Meningkatkan Kemampuan Koneksi Matematis Siswa SMK dengan Menggunakan Pendekatan Berbasis Masalah

Improving Mathematical Connection of Vocational High School Students Using the Problem Based Approach

Ariyadi Sulaeman¹, Yayu Yusniawati², Euis Eti Rohaeti³

¹SMAN 1 Padalarang, Jl. Perum babakan loa permai, Padalarang, Kab.Bandung barat, Indonesia
²SMK Yayasan Islam Kota Tasikmalaya, Jl. K.H. Ma’mun Sodik, No.50, Panglayungan, Cipedes, Tasikmalaya, Indonesia
³IKIP Siliwangi, Jl. Terusan Jendral Sudirman, Cimahi, Indonesia

Volume 1 Number.1 2018, Page 43-57
https://jurnal.unsur.ac.id/triple-s/article/view/319

To cite this article:

This article may be used for research, teaching, and private study purposes.

Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

Authors alone are responsible for the contents of their articles. The journal owns the copyright of the articles.

The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of the research material.
Improving Mathematical Connection of Vocational High School Students Using the Problem Based Approach

Ariyadi Sulaeman, Yayu Yusniawati, Euis Eti Rohaeti

Abstract

This study aims to determine the achievement of student’s mathematical connection whose learning to use problem-based learning approaches better than those using ordinary learning, to improve students' mathematical connection in teaching-learning to use problem-based learning approaches better than those using ordinary learning. This research method is quasi-experiment. The population in this study is all students of SMK Negeri 1 Rengasdengklok. While the sample is selected from class X of the school, with class X TKJ 1 becomes experiment class and X TKR 1 becomes control class. The experimental class uses a problem-based approach while the control class uses the usual approach. The instrument of this research is in the form of pretest and posttest of mathematical connection in the form of description as many as 5 questions. This data is pretest, posttest and n-gain processed through normality test, homogeneity test, t-test, and Mann-Whitney test using SPSS 16.0 for Windows software. The results can be concluded that the achievement of students mathematical connection whose learning to use problem-based learning approaches better than those using ordinary learning, and the improving students' mathematical connection in teaching-learning to use problem-based learning approaches better than those using ordinary learning.

INTRODUCTION

The ability of connections is the ability to link mathematical topics both internally and externally. As Meyriska, W.(2016:10) said that the mathematical connections' ability is the ability of learners to associate the concepts of mathematics both between mathematical concepts themselves (in mathematics) and linking the concept of...
mathematics with other fields (outside mathematics). The ability of a mathematical connection is one of the important capabilities. In mathematics learning, there are some basic skills that must be considered. Among them: (1) Mathematical Understanding; (2) Mathematical Problem Solving; (3) Mathematical Reasoning; (4) Mathematical Connection; (5) and Mathematical Communications.

Of the five basic skills such as the mathematical connections' is a capability that must be understood correctly by students, therefore teachers need to discover how to achieve the mathematical connection. And as revealed by Hendriana (2017: 27) that the ability of mathematical connections is an essential ability that must be mastered by high school students. The importance of possessing the ability of mathematical connections is contained in the objectives of high school mathematics learning: Understanding mathematical concepts, explaining interconnected interconnections and applying between concept or algorithms are flexible, accurate, efficient, and precise in problem solving.

But in reality, students experience difficulty in mathematical connection. This is based on the results of interviews the author to the mathematics teacher SMKN 1 Rengasdengklok in class X TKJ 1 and X TKR 1 and provide evidence in the form of repetition values that, 70% of the total 2 students of 92 classes, students are difficult to learn math lessons. The average score on each test of mathematics lessons is only 58. While the Minimum Exhaustiveness Criteria (KKM) determined by SMKN 1 Rengasdengklok for the subjects of class X mathematics is 65.

By looking at the phenomenon mentioned above would require the active role and more serious attention by various parties concerned to be able to improve the quality of mathematics learning as expected. In this case, the teacher of mathematics has a very important role to overcome the problems in question because the teacher has a role model in teaching and learning activities. The role of this model is to transform the knowledge, skills and values to learners.

