The Effect of LSQ Learning Model on Student Learning Achievement and Long-Term Memory

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Abstract. This study aims to analyze the effect of using triangle card media in the Learning Start with a Question (LSQ) learning model on student learning achievement and long-term memory. This research uses quantitative methods. The research design used was pretest - postt est one group design. The population involved were all fourth grade students at SD Negeri Gugus Permadani. The samples in this study were fourth grade students of SDN Kaliurip. Data analysis to measure learning achievement used Paired Sample T-Test with SPSS 26 application. The analysis results showed that the significance value was 0.000 or <0.05 which means Ho was rejected, which means the use of triangle card media in the LSQ learning model has a positive effect on students' IPAS learning achievement. Data analysis to measure long-term memory using descriptive analysis with SPSS 26 application. The analysis results show the value indicates that there is no significant difference in students' long-term memory.

Keywords: triangle card media, LSQ learning model, learning achievement, students' long-term memory.

1 Introduction

Education always needs learning innovation. Learning innovation makes education in tune with the times. Innovators in education will affect the progress of a nation. Educators are one of the parties that can be innovators and the frontline in improving the quality of education. The quality of learning in elementary schools must always be improved because it is the foundation for education at the next level regardless of the general paradigm in society.

The paradigm that develops in the community that teaching and learning activities are identical to writing and reading books. This indirectly affects the creativity of educators. According to Nugrahani [1], there are many complaints about the teaching system in primary schools that emphasizes one-way communication or lectures in the classroom. This teaching system is said to be a conventional system that is too boring and monotonous.

Perangin-angin [2] mentioned that this conventional learning is a learning model commonly applied by educators consisting of lecture, question and answer and assignment methods. Conventional learning places the teacher as the subject in learning activities while students become the object of learning. Students are not actively involved and only receive material from the teacher. Students do not get the opportunity to build their own knowledge. This has an impact on students' low learning achievement. Teachers need to transform learning activities to overcome student difficulties. Although not only learning achievement is

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a reference for success in learning, learning achievement can be a benchmark for teachers regarding the development of student learning achievement. This is what teachers encounter in the practice of IPAS learning.

IPAS learning is very closely related to real conditions in the surrounding environment. Students are faced with problems related to everyday life. If students master the IPAS material, it will help them to solve problems that occur in everyday life. One of the things that an educator can do is to optimize learning activities. Teachers must continue to innovate even though there are many factors that cause low student achievement.

Slameto [3] mentioned factors that can affect student performance another than interest in learning, including internal factors of the students themselves, such as intelligence, talent, attention, maturity and preparation. However, it is very possible that students learning success can be achieved well if teachers are creative in carrying out learning, such as using the right learning model and the learning media.

The learning model used must consider many factors such as learning objectives, subject matter, availability of facilities, student conditions and time allocation. Learning using learning media must be adapted to learning methods that are suitable for students, so that students do not feel bored at school. Media can also be interpreted as an intermediary for messages from the source of the message to the recipient of the information. This means helping teachers in conveying knowledge to students. Learning media in teaching and learning activities can also generate enthusiasm for learning and student interest, besides that it can also arouse student motivation and performance, and even have an effect on student psychology. Media utilization can also improve student understanding of subject matter at school.

The learning model that can be an alternative is the Learning Start with a Question (LSQ) learning model. LSQ is one of the active learning models that focuses on questioning skills. Students are asked to read the material to be studied. The reading activities carried out will make students have an overview of the material they will learn. If when the material is read or discussed, there are conceptual errors, it can be discussed together in class [4]. The LSQ learning model emphasizes student activity in reading and writing. The LSQ learning model is expected to influence students' activeness in asking questions and better student performance.

Question and answer sessions in the learning process are very important. Questions from teachers or students are necessary for good learning activities. Teachers need to stimulate students to ask questions. Teachers should appreciate students' questions. Questions will remove the unclear material that is being studied together. This statement is in accordance with the opinion of Mahmood, Ahmed, Shoaib, & Ghuman, namely " Questioning is the most important time in learning activities. The statement is in accordance with the opinion of Mahmood, Ahmed, Shoaib, & Ghuman, namely "The question and answer process is the most important time in learning activities. Question and answer activities between teachers and students are needed to make learning active. Teachers are obliged to stimulate students to ask questions during and after the lesson. The teacher is obliged to give the right answer in a happy and pleasant mood. Teachers should reward students who ask questions during learning activities. Questions can clear up a lot of confusion about the topic being discussed"[5].

