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The influence of paikem gembrot model against student's self efficacy and learning outcomes

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Abstract: This research Aimed to know the method of PAIKEM GEMBROT obese learning with a scientific approach to *self efficacy* and the result of students learning at SMPN 1 East Sakra in the school year 2018/2019. The research which in this research was a quasi-experimental method. The population is all the seventh graders of SMP Negeri 1 East Sakra in the School 2018/2019 with a 112 number of students. The sample was definite with *simple random sampling*. VII A class (28 students) as experimental class and VII B class (28 students) as control class. The technique of collecting data was used a questionnaire of *self efficacy* (20 items) and the result of study (multiple choice is 20 items). The data analysis was used MANOVA. The result of analysis showed $t_{arithmetic} \geq t_{table}$ was $26 \geq 4.02$ roommates means H_0 received and H_a rejected, so it conclude that there was a significant effect in using *PAIKEM GEMBROT* learning with a scientific approach to *self efficacy* and the result of students at SMP Negeri 1 East Sakra in the school year 2018/2019.

Keywords: *Paikem Gembrot, self efficacy, result of study.*

According to Indonesian act. number 20 of 2003 article 4 paragraph 5 of the National Education System states that Education is organized by developing a culture of reading, writing and arithmetic[1]. This is applied through the Mathematics learning process that is taught at every level of education. Even mathematics has been taught from an early age, namely before children enter school even though it is still just an introduction to numbers. Through learning mathematics, it is hoped that community members can develop the ability to count and apply it in everyday life[2].

Mathematics is a basic science that has become a tool for learning other sciences. The problem that is often faced by students is the low ability to understand students' basic mathematical concepts[3]. Therefore, mastery of mathematics is absolutely necessary and mathematical concepts must be understood correctly from an early age. This is because the mathematical concept is a series of cause and effect. A concept is compiled based on previous concepts, and will be the basis for subsequent concepts, so that a wrong understanding of a concept, will result in misunderstanding of the next concept[4]. On this basis, the inculcation of mathematical concepts began to be taught to elementary school students[5].

The teacher also needs to understand the character of students and is inseparable from teaching and learning activities[6]. Learning activities are expected to create a process that directs students to carry out learning activities. The interaction between the teacher and students in teaching and learning activities is an ongoing process to realize the objectives to be achieved[7].

The learning atmosphere is under the characteristics of students is an interesting and fun learning atmosphere. It requires teachers to create an interesting learning and enjoyable, so that students feel happy and motivated to take part actively during the learning process of mathematics. The supports this which states that learning will be effective if done in a pleasant atmosphere. For that in learning, children are given the opportunity to plan and use learning methods that they enjoy[8].

Learning mathematics will be more effective if done in a pleasant atmosphere. Teacher should seek their unpleasant circumstances by applying an enjoyable learning method[9]. The success or failure of the learning process is greatly influenced by various factors, including the teacher's ability to provide lessons including using the models, methods and approaches used in teaching.

The results of observations and interviews that have been conducted by researchers with mathematics teachers in grade VII of SMP Negeri 1 East Sakra, so far the teacher still uses conventional methods, uses lectures more and still does not use creative and innovative methods in teaching students. So when the learning process takes place, some students pay less attention to the explanation from the teacher and are more likely to want to play around during the learning process. If students are not active and more teachers act than confidence (*Self Efficacy*) I will reduce students [10]. *Self*



efficacy is an attitude or a feeling of confidence in one's own abilities so that the person concerned is not too anxious in his actions, can do things he likes and is responsible for his actions, warm and polite in interacting with others, can accept and appreciate others, have the drive to excel and recognize their strengths and weaknesses[11].

Another fact the researchers interviewed with several students and got results that when students work on questions in front of the class, the answers written by students are correct, but because of the lack of self-confidence students cause students to continue to delete the answers. "Same is the case with students who cannot express their opinions" for example when the teacher asks questions, the student wants to answer them, even though the student's answer is correct but he is still unsure of his own answers, this results from students self-efficacy. If self-confidence (Self Efficacy) is lacking, it will impact student learning outcomes, which we know that learning outcomes are very important. "Learning outcomes are behavioral changes that occur after taking part in the teaching and learning process under educational goals"[12]

The results of observations made at SMP Negeri 1 East Sakra show that the results of student learning are still low for the low level of student self-efficacy during the learning process. Therefore, there is a need for new innovations in teaching mathematics especially to improve self-efficacy and mathematics learning outcomes of Grade VII students of SMP Negeri 1 East Sakra.