One alternative action that can be given to improve students' mathematical connections is to apply problem-based learning models. According to Sanjaya (2007: 214), one of the characteristics of problem-based learning is the existence of a number of activities to be done students, not expecting students just listen, record, then memorize the subject matter, through learning-based problem students actively think, communicate, process data and finally concluded. One of the advantages of problem-based learning is to
improve student learning activities, whereby giving problems to students, students feel challenged to find answers to the problem.

Therefore, this study aims to find out 1) the achievement of mathematical connection of vocational students whose learning to use problem-based approach compared with using ordinary learning, 2) improvement of mathematical connection of vocational students whose learning to use problem-based approach compared with using ordinary learning.

THEORITICAL REVIEW

Mathematical Connection

The mathematical connection is one of the ability to link between mathematics topic both internally and externally. This is in accordance with the opinion of Meyriska, W. (2016:10). Defining the ability of mathematical connections is the ability of learners to associate mathematical concepts both between mathematical concepts themselves (in mathematics) and linking mathematical concepts with other fields (Outside mathematics). From the opinion sulisyowati can be concluded that everything related to the mathematics in everyday life or with math lesson itself is interconnected then it can be called a mathematical connection.

Mathematical connection is one of the five standard capabilities students must have in learning mathematics supported by NCTM (2000), namely (1) problem solving, (2) reasoning and verification, (3) communication, (4) connections, and (5) representation. According to NCTM (Sumarmo, 2013: 37) mathematical connections include:
1. Look for equivalent representations of the same concepts and procedures
2. Understand the relationship between math topics
3. Using mathematics in other fields of study or daily life

Problem-Based Approach (PBA)

Descriptive of PBA

Boud and Feletti (Rusman, 2010: 230) argue that Problem Based Approach is the most significant innovation in education. Margetson (Rusman, 2010: 230) argues that the Problem-Based Approach curriculum helps to improve the development of lifelong learning skills in an open, reflective, critical, and active mindset. The Mask Based Learning curriculum facilitates the successful solving of problems, communication, group work and interpersonal skills better than any other approach.
Steps of Problem Based Approach

Ibrahim and Nur (Rusman, 2010: 243) suggested that the Problem-Based Approach steps are as follows:

Table 1. Steps of Problem-Based Approach

<table>
<thead>
<tr>
<th>Phase</th>
<th>Indicator</th>
<th>Activity of Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Student orientation on the problem</td>
<td>Explain the learning objectives explain the logistics required, and motivate the students to engage in problem-solving activities</td>
</tr>
<tr>
<td>2</td>
<td>Organize students to learn</td>
<td>Helps students define and organize learning tasks related to the problem.</td>
</tr>
<tr>
<td>3</td>
<td>Guide individual/group experiences</td>
<td>Encourage students to gather appropriate information, conduct experiments to gain explanations and troubleshoot.</td>
</tr>
<tr>
<td>4</td>
<td>Develop and present the work</td>
<td>Assist students in planning and preparing appropriate works such as reports, and assisting them for various tasks with their friends.</td>
</tr>
<tr>
<td>5</td>
<td>Analyze and evaluate the problem-solving process</td>
<td>Helps students to reflect on or evaluate their investigations and the processes they use.</td>
</tr>
</tbody>
</table>

RESEARCH METHODS

The method in this research is a quasi-experimental method with research design which is described as follows:

O X O (Ruseffendi, 2010: 53)

---------------------
O O

Information:

O : Pretest /Posttest Mathematical connection
X : Problem Based Approach
------: The sampling is not random

The population in this study is all students of Class X SMK Negeri 1 Rengasdengklok. For the sample is of 8 classes, two classes are selected randomly assigned to the experimental class and control class. Class X TKJ 1 as experimental class and class X TKR 1 as control class, so the sample of this research is class X TKJ 1 and class X TKR 1.