The selection of the right learning model also needs to be balanced with the use of the learning media. The utilization of the learning media in learning activities can generate interest, motivate and stimulate learning activities, and even have psychological effects on students. [6]. the learning media can be utilized to increase and direct students' attention. So that motivation arises and provides a meaningful learning experience. In addition, it can also be used as a controller for the direction and speed of learning. The learning media as an intermediary from learning sources to recipients can ultimately improve student achievement.

Media that can be used are triangle cards. Researchers make triangle card media with modified puzzle games. Triangle card media contains questions and answers on the side that coincides with the puzzle triangle. The reverse side contains information about rare animals in Indonesia. The use of triangle card media as a tool is in the form of pairing the appropriate questions and answers on the card. Triangle card media is used after the teacher has finished providing feedback on student questions.

Learning activities can be structured and directed if they follow the syntax of the learning model. Directed learning activities can help the perpetrators of learning activities in achieving learning objectives. The actors of learning activities in question are teachers and students. Students in learning activities are encouraged to discover knowledge, explore the knowledge they already have and develop further information or abilities. Teachers guide students in this process by developing a learning atmosphere that can provide opportunities for students to find and apply their ideas to learn independently. It is expected that meaningful learning can provide knowledge that can last in students' long-term memory.

Tandon and Sharma [7] explain that Long-term memory is a memory that can last anywhere from a few days to a lifetime. In terms of structure and function, long-term memory is different from short-term memory which lasts up to 30 seconds. Long-term memory is concerned with the process of storing information on an ongoing basis. The information is mostly out of awareness, but can be recalled into working memory when needed. Information in long-term memory can be stored for a long time. This information can be reused within a period of days, weeks or years. Through the process of association and repetition, information that was previously stored in short-term memory can turn into long-term memory.

Many researchers and educators view the LSQ learning model as improving student achievement. Research by Pramithi [8] the application of LSQ learning strategies can improve students' learning activities and science learning achievement. Another study conducted by Suriani and Perdana [9] showed that the use of LSQ learning strategy accompanied by rewarding can increase mathematics learning activities and better student learning outcomes compared to the learning outcomes of students who apply conventional learning.

Based on the problems encountered and the theory that the researchers described, the researchers tried to use triangle card media in the LSQ learning model to solve the problem of low student achievement. In addition, students are also expected to be able to store information in their long-term memory. This study investigates the extent to which the use of triangle card media in the LSQ learning model can affect learning achievement and analyze differences in students' long-term memory after using triangle card media in the LSQ learning model.

2 Research Methods

2.1 Research desain

This research uses quantitative methods. The research design used was pretest - posttest one group design. This study will compare pretest and posttest scores. If the post-test value is greater than the pretest, then the treatment has a positive effect [10]. This design can be described as follows.

O1 X O2 : O3 : O4 : O5

Description:
O1 = Pretest score
X = Treatment
O2 = Posttest score
O3 = Retest 1 score
O4 = Retest 2 score
O5 = Retest 3 score

2.2 Subject of the study

The research was conducted in the area of the Tapestry cluster, Purwojati District. The population in this study consisted of ten public primary schools in the Tapestry cluster. Samples in this study were fifth grade students of SDN Kaliurip. Samples were taken using random sampling technique.

2.3 Intrument of the study

The instrument used in data collection was a test. IPAS learning achievement data in question is the score on the student IPAS test before and after the action treatment using triangle card media in the LSQ learning model for students. Long-term memory data collection also uses tests given periodically after treatment, namely 2 days, 4 days and 10 days. Learning achievement variables will be analyzed using paired sample t-test. While the long-term memory variable will be analyzed using descriptive analysis.

