this case, it will be easy to face and solve problems in learning. Indriani (2016) in his research emphasized that motivation is very influential on student achievement.

Based on preliminary research conducted by researchers in grade 4A of Primary School Islam Imama Mijen, there were only 8 students who had high motivation, 13 children had sufficient motivation and 8 children who had low motivation. Thus, there are no students who have very high motivation, and students who have high motivation do not reach 50% of the total number of students in class 4A. So that the motivation of class 4A students is declared low.

There were several problems during the teaching and learning process that were found. Among them were the use of the lecture method; students have not become subjects in learning; the minimal use of learning media that attracts students to learn; the learning atmosphere is not conducive so that students are less motivated; students are still dependent on teachers and are not yet independent in seeking the knowledge and skills needed; students are embarrassed to ask questions to the teacher; and students do not repeat the discussions that have been learned. However, students are very enthusiastic during sports lessons even though they feel tired and hot in the field compared to the learning motivation that decreases during class learning.

Student motivation is low in some subjects, but the one that needs treatment the most is Mathematics. This is supported by the results of interviews with grade 4 teachers at Primary School Islam Imama Mijen which stated that student learning outcomes in Mathematics were still very low compared to other subjects. One of the reasons for this is because mathematics is always considered difficult by students (Ulinnuha et al., 2021)

There has been no significant handling. Teachers are still trapped in stagnation in teaching. This kind of problem must be addressed immediately. Because when students do not have the motivation to learn, they are not able to achieve higher-order thinking skills, which is very important for 21st-century children in dealing with life's problems.

Wagner (2009) identifies the skills needed in dealing with life, work, and citizenship in the 21st century as follows: (1) critical thinking and problem-solving skills, (2) collaboration and leadership, (3) agility and abilities. adaptable, (4) initiative and entrepreneurial spirit, (5) able to communicate effectively both orally and in writing, (6) able to access and analyze information, and (7) have curiosity and imagination. According to Wechsler (2018), the results of research conducted by (OCED, 2009) and (UNESCO, 2015) in various countries have emphasized creativity, high-order thinking skills, problem-solving, and decision making, which are the main components in developing the education system in the last century. 21.

Nurhayati & Angraeni (2017) explain that higher-order thinking skills are an important component in learning. Students who can be trained to be able to think at a high level make it possible to form effective and efficient learning patterns. According to Ichsan et al. (2018) students who have high High Order Thinking Skills (HOTS)

will be able to understand and criticize various problems that exist in their environment. Furthermore, Kurnianto et al. (2019) explained that critical thinking at a higher level allows students to analyze their thoughts, make choices, and draw conclusions intelligently.

Learning for grade 4 students at Primary School Imama Mijen Semarang shows that there is still a low level of thinking skills of grade 4 A students at Primary School Islam Imama Mijen Semarang. Fifteen students score above the Minimum Completeness Criteria and 14 under the Minimum Completeness Criteria, it can be interpreted that 14 students do not complete the daily tests on the area and circumference of a building.

Based on the observations made by the researcher, it turns out that during the teaching and learning process the teacher and students do question and answer by asking closed questions like mention! choose! show!. Activities with these questions and commands tend to be less active in students thinking, reasoning, analyzing, and evaluating information and knowledge. The implementation of the learning process that takes place in the classroom is only directed at the students 'ability to memorize information, the students' brains are forced only to remember and accumulate various information without being required to understand the information obtained to relate it to situations in everyday life.

Based on the problems that have been described above, the researcher will increase learning motivation and higher-order thinking skills by using cooperative learning models. There are several learning models with objectives to be achieved which refer to the approach used including learning objectives, stages in learning activities, learning environments, and classroom management. Virgana et al. (2019) suggest that cooperative learning is a learning method that can make students more active in learning. Florentina & Leonard (2017) provide an overview that this cooperative learning model gathers students in a study group to interact with each other to convey their respective arguments. Students exchange ideas and ideas in a discussion.