RESULTS AND DISCUSSION

Results

Description of Research Results

Overall the sample size for the experimental class and control class is 92 students with 45 students each and 47 students.
Data obtained from this research are data derived from pretest, posttest and n-gain results of experimental class and control class. As a preliminary description is presented a description of the two classes that have been given pretest and posttest in Table 2 below:

Table 2. Descriptive Results of Statistic of Mathematical connection

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Pretest</th>
<th>Posttest</th>
<th>N-Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Min</td>
</tr>
<tr>
<td>Control</td>
<td>45</td>
<td>29.36</td>
<td>18.54</td>
<td>0</td>
</tr>
<tr>
<td>Experiment</td>
<td>47</td>
<td>37.51</td>
<td>24.74</td>
<td>0</td>
</tr>
</tbody>
</table>

Information: Score of Maximum Ideal (SMI) = 26

Analysis of Pretest

1. Test of Normality

   The first step taken to test the pretest data is to know in advance whether the data comes from a population that is normally distributed or not. Normality test of the two classes is done by Kolmogorov-Smirnov test using SPSS 16.0 for Windows program with a significance level of 0.05.

   The hypothesis in normality test of pretest data is as follows:

   $H_0$: The sample comes from a normally distributed population

   $H_1$: The sample comes from a normally non-distributed populations

   Criteria for decision making are:

   If the value of significance is less than 0.05 then $H_0$ is rejected

   If the significance value is greater than 0.05 then $H_0$ is accepted

After done data processing, output display can be seen in Table 3

Table 3. Normality Test of Pretest in Experiment and Control Class

<table>
<thead>
<tr>
<th>Group</th>
<th>Kolmogorov-Smirnov $^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.112</td>
</tr>
<tr>
<td>2</td>
<td>.084</td>
</tr>
</tbody>
</table>

Based on the result of the test of normality test by using the Kolmogorov-Smirnov test in Table 3 value of pretest value for experiment class with label group 2 is 0.200 and control class with label group 1 is 0.199. Both values of significance are greater than 0.05. Based on the decision making criteria $H_0$ is accepted. This means that the samples from the control class and the experimental class come from normally distributed populations.
2. Test of Homogeneity

After knowing that the sample comes from a normally distributed population, the next step is to test homogeneity using Levene test statistics with the help of SPSS 16.0 for Windows program with a significance level of 0.05. This is done to see if the data comes from the same variance or not. The hypothesis in testing homogeneity of pretest data in this research are as follows:

- $H_0$: there is no difference in variance between the experimental class and the control class
- $H_1$: there is a difference in variance between the experiment class and the control class.

When formulated into the statistical hypothesis as follows:

$$
H_0 : \sigma_1^2 = \sigma_2^2 \\
H_1 : \sigma_1^2 \neq \sigma_2^2
$$

Criteria for decision making are:

- If the value of significance is less than 0.05 then $H_0$ is rejected.
- If the significance value is greater than 0.05 then $H_0$ is accepted.

After done data processing, output display can be seen in Table 4:

<table>
<thead>
<tr>
<th>Score</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on Mean</td>
<td>3.385</td>
<td>1</td>
<td>90</td>
<td>.069</td>
</tr>
<tr>
<td>Based on Median</td>
<td>3.373</td>
<td>1</td>
<td>90</td>
<td>.070</td>
</tr>
<tr>
<td>Based on Median and with adjusted df</td>
<td>3.373</td>
<td>1</td>
<td>82.669</td>
<td>.070</td>
</tr>
<tr>
<td>Based on trimmed mean</td>
<td>3.416</td>
<td>1</td>
<td>90</td>
<td>.068</td>
</tr>
</tbody>
</table>

Based on the results of homogeneity test results using Levene test in Table 4 significance value is 0.069. Since the significance value is greater than 0.05 then based on the decision-making criteria it can be concluded that there is no difference in variance between the experimental class and the control class or in other words the variance between the experimental class and the control class is the same.

3. T-Test

Based on normality and homogeneity test results, normal and homogeneous distribution data were obtained so that the mean difference test using t-test through SPSS 16.0 for Windows program using Independent Sample T-Test with the assumption of two homogeneous variances (equal variance assumed) with a significance level of 0.05.

