

Model of Increasing Experiences Mathematics Learning with Group Method Project

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Abstract

Improving student learning experience is a very important thing. purpose research to develop a group project method model. This study uses the experimental method by testing the experimental class and comparing conventional based learning and learning using the group project method. The results of this study indicate that using this group project method can improve student learning outcomes and learning experiences.

Keyword: Group Method Project, Mathematical Experiences

Introduction

Learning is how the techniques and strategies of approach taken by the teacher, so that students can easily understand the learning material delivered. It is possible that the teacher only does it by explaining, lecturing, or explaining monotonously or by making learning innovations more effective and efficient. Many schools that have implemented mathematics learning well that is improving the quality and quality of students, learning mathematics that is fun needs to developed.

The development of mathematics learning in Indonesia is very alarming, because of the low mastery of technology and the ability of Indonesian human resources to compete globally. Indonesia is a country with abundant natural resources. However, the ability of Indonesian children in mathematics is still low, Many people assume that learning mathematics is difficult, and the lack of teachers who follow the development of mathematics. Nur (2001) states that mathematics education in Indonesia in general is still in conventional mathematics education which is characterized by structuralism and mechanistic. In addition, the curriculum content is too dense and classroom learning is dominated by teachers or teacher centred. Tran Vui (2001) reports that teachers in Indonesia and in Southeast Asia tend to use traditional learning strategies known by several terms such as; teacher-centred learning, direct instruction, deductive teaching, expository teaching, and whole class instruction without classifying students and so on.

With such learning strategies, it can result in the level of student activity being very low. Students only use low order thinking skills. As a result, during the learning process in the classroom students are not creative enough to think and participate less in learning.

The problem that arises is how mathematics should be learned? This question seems simple, but requires answers that are not simple. Because the teacher's view of the process of learning mathematics is very influential on how they do

The group project method in this research is the development of the project based method (project based learning). In project-based learning, teachers are still more dominant in learning and students in project work are less active in interacting with nature and other students. Work on the project and conclude the results of research are still carried out by students independently. By using the project method the teacher and student groups will collaboratively design learning in the form of projects and students will work together with other students to solve problems in the context of reality and are required to make conclusions from the results of research and be able to present the results of research in groups so that constructivism in mathematics can run well

Methods

Syntax of Group Project Methods

In this model there are several syntaxes (steps) that need to be considered as follows:

- a. Determination of fundamental questions (start with the essential question) Learning begins with essential questions, namely questions that can give students assignments in carrying out an activity. Take a topic that matches the real-world reality and begin with an in-depth investigation. The teacher tries to make the topic that is relevant to students;
- b. Design a project planning (design a plan for the project). Planning is done collaboratively between teachers and students. Thus students are expected to feel they have the project. Planning contains rules of the game, the selection of activities that can support in answering essential questions, by integrating various possible subjects, as well as knowing the tools and materials that can be accessed to assist project completion;
- c. Arrange a schedule (create a schedule). Teachers and students collaboratively arrange activities in completing projects. Activities at this stage include: (1) creating a timeline for completing the project, (2) creating a project completion deadline, (3) bringing students to plan a new way, (4) guiding students when making ways that are not related to the project , and (5) asking students to make an explanation (reason) about choosing a method;
- d. Monitor students and project progress (monitor the students and progress of the project) The teacher is responsible for monitoring student activities while completing the project. Monitoring is done by facilitating students in each process. In other words, the teacher plays the role of mentor for students' activities. To simplify the monitoring process, a rubric is created that can record all important activities;
- e. Test the results (Assess the outcome) Assessment is carried out to assist teachers in measuring the achievement of standards, play a role in evaluating the progress of each student, provide feedback about the level of understanding that has been achieved by students, help teachers in developing the next learning strategy;
- f. Evaluate experience (evaluate the experience). At the end of the learning process, teachers and students do a re-reflexion of the activities and results of the projects that have been carried out. The reflection process is carried out both individually and in groups. At this stage students are asked to express their feelings and experiences while completing the project. Teachers and students develop discussions in order to improve performance during the learning process, so that eventually new findings are found to answer the problems raised in the first phase of learning.

Experience in Mathematics Learning

Understanding learning experiences are learning experiences are not the same as the content of learning materials or activities carried out by the teacher. The term learning experience refers to the interaction between the learner and the external conditions in the environment he reacts to. Learning through active student behaviour; that is what is done when students learn, not what is done by the teacher.

Caswel and Campbell (1935) say that they are composed of all the experiences students have had under the guidance of the teacher. Based on this opinion it can be explained that:

- a. Experience learning experience refers to the interaction of students with external conditions, not the content of the lesson;
- b. Learning experience refers to learning through active student behavior;
- c. Students will be owned by students after they have participated in certain teaching and learning activities;
- d. Learning experiences are the results obtained by students;
- e. There are various efforts made by teachers in their efforts to guide students to have certain learning experiences.

In this regard, the teacher also wants to know how far the students have mastered the specified learning experience and how much effectiveness the guidance has been given to students. In this context the evaluation of learning experiences becomes very important because the evaluation of learning experiences is the process of collecting and interpreting information or data that is carried out continuously and systematically to determine the level of achievement of student learning outcomes.

