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THE INFLUENCE OF PROBLEM-BASED LEARNING MODELS AND CRITICAL THINKING ABILITY ON LEARNING OUTCOMES

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ABSTRACT

This research started from the low student learning outcomes of PAI, this can be seen in the learning outcomes obtained by students, observations, interviews with teachers. This study aims to determine the effect of applying a problem-based learning model on the learning outcomes of class X PAI students of SMAN 1 V Koto Kampung Dalam Padang Pariaman. This type of research is a quasi-experimental research. The population in this study were all students of class X, totaling 248 and consisting of 9 classes. The sample used is selected based on values that have almost the same average. The sample in this study were students of class X IPS 3 as the experimental class and class X IPS 4 as the control class.

Keywords: Problem-based learning models, Critical thinking skills, PAI Learning outcomes.

INTRODUCTION

The educational process leads to the formation of attitudes, the development of intelligence or intellect, and the development of children according to the required competencies. Educators are learners' learning boosters who have a big role in fostering students' enthusiasm for learning to learn. By using a good learning model students will find it easier to understand lessons and develop knowledge.

One of the abilities of students in 21st century education that is expected in the learning process is high-level cognitive abilities or high order thinking skills (HOTS).which is a cognitive ability consisting of the ability to analyze, evaluate and create. HOTS directs students to be critical in the learning process. Critical thinking skills can train students to make decisions from various perspectives carefully, thoroughly and logically (Hasan & Syaftriandi, 2018). This is a goal in 21st century education, in which students are expected to have the ability to think critically in solving problems. The field of study of Islamic Religion can be taught with a wide variety of learning models such as problem-based learning models, project-based learning models, inquiry models etc., not only limited to lecture models which aim to provide an atmosphere that is educative, fun, and interactive, for students . Furthermore, it is the educator who adjusts the learning model to be used with the material to be delivered. Therefore educators are expected to be able to apply and use appropriate learning models with the aim that the results achieved are maximized. In addition, students will acquire skills and grades that are sufficient to national standards if educators have the ability to design learning that has an impact on the success of improving the quality and quality of human resources through the education that has been carried out.

The problem-based learning model is an effective learning model for teaching critical thinking processes because this problem-based learning model was developed especially to

assist students in developing thinking skills, problem solving and intellectual skills, learning about the role of adults by engaging in real experiences or simulations. , and become an autonomous and independent learner. The application of this model is expected to have an influence on improving students' thinking which is still low. Problem-based learning will help overcome the weaknesses of PAI learning which has so far been centered on educators as the main source of learning through the lecture method. Through the application of a problem-based learning model, students are required to be active and creative in the learning process. The role of the educator in the learning process is only as a facilitator who guides and provides support to students to express their own opinions, provide analysis and provide solutions to the problems to be studied.

METHODS

This type of research is quasi-experimental using two classes, namely the experimental class and the control class. Quasi-experimental research means research conducted on pre-existing classes, and there is no need to create new classes in this study. The experimental class was given treatment using a problem-based learning model and the control class used a conventional learning model. The population in this study were all class X students of SMAN 1 V Koto Kampung Dalam, Padang Pariaman district, for the 2021/2022 academic year. Husain (1995), population is all values both calculated and measured, both quantitative and qualitative, from certain characteristics regarding a complete and clear group of objects. According to Arikunto (2010) the population is the entire research subject. The sample according to Husain (1995) is a portion of the population taken using a certain technique called the sampling technique. The sampling technique in this study was "Random Sampling", which is a way of taking samples from members of the population in a random way in that population. Sampling is done by looking at the average value that is the same or close to it.

RESULTS

3.1 Pie Learning Experiment Class and Control Class

The data obtained from pie learning test results for experimental class and control class students were described according to the mean, median, mode, standard deviation, variance, minimum value, and maximum value. a description of the data regarding pie learning can be seen in Table 1 below:

Table 1. Data on experiment class and control class learning outcomes

Items	Experiment class	Control class
Average	88	84
Median	88	83
Mode	83	87
SD	6,60	6.05
Variance	43,61	36,59
Minimum	77	73
Your maximum	100	97

From the Table 1 above, it can be seen that the average learning test results for experimental class students who use problem-based learning models are higher than the

average learning outcomes for students who are taught using conventional learning models. based on the standard deviation, the test scores of the experimental class are more spread out than the test scores of the control class because the standard deviation of the control class is smaller than that of the experimental class. the maximum value of the experimental class is higher than the control class.

3.2 Experimental class and control class pie learning based on higher thinking ability

Acquisition of learning data for students in the experimental class and control class based on high-level thinking skills is described as follows.

