

Performance Management and Student Mathematic Disposition through a Posing Problem Approach

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Abstract

This study aims to determine the performance management and mathematical disposition of students through the problem posing approach. This research uses quasi experimental research. The population in this study were 149 students of SMK Sumber Mulyo. The research sample was the cluster random sampling technique (random group sample), that is, one class was selected as a sample subject to treatment through random selection, namely students of class XI SMK TSM totaling 30 students. The results showed that the level of influence between the problem posing approach variable on performance management and students' mathematical dispositions had a high effect. The results of testing the research hypothesis testing problem posing approach to performance management can be seen that the t_{count} value is 7.560 and t_{table} is 1,781 so that $t_{count} \geq t_{table}$ then H_{a1} is accepted, that is, there is a positive and significant influence between the problem posing approach to performance management. Furthermore, the results of the research hypothesis test of the problem posing approach to mathematical disposition, it is known that the t_{count} value is 6.630 and the t table is 1.981 so that $t_{count} \geq t_{table}$ then H_{a2} is accepted, namely that there is a positive and significant influence between the problem posing approach to mathematical disposition.

Keywords

performance management;
mathematical disposition;
problem posing



I. Introduction

Everyone can feel the benefits of applying mathematics in various lines of life, both at school, at work, and in society. Mathematics studies about management / order, about organized structure, from the simplest concepts to the most complex concepts, mathematical concepts are arranged hierarchically, structurally and systematically. Nowadays mathematics as one of the basic sciences has developed rapidly both in terms of material and its use. (Wijaya et al., 2020).

Mathematics serves to symbolize communication skills by describing numbers and symbols as well as sharpness of reasoning that can provide clarity and solve problems in everyday life. therefore mathematics is one of the subjects that must be studied for all levels of education, starting from SD / MI, SMP / MTs, SMA / SMK / MA equivalent to Higher Education (Rustyanti, et al, 2019)

In learning mathematics, the process of practicing thinking, reasoning that is critical, systematic, logical, creative is very thick, this is so that students are trained managing activities or behavior to produce a good effect (performance management). This is in line with the opinion of Soedjadi (2014: 43) that the purpose of learning mathematics is to prepare students to be able to manage their own behavior in facing world changes that always develop in situations, conditions and patterns of thought.

The ability of students to manage activities or self-behavior to produce a good effect (performance management) has an impact on student mathematics learning outcomes. This is in line with (Firmanto, 2017) states that in order to achieve the objectives of effective school management, school management is needed in accordance with the situation and conditions in which the school is held. It is reinforced by the opinion of Hasibuan (2019: 1) that management is a tool to achieve cool goals, a person's ability to organize / manage himself will facilitate the realization of goals. According to Argareta Simorangkir (2018) one of the efforts to improve the ability of student number sense is that teachers should be able to create an interesting and enjoyable learning atmosphere by using technology as a learning medium. Media is a learning aid that can act as a channel for information directly or indirectly in the learning process.

However, it is very unfortunate that many students have a negative view (do not like) mathematics because students think mathematics can only be understood by students who have high cognitive abilities. A negative student view of mathematics will have an impact on the lower interest of students in studying and solving math problems so that it affects the low learning outcomes of mathematics (Akbar et al., 2017).

In addition to developing students' mathematical cognitive abilities, namely managing learning activities (performance management), mathematics learning is also intended to develop students' affective domains. One important aspect in the affective domain that greatly influences the process and student learning outcomes is students' positive view of mathematics. (Nurrizbaeni & Zanthi, 2018). A positive attitude or outlook towards mathematics will greatly influence the process and student learning outcomes. When students have appreciated mathematics and feel that mathematics is useful in solving life's problems, these students will solve mathematical problems seriously, are full of self-confidence, resilience, and reflect on how to think (Mahmuzah & Ikhsan, 2014).

This is in line with the objectives of learning mathematics, namely having an attitude of appreciating the usefulness of mathematics in life such as attention, curiosity, interest in learning mathematics and a persistent and confident attitude in solving mathematical problems. This is in accordance with what is contained in the 2003 National Council of Teachers of Mathematics (NCTM) on the seventh point regarding the objectives of learning mathematics, namely the formation of a positive attitude towards mathematics.

Education is one way to produce quality Human Resources (HR) with experience changes in knowledge, skills and attitudes. These changes can be a capital to improve self-competence in facing the era of globalization that always undergo the change (Sitorus et al, 2019). However, based on the fact, there are still many students who do not have good learning outcomes in learning mathematics. The problem of the low quality of education, especially mathematics, is a classic problem in our world of education. The achievement of Indonesian students internationally from the last three years is one indicator that shows the low quality of mathematics education in Indonesia. Ainsiyah (2020) stated that good quality education can occur through a variety of factors that are related to planning, process, community support, and facilities in schools. This can be seen from the results of the 2015 PISA, especially in mathematics which placed Indonesia in 63rd place out of 69 countries evaluated with an average score. the average obtained was 386 (OECD, 2016).

