ATLANTIS PRESS

Advances in Social Science, Education and Humanities Research, volume 323

International Conference on Social Science and Character Educations (ICoSSCE 2018)
International Conference on Social Studies, Moral, and Character Education (ICSMC 2018)

The Effect of Problem Solving and Inquiry Methods Towards Learning of Geography

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***Abstract*—This research aims to know the effect of a problem solving and inquiry method towards a geography learning result in SMAN 1 Teupah Barat. This is a quantitative research style by an experimental method towards two student learning groups of X IIS grade applying a problem-solving method and X MIA 1 grade applying an inquiry method. Data gathering uses a pretest and posttest by some steps of normality test analysis using a one sample Kolmogorov Smirnov test, homogeneity test using a one-way Anova and hypothesis test using a two-way Anova by an SPSS program. Analysis of Anova test hypothesis by an SPSS program acquire significance of 0.003 and F_{table} of 9.852. Analysis results showed a significance smaller than 0.05 so that can be concluded that the application of problem solving dan inquiry methods has an effect in improving a geography learning result in X grade of SMAN 1 Teupah Barat.**

Keywords—Problem solving, Inquiry, Geography

I. INTRODUCTION

This research aims to improve the ability of students in a cognitive, affective and psychomotor. One of ways that is able to be performed by a teacher in applying a learning method that can motivate students to learn independently as well as in groups. The learning method that can be applied by a teacher such as problem solving and inquiry methods that prioritizing student involvement actively in a learning activity.

The learning method applied by a teacher had not given a significant effect towards a geography learning result so far, especially in SMAN 1 Teupah Barat. In addressing a lesson there is still a teacher who applying a speech method so that the learning activity focuses in teacher and students are passive as listeners.

A teacher readiness deficiency in applying problem solving and inquiry methods in a learning activity so that a speech method has become a reliance to address a learning material. Krulik & Rudnick If a teacher is to be an effective guide for the learning of problem-solving skills, then he or she must first become a problem solver. A teacher who has no skills will have a difficulty and is impossible teaching a problem solving if the teacher him/herself is not a suitable problem solving [1].

Today, the application of problem solving, and inquiry methods are suitable with curriculum 2013 because problem solving dan inquiry methods more prioritize student effectiveness in learning. According to Regulations No. 20 of 2003 prioritized a student involvement actively in a teaching-learning process to improve a student potential. The deficiency of student's involvement in learning provided a negative effect such as low student learning results, deficiency of student learning motivation and emergence of student boredom.

Through the application of problem solving and inquiry methods are expected to be able to improve student thinking ability. According to Dobber et al. [2] thinking strategies are considered central to the (scientific) inquiry, since the understanding is that for thoughtful inquiry processes, students need to explicitly understand how scientists think and why they think in that way, not only what scientists do and think during the scientific inquiry processes.

According to Rogers in recent years a trend towards enquiry and discovery has undoubtedly developed in education which is, in principle, to be welcomed [3]. In some recent years observation and finding methods have developed and welcomed at schools. In observation method, students play roles such as a scientist who is conducting a research, investigating problems, formulating problems and also making hypothesis.

II. LITERATURE REVIEW

The research entitled Effect of Using Problem Solving Method in Teaching Mathematics on The Achievement of Mathematics Students. By Riasat Ali and Khan Anwar with kind of a qualitative research method, data gathered is analyzed searching for average, deviation standard and t-test. The research results show there is a very significant difference of student academic achievement better than what taught through a problem-solving method compared with students who are taught through a traditional method.

The Effect of Inquiry based Learning Method on Students' Academic Achievement in Science Course. This research aims to observe the effect of an inquiry-based learning method towards a student academic achievement in science lesson. As many as 40 fifth grade students out of two different classes get involved in this research. They are selected through a purposive sampling method. The group assigned as experimental group is instructed through an inquiry-based learning method.

Based on findings obtained in the research, it can be declared that there is a significant difference between an already educated student achievement level by an inquiry-based instruction supported by 5E learning method and those who have been educated by a traditional method. The students who have been educated by an observation-based instruction supports 5E learning cycle method has been more successful than those who have been taught by a traditional method.