2.4 Research procedure

The research procedure was as follows:

1) All test items were tested before giving the pretest to determine the instrument and its reliability.
2) Pretest and posttest were given to analyze students' IPAS learning achievement.
3) Retest was given to analyze students' long-term memory.
4) Quantitative data was collected using pretest-posttest and retest and analyzed using SPSS.

3 Results And Discussion

The results of research on the use of triangle card media in the LSQ learning model on IPAS learning achievement and students' long-term memory will be discussed at the points below.

3.1 Validity and reliability test

The validity of the learning achievement test was calculated using SPSS 26. The validity results obtained were quite high and high. The reliability test results are also in the high category. The resulting Guttman Split-Half Coefficient value is 0.899. Based on these results, the learning achievement test questions can be used as instruments in this study.

3.2 Data Normality Test

The purpose of using the normality test is to determine whether the data meets the normal distribution value or not. The normality test was carried out with the Saphiro-Wilk test on

student pretest and posttest data. States that data is referred to as normal data if the significance is> 0.05 in the Saphiro-Wilk normality test [11]. States that if the data does not meet the normal distribution value, then parametric statistics cannot be used and need to use non-parametric statistical tests [12]. The results of the data normality test using Shapiro-Wilk are presented in table 1.

Table 1. Data Normality Test

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Prestasi Belajar Siswa	Pretest	.161	20	.186	.918	20	.092
	Posttest	.183	20	.076	.911	20	.067
a. Lilliefors Significance Correction							

Based on the table above, the results of the data normality test using Saphiro-Wilk show that the significance value is 0.092 for the pretest and 0.067 for the posttest, which means that the data is normally distributed.

3.3 Descriptive Analysis of Student Learning Achievement

Data from the results of student learning achievement were then analyzed descriptively to determine whether there was a difference in the average pretest and posttest scores in IPAS learning using triangle card media in the LSQ learning model. The results of the descriptive analysis can be seen in table 2.

Table 2. Descriptive Analysis of Student Learning Achievement

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre test	20	10	60	33.50	15.652
Post test	20	40	100	66.00	17.592
Valid N (listwise)	20				

Table 2 presents the results that the average scores on the pretest and posttest show positive changes. Based on this description, the application of learning by using triangle cards in the LSQ learning model has a positive effect on students' IPAS learning achievement. It is evident that the average posttest value of student learning achievement is better than the pretest value. However, to further strengthen this opinion, it is necessary to analyze the data using the t test so that the research results are more valid and accountable.

Based on the analysis requirements test that has been carried out on the learning achievement variable, to verify the validity of hypothesis 1 in this study using the t test, namely the Paired Sample T-Test. This test is used because the research data is normally distributed and compares paired data. The paired data in question are pretest and posttest scores from the same subject. Table 3 shows the significance of the pretest-posttest scores for learning achievement.

Table 3. Paired Sample T-Test of Learning Achievement

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	Pretest - Post test	-32.500	22.913	5.123	-43.224	-21.776	-6.343	19	.000

Table 3 presents a significance value of 0.000 or <0.05. These results show that the use of triangle cards in the LSQ learning model has a positive influence on students' IPAS learning achievement in the sample class used, namely fourth grade students at SD Negeri Kaliurip.

These results are caused by several factors that affect student learning achievement. These factors can come from within the student or from outside the student. Factors that can influence can be grouped in terms of material studied, student learning environment, instrumental factors and student conditions. According to Mulyasa [13] these factors can jointly or separately contribute to student learning achievement.

In the school environment, students will follow the learning model designed by the teacher. Therefore, teachers need to pay attention and prepare learning models that will be used to support the learning process in the classroom.

The selection of the learning model used is also influenced by the material to be taught. IPAS material is material that is closely related to student life. The selection of the learning start with a question learning model is an alternative choice that can be used because it emphasizes student activities to explore knowledge by reading the material then continued with questions and answers. Students already have an initial provision about the material being studied and ask about things they don't understand.

This study modifies the learning start with a question model by adding activities, namely games using tri angel card media. The media will make students recall the material that has been learned in a fun way. According to Sudjana & Rivai [14] media is very important to use to make it easier for students to understand the concept of the material being taught. The use of media allows learning to be fun and more meaningful.

