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THE INFLUENCE OF ACTIVE LEARNING STRATEGIES ON MATHEMATICS LEARNING MOTIVATION OF FIFTH GRADE STUDENTS OF ELEMENTARY SCHOOL (SD) NAKULA CLUSTER, JEMBRANA SUB-DISTRICT

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Abstract: This study aims to analyze the differences in learning motivation between students who study using active learning strategies and conventional learning strategies. This type of research is a *quasi-experimental* design with a *non-equivalent pretest-posttest control group design*. Research populations are all fifth-graders at State Elementary School (SDN) in Nagara District 2021/2022, totaling 162 people. The class sample was taken by random sampling technique. The sample consisted of 2 classes, which are Class V at State Elementary School (SDN) 1 Banjar Tengah as many as 22 students who studied with active learning strategies, and class V State Elementary School (SDN) 2 Banjar Tengah with 22 students who studied with conventional learning strategies. The data collected in this study was data on students' mathematics learning motivation, which was obtained by using a mathematics learning motivation test that had a reliability of 0.93. Data on motivation to learn mathematics were analyzed by descriptive analysis and one-way ANOVA. Hypothesis testing was carried out at a significance level of 5%. The results showed that there were differences in motivation to learn mathematics between students who studied with active learning strategies and conventional learning strategies ($F = 79.93$; $p < 0.05$). The results of the LSD test showed that student's motivation to learn mathematics using active learning strategies was higher than conventional learning strategies (LSD = 0.09) ; =0.42) .

Keywords: learning motivation, active learning strategy, conventional learning strategy.

PRELIMINARY

Law No. 20 of 2003 concerning the National Education System stated that education is a conscious and planned effort to create a learning atmosphere and learning

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process so that students actively develop their potential to have religious-spiritual strength, self-control, personality, intelligence, motivation, noble character, and skills that needed by himself, society, nation, and state. (Utami, *et al*., 2013).

Mathematic is an ideal way to acquire competencies (skills, maintaining attitudes, and developing an understanding of concepts). One of the functions and objectives of mathematics is that students can gain experience and apply the scientific method through experiments so that students are trained to be scientific. (Literature, 20 1 9)

Based on interviews that have been conducted with 3 students and a teacher in mathematics at Elementary School (SD) Banjar Tengah 1, they still use conventional learning. This can be seen from the lack of student activity during teaching and learning process, students tend to be silent or passive and even talk to themselves when the teacher delivers the material. As a result, it affects the student's unsatisfactory learning motivation. The low competence or ability of Indonesian students, especially in mathematics, is due to the absence of a meaningful learning process that can improve and optimize aspects of student development so that the achievement of motivation is not optimal.

There are several causes of ineffectiveness of learning strategies in the classroom that it has an impact on student learning motivation, namely as follows.

First, learning mathematics in the classroom is still dominated by teachers. This fact shows that teachers have not been able to change the paradigm of teaching into learning. Teachers still place themselves as teachers and students as objects to be taught. This causes the learning process in the classroom to be dominated by teachers. This dominance was observed when teachers taught and delivered the material monotonously in the classroom. Teachers often discuss theory by providing mathematical equations contained in the handbook. (Abdjul 2013).

Second, elementary school students have different study habits when the learning process takes place in class, not all students catch the material given by teachers. In the classroom teachers sometimes use different learning strategies so that each child has different study habits. (Chaudhari, 2013).

According to Widi Yanto and Riyadi, (2013) stated that students are not actively involved in learning process, and limited learning facilities so learning

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motivation and ability to increase student motivation are still low. The emergence of these problems is caused by the learning process that has not been optimal to grow and increase satisfaction, and student learning motivation. In responding to these problems, it is necessary to choose appropriate and innovative learning strategies to be able to provide opportunities for students to explore their knowledge. The appropriate learning strategy applied to solve the problems above is an active learning strategy. Learning outcomes will be optimal if there is the right learning motivation (Sardiman, 2016).