Aiman (2020) explains that students will be able to face problems in everyday life with higher thinking stages if they are trained in solving problems critically. Research conducted by Rohyami & Huda (2019) also proves that cooperative models can increase motivation, enthusiasm, and collaborative learning processes in students. In contrast to the research conducted by Trianto (2009), he said that cooperative learning has not been able to improve students' academic tasks and has not been able to develop higher-order thinking skills. Also, research conducted by Agustiningrum (2017) states that the cooperative model is less significant in increasing student motivation.

From the cooperative learning model, the writer chooses the TTW type strategy, Lestari (2018) says that the TTW strategy is very innovative to increase motivation and understanding of mathematics communication, the TTW learning strategy is an innovative learning strategy that emphasizes students to work together in learning groups by involving all students without having any differences in status, involve students as peer tutors and contain elements of play. The TTW type is also a simple learning strategy, saying that the TTW learning model is built through thinking, speaking, and writing.

Kusuma & Hamidah (2019) explains that the progress flow of the TTW strategy starts from the involvement of students in thinking or having a dialogue with themselves after the reading process, then talking and sharing ideas with friends before writing. This atmosphere is more effective if it is done in a heterogeneous group with 3-5 students, in this group students are asked to read, take small notes, explain, listen and share ideas with friends then express them through writing.

The purpose of this study was to analyze the effectiveness of the Think Talk Write (TTW) cooperative learning model on students' learning motivation and higher-order thinking skills. So that it can be seen that the Think Talk Write model can increase learning motivation and student learning outcomes from obtaining High Order Thinking Skills (HOTS) questions

METHOD

This type of research is quantitative research. The research method used in this study is quasi-experimental. This study uses an unequal research design. The sampling technique used in this study was cluster random sampling. Randomization is carried out by taking into account the following considerations: (1) Primary School that has implemented the 2013 curriculum, (2) Primary School has the same accreditation, (3) the number of students is almost the same, (4) the material taught is the same and (5) facilities relatively the same learning. So that the sample that the researchers took was the fourth-grade students of Primary School Islam Imama 41 children and Primary School Islam Permatasari, 35 children. So that a total sample of 76 children.

The variables in this study are divided into three parts, namely: Independent Variable (X), namely the implementation of the TTW cooperative model, the dependent variable (Y1), the first in this study is high-order thinking skills, and Bound variables. or Dependent (Y2) the second in this study is learning motivation. The instruments measured in this study were learning motivation, higher-order thinking skills, and the TTW model. The learning motivation indicator consists of 6 statement items in the form of a questionnaire. The questionnaire was given after students had intervened with the TTW model. The high-order thinking ability instrument contains C4 - C6 thinking abilities, namely analyzing, evaluating, and creating in the form of tests given to the evaluation questions. Then the TTW model questionnaire provides an overview of the implementation of the TTW model learning steps. Students can reflect on the questionnaire. Data collection techniques using questionnaires, tests of higher-order thinking skills. The data analysis technique used in this research is the prerequisite test which includes the normality test and the homogeneity test as well as the hypothesis test including the descriptive statistical test, the average difference test, and the direct effect test.

RESULTS AND DISCUSSION

The results of research that have been carried out on grade 4 students of SD Islam Imama and SD Islam Permata Sari will be presented in the form of prerequisite test data analysis and research data. The prerequisite analysis test in this study was the normality and homogeneity test. The data that were tested for normality and homogeneity were the students' posttest scores.

The normality test is used to determine the normality of the cooperative model variables, higher-order thinking skills, and learning motivation. The normality test in this study used the Chi-Square test. The results of the normality test are presented in Table 1, Table 2, and Table 3.