Likewise, the learning outcomes of students at SMK Sumber Mulyo which were obtained from administrative data and the deputy head of the curriculum show that the results of student learning mathematics are still not optimal. This can be seen from the average scores of the last three years of the National Mathematics Examination of students starting in the 2018/2019 academic year to the 2019/2020 school year. In Table 1, the

results of the SMK Sumber Mulyo Kp National Examination are presented. VI Sumber Mulyo Kec. Marbau Regency, North Pelabuhanbatu.

Table 1. Results of the National Examination at Sumber Mulyo Senior High School

Subjects	Average value Academic Year 2019/2020
Indonesian	74.42
B. English	44.08
Mathematics	42.12
Productive	50.1

Source: Administration (2020)

Based on Table 1, it can be seen that the results of the National Exam for SMK Sumber Mulyo students in mathematics received the lowest score, namely 42.12 compared to other subjects that entered the national exam, including: Indonesian (74.42); English (44.08); and Productive (50.1). To improve mathematics learning outcomes, it is deemed necessary for teachers to foster affective aspects. One of the affective aspects that need to be developed is mathematical disposition, because mathematical disposition is one of the factors that also supports students in learning mathematics.(Setyaningsih et al., 2015).

Therefore, the mathematical disposition or positive view of students towards mathematics must be grown and improved as early as possible in order to support students' mathematical abilities. However, in reality many students' mathematical dispositions are still low. This can be seen from the results of research by Kesumawati (2013) which showed that 58 students' average disposition scores were in the low category. One of the factors that causes the low mathematical disposition of students is the conventional mathematics learning model applied by the teacher where students tend to be passive while the teacher is more dominant so that students are less familiar with and appreciate mathematics lessons.

In an effort to be able to change the situation of the conventional model learning process, an appropriate learning approach is needed. One of them is learning mathematics with a problem posing approach. The application of the problem posing approach is an appropriate learning model to make students more interested in mathematics and to make students more responsible for solving mathematical problems.(Farisyah, 2020).

II. Review of Literature

2.1 Performance Management through Problem Posing Approach

Management is known as a process that regulates a person's activities or behavior so that it has a good effect. Management is a goal to be achieved by using other people's activities that must be guided and supervised (Manullang, 2017: 6). Performance is a manifestation of the ability in the form of real work achieved by a person in carrying out his duties and jobs. Performance is the result of a process that is referenced and measured over a period of time based on the provisions or agreements that have been previously determined. Performance management is an attempt to achieve a better person's or organizational performance over time (Edison, et al. 2016: 188). It can be concluded that without good performance management, the expected results in accordance with the planning are actually very difficult to achieve.

Performance management in this study is the management of students in mathematics through planning, implementing, and evaluating learning. The planning is a very important part of a learning program. Good planning is part of the success, because of

this planning, program implementation will be smoother and easier. The implementation in question is the process of students in learning mathematics which shows that students have done learning actions while evaluation is an assessment of the learning outcomes achieved.

The use of the problem posing approach in the learning process has been suggested by previous researchers because it has many benefits for students, one of which is increasing the performance management ability of students as learners. Based on observations (Farisyah, 2020) When the learning process takes place using the problem posing approach, from the situation given the students look enthusiastic when designing the questions, even though a small number of students look passive, that is, they only accept what their friends do. Then at the next meeting, namely the second, third and fourth meetings, passive students began to appear confident in enjoying the learning process and began to dare to express opinions and be more persistent in asking questions and making solutions to these problems.

Problem posing is an effective way to develop student skills in order to increase students' understanding and ability to apply mathematical concepts. So that students are able to face and solve various math problems. Apart from that, the problem posing approach is an approach that maximizes students' creativity in bringing up ideas to formulate problems from existing situations. (Mathematical et al., 2015). It is suspected that learning with the problem posing approach has a positive tendency towards the ability to manage students' self-behavior (performance management).

2.2 Mathematical Disposition through Problem Posing Approach

In learning mathematics the realm of cognitive abilities is an aspect that is considered. However, apart from cognitive abilities, it should be accompanied by affective abilities, so that students have a positive view of mathematics. because students who have high mathematical dispositions will form a person who is resilient, diligent, passionate about learning (Nurrisbaeni & Zantho, 2018). This is supported by (Rustyani, 2018), that mathematical disposition is a desire, awareness, dedication and a strong tendency in students to think and do mathematically in a positive way and based on faith, piety, and noble morals.