Active learning is one of several kinds of learning variations that invite students to learn actively. Student involvement is a significant factor in the promotion of active learning (Mahmood, *et al* ., 201 7). The benefit of providing active learning strategies to students is that teachers can involve students in problem-solving activities, and provide feedback about learning process for teachers and students so that the learning atmosphere in the classroom becomes more active and lively, so what the learning objectives can be achieved increases students' learning motivation (Gleason, *et al* ., 2011).

Based on the research results by Tas and Cakir (2014) that active learning strategies are reflected in students playing an active role in building new knowledge based on their previous knowledge. Widiyanto and Riyadi (2013) stated that the active role of students in learning process will increase student learning motivation and increase critical attitudes towards problems in daily life. The existence of an active learning strategy in the classroom is expected to increase students' learning motivation, which can be seen in students' persistence in learning mathematics.

Based on background explanation above, the research objective is to analyze the differences in learning motivation between students who study using active learning strategies and conventional learning strategies. Thus, the idea of experimental research is proposed to find out the problems that arise. Researchers proposed research entitled "The Influence of Active Learning Strategies on Mathematics Learning Motivation of Fifth Grade Students in Nakula Cluster, Negara Sub-district for the academic year 2021/2022".

METHOD

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This research is quasi-experimental. This study used a quasi-experimental design. The *quasi-experimental design* has a control group, but cannot fully control the external variables that affect the implementation of the research (Sugiyono, 2013).

1. Research Population

Population is not just the number that exists in the object or subject being studied but includes all the characteristics (properties) of subjects or objects (Sugiyono, 2012). The target population in this research is fifth-grade students of Nakula Cluster, Negara Sub-district for the academic year 2021-2022 which consists of 8 schools. The total population is 162 students.

2. Research Sample

Sampling in this study was conducted using *simple random sampling technique*. Sampling uses a lottery system. Each school is assigned a serial number based on the number of classes available. So schools that are numbered sequentially from one to eight are Elementary Schools (SD) 1-5 BB Agung and Elementary Schools (SD) 1-3 Banjar Tengah. Two rolls of paper containing selected numbers represent classes used in this study. Two selected classes are drawn again so that one class gets the treatment of applying active learning strategies and the other class gets the application of conventional learning strategies.

3. Research procedure

The data collection technique used in this study was to collect test data on mathematics learning motivation at the beginning and end of treatment in each learning group, which are the active learning strategy group and the conventional learning strategy group. This study used data analysis techniques, namely descriptive analysis and one-way analysis of variance (Anava). Descriptive analysis was used to analyze the average score and standard deviation of students' mathematics learning motivation before being given treatment (*pretest*) and after being given treatment (*posttest*) for each learning strategy. The research hypothesis was tested using the one-way analysis of variance (ANAVA) technique. Testing the research hypothesis can be done if the prerequisite tests are carried out, namely the normality test and homogeneity test with help of SPSS with a significant level of 5%. Then continued with the significant test of average value between groups using the *Least Significant Difference* (LSD).

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4. Research Instruments

The instrument developed in this study was a student motivation test. This test is used to collect data on students' learning motivation before being given treatment and data on students' learning motivation after being given treatment. The student's mathematics learning motivation test developed in this study was in the form of multiple choice. Students' learning motivation test in the form of multiple-choice was given 2 times, namely at *pretest* and *post-test*. The number of test items used is 25 items. The minimum score of each test item for learning motivation is 0 and the maximum score is 1. The test for learning motivation is given twice, namely a test for students' motivation to learn mathematics which is given before treatment (*pretest*), and a test of learning motivation after treatment (*posttest*). Mathematics learning motivation test used at the pretest and posttest is the same.

5. Data Analysis Techniques

Descriptive analysis technique was used to describe the score (M) and standard deviation (SD). Motivation score of students learning mathematics after doing the initial test (*pretest)* and motivation score of students learning mathematics after working (*post-test*) can be determined using the following formula.

$$Score = \frac{Score\ obtained}{Maximum\ score} \times 100\%$$

The data analysis technique used to test the hypothesis in this study is the one-way analysis of variance (Anova).