III. METHOD

Riding & Rayner a learning strategy is a set of one or more procedures that an individual acquires to facilitate the performance on a learning task. This is an experimental research that applies a problem solving and inquiry methods towards geography lesson [4].

IV. RESULTS

This research involves two learning groups of X IIS grade students apply a problem-solving method and X MIA1 grade students apply an inquiry method. To gather data of learning results of each group by providing a posttest so that can be known student ability to master materials addressed after attending learning. Results of pretest and posttest data analysis of experimental class by applying problem solving dan inquiry methods as follow.

A. Learning results of X IIS grade students by applying a problem-solving method.

Data analysis of research results uses an Anova test by a SPSS for windows version 24.0 program as follows. Results of data analysis shows increase of average value of student learning results after applying a problem-solving method includes from 59 to 84. Minimum value prior to learning by applying a problem-solving method is 40 and maximum value of 76. After learning by applying a method already used there happens increase of student learning results includes minimum value of 72 and maximum value of 92.

TABLE I. ANALYSIS OF LEARNING RESULTS OF X IIS GRADE STUDENTS

	Pretest	**Posttest**
N Valid Missing	21	21
Mean	0	0
Median	59.8095	84,0000
Mode	60,0000	84,0000
Std. Deviation	60,00[a]	84,00
Minimum	8,71561	4,56070
Maximum	40,00	76,00
Sum	72,00	92,00
	1256,00	1764,00

Based on results of problem-solving method data analysis has an effect towards a student learning result, especially in geography lesson. According to Daryanto & Karim [6] opinion that explains a problem-solving method has an advantage includes making education at school is more relevant with living, especially career world, accustom learners to facing and solve problems skillfully and stimulates thinking ability of learners creatively and in overall.

In a problem-solving method, students have habit of active freedom in learning activity to perform analysis, observation and making concept so that it can solve a problem. According to Nasriah opinion, social subject learning through the method of problem solving can be applied to the students, because the impact of the use of this method is very advantageous, among them students become more critical in responding to any problems that arise, students can train the ability to communicate, improve the ability to dig his own knowledge, and to improve the taste solidarity, thus improving learning achievement [7].

B. Learning results of X MIA1 grade students by applying an inquiry method.

Ismail although inquiry-based learning method has only been introduced recently, it has become one of the most popular learning methods in the developed countries such as USA and Canada [6]. In Malaysia, it is yet to be introduced. However, some related classroom methodologies, such as problem-based learning method, has been practiced.

According to Anam in context of an inquiry method use as a learning-teaching method, students are placed as learning subjects that mean students have a big contribution in determining learning atmosphere and model. Results of data analysis apply an inquiry method in X MIA1 grade students use an Anova test by an SPSS for windows 24.0 program as follow.

TABLE II. ANALYSIS OF LEARNING RESULTS OF X MIA GRADE STUDENTS

	Pretest	Posttest
N Valid Missing	25	25

Mean	0	0
Median	58,7200	78,2400
Mode	60,0000	80,0000
Std. Deviation	48,00[a]	80,00
Minimum	8,54166	5,45649
Maximum	44,00	70,00
Sum	72,00	88,00
	1468,00	1956,00

The application of an inquiry method has an effect towards increase of average value of student learning results include 58 to 78. Minimum value prior to learning by applying a solving problem method is 44 and maximum value of 70. After learning by applying a method used there is an increase of student learning results include minimum value of 72 and maximum value of 88. Based on data analysis results known the application of an inquiry method in X MIA1 grade students affects a student learning result.

Actively student involvement in improving thinking ability in an inquiry method will ask students to solve problems optimally according to Arends [8] opinion in which inquiry-based teaching is another model of instruction that has been developed for the purpose of teaching students how to think. An inquiry method provides an opportunity to students improving their thinking ability maximally.

Lile information literacy competence becomes a desired result of learning for any domain [9]. All the actors of the academic system recognize that the capacity of finding, accessing, evaluating and using in an efficient and ethic way the information is necessary for the students' success within their educational program.

In an inquiry method, students are encouraged to be actively got involved in a learning-teaching process such as asking questions towards materials addressed. The questions should not be answered by the teacher, but other students are given an opportunity to respond or answer to the questions asked so that students do not have an opportunity to sit, be silent or only listening.