Table 1. Coopertive Model Normality Test

N	Max Score	Min Score	Range	Mean	Variance	Standard Deviation	K
21	88	53	35	73	80.6	8.97	6

Based on Table 1, of the 21 samples, the maximum and minimum values are 88 and 53, while the range is 35. The average value of the model is 71 and has a variance and standard deviation of 80.6 and 8.97, respectively. The K value (class length) obtained is 6. X count the value of the experimental class is 2.675. By comparing the value between $\boldsymbol{\chi^2_{count}}$ with $\boldsymbol{\chi^2_{table}}$ is clear that $\boldsymbol{\chi^2_{count} \leq \chi^2_{table} = 2.675 \leq 7.81}$ so that the hypothesis $\boldsymbol{H_0}$ is accepted that the sample of the experimental class cooperative model variables is normally distributed. The results of the normality test of the high-order thinking skills variable are summarized in Table 2.

Table 2. Normality test of higher-order thinking skills

N	Max Score	Min Score	Range	Mean	Variance	Standard Deviation	K
21	88	53	35	73	75.4	8.68	6

Table 2 shows the maximum and minimum values of 88 and 53 with a mean of 73. The values for range, variance, and standard deviation are 35, 75.4, and 8.68, respectively. The value of K (class length) is obtained at 6. By comparing the value between $\boldsymbol{\chi^2}_{\boldsymbol{count}}$ with $\boldsymbol{\chi^2}_{\boldsymbol{table}}$ is clear that $\boldsymbol{\chi^2}_{\boldsymbol{count}} \leq \boldsymbol{\chi^2}_{\boldsymbol{table}} = \mathbf{0.534} \leq \mathbf{7.81}$ so that the hypothesis $\boldsymbol{H_0}$ is accepted that the sample variable high-level thinking ability of the experimental class is normally distributed. he results of the normality test for the learning motivation variable are summarized in Table 3.

Table 3. Normality Test of Learning Motivation

N	Max Score	Min Score	Range	Mean	Variance	Standard Deviation	K
21	86	40	46	67	118	10,86	8

The data presented in Table 3 shows that the collection of 21 samples obtained a maximum value of 86 and a minimum value of 40. The reach is quite large, namely 46, while the average score is 67. Furthermore, the variance and standard deviation are 118 and 10.86 with a value of K (class length), namely 8. By comparing the value between $\boldsymbol{\chi^2}_{\boldsymbol{count}}$ with $\boldsymbol{\chi^2}_{\boldsymbol{table}}$ is clear that $\boldsymbol{\chi^2}_{\boldsymbol{count}} \leq \boldsymbol{\chi^2}_{\boldsymbol{table}} = \mathbf{0.531} \leq \mathbf{7.81}$ so that the hypothesis $\boldsymbol{H_0}$ is accepted that the sample of motivation variables learning experiment class normally distributed.

The homogeneity test in this study used the Bartlett test. Based on the value of variance, the total value of the Bartlett coefficient (B) is 75,690. Homogeneity test results are presented in Table 4 and Table 5.

Table 4. Homogeneity test of cooperative model variables and higher-order thinking

N		$\boldsymbol{n_i - 1}$	$\boldsymbol{\frac{1}{n_i - 1}}$	$\boldsymbol{\log {s_i}^2}$	$\boldsymbol{(n_i - 1)({s_i}^2)}$
	$\boldsymbol{V_a}$	20	0.05	1.90	1612
	$\boldsymbol{V_b}$	20	0.05	1.87	1509.23
∑		40	0.1		3121.23

From the presentation of Table 4, the value of the Bartlett coefficient, the value of $\boldsymbol{\chi^2}_{\boldsymbol{count}}$ is $\mathbf{0.0216}$. Assuming error rate $\boldsymbol{\alpha} = \mathbf{5}\%$, and degrees of freedom $\boldsymbol{dk} = \mathbf{1}$, then the value of $\boldsymbol{\chi^2}_{\boldsymbol{table}} = \boldsymbol{\chi^2}_{\mathbf{(1-0.05,1)}} = \mathbf{3.8415}$. By comparing the value between $\boldsymbol{\chi^2}_{\boldsymbol{count}}$ with $\boldsymbol{\chi^2}_{\boldsymbol{table}}$ it is clear that $\boldsymbol{\chi^2}_{\boldsymbol{hitung}} \leq \boldsymbol{\chi^2}_{\boldsymbol{tabel}} = \mathbf{0.021} \leq \mathbf{3.8415}$ so that the hypothesis $\boldsymbol{H_0}$ is accepted that the variance of cooperative models and high-order thinking is homogeneous.

