Mathematical problem solving ability of sport students in the statistical study

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Abstract. This study aims to determine the problem-solving ability of sport students of PGRI Palembang semester V in the statistics course. Subjects in this study were sport students of PGRI Palembang semester V which amounted to 31 people. The research method used is quasi experiment type one case shoot study. Data collection techniques in this study use the test and data analysis used is quantitative descriptive statistics. The conclusion of this study shown that the mathematical problem solving ability of PGRI Palembang sport students of V semester in the statistical course is categorized well with the average of the final test score of 80.3.

1. Introduction

Realized or not in our daily lives we often find information related to statistics, whether presented through electronic media and print media. So it can be said that statistics have an important role in human life. The course of statistics is one of the subjects taught in universities, especially in the university PGRI Palembang. This course is expected to help students in completing the final task of thesis, especially on the research methodology.

Although the course of statistics is very important in college, but generally less interested students to study especially in sports education program. At the University of PGRI Palembang sports education program, the statistical courses are taught in the fifth semester. By studying the statistics course, students are expected to develop analytical, systematic, conclusive, diligent and disciplinary skills in solving problems in mathematics and in other fields. This is reinforced by the opinion of Kholidi and Sahat [1] which states that one of the indicators of good quality learning is the high level of knowledge as well as the interaction of students to the material taught in real life.

The facts on the ground are not in accordance with the existing learning objectives. The difficulties of students in translating statistical problems, complexity in the process of calculation at each stage to make conclusions, coupled with the level of accuracy of students in the calculations are still lacking, and student self-distrust causing students easily desperate in solving statistical problems. Likewise that is recognized by some students of Sports Education Program Education University PGRI Palembang.

Problem solving skills are the mathematical skills that every student should have. Problem solving is said to be the heart of mathematics, this is because of the importance of problem solving skills in learning mathematics. NCTM [2] says that problem solving has two functions in mathematics...
learning. First problem solving is an important tool to learn math. Both problem solving can equip students with knowledge and tools.

The importance of problem-solving skills is also expressed by Branca, as quoted by Effendi [3] that problem-solving skills are the heart of mathematics. The problem solving ability of students has relevance to the stage of solving mathematical problems. According to Polya [4] the mathematical problem solving stage includes: (1) understanding the problem, (2) making a plan of completion, (3) executing the plan, and (4) looking back. It is intended that students are more skilled in solving mathematical problems, that is skilled in carrying out procedures in solving problems quickly and carefully, especially on the statistical problems that are often faced by students. Statistics is one of the subjects that must be followed by every sem. V sports students of Universitas PGRI Palembang. Therefore this course becomes very important, point to help students in completing the final task (thesis).

Problem is a situation where the individual wants to do something but does not know the way or action needed to get what he wants. Hudojo, as quoted by Yuwono [5] states that something is called a problem for students if: (1) the questions confronted to learners must be understandable to the learners, but the question must be a challenge for him / her to answer, 2) the question can not be answered by routine procedures that learners already know.

The problem for someone is not necessarily a problem for others. This is because of the possibility that the other person has ever encountered and solved such a person's problem. A problem that comes to someone causes the person to at least attempt to solve the problem he is facing. So he has to use various means such as thinking, trying, and asking to solve the problem. Even in this case, the process of solving the problem between one person and another person may differ. According to [6] problem solving has been defined as a high-level cognitive process that requires modulation and control over routine or basic skills.

At the time of solving mathematical problems, students are faced with several challenges such as difficulty in understanding the problem. This is because the problem faced is not a problem that has been faced by previous students. There are several troubleshooting steps introduced by mathematicians and mathematics teachers such as the problem-solving stage according to Polya, Krulik and Rudnick, and Dewey. Schoenfeld, as quoted by Ellison [8] states that is not a teaching on strategies that can cause differences in solving problems, more than that, practice problem solving then make a difference. According to [9] students need to do things like accept challenges from problems, plan problem-solving strategies, implement strategies, and re-examine the solutions obtained.

According to Polya [4] the four stages of Polya problem solving are detailed as follows.

1. Understanding the problem (understand the problem)

The first stage of problem solving is understanding the problem. Students need to identify what is known, what is there, the number, relationships and related values and what they are looking for. Some suggestions can help students understand complex issues: (1) to ask questions about what is known and sought, (2) explain the problem according to the sentence itself, (3) link it to other similar problems, (4) focus on the part which is important from the problem, (5) developing the model, and (6) drawing the diagram.