V. DISCUSSION

Aziz learning outcomes are references for standard and quality as well as for the development of curriculum in terms of teaching and learning [10]. While, learning objectives describe the intended purposes and expected results of teaching activities and establish the foundation for assessment.

Geography science begins popular in schools as well as universities so that training towards geography teachers increase in some recent years. Krause geography is a rich subject; rich in terms of its content and the understanding, skills, values and attitudes it develops [7]. Geography science has a very important role in living, even primitive people have had an understanding towards geography so that they are knowledgeable of water source location, hunting site, cultivation and save residence.

Therefore the importance of geography science in living and needed improvement of student intelligence with various skills to enable them acquire ability of interpreting various things from various angles to solve daily living problems according to Chan with regard to the aims and objectives of geography teaching and learning, Irish highlighted the importance of the development of intellect among students-nurturing students various generic skills in order to allow them to acquire the ability to interpret things from various angles and the capability to solve daily life problems [3].

Surgenor if students are to learn desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes [13]. It is helpful to remember that what the student does is more important in determining what is learned than what the teacher does.

A. Normality Test

Normality test to know data of research results whether normal distributed or not. Normality test performed is data of geography learning results by problem solving and inquiry methods. Data testing uses a one sample Kolmogorov Smirnov test method by an SPSS for windows version 24.0 program. This criterion of research hypothesis testing if significance greater than 0.05 or P > 0.05 so that the data can be declared normally distributed. However, if data significance is under 0.05 or P < 0.05 data can be confirmed abnormally distributed.

TABLE III. NORMALITY TEST

Method	Learning Result	Sig	Remarks
P. Solving	Pretest	0.200	Normal
	Posttest	0.130	Normal
Inquiry	Pretest	0.200	Normal
	Posttest	0.175	Normal

Analysis results show significance of pretest and posttest data of X IIS grade by applying a problem solving method and X MIA1 grade by applying an inquiry method greater than 0.05so that it can be concluded that pretest and posttest data of X IIS and X MIA1 grade students in SMAN 1 Teupah Barat is normally distributed.

B. Homogeneity Test

Homogeneity test is a variance testing to two groups of distributed data or more. Results of data analysis are as follow.

TABLE IV. HOMOGENEITY TEST

Learning Result	Method	F_{count}	Sig	Remarks
Pretest	P. Solving	0.68	0.796	Homogen
	Inquiry			
Posttest	P. Solving	2.508	0.120	Homogen
	Inquiry			

Based on analysis of research result data known probability homogeneity of pretest value by applying problem solving and inquiry methods are 0.796 and F_{count} 0.68. This shows that variable of pretest data is homogenous in nature by Levene statistic 0.68. While significance or posttest probability homogeneity by applying problem solving and inquiry method is 0.120 and F_{count} 2.508. This shows variable of posttest data is homogenous in its nature by Levene statistic 2.508. Based on results of homogeneity of variance test analysis known significance or probability value and testing criteria so that it can be concluded pretest and posttest data by applying problem solving and inquiry method in SMAN 1 Teupah Barat is homogenous in its nature.

B. Test Hypothesis

To test a hypothesis of problem solving and inquiry method towards a geography learning result using a two-way Anova test by an SPSS for windows version 24.0 program. Results of posttest variable data acquires significance 0.003 and F_{table} 9.852. Results of data analysis shows significance smaller than 0.05 (alpha) so that it can be concluded that problem solving, and Inquiry method affects results of geography learning in SMAN 1 Teupah Barat.

VI. CONCLUSION

Based on results of data analysis known that application of problem solving, and inquiry methods affect geography learning results in SMAN 1 Teupah Barat. In the activity of learning, students are actively involved solving problems, performing analysis, observation and draw conclusions. Average value of pretest and posttest by applying problem solving and inquiry methods increase.

Analysis of Anova test analysis by an SPSS for windows version on 24.0 program acquired significance 0,003 and F_{table} is 9.852. Results of analysis show significance smaller than 0.05 so that it can be concluded that the application of problem solving, and inquiry methods have an effect in improving results of geography learning in X grade of SMAN 1 Teupah Barat.

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