The hypothesis is as follows:
There is no difference in the ability of students' mathematical connections between the learning using problem based learning with those using ordinary learning.

There is a difference in the ability of students' mathematical connections between those learning using problem-based learning better with those using ordinary learning.

When formulated into the statistical hypothesis is as follows:

\[ H_0 : \mu_1 = \mu_2 \]
\[ H_1 : \mu_1 \neq \mu_2 \]

Criteria for decision making are:

If the value of significance is less than 0.05 then \( H_0 \) is rejected.

If the value of significance is greater than 0.05 then \( H_0 \) is accepted.

After data processing, t-test results can be seen in Table 5.

**Table 5. Independent Samples Test of Pretest**

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>T-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances</td>
<td>-</td>
<td>84.9</td>
</tr>
<tr>
<td>not assumed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 shows that the significance value (sig.2-tailed) with the t-test is 0.082. Because the significance value is greater than 0.05 then \( H_0 \) is accepted. This shows that there is no difference in the ability of students' mathematical connections between the learning using problem-based learning with those using ordinary learning.

**Analysis of Posttest**

1. Test of Normality

In the normality test, this posttest data is first seen whether the data comes from a population that is normally distributed or not. Normality test of the two classes is done by Kolmogorov-Smirnov test using SPSS 16.0 for Windows program with a significance level of 0.05.

The hypothesis in normality test of pretest data is as follows:

\[ H_0 : \text{the sample comes from a normally distributed population.} \]
\[ H_1 : \text{samples are from non-distributed populations.} \]

Criteria for decision making are:
If the value of significance is less than 0.05 then $H_0$ is rejected

If the significance value is greater than 0.05 then $H_0$ is accepted

After data processing, output display can be seen in Table 6

Table 6. Test of Normality of Posttest in Experiment and Control Class

<table>
<thead>
<tr>
<th>Group</th>
<th>Score</th>
<th>Kolmogorov-Smirnov$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>.163</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>.224</td>
</tr>
</tbody>
</table>

Based on the result of the test of normality test by using the Kolmogorov-Smirnov test at Table 6 significance value in column significance of data of final test (posttest) for the experiment is 0.00 and control class is 0.004. Based on decision-making criteria then $H_0$ rejected. This means the sample of the population is not normally distributed.

Because the normality test of posttest data is not normally distributed, it is continued to the Mann-Whitney test

2. Mann-Whitney Test

Based on the result of normality test that has been done, the data obtained is not normally distributed so that it can be continued by Mann-Whitney test through SPSS 16.0 for Windows program with significance level 0.05.

The hypothesis in the Mann-Whitney test is as follows:

$H_0$: There is no significant difference between mathematics learning outcomes of students using problem-based learning model with mathematics learning outcomes of students using ordinary learning

$H_1$: There is a significant difference between the mathematics learning outcomes of students using problem-based learning models with students' mathematics learning outcomes using ordinary learning

Criteria for decision making are:

If the value of significance is less than 0.05 then $H_0$ is rejected

If the significance value is greater than 0.05 then $H_0$ is accepted

After done data processing, output display can be seen in Table 7

Table 7. Test of Mann-Whitney of Posttest in Experiment and Control Class

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann-Whitney U</td>
</tr>
<tr>
<td>Z</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
</tr>
<tr>
<td>a. Grouping Variable: Group</td>
</tr>
</tbody>
</table>
Table 7 shows that the significance value (sig.2-tailed) with the Mann-Whitney test is 0.000. Because the significance value is less than 0.05 then based on decision-making criteria, $H_0$ is rejected. Meaning that learning by using a problem-based approach is better than ordinary learning.

**Analysis of N-Gain**

1. Test of Normality

   In the normality test, this posttest data is first seen whether the data comes from a population that is normally distributed or not. Normality test of the two classes is done by Kolmogorov-Smirnov test using SPSS 16.0 for Windows program with a significance level of 0.05.

   The hypothesis in normality test of pretest data is as follows:

   $H_0$: Normally distributed data.

   $H_1$: Distributed data is not normal.