Result

Learning activities with conventional methods. Implementation of learning with conventional methods is how teachers dominate more than students. The teacher delivers the material in a lecture that makes learning monotonous. Using the lecture method the teacher explains the trigonometric comparison material. In this explanation the teacher is more dominant and occasionally gives questions to attract reactions from students in the class. The learning process refers to the Implementation Plan created by the researcher to oversee the procedural learning. At the end of learning students are given a test to see the extent to which students understand the learning material delivered by the teacher and give assignments to students related to the learning.

Learning Activities using the Group Project method.

At the next meeting, the teacher applies the Group Project method. At this stage, learning begins with essential questions, which are questions that can give students the assignment in carrying out an activity. Take a topic that matches the real-world reality and begin with an in-depth investigation. Next the teacher and students plan student projects. Planning contains rules, the selection of activities that can support in answering essential questions, by integrating a variety of possible subjects, as well as knowing the tools and materials that can be accessed to assist the completion of the project. Then the teacher and students collaboratively arrange a schedule of activities in completing the project. In working on the project for a predetermined time the teacher is responsible for monitoring the activities of students while completing the project and testing the results of student experience. At the end of the group project method, the teacher and students make a revision of the project activities and results that have been carried out. The reaction process is carried out both individually and in groups. At this stage students are asked to express their feelings and experiences while completing the project

Description of Test Results

Student test data consists of the results of the students 'pre-test to test the students' initial abilities, then the results of student tests using conventional methods and at the last stage the tests are carried out after the implementation of the group project methods on students. The test instrument is given equally to all students in all schools and in the same work time. Based on statistical analytics using the SPSS program version 18.0, the results of the experimental class tests in each school can be seen as follows:

Statistics				
		Nilai Pretest	Metode Konvensional	Metode Proyek Kelompok
N	Valid	23	23	23
	Missing	17	17	17
Mean		52,83	63,78	82,83
Std. Error of Mean		2,884	2,335	1,400
Median		50,00	65,00	80,00
Mode		60	60	80
Std. Deviation		13,832	11,200	6,713
Variance		191,332	125,451	45,059
Range		60	40	20
Minimum		30	45	75
Maximum		90	85	95
Sum		1215	1467	1905

Table 3.1 Statistics Student Learning Outcomes Class of Experiment MAN 2 Model

From table 3.1 it can be seen that the average value of the experimental class in the pre-test is 52.83; The conventional method is 63.78; and group project methods 82.83. The standard deviation in the pre-test is 13,832; conventional method 11.2; group project methods 6,173.

Statistics				
		Nilai Pretest	Metode Konvensional	Metode Proyek Kelompok
N	Valid	32	32	32
	Missing	8	8	8
Mean		44,22	67,66	84,69
Std. Error of Mean		2,960	1,571	1,346
Median		47,50	70,00	85,00
Mode		50	60	90
Std. Deviation		16,742	8,889	7,613
Variance		280,305	79,007	57,964
Range		56	35	25
Minimum		14	50	70
Maximum		70	85	95
Sum		1415	2165	2710

Table 3.2: Statistics Learning Outcomes of SMAN 1 Experiment Class

From table 3.2 it can be seen that the average value of the experimental class in the pre-test is 44.22; Conventional method 67.66; and group project methods 84.69. The standard deviations in the pre-test are 16.742; conventional method 8,889; group project methods 7,613.

Statistics				
		Nilai Pretest	Metode Konvensional	Metode Proyek Kelompok
N	Valid	32	32	32
	Missing	8	8	8
Mean		38,91	61,78	85,53
Std. Error of Mean		2,972	1,710	1,324
Median		37,00	65,00	85,00
Mode		50	60 ^a	95
Std. Deviation		16,813	9,671	7,492
Variance		282,668	93,531	56,128
Range		60	35	20
Minimum		10	40	75
Maximum		70	75	95
Sum		1245	1977	2737

a. Multiple modes exist. The smallest value is shown

From table 3.3, it can be seen that Kolmogorov-Smirnov based on the results of the pretest is 0.849, the test results after the conventional method are 0.125, and the test results after the group project action methods are obtained 0.182. Overall normality test results are greater than 0.495, meaning that learning outcomes in the experimental class are normally distributed.

Conclusion

Based on the results of research and discussion in Chapter IV, it can be concluded as follows:

Students' ability to solve problems using group project methods is better than students who use conventional methods. Students using the group project method in class X MAN 2 Padangsidempuan obtained an average grade of 82.83, the average grade X of SMAN 1 Padangsidempuan obtained 84.69, and in class X MA YPKS obtained an average grade of 85.53. Using the group project method makes students more active in learning than students by using conventional methods. By using the group project method in students can deliver students achieve mastery learning. Using the group project method has a positive effect on students interacting with the teacher and more freely expressing opinions with fellow students in the group. Method Group project can be used as an alternative learning method to make students more active in learning and can interact with the surrounding environment so that students are able to solve a problem based on the results of experiences students get from interactions with students and the environment and the teacher as a facilitator at school.

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