Table 5. Homogeneity test of cooperative model variables and learning motivation

N		$\boldsymbol{n_i - 1}$	$\boldsymbol{\frac{1}{n_i - 1}}$	$\boldsymbol{\log {s_i}^2}$	$\boldsymbol{(n_i - 1)({s_i}^2)}$
	$\boldsymbol{V_a}$	20	0.05	1.90	1612.00
	$\boldsymbol{V_b}$	20	0.05	1.87	1491.14
∑		40	0.10		3103.14

The presentation from Table 5 shows that from the Bartlett coefficient value, the value of χ^2_{count} is $\mathbf{0.030}$. assuming the error rate $\alpha = 5\%$, and the degree of freedom $dk = 1$, then the value of $\chi^2_{table} = \chi^2_{(1-0.05,1)} = 3.841$. By comparing the value between χ^2_{count} with χ^2_{table} it is clear that $\chi^2_{count} \leq \chi^2_{table} = 0.030 \leq 3.841$ so that the hypothesis H_0 is accepted that the variance of learning outcomes and higher-order thinking is homogeneous.

Effectiveness of Cooperative Learning Model on Learning Motivation

The effectiveness of the application of the TTW type of cooperative model was measured using the paired sample test and the independent sample t-test with the SPSS version 20 program. The paired sample test is a statistical test used to test the effect of the application of the TTW type of cooperative learning model in increasing student learning motivation. Meanwhile, the independent sample t-test was used to compare learning motivation between the control class and the experimental class. The results of the test calculations are shown in Table 6 and Table 7.

Table 6. Paired Sample test

	N	Min	Max	Mean	SD
pre_motivation_control	41	60	77	69.39	4.05
post_motivation_control	41	60	81	71.95	4.87
pre_motivation_experiment	35	42	77	60.83	8.79
post_motivation_experiment	35	60	89	76.29	6.71

Based on Table 6 the average pretest motivation score for the control class is 69.39 with a minimum score of 60 and a maximum score of 77, while in the posttest motivation it has an average score of 71.95 with a minimum score of 60 and a maximum score of 81. In the experimental class, the average pretest motivation score was 60.83 with a minimum score of 42 and a maximum score of 77, while the posttest motivation score had an average score of 76.29 with a minimum score of 60 and a motivation score of 89. Then a comparative test was conducted. paired t-test to determine whether there is a significant effect or not the application of the TTW cooperative learning model. The results of the independent sample t-test are presented in Table 7.

Table 7. Comparative Test of Prestset and Posttest Motivation Scores

Data	T Count	Sig	Conclusion
Pre_control Post_control	-5.048	0.000	There is a significant difference
Pre_experiment Post_experiment	-8.054	0.000	There is a significant difference

Based on the paired sample t-test in Table 7, it was found that the pretest and posttest significance values in the control class and experiment were 0.000 < 0.005, so there was an increase in the motivation score between before and after learning, in other words, there was an effect of the application of the TTW type cooperative learning model. on student motivation. The increase in student motivation scores with the TTW type of cooperative learning is also seen from the increase in each of the indicators presented in Figure 1.