   Criteria for decision making are:

   If the value of significance is less than 0.05 then $H_0$ is rejected.

   If the significance value is greater than 0.05 then $H_0$ is accepted.

   After done data processing, output display can be seen in Table 8

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnova</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>N-GAIN</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.128</td>
</tr>
<tr>
<td>2</td>
<td>.162</td>
</tr>
</tbody>
</table>

   a. Lilliefors Significance Correction

   Based on the result of the test of normality test by using Kolmogorov-Smirnov test in Table 8 significance value in N-Gain data significance column for the experiment is 0.03 and control class is 0.063. The significance value of the experimental class is less than 0.05 and the significance value of the control class is greater than 0.05. Based on decision-making criteria then $H_0$ rejected. This means the data is not normally distributed.

   Because the normality test of N-Gain data is not normally distributed, it is continued to the Mann-Whitney test.

2. Mann-Whitney Test

   Based on the result of normality test that has been done, the data obtained is not normally distributed so that it can be continued by Mann-Whitney test through SPSS 16.0 for Windows program with significance level 0.05.

   The hypothesis in the Mann-Whitney test is as follows:
$H_0$: There is no significant difference between mathematics learning outcomes of students using problem-based learning model with mathematics learning outcomes of students using ordinary learning

$H_1$: There is a significant difference between the mathematics learning outcomes of students using problem-based learning models with students’ mathematics learning outcomes using ordinary learning

Criteria for decision making are:
If the value of significance is less than 0.05 then $H_0$ is rejected
If the significance value is greater than 0.05 then $H_0$ is accepted

After done data processing, output display can be seen in Table 9

| Tabel 9. Mann-Whitney Test of N-Gain Data Experiment and Control Class |
|-------------------------|-----------------|
| Mann-Whitney U          | 389.500         |
| Z                       | -5.223          |
| Asymp. Sig. (2-tailed)  | .000            |
| a. Grouping Variable: Group |

Table 9 shows that the significance value (sig.2-tailed) with the Mann-Whitney test is 0.000. Because the significance value is less than 0.05 then based on decision-making criteria, $H_0$ is rejected. This means that the improvement of mathematical connection of SMK students using problem-based approach is better than using the usual approach.

**Discussion**

In this study, 10 learning activities were conducted consisting of 8 times face-to-face in class and 2 meetings for pretest and posttest. Learning uses different learning models (treatments). In the experimental class were treated using a problem-based learning model while in the control class using ordinary learning.

At the first meeting, pretest in both classes was analyzed. The pretest data were normally distributed and had homogeneous variance, then tested the average difference with the t-test and found that the students’ initial ability in the experimental class and the control class were the same.

The second meeting in the experimental class, students are still confused about the relation of mathematics with daily life not only that interest and motivation to learn low mathematics due to less optimal learning of math class in the experiment, they only record and learn alone without any guidance. That's why they are less interested in learning mathematics. To increase their interest and motivation, teachers provide motivation where mathematics is a universal learning or a link in their area of expertise. They want a good
method for learning math easily understood. Therefore teachers form groups, with a group of 4-5 people. Each group is given LKS. Furthermore, before the students do the LKS with the group, first the teacher gives the material taught, then the students and the group are allowed to find and solve the mathematical problems based on the LKS. These experiments were almost all students less active because of the embarrassment to ask questions, so the teachers lure them to be active by giving a plus and appreciation in the first meeting. While the teacher only guides the students so that the answers described are true and not mistaken. After all the problems in the LKS have been discussed then the teacher evaluates individually. Furthermore, in the control class, the teacher asks the problem they are experiencing. It turns out the problem is the same as the experimental class because the counsellor is the same. then the teacher gave the same treatment as the experimental class that is giving motivation so that they are interested in learning mathematics. Furthermore, teachers give material to them and give examples of questions and answers. In this control class, students tend to listen and imitate what the teacher is saying, without participating in expressing their opinions to find a solution to each problem. At the end of the meeting, the teacher gives an individual evaluation.