Gain score is then used to test the research hypothesis using the one-way ANOVA technique. (Candiasa, 2010).

RESULTS

Based on the analysis of *pretest results* and *post-test* it can be obtained the graph of comparison of students' mean from results of the pretest *and* posttest *is* presented in Figure 1.

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Figure 1. Graph of Mean *Pretest* and *Posttest* between Treatment Groups

The assumption test that must be met, which includes the normalization test for data distribution and the homogeneity test of variance between groups, is as follows.

1. Testing the Normality of Data Distribution

The normality test for distribution of learning motivation data was carried out using the *Kolmogoro-Sminov* and *Shapiro-wilk statistics*. Data analysis of learning motivation was carried out using the help *of SPSS 16 software for windows.*

If the significant number obtained is greater than 0.05, then the data being tested has a normal distribution of data. The results of normality test obtained from SPSS are presented in Table 4.

Table 4. Summary of Data Normality Test Results

Group		Kolmogorov-Sminov [a]			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Motivation	Conventional learning strategies	0.15	22	0.20*	0.93	22	0.13
	Active learning strategy	0.12	22	0.20*	0.96	22	0.44

Table 4. shows the statistical value of *Kolmogorov-Sminov* and *Shapiro-Wilk* for the conventional learning strategy group, which obtained significant figures of 0.30 and 0.13 respectively, while the active learning strategy group obtained significant figures for the *Kolmogorov-Smin*ov and *Shapiro-Wilk* values respectively. respectively i.e. 0.20 and 0.40. This shows that the significant number of both statistical tests in each group is greater than 0.05. So it can be concluded that the data on student learning motivation in each group is normally distributed.

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2. Testing the Homogeneity of Variants Between Groups

Homogeneity test of variance between groups was carried out using *SPSS 16 software for windows*. A summary of the results of variance homogeneity test is shown in Table 5.

Table 5. Summary of Variant Homogeneity Tests Between Groups

		Levence statistics	df1	df2	Sig.
Motivation	Based on mean	0.52	1	42	0.48
	Based on Median	0.52	1	42	0.48
	Besed on Median and with adjusted df	0.52	1	40.33	0.48
	Based on trimmed mean	0.52	1	42	0.48

Based on Table 5, the results of homogeneity test of the variance data obtained show the statistical value of *Levenc* of *based on mean* has a significant number of 0.48. It can be defined that the significant number of two statistical tests in each data group is greater than 0.05. It can be concluded that the variance of the learning motivation data in each group is homogeneous.

a. Hypothesis test

The level of significance used is 0.05. If the significant number is less than 0.05, then H0 is rejected and H1 is accepted, meaning that there are differences in the motivation to learn with active learning strategies and groups of students who learn with conventional learning strategies. A summary of the results of one-way Anova is presented in Table 6.

Table 6. ANOVA Result Summary

Source	Type III Sum Of Squares	df	mean Square	F	Sig.
Corrected Model	1.97 [a]	1	1.97	79.93	0.00
Intercept	9.04	1	9.04	367.45	0.00
Group	1.97	1	1.97	79.93	0.00
Error	1.03	42	0.03		
Total	12.04	44			
Corrected Total	3.00	43			

The results of the one-way ANOVA test in Table 6 have the following interpretation. The source of influence of learning strategies on Mathematics Learning Motivation has a significant F value of 79.93 with a significance number smaller than the 0.05 significance level. Based on these results, H0 is rejected and H1 is accepted, so it

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can be concluded that there are differences in Mathematics Learning Motivation between students who learn by using active learning strategies and students who learn by conventional learning strategies. Thus, the increase in students' Mathematics Learning Motivation significantly ($p<0.05$) was influenced by the treatment given in the form of active learning strategies and conventional learning strategies.