The disposition is reflected in the students' interest and belief in mathematics learning. The components of coaching students' affective domains in the form of desire, awareness, dedication and strong tendencies in students in learning mathematics to think and do mathematically in a positive way and based on faith, piety, and noble character are components of fostering mathematical dispositions. A strong tendency in students to learn mathematics and carry out various mathematical activities is a mathematical disposition. Student confidence, curiosity and interest, student persistence or persistence in studying mathematics and solving problems related to mathematical disposition (Qodariyah & Hendriana, 2015).

The low positive attitude of students, students' curiosity about mathematics, and self-confidence in answering questions and expressing opinions have an impact on low mathematics learning outcomes (Tarjo, 2020). Therefore, one of the factors supporting the success of students' mathematical learning is mathematical disposition. Mathematical disposition required students to persist in facing problems, develop work habits and take responsibility, which are good in learning mathematics. In the future, taking advantage of studying all mathematics material is not necessarily realized, so that it can be ascertained that the development of mathematical dispositions is a necessity because students need a positive disposition to face various problem situations in their lives. (Muslim, 2016).

Mathematical disposition, namely the desire, tendency, awareness, and strong dedication to students to think and do mathematically in a positive way. The low attention of teachers to students' mathematical dispositions in the teaching and learning process resulted in students seeing mathematics as difficult to understand and student interest was reduced. Good thinking attitudes and habits will essentially shape and develop mathematical dispositions. which has an impact on student learning success(Akbar et al., 2017).

Real efforts in developing students' mathematical dispositions, one of which is through the problem posing approach, is needed because many students in the learning process do not know and appreciate mathematics. The problem posing approach emphasizes students to learn actively, form or ask questions according to information or situations so that students are able to find and construct their own knowledge. The problem posing approach provides opportunities for students to be more active in class learning activities. In addition, students are free to issue their ideas when giving material(Nurjaman & Sari, 2017). It is suspected that learning with the problem posing approach has a positive tendency towards students' mathematical dispositions.

2.3 Conceptual Framework

The learning process with the problem posing approach requires students to have a diligent and persistent attitude, especially in designing a problem and also solving it so that students understand and appreciate mathematics more, so that it can improve performance management and students' mathematical dispositions. In order to simplify the flow of thought in this study, the authors describe it as follows:

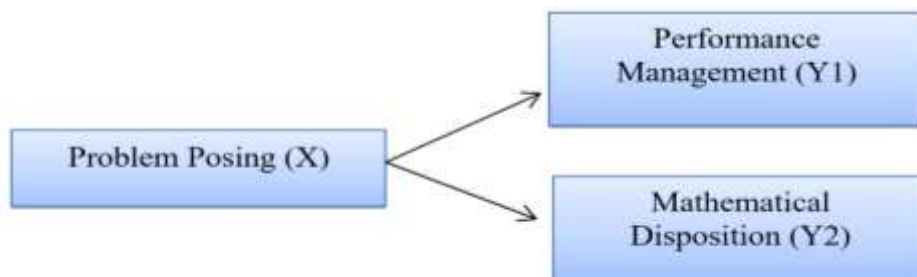


Figure 1. Framework

Source: Data processed in 2021

III. Research Methods

3.1 Design or Research Design

In this study, there are three variables, namely the independent variable and the two dependent variables. The independent variable in this study is the Problem Posing Approach (variable X) while the dependent variable in this study is the Performance Management and Mathematical Disposition variable Y). This research uses a quasi experimental research type by conducting experiments in a class that is already available as is, without changing the classroom situation and learning schedule.

3.2 Population and Research Sample

According to Sugiyono (2017: 80) states, "population is the whole or area of generalization consisting of: objects / subjects that have certain qualities and characteristics that are determined by researchers to be studied and then draw conclusions. It can be concluded that the population in this study is the entire research subject. The population in this study were 149 students of SMK Sumber Mulyo as presented in Table 1. Data on Sumber Mulyo Vocational School Students for the 2020/2012 academic year.

Table 2. Data of Sumber Mulyo Vocational School Students for the 2020/2021 Academic Year

No.	Class	Gender		Total Students
		M	F	
1	X TKJ	7	11	18
2	X TSM	10	13	23
3	XI TSM	13	17	30
4	XI TKJ	9	14	23
5	XII TKR	8	6	14
6	XII TSM	12	6	18
7	XII TKJ	10	13	23
Amount		69	80	149

Source: Administration SMK Sumber Mulyo

3.3 