The third meeting, not much different from the second meeting, in the experimental class, the teachers formed students in groups. But at this meeting, it is better than the second meeting, because more students have dared to come up with findings and solutions on every issue. Students are excited because they can appreciate the teacher in every way they are able to do. While in the control class that learning using the usual way of learning is centred on the teacher, students have not been aroused to hone his connection skills.

The fourth meeting, the same activity as in the previous meeting. In the experimental class many students who have the confidence to express the findings in solving the problems that teachers give without telling any they already understand when they can answer then they pointed in front of the class. While in the control class, students are still timid to ask or express opinions.

The fifth meeting, in the experimental class of students' mathematical connection, is better than the previous meeting. This is evidenced by the number of students who want to advance to the front of the class even scramble to explain the findings and solutions that they think is right. Although there are still many mistakes that are then corrected by the teacher. Better improvements have also begun to be demonstrated by control classes. Although no student has dared to express his findings, some students dare to ask the teacher whether their findings are true or not.
The sixth meeting, in the experimental class of students' mathematical connection, is increasingly honed. Many students have found the right solution. In the control class, at this meeting, there are already some students who dare to bring up the findings and solutions that they consider to be true. But still much is corrected by the teacher.

The seventh, eighth, and ninth meetings in the experimental class have many active and confident students to come up with the solution of their connections to every problem. And their answers are many correct. Controlled, half the students in the class, students have dared to express their opinions, but their connecting ability is less visible than experimental class, from some solutions they are only able to answer half. because they only imitate, record and listen to the teacher.

The tenth meeting, in the classroom of experiment and the control class, is held posttest. The posttest data analysis aims to find out how the influence of problem-based learning model on student learning outcomes is better than students using ordinary learning or vice versa. After analyzing, posttest data were not normally distributed and had homogeneous variance, then tested the average difference with t-test and got the result that the students' mathematics learning result using the problem-based learning model was better than the students who used regular learning. In this experimental class is not solely gain knowledge from the teacher, but more trying to find and develop the knowledge independently and in groups with his friends through the problems contained in the LKS. In general, the learning has been done well, so the results of the analysis conducted in accordance with the hypothesis that has been expressed before.

Before the students do the LKS with the group, the teacher first gives information about the learning stages of the meeting, then the students and the group are allowed to find and solve the mathematical problems in the given LKS.

During the process of LKS work by the students progresses, the teacher occasionally provides guidance to direct the mindset of the students to the concept of knowledge being studied. Students are required to be active in the classroom to enjoy the lesson with a relaxed and comfortable. After the completion of LKS work, teachers and students jointly discuss the LKS.

Student Activity in Class Control

While in the control class who obtained learning mathematics in the usual way that is teacher-centred learning. The teacher gives information, gives examples of questions and answers questions together, then gives the problem to be done individually. This way, it does not produce much students' mathematical connection. Because students tend to
imitate what is exemplified by teachers, without trying to find their own solutions first to solve the problem on each given question. So as to cause the average mathematical connection of students in the class who acquired the learning of mathematics using problem-based learning approaches better than the classroom students who acquired math learning with ordinary learning.

Problems that arise related to the condition of students and teachers in teaching and learning activities in school is time constraints. Especially in the experimental class, to perform the learning process with problem-based learning approach which of course has an impact on the results achieved not maximal. The timing of the completion and discussion of the LKS should also be considered since after that stage the teacher and the student must draw conclusions from the learning that has taken place. Sometimes the students' inadvertence at the discussion stage with their friends is accompanied by jokes, and the settlement of the completed LKS is too relaxed causing a lot of time to be missed. So when making conclusions by teachers and students too briefly because the lesson time that has ended. To overcome these problems the teacher should always guide and direct students to seriously work on the LKS and give warning to students who are too many jokes in the classroom.

However, the problems that arise can be overcome as more students try to find and develop the most dominant knowledge is the daily life so that students are not too difficult to achieve the connection ability of the math lesson learned.

CONCLUSION
Based on research data and data analysis results obtained, it can be concluded that the mathematical connection of students using problem-based approach is better than students using ordinary learning.

REFERENCES