DISCUSSION

This section discusses the results of descriptive analysis which is difference between the average score of students' Mathematics Learning Motivation between groups of active learning strategies and conventional learning. Mathematics Learning Motivation which shows the normalized score *gain*, which is the group of students who learn Mathematics with an active learning strategy has a normalized average score *gain* (M = 0.66 with SD = 0.14) while in the conventional group strategy group, the average Mathematics Learning Motivation is shown with the normalized gain score (M = 0.24 with SD = 0.14). Based on findings obtained in this study, it can be seen that the average score of students in the experimental class who learns with active learning strategies is higher than the control class that learns with conventional learning strategies because active learning facilitates students to learn actively and meaningfully. A learning atmosphere with active learning can minimize student boredom in learning.

Some of the reasons that can be used as the basis or determination that active learning strategies are better in providing opportunities for achieving better learning motivation when compared to learning strategies are as follows.

First, in terms of theoretical basis, active learning strategies are based on constructivism learning theory which suggests that students should be more active in constructing their knowledge through assimilation and accommodation processes. In addition, active learning is also based on the teachings of Confucius in China which teaches that the more real or concrete students' activities in learning, the easier it is for students to understand knowledge than just listening and reading. The application of active learning strategies in the learning process helps students to improve cooperation both within groups, between groups and with teachers.

This is the advantage of an active learning strategy compared to using conventional learning strategies. Conventional learning is teacher-centered learning,

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where the teacher plays a very dominant role in learning while the students are only passive listeners. Suryosubroto (2012) stated that there are several steps in implementing conventional learning strategies, namely (1) appreciation, (2) information presentation, (3) illustrations and examples of questions, (4) practice questions, (5) feedback, (6) evaluation. The weakness of this strategy is that learning steps are full responsibility of the teacher, starting from preparing the material, explaining the learning material, connecting the material with students' daily lives to concluding.

Second, viewed from an empirical operational point of view in the presentation of learning, groups of students who study with active learning strategies are facilitated by worksheets (LKS) that direct students in experimental activities or activities accompanied by quiz questions between groups. The teacher is tasked with guiding students in learning activities so that the answers made by students do not deviate or are relevant to the material discussed. The activity of doing worksheets (LKS) shows a person's mindset so that with these questions the teacher can find out the extent to which students understand the material presented.

This is different from the conventional learning strategy group which is not given worksheets (LKS) given by the teacher and only listens to the teacher's explanation in front of class. Information obtained by students comes entirely from the teacher's explanations and demonstrations, so students will record what the teacher writes on the board. This learning strategy does not provide opportunities and freedom for students to move and explore their knowledge.

The advantages of active learning strategies in this study are also supported by several research results. Research conducted by Tas and Cakir in 2014 entitled "An Investigation of Science Active Learning Strategy Use in Relation to Motivational Beliefs" revealed that the application of active learning strategies attracted more student participation than traditional learning and students showed more positive attitudes during learning. compared to traditional learning strategies.

This is also confirmed by Shahi, et al. (2013) " *The effect of active learning on academic achievement motivation in high school students* " revealed that there are significant differences in learning motivation between students who study with active learning strategies and students who study with conventional learning. Active learning provides opportunities for students to learn with other students through discussion or

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interaction in groups and between groups. Learning will be easier and more comfortable for students if they gain knowledge through collaboration with peers so that the material will be easier for students to understand.

This is also reinforced by the results of previous relevant studies such as the research conducted by Putri in 2014 entitled "Application of Active Learning Strategy *Eveyone is a Teacher Here* in Mathematics Learning for Class VII Students of SMPN 3 Sungai Penuh" in the learning process, students learn active and have a study plan and time. The active learning process makes students responsible and their understanding will be more critical to achieving success in learning. The results of the study show that active learning makes students interact with colleagues in learning process and have an important role in each process.

CONCLUSION

Based on the results of research discussion, the following conclusions can be developed. There are differences in motivation to learn mathematics between students who study with active learning strategies and students who learn with conventional learning strategies in class V Elementary School (SD) Nakula Cluster, Jembrana District ($F = 79.93$ with; $p<0.05$). Mathematics learning motivation in the active learning strategy group with an average normalized gain of 0.66 is better than the conventional learning strategy group with an average of 0.24.

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