Efforts that can be made to improve *self-efficacy* and mathematics learning outcomes of Grade VII students of SMP Negeri 1 East Sakra are by applying the PAIKEM GEMBROT model. PAIKEM GEMBROT contains learning to mean that enables children, develop innovation and creativity so it is effective but still fun, joyful and will make students who are weighted.

While according notion that PAIKEM GEMBROT is a stands for Active Learning, Innovative, Creative, Effective, fun, excited and weighted. The term Active means that the process is actively building meaning and understanding of information, science and experience by students themselves. We expect innovative learning process to emerge new ideas or positive innovations that are better. Creative that learning is developing student creativity, because basically every individual has an imagination and curiosity that never stops. Effective means that whatever is chosen must guarantee that learning objectives will be maximally achieved. Fun means that the learning process must take place in a pleasant and memorable atmosphere. Excited intended for teachers to create a fun atmosphere so that students can learn to enjoy students can absorb the lessons. Weighing is intended so that teachers in providing learning to students have good quality so it achieve learning objectives.[13]

With this learning, the teacher can freely and creatively present the teaching material in a interesting manner I expect under what because the teacher encourages students to find their own way in solving a problem. PAIKEM GEMBROT involves students in various activities that develop their understanding and abilities[14]. PAIKEM GEMBROT can create a conducive and meaningful learning environment able to give students the knowledge and attitude to life. Students will learn about individual processes, social processes, and how to learn that are fun. I encourage PAIKEM GEMBROT to gain direct knowledge from the environmental experiences of students, so this learning focuses more on the success of students in organizing their experiences.

Based on the rationalization and facts mentioned above, the researchers conducted a study of the effect of the PAIKEM GEMBROT model on *self-efficacy* and learning outcomes of Grade VII students of SMP Negeri 1 East Sakra. I expect the application of the PAIKEM GEMBROT model to improve *self-efficacy* and learning outcomes of Grade VII students.[15]

Method

This research is a quasi-experimental research (*Quasi Experimental*)[16]. The research design used is *factorial design*. This research is a quasi-experimental research (*Quasi Experimental*). The research design used its *factorial design*.

Table 01. Research design

Treatment	Dependent variable	
	Self-confidence (Y_1)	Learning Outcomes (Y_2)
Paikem Gembrot (X_1)	$X_1 Y_1$	$X_1 Y_2$
Expository (X_2)	$X_2 Y_1$	$X_2 Y_2$

Place of research conducted in SMP Negeri 1 East Sakra. I conducted the research on the date of July 9 to July 31, 2018 education year of 2018/2019. The population in this study were all grade VII students in SMP Negeri 1 East Sakra in the 2018/2019 education year comprising 4 classes of 112 students. The research sample is class VII A as an experimental class comprising 28 students and class

VII B as a control class comprising 28 students. The technique used in sampling is the *Simple Random Sampling* technique.

Data collection techniques in this study are tested and non-test techniques. Test techniques were used to get data relating to the cognitive abilities of students. The test in this study is that the posttest questions are used to see the effect of the experimental group. I do this test at the end of learning as an evaluation to see the ability of students after being given treatment. The non-test technique used by researchers was a questionnaire. This questionnaire is used to measure students' self-confidence (*self-efficacy*).

The instruments used to collect data in this study were the test and questionnaire instruments. The test used to measure student achievement in this study is an aim test in the form of multiple choice comprising 20 questions. The questionnaire to measure student self-confidence (*self-efficacy*) comprises 20 question questions and has a very positive to negative gradation provided in 4 alternative answer choices, which are sure, sure, not sure, and very unsure.

This research instrument trial comprised validity test and reliability estimation test. Validity test was carried out by referring to the Aikens' V formula, while for the estimation of the reliability of the learning outcomes test used the formula KR 20 (*Kuder Richardson*) and the reliability coefficient on the questionnaire using the Cronbach alpha formula[17].

The data analysis technique used in this study is the MANOVA test, which before conducting the MANOVA data analysis, a prerequisite test comprising the normality and homogeneity of the data and further tests used the t-test.