Table 2. Data on learning outcomes of the experiment class and control class based on higher thinking ability

+	Experiment class	control class
Average	90	84
Median	88	83
mode	93	80
SD	6.55	4.74
Variance	42.84	22,47
Minimum	80	77
Your maximum	100	93

From Table 2 above, it can be seen that the average test scores for experimental class students who have high thinking skills who are taught using a problem-based learning model are higher than the learning outcomes for control class students who have high thinking skills who are taught using a learning model. conventional. based on the standard deviation, the test scores of the experimental class based on high-level thinking skills are more spread out than the control class test scores based on high-level thinking skills because the standard deviation of the control class is smaller than that of the experimental class. the maximum value of the experimental class is higher than the control class.

3.2 Experiment class and control class pie learning based on lower thinking ability

The acquisition of pie learning data for students in the experimental class and control class based on low-level thinking skills is described as follows.

Table 3. Learning outcomes of experiment class and control class based on low thinking ability

+	Experiment class	control class
Average	87	84
Median	87	87
mode	77	80
SD	6.58	7.09
Variance	43.35	50,26
Minimum	77	73
Your maximum	100	90

From Table 3 above, it can be seen that the average test scores for experimental class students who have low thinking skills who are taught using a problem-based learning model are higher than the learning outcomes for control class students who have low thinking skills who are taught using a learning model conventional. based on the standard deviation, the test scores for PAI learning outcomes in the experimental class based on low thinking skills are more spread out than the control class test scores based on low thinking skills because the standard deviation of the control class is smaller than the experimental class the maximum value of the experimental class is higher than the control class.

3.3 Test requirements analysis

3.3.1 Normality test

The normality test was carried out using the Liliefors test. If *L-count* < *L-table* at a significant level of alpha 5%, it can be concluded that the data is normally distributed. Conversely, if the value of *L-count* > *L-table* at a significant level of alpha 5%, it can be concluded that the data is not normally distributed. PAI learning in the experimental and control classes as a whole has a normal distribution because the value of *L-count* < *L-table* at a significant level of alpha 5%. Likewise with the PAI learning data of students based on high and low thinking skills who were taught using a problem-based learning model in the experimental class and conventional learning models in the control class with normal distribution because the value of *L-count* < *L-table* at a significant level of alpha 5%.

Table 4. The results of the normality test for the learning outcomes of the experimental class and the control class

Class	Thinking ability	*L-count*	*L-table*	Information
Experiment	Tall	0.001	0.242	Normal
	Low	-0.036	0.242	Normal
	Whole	0.375	0.176	Normal
Control	tall	-0.025	0.227	Normal
	low	-0.0108	0.234	Normal
	whole	-0.208	0.1655	Normal

3.3.2 Homogeneity test

The variance homogeneity test was carried out to see the similarity of variance (diversity) in the abilities of the experimental and control class students. the experimental class and the control class have homogeneous variances because $_{F\text{-}count}$<*F-table*$_{at}$ a significant alpha level of 5%. Students' PAI learning using a problem-based learning model is higher than the PAI learning outcomes of students taught using conventional learning models. This is shown in the first hypothesis testing. Based on calculations using the t-test, it is obtained *T-count* = 1.88 > *F-table* = 1.67 at a significant level of 5%.

Table 5. Results of the data homogeneity test on Islamic education learning outcomes

Thinking ability	*F-count*	*F-table*	Information
PAI learning outcomes	0.188	3.84	Homogeneous
PAI learning outcomes based on the ability to think highly	1,906	4.06	Homogeneous
PAI learning outcomes are based on low-level thinking skills	0.063	3.84	Homogeneous

3.4 Hypothesis testing

3.4.1 PAI learning outcomes of students in the experimental class and control class

Students' PAI learning using a problem-based learning model is higher than the PAI learning outcomes of students taught using conventional learning models. This is shown in the first hypothesis testing. Based on calculations using the t-test, it is obtained *T-count* = 1.88 > *F-table* = 1.67 at a significant level of 5%.

Table 6. Summary of hypothesis test calculations 1

Class	N	Average	SD	*T-count*	*F-table*
experiment	24	88	6,60	1.88	1.67
control	27	84	6,605		
Conclusion	*T-count* > *F-table* = significant				

3.4.2 PAI learning outcomes of students based on high thinking skills

The learning outcomes of PAI students who have higher thinking skills who are taught using problem-based learning models are higher than students who have high thinking abilities who are taught using conventional learning models. This is evidenced in testing the second hypothesis. Based on calculations using the t-test, it is obtained *T-count* = 3.03 > *F-table* = 1.70 at a significance level of 5%.

Table 7. Summary of hypothesis test calculations 2

Class	N	Average	SD	*T-count*	*F-table*
experiment	12	87	6.58	6,32	1.71
control	12	84	7.08		
Conclusion	*T-count* > *F-table* = significant				

3.4.3 PAI learning outcomes of students based on low thinking skills

PAI learning outcomes of students who have low thinking skills who are taught using problem-based learning models are higher than students who use conventional models. This is aimed at testing the third hypothesis. Based on calculations using the t-test, it is obtained *T-count* = 3.03 > *F-table* = 1.70 at a significance level of 5%.