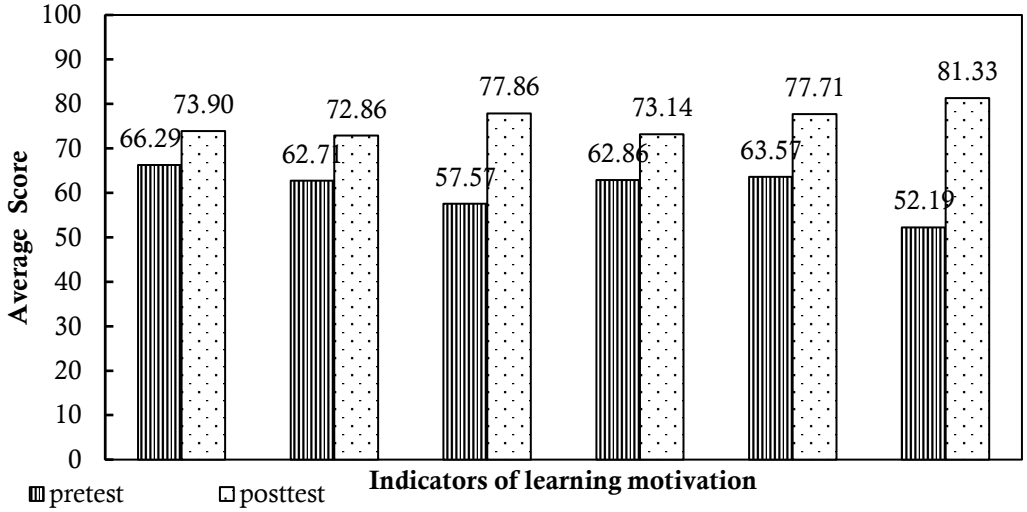

Figure 1. Improved Student Learning Motivation Score

Based on Figure 1 that on each motivation indicator there is an increase in the score from pretest to posttest. An increase in the indicators of desire to succeed by 7.61%, an increase in indicators of motivation and need in learning by 10.15%, an increase in indicators of future hopes and aspirations of 20.29%, an increase in indicators of rewards in groups 10.28%, an increase in indicators of activities that are interesting in learning by 14.14%, and an increase in indicators of a conducive environment by 29.14%.

The use of the TTW type of cooperative learning model is proven to have an influence on students' motivation which shows that a conducive environment and the desire to achieve future goals are the most influential indicators. These results following with research conducted by Al Amin (2020) that there is a positive influence on the Think Talk Write (TTW) learning model on student learning motivation. Other supporting research conducted by Widiastika (2017) states that learning motivation in students who take learning with the cooperative type TTW model is better than conventional models. In line with this, Artati (2018) also researched the application of the Think Talk Write cooperative learning model which can increase student learning motivation. The average motivation of students in cycle 1 was 70.58, in cycle 2 was 85.62. Sumantri (2017) in his research also emphasized that the higher the motivation, the higher the student's learning performance and achievement.

2. The Effectiveness of Cooperative Learning Model on Students' High-Level Thinking Ability

The effectiveness of the Type TTW Cooperative learning model on students' higher-order thinking learning outcomes using the Paired Samples Test. It is said that there is an effect of the application of the TTW type of cooperative learning model on learning outcomes if there are significant differences in learning outcomes of higher-order thinking between before and after the implementation of the TTW type of cooperative learning model. The results of the different test outputs are summarized in Table 8.

Table 8. Test Differences in Learning Outcomes of Students' High-Level Thinking Ability in Pretest and Postest

Data	T Count	Sig	Conclusion
pre-post control	-8.436	0.00	There is a significant difference
pre-post Experiment	-9.564	0.00	There is a significant difference

Based on the different tests in Table 8, it is found that the significance value of the control class and experimental class is 0.000 <0.05, then H0 is rejected. This shows, that there are differences in learning outcomes before and after being given a learning model, so it can be concluded that there is a significant effect of giving the TTW type cooperative learning model. To know the average increase in student learning outcomes, it is presented in the graph of the average high-level learning outcomes in Figure 2.