Results and Discussion

They carried this research out at SMP Negeri I East Sakra, this study used an experimental research design "factorial" in which the object of the study they divided the object of the study into two classes, namely the experimental class and the control class. In this study, a class VII A as a class experiment which amounts to 28 students were given treatment by using PAIKEM GEMBROT Model, while the seventh grade B as a control group, amounting to 28 students were given treatment by using instructional lectures.

I do the learning process during the first month using the learning model differently at a specified class. After I give each class different learning, then at the last meeting an evaluation is held to measure self-efficacy and student learning outcomes. I gave questionnaires to measure students' self-confidence 20 items while the test results given were in the form of multiple-choice questions totaling 20 items. Where the data collection instruments in the form of questionnaires and tests have been tested for validity through expert testing and questionnaires and I have conducted tests in class VIII A and VIII B to measure the level of reliability. I can see the results of the test validity and reliability of tests and questionnaires in table 02 and table 03 below.

Table 02. *Validity Test Results Test Instruments Learning Outcomes and Questionnaire Self Efficacy*

Learning Outcomes Test		
Item Number	Aiken's Coefficient V	Information
1, 2, 4, 6, 7, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20	> 0.80	Very Valid
3, 5, 8, 13, 14	0.40 - 0.8	medium validity
Questionnaire <i>Self Efficacy</i>		
Item Number	Aiken's Coefficient V	Information
1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20	> 0.80	Very Valid
6, 7, 19	0.40 - 0.8	medium validity

Table 03. *Reliability Test Results Test Instruments Learning Outcomes and Questionnaire Self Efficacy*

Instrument	Reliability coefficient	Information
Learning Outcomes Test	1,00	Very high / Very Fixed / Very Good
Questionnaire <i>Self efficacy</i>	0.66	High enough / Just Stay / Good Enough

Based on the results of the analysis using the Aiken's V formula the learning achievement test instrument and the self-efficacy questionnaire consisting of 20 items were declared workable to use[18]. However, there are several items that need to be revised according to the input and suggestions

from the validator. As for the reliability of the test instrument learning outcomes and I can say an get self efficacy to have keajekan were good.

The data used in this study were the posttest results of the experimental class and the control class. Based on the posttest data results obtained average (mean) and standard deviations as the need for categorizing and calculating data. The questionnaire calculation data for learning self efficacy and tests for student learning outcomes from the experimental class and the control class are as follows:

The results of the questionnaire in class experiments to measure self-efficacy den gan number as many as 28 students in study was conducted through the learning model PAIKEM GEMBROT fat obtained the highest score 63 and the lowest score 38 . Meanwhile the results of a questionnaire on the control class to measure self efficacy with a total of 28 students in learning is done with conventional learning models gained the highest score of 60 and the lowest score 38.

The data calculation *posttest* in the experimental class to measure the learning outcomes of the self gained the highest score 85 and the lowest value of 55. While result of *posttest* in control class to measure the learning outcomes of the self gained the highest score 75 and the lowest value of 30. For more details can be seen in the following table:

Table 04. Self Efficacy Questionnaire Results Data Experiment Class and Control Class

Statistics	Self Efficacy Questionnaire Results		Learning outcomes	
	Experiment	Control	Experiment	Control
Sample	28	28	28	28
Highest Scores	63	60	85	75
Lowest score	38	38	55	30
Average	52	49.93	71	53.2
Standard Deviation	7.57	6.62	8.65	13.2

To determine whether there is influence positive and significant learning of PAIKEM GEMBROT Model to *self-efficacy* and student learning outcomes, then testing which comprises: pre-test requirements, test hypotheses and a further test.

Pre-Test Data Requirements. The analysis prerequisite test is performed to find out the type of statistics that will be used to test the hypothesis. The prerequisite test consists of tests of normality and homogeneity. Normality test is used to determine whether the sample is from a normal or abnormal distribution. Normality test in this study was carried out using *Chi-squared* technique at the significance level $(\alpha) = 0.05$ provided that the data are said to be normally distributed if the value of $\chi^2_{\text{counts}} < \chi^2_{\text{tables}}$. Normality test is obtained from the *posttest* data of the experimental class and the control class. The normality test results of the experimental class and the control class can be seen from the following table.