Table 8. Summary of hypothesis test calculations 3

Class	N	Average	SD	*T-count*	*F-table*
experiment	12	87,49	8.30	2.55	1.70
control	15	82,22	7,71		
Conclusion	*T-count* > *F-table* = significant				

The problem-based learning model can improve students' PAI learning outcomes regardless of students' thinking abilities. That is, there is no interaction between the problem-based learning model and the ability to think about student Islamic education learning outcomes.

Table 9. Summary of hypothesis test calculations 4

Source of Variance	JK	et al	RJK	*F-count*	F table
A (Between Columns)	24733,82	1	24733,82	4.06	4.04
B (Between Rows)	24219.57	1	24219.57	6.05	4.04
AB (Interaction)	1899.07	1	1889.07	0.31	4.00
Error (In Group)	286043.83	47	6068.03		
Total		50			

3.5 Discussion

3.5.1 PAI learning outcomes of students in the experimental class and control class

Testing the first hypothesis shows that students' PAI learning through a problem-based learning model is higher than students' PAI learning using conventional learning models. The results of this study are relevant to the results of research conducted by Utami & Sabri (2020) that the use of problem-based learning models has a high influence on scientific literacy skills. This is due to the problem-based learning model using critical thinking skills in solving problems that will encourage and challenge students' abilities and provide satisfaction to discover new knowledge for students.

At the investigation stage, students carry out discussions and describe the problems given. Students can argue with each other to get the most appropriate answer. In problem-based learning, it develops students' critical thinking, develops independent learning, and

increases self-confidence. This is eleven with research conducted by Dewi & Septa (2019) on problem-based learning, students start learning with a given problem so that students think and have ideas to solve problems which then construct them as new knowledge. Because learning is constructed from experience and knowledge that they already have, so students assimilate new information and build their own understanding.

The learning process that takes place during the research, students are used to thinking critically in solving the problems given, namely by collecting data or information through various sources to find answers to problem solving. Then determine the most appropriate problem solving from the various problem solving options that students find. Students compile a report on the results of problem solving and then present it in front of the class. This condition makes PAI learning better. This is in accordance with the results of research conducted by that there is effectiveness in the use of guided inquiry learning models and problem-based learning models to increase students' competence in the aspect of knowledge.

3.5.2 The learning outcomes of students who have high thinking skills

In testing the second hypothesis, it was found that learning PAI students who have high thinking skills who are taught using a problem-based learning model are higher than students who have high thinking abilities who are taught with conventional learning models. This is relevant to the results of Amijaya (2018) that there is a significant difference between the critical thinking skills of the experimental class using the guided inquiry learning model and the critical thinking skills of the control class using conventional models.

3.5.3 PAI learning outcomes that have low thinking skills

In testing the third hypothesis, it was found that the learning outcomes of students with low thinking skills using problem-based learning models were significantly higher than the learning outcomes of students with low thinking abilities using conventional learning models. The results of this study are relevant to the results of Hasanah (2016) showing that the science learning outcomes of students who study with the inquiry training model are lower than students who learn with the group investigation model in groups of students who have low thinking skills. Students who have low thinking skills, then they need to be stimulated in every way to awaken their critical thinking skills. Increasing the average value of critical thinking skills proves that students who have high thinking skills and students who have low thinking skills who use problem-based learning models can accept the subject matter well.

There is no interaction between the learning model and the ability to think critically on learning outcomes. In testing the fourth hypothesis, it was found that there was no interaction between the problem-based learning model and the ability to think critically on students' PAI learning outcomes. This means that each research variable (problem-based learning model and critical thinking) is not interdependent and does not influence each other. The results of this study are also relevant to the results of research conducted by Husnah (2017) that there is no significant interaction effect with learning outcome variables that apply the PBL model. Furthermore, the results of Tarigan (2017) state that there is no significant relationship between critical thinking and learning outcomes. The increase in student learning outcomes is caused when the learning process that uses problem-based learning codes is given various kinds of problems related to everyday life in accordance with the subject matter. The matter is used as an initial stage for investigation and investigation. Students are encouraged to work together in solving these problems and find information related to solving problems themselves.

CONCLUSION

PAI learning outcomes of students who are taught with a problem-based learning model are significantly higher than the learning outcomes of students who are taught with conventional models. Learning outcomes among students who have high thinking skills taught by problem-based learning models are significantly higher compared to students who have high thinking skills taught by conventional learning models. Learning outcomes among students who have low thinking skills taught by problem-based learning models are significantly higher compared to students who have low thinking skills taught by conventional learning models. There is no interaction between the problem-based learning model and the ability to think critically in influencing the learning outcomes of PAI class X students of SMA Negeri 1 V Koto Kampung Dalam.

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