2. Make a plan (devise a plan)

Students need to identify the operations involved as well as the strategies needed to solve the given problem. This can be done by students such as: (1) guessing, (2) developing a model, (3) sketching diagrams, (4) simplifying problems, (5) identifying patterns, (6) creating tables, (7) experiments and simulation, (8) working inversely, (9) testing all possibilities, (10) identifying sub-goals, (11) making analogies, and (12) sorting data / information.
3. Implement the plan (carry out the plan)

What is applied clearly depends on what has been planned before and also includes the following: (1) interpreting the information given into a mathematical form; and (2) execute a strategy during the process and ongoing calculations. In general at this stage students need to retain the chosen plan. If such a plan cannot be done, then the student can choose another way or plan.

4. Looking back (looking back)

The following aspects need to be taken into consideration when reviewing the steps previously involved in solving the problem, namely: (1) recheck all important information that has been identified; (2) checking all counts already involved; (3) consider whether the solution is logical; (4) look at other alternative solutions; and (5) read the question again and ask yourself if the question has really been answered.

As for the problem in this research is "How the problem solving skills mathematical students PGRI Palembang semester V students in the statistics course?". This study aims to determine the problem-solving ability of mathematical students of PGRI Palembang sports semester V in the statistics course.

2. Method

The method of this research is one case shoot study where there is only one class of sample that is class which become experiment which implemented without control class (comparison class). Data collection techniques in this study used the test and data analysis used is quantitative descriptive statistics [10].

3. Result and discussion

Data of students' mathematical problem solving ability is seen from the result of the test which is given at the 4th meeting. The test is given in the form of essays with categories easy, medium, medium, easy and moderate. About 4 test questions about mathematical problem solving students.

| Table 1. The value of students every meeting |
|---------------------------------------------|
| Average | Meeting 1st | Meeting 2nd | Meeting 3rd |
|--------|------------|------------|------------|
| 64.40  | 72.65      | 83.24      |

Table 1 shows that at the first meeting it was sufficient with an average score of 64.40 at the second meeting was good with an average score of 72.65 whereas in the third meeting the average was classified as good with an average of 83.24.

At the meeting to four students are given a test that is as much as 4 essay-shaped questions. The test results were followed by 31 students, with the highest score being 100 while the lowest score was 50. From the final test obtained students 'mathematical problem solving ability of the average value of 80.30 This means that students' mathematical problem solving abilities are categorized as well as the results of the mathematical problem solving ability of the student per indicator on the test can be seen in Table 2.

| Table 2. Average value of end tests ability resolution mathematical student per-indicator |
|---------------------------------------------|
| No | Indicators | Average | Result |
|----|------------|---------|--------|
| 1  | The ability to identify problems | 80.2    | Very good |
| 2  | Planning a solution with a mathematical model | 87.5    | Very good |
| 3  | Resolving the problem as planned | 89.4    | Very good |
| 4  | Interpret solutions | 58.9    | Enough  |
|    | Average    | 80.30   |         |
The students' mathematical problem solving abilities on the first meeting test were averaged 64.40. At the second meeting the students began to be active and began to get used to the statistical material so that the impact on the average value of the second meeting is 72.65. At the third meeting, students get good grades, this is because students have started to get used to the statistical material with an average value of 83.24.

From the test results obtained the average value of mathematical problem solving ability of student each indicators and obtain an average of 80.30. And the lowest indicator is on inductor 4 makes conclusions with an average of 58.9 less categories, this is because students forget to write a conclusion or wrong when making conclusions. While the highest indicator lies in indicator 3 solve the problem with an average of 89.4 well categorized this is because students have understood the concept of the problem and have understood the purpose of the problem.

4. Conclusion
Based on the results of research that has been done, it can be concluded that students' mathematical problem solving skills are categorized well with the average of the final test score of 80.3. While the average per indicator students' mathematical problem solving abilities on the indicator 1 reaches an average of 80.2 with very good category, in indicator 2 reaches an average of 87.5 with excellent category, indicator 3 reaches 89.4 average rating with excellent category, and indicator 4 reaches 58.9 average rating with enough category.

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