Table 05. Self Efficacy Normality Test Results Data

Statistics	Self Efficacy		Learning outcomes	
	Experiment	Control	Experiment	Control
Number of samples (N)	28	28	28	28
Mean (X)	52	49.93	71	53.2
Standard deviation (S)	7.57	6.62	8.65	13.2
Chi Square	6,544	10,249	2,077	4,694
Chi square critic	11,070	11,070	11,070	11,070
Conclusion	$2 \text{ counts} < 2 \text{ tables}$	$2 \text{ counts} < 2 \text{ tables}$	$2 \text{ counts} < 2 \text{ tables}$	$2 \text{ counts} < 2 \text{ tables}$
Information	Normal	Normal	Normal	Normal

Homogeneity test aims to test the similarity of the variance of scores in both classes. In this study, the homogeneity test was carried out using the *F* test formula with a significance level of $\alpha = 0.05$ and the numeracy (db) degree of freedom was $28 - 1 = 27$ and the denominator $28 - 1 = 27$ provided that the data said to be normally distributed if the calculated $F_{\text{value}} < F_{\text{table}}$.

Table 06. Homogeneity Test Results for Student Self Efficacy Data

Class	N	Variance	F_{count}	F_{table}	Conclusion	Notes
Experiment	28	27.79	1,413	2,5719	$F_{\text{arithmetic}} < F_{\text{table}}$	Homogeneous
Control	28	39,295				

Table 07. Homogeneity Test Results Student Learning Outcomes

Class	N	Variance	F _{count}	F _{table}	Conclusion	Notes
Experiment	28	113.10	1.42	2,5719	$F_{\text{arithmetic}} < F_{\text{table}}$	Homogeneous
Control	28	160,15				

Hypothesis testing

After the prerequisite test analysis, it turns out that the sample comes from samples that are normally distributed and homogeneous. The next stage is to test the hypothesis using the MANOVA test on hypothesis 1 and the *univariate t* test on hypotheses 2 and 3. The hypothesis test used in testing hypothesis 1 is the MANOVA test. Hypothesis 1 reads that there is a positive and significant influence of the PAIKEM GEMBROT model on *self efficacy* and student learning outcomes. The results of the first hypothesis test are as follows.

Table 08. MANOVA Test Results

Description	Results
JP _{average}	181052.48
JP _{treatment}	1021.44
JP _{residue}	607315632
JP _{total}	607497706
JP _{total} (corrected) =	607316653
A	.249
F _{count}	26
F _{table}	4.02

Based on the table above shows that the calculated F value is 26 and the F_{table} with a significance level of 5% is 4.02, so $F_{\text{calculated}} > F_{\text{table}}$. It can be concluded that the MANOVA test results showed no effect of the PAIKEM GEMBROT model to *self efficacy* and learning outcomes grade students of SMP Negeri 1 Sakra East ern learning year 2018/2019.

The hypothesis test used in testing hypotheses 2 and 3 is the *one sample t-test*. Hypothesis 2 reads there is a positive and significant effect PAIKEM GEMBROT model against students *self efficacy*. And the third hypothesis says there is a significant and positive effect PAIKEM GEMBROT model on student learning outcomes. The results of hypothesis testing 2 and 3 are as follows.

Table 09. Hypothesis 2 and 3 Testing Results

	Leraning Outcome	Self Efficacy
	18,214	3,785
T _{count}	6,771	2,426
T _{table}	1,671	1,671

Table 09 above shows the results of t test analysis where obtained for the learning outcomes T_{count} is 6.771 and the T_{table} is 1.671, it shows that $T_{\text{arithmetic}} (6.771) > T_{\text{table}} (1.671)$ so it can be seen that H_0 rejected and H_a accepted which means there is a positive and significant effect PAIKEM GEMBROT model on student learning outcomes. Then the t-test analysis for students *self-efficacy* obtained T_{count} is 2.426 and T_{table} is 1.671, so it shows that $T_{\text{count}} (2.426) > T_{\text{table}} (1.671)$ so it can be seen that H_0 is rejected and H_a is accepted which means there is an influence positive and significant PAIKEM GEMBROT Model to students *self efficacy*.

Conclusion

The conclusions that can be drawn, based on the research that has been done that There is a significant and positive effect models PAIKEM GEMBROT fat to *self efficacy* and student learning outcomes SMP Negeri 1 East Sakra learning year 2018/2019.

Mathematics learning using the PAIKEM GEMBROT model is well implemented by the teacher as one of the variations in the learning process in the classroom. It is suggested for students to be more active and creative in learning especially if there are problems that cannot be solved so that they are more active in asking questions. Teachers are even more pro-active in finding and using new learning methods to be applied in teaching and learning with students.

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