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The Effect of Inquiry Learning Model with Pictorial Riddle Method on Students' Creative Thinking Ability

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Abstract
This study aims to determine the effect of inquiry learning models with pictorial riddle methods on students' creative thinking abilities. This research is a quasi-experimental (Quasy Experiment) with Nonequivalent Control Group Design. The research sample consisted of two classes, namely class X IPA 2 and class X IPA 3, each of which amounted to 30 students. The creative thinking ability test instrument consisting of 12 items and observation sheets was used to collect data in this study. The results of the study were analyzed using SPSS v-22 software for windows. The results showed that: 1) the average initial test scores of the experimental and control classes were 45.7 and 44.1 respectively; 2) the average initial test scores of the experimental and control class were 79.2 and 68.8 respectively; 3) homogeneity prerequisite tests show homogeneous data and normality tests show normally distributed data; 4) t-test results obtained Sig. (2-tailed) posttest data (0.00) is smaller than alpha testing (0.05), so the working hypothesis (Ha) is accepted. Thus, the inquiry learning model with the pictorial riddle method influences students' creative thinking abilities.

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INTRODUCTION

Education is a very important thing that must be given properly early on as an effort to improve the quality of human resources. Through human education can be educated, trained, and developed its potential. Education in schools has goals that are aligned with national education goals. Education is expected to be a provision for humans to be able to stand alone, act, explore their potential and take responsibility for the actions taken. Therefore, education not only develops cognitive aspects but emphasizes psychological aspects.

Physics is one of the pillars of the development of science and technology. Mastery of physical material requires the ability to think creatively. Therefore, the method applied should be able to make students think creatively to be able to find something new in learning physics. Purba Menuru in Agustina (2018) that one of the root problems in physics subjects is that students often consider physics as a difficult subject because it contains mathematical calculations that are identical to formulas. Though what should be learned in physics is a problem that is often seen even experienced by students in everyday life. Therefore, when students are faced with problems related to daily life, they still find it difficult to analyze the problems that occur. One ability to think that can be used to solve a problem is the ability to think creatively. The ability to think creatively developed in learning includes aspects of fluent thinking, flexible thinking, original thinking, elaborating thinking (Munandar, 2012).

The results of observations made at SMAN 2 Aikmel show that physics teachers still mostly use conventional methods. The teacher uses the lecture method more in teaching and students listen more to the teacher's explanation in front of the class and carry out assignments if

the teacher gives exercises to students. According to the physics teacher at SMAN 2 Aikmel, how to learn physics for each student is different, there are students who are easy to understand and there are students who have difficulties in learning physics. Addressing these differences requires appropriate learning models and methods that can help students to understand and develop their own knowledge.

One learning model that can help students to be able to understand and develop their own knowledge is inquiry. According to Sanjaya (2008) inquiry is a series of learning activities based on search and discovery through a systematic thought process. According to Sumantri (1999), inquiry is a way of presenting lessons that give students the opportunity to find information with or without the help of the teacher. The inquiry learning model allows students to discover for themselves the information needed to achieve their learning goals, because the inquiry method engages students in the mental process for the discovery of a concept based on information provided by the teacher.

Trowbridge (1990) states that another technique for developing motivation and interest in discussion is to use inquiry learning models with the Pictorial Riddle method, which is in the form of drawings created by the teacher to elicit student responses. According Nurseptia (in Euis, 2017) states that the Pictorial Riddle method is a method, technique, as well as a way of student activity and creativity in small discussion activities or discussions in the form of large groups. Presentation of a problem given by the teacher is packaged in the form of illustrated images, either displayed in front of the class such as on a blackboard, poster form, or images displayed through a projector, then the teacher can ask questions about the image being displayed and must of course be related to the image being also displayed.\

Inquiry learning model with the Pictorial Riddel Method provides opportunities for students to think creatively. According to Anggriani (2017) creative thinking is the ability of students to answer questions with a variety of answers. Whereas Munandar (2012) states that creative thinking is actually an ability to think that starts from the sensitivity of something that is faced, that something is seen or identified problems that want to be solved. In general, creative thinking is the ability of students to express a variety of answers. The steps to design a pictorial riddle are as follows: 1) Selecting several concepts or principles that you want to teach or prioritize, 2) Draw a picture or show an illustration demonstrating the concept, 3) Manipulate a Pictorial Riddle and ask students to know what wrong in the picture, 4) Designing questions related to the image, which will help students gain knowledge from the principles taught. Based on the explanation above, the research objective is to find out whether there is an influence of inquiry model learning with pictorial riddle method on students' creative thinking abilities.

METHOD

This research is a Quasi Experiment study with Nonequivalent Control Group Posttes Design. The study uses two classes, namely the experimental and control classes. In the experimental class were treated (using the inquiry learning model with the Pictorial Riddel Method) while in the control class were not treated (using a conventional model). The sample of this study was class X IPA 2 and class X IPA 3 SMAN 2 AIKMEL. Class X Science 2 consists of 30 students used as an experimental class and Class X Science 3 consists of 30 students used as a control.