Based on the description above, it can be understood that learning activities using tri angel card media in the learning start with a question learning model have a positive effect on students' IPAS learning achievement.

3.4 Results of Data Analysis to Test Long Term Memory Variables

Data analysis in this study used descriptive analysis. According to Nasution [15], descriptive analysis is a form of research data analysis to test the generalization of research results based on one sample. Descriptive statistics only relate to describing or providing information about a data or situation or phenomenon. In other words, descriptive statistics function to explain the situation, symptoms, or problems.

The data used are the results of the retest three times on the same subject. The first retest was 2 days after the posttest was conducted. The second and third retests were 4 days and 10 days after the posttest was conducted. The results of data analysis to test hypothesis 2 are presented in table 4.

Table 4. Descriptive Statistic

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
2 Hari	20	60	100	81.00	17.741
4 Hari	20	60	100	81.00	15.183
10 Hari	20	40	100	77.00	17.502
Valid N (listwise)	20				

Based on the results of the normality test, it was found that the data was not normally distributed. The first and second retests resulted in a significance value of 0.000. The third retest resulted in a significance value of 0.011. The first and second retests were carried out consecutively at regular intervals of 2 days and 4 days. While the third retest was 10 days apart.

The table shows the number of respondents as many as 20 students. The results of the first retest the minimum value obtained by students is 60 while the maximum value is 100. The mean of the first retest is 81.00 while the standard deviation is 17.741. The second retest obtained the minimum value, maximum value and mean value are the same as the first retest, while the standard deviation obtained a value of 15.183. The third retest obtained a minimum value of 40, a maximum value of 100, a mean of 77.00 and a standard deviation of 17.502.

The data shows similar conclusions, namely that the mean value is closer to the maximum value and the mean value is greater than the standard deviation value. The standard deviation value is smaller than the mean, indicating that there is no data deviation in the long-term memory variable. Based on the mean value, it can also be concluded that student memory in the first and second retests with an interval of two days is still the same. This means that students' long-term memory is still good. It is different in the third retest which shows a decrease in memory but still has a mean value close to the maximum value.

This result is in accordance with the research of Parmithi and Wahidin [8] who found that the use of the LSQ model can improve student learning achievement. Pradana [16] suggested that the LSQ model is able to provide active learning so that learning outcomes are better. This is because the process and steps of the LSQ model can lead students to be ready to learn. The learning process begins with students reading the material and continues with asking questions by each group. The questions are questions about the material that students have not understood. Questions can be answered by other groups who already understand and there will be discussions in the classroom. Students can exchange knowledge and learning experiences found.

The use of triangle card media will add to the impression of students in learning. According to Tandon and Sharma [7] students more easily remember ideas presented through their sensory channels. They further explained "long-term memory is a system that permanently stores, manages, and retrieves information so that it can be reused at a later time. Information stored in long-term memory can be stored for life. Long-term memory involves storing and recalling information over a long period of time, such as several days or even several years. Through the process of association and practice, the contents of short-term memory can become long-term memory".

Tandon and Sharma [7] also mentioned that long-term memory is generally divided into two types, namely explicit and implicit memory.

- Explicit memory includes all memories available in consciousness both episodic memory (specific events) and semantic memory (knowledge about the world).

- Implicit memory is memory that is largely unconscious. This type of memory includes procedural memory. Implicit memory involves memories of body movements and how to use objects in the environment. For example, driving a vehicle or using a computer.

This opinion means that improving long-term memory can be done with a training process. The practice process will be able to call information and re-store the information obtained so that it can become a explicit or implicit memory. Long-term memory will be able to help students in achieving learning success. Teachers need to guide students in learning so that teaching and learning activities become meaningful. If this learning activity is meaningful, it can make the information received by students enter their long-term memory. This will be very useful for students' lives in the future.

4 Conclusion

Based on the result of the research, it can be concluded that the use of triangle card media in LSQ learning model gives positive influence and impact on learning achievement and there is no difference in long-term memory of fourth grade students of SD Negeri Kaliurip. Teachers need to adjust the use of learning models and appropriate learning media in order to improve students' achievement and long-term memory.

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