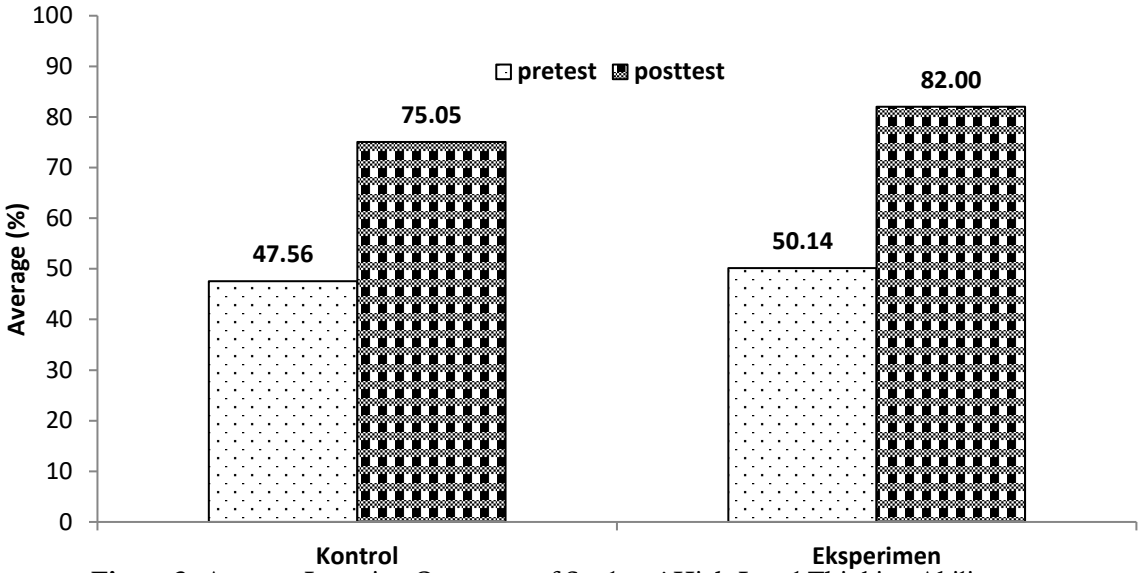

Figure 2. Average Learning Outcomes of Students' High-Level Thinking Ability

The data presented in Figure 2 shows that the average learning outcomes of students' high-order thinking skills have increased from the control class to the experimental class, namely from 47.56 to 50.14 in the pretest questions and 75.05 to 82.00 in the posttest questions. This confirms that students' higher-order thinking skills in the experimental class are better than in the control class. The cooperative learning model affects increasing students' higher order thinking skills. According to Farida, et al (2020) the application of the cooperative learning model in learning requires students to cooperate to obtain maximum learning outcomes. These results are following research conducted by Dianastiti (2019).

Implementing the Cooperative Learning model also increases the Higher Order of Thinking Skills (HOTS) in students. Marhadi & Erlisnawati's research (2018) also concluded that the higher order thinking skills of students who learn with cooperative learning have increased more effectively than students learning with conventional learning. Furthermore, Suparya's findings in 2019 also confirmed the effectiveness of the Think Talk Write type of cooperative learning model. Students' critical thinking skills in science learning are higher than conventional learning, this is evidenced by the statistical value of F = 14.732 with a significance level smaller than 0.05.

CONCLUSION

Based on the results of research conducted by researchers on fourth-grade students of Primary School Islam Imama and Primary School Islam Permatasari, it can be concluded that the application of the TTW cooperative model can increase student motivation and higher-order thinking skills. This can be proven in the results of tests and observations of students after learning by using the TTW (Think Talk Write) type of cooperative learning model which has increased. The results show that (1) the Think Talk Write (TTW) cooperative model is effective on student learning motivation. The significance value of the pretest and posttest in

the control and experimental class is 0.000 <0.005, so there is an increase in the motivation score between before and after learning (2) The cooperative model of the Think Talk Write (TTW) type is effective against students' high-order thinking skills. The average learning outcomes of students' high order thinking skills increased from the control class to the experimental class, namely from 47.56 to 50.14 in the pretest questions and 75.05 to 82.00 in the posttest questions.

ACKNOWLEDGMENTS

Acknowledgments are addressed to journal reviewers who have provided directions and suggestions in improving writing procedures and assisting in journal publishing

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