The test consists of 12 essay questions given to students before learning (pretest) and after learning (posttest). Normality test, homogeneity test and t test using SPSS v.22 are performed to analyze the research data, with details (1) Normality test is a prerequisite test before conducting a hypothesis test. Normality test aims to determine whether the data is normally distributed or not. Furthermore, a significant value is realized with a significant value of 5%, 0.50; (2) Homogonity Test of posttest experimental and control class data is performed to find out the variance of research data (Sugiyono, 2011). Data is said to be homogeneous if the Sig. (significance) Based on Mean> alpha testing (0.05) (Riduwan, 2003); (3) The research hypothesis was statistically tested using the t test. If the Sig. (2-tailed) posttest data of the experimental class and the control

class are smaller than alpha testing (0.05), then the working hypothesis (Ha) is accepted, that is, there is an influence of inquiry learning model on students' creative thinking abilities, and vice versa.

RESULT AND DISCUSSION

The pretest and posttest results of the experimental class and control class students in this study are presented in Table 1 below.

Table 1. Descriptive analysis of students' creative thinking abilities

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest_ekperimen	30	42.50	50.00	45.7500	2.19227
Pottest_eksperimnen	30	70.00	100.00	79.2500	7.40311
Pretest_kontrol	30	25.00	77.50	44.1667	9.40775
Posttest_kontrol	30	50.00	90.00	68.8167	11.05432
Valid N (listwise)	30				

Data on the results of the pretest and posttest are summarized in the following Table 2.

Table 2. Pretest and posttest scores of the Control and Experiment Class

Group	Class	
	Experiment	Control
Pretest	45,7	44,1
Posttest	79,2	68,8

The results of the homogeneity analysis of the sample posttest data are presented in Table 3, while the results of the normality test data are presented in Table 4.

Table 3. Homogeneity Test

Levene Statistic	df2	df2	Sig.
12.491	58	58	.650

Posttest student data was declared homogeneous if the Sig. (significance) Based on Mean> alpha testing (0.05). Based on the results of the analysis in Table 3 that the variance of students' posttest data is homogeneous, because the sig value (0.740)> of alpha testing (0.05), so it is stated that the two samples namely the experimental class and the control class have the same or homogeneous abilities.

Table 4. Normality Test Analysis

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Class	Statistic	Df	Sig	Statistic	Df	Sig.
Posttest	1.00	.260	30	.000	.828	30	.870
	2.00	.131	30	.200*	.962	30	.740

Table 4 shows that the Sig. Posttest data of the experimental and control class is greater than 0.05 so it can be stated that the data is normally distributed. The test results of the posttest data distribution of the experimental class and the control class were stated normally distributed, so to test the statistical hypotheses in this study a t-test was conducted to determine differences in the results of students' creative thinking abilities between the experimental classes after learning using the inquiry learning model with the Pictorial Riddel Method and after conventional learning in the control class. Data on the results of testing the effect of the inquiry learning model

with the Pictorial Riddel Method on students' creative thinking abilities are presented in Table 5 below.

Table 5. Hypothesis test analysis

Levene's Test for Equality of Variances		t-test for Equality of Means				
					95% Confidence Interval of the Difference	
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Posttest	Equal variances assumes	.000	10.433	2.429	5.571	15.295
	Equal variances not assumes	.000	10.433	2.429	5.556	15.310

Based on the test results as shown in Table 5, it is known that the value of Sig. (2-tailed) posttest data (0.00) is smaller than alpha testing (0.05), so it can be stated that the inquiry learning model with pictorial riddle method influences students' creative thinking abilities.

From the results of hypothesis testing shows that there are differences in the ability to think creatively between the experimental class and the control class. Learning by inquiry learning model with pictorial riddle method has an average value of creative thinking ability higher than conventional methods.

The inquiry learning model with the pictorial riddle method is used to practice students' creative thinking skills, where students are given the opportunity to solve a problem based on their own experiences and students are required to find solutions to these problems. This learning activity is discussed with group members so students are more active in learning.

Based on the analysis of the data obtained by the inquiry learning model with this pictorial riddle method can significantly affect students' creative thinking abilities. This means that using the inquiry learning model with the pictorial riddle method gives an influence on students' creative thinking abilities where students freely convey knowledge about the problem presented. The use of inquiry learning models with the pictorial riddle method can improve effectiveness in learning, solve a problem, and develop students' thinking abilities.

The advantage of inquiry learning model with this pictorial riddle method is to emphasize student learning activities to find and find a problem and a solution to these problems where the learning process students not only act as recipients but students also play a role in finding the core of the subject matter, so that they are able to grow confident attitude to students.

Some of the obstacles encountered in learning are, the first is the student's learning interest decreases or lacks confidence in solving a problem that is considered very difficult to find solutions to the problem, the second is feeling reluctant to ask if you have difficulty in solving the problem being studied, the third namely the existence of students who think how to find a concept without the explanation first. The effort made by researchers in overcoming these obstacles is to present a problem and ask students to analyze the problem in groups. Then students look for solutions to the problems presented so students are able to convey new ideas from their own knowledge. Each group is asked to present their answers and express their opinions so that they are able to develop new ideas.

The results of this study are in line with the results of research conducted by Dian (2013) which states that the inquiry method with Riddle pictorial media influences student learning outcomes. Furthermore, Nuriyanah (2015) states that through simple practicum can develop Students' Creative Thinking Ability.

CONCLUSION

Based on the results of research and data analysis, it can be concluded that there is an effect of the Inquiry learning model with the Pictorial method on students' creative thinking abilities

SUGGESTION

Based on the research results obtained, researchers can provide suggestions to other researchers should use the inquiry model on different learning materials according to the characteristics of teaching material delivered as data to improve student achievement can be seen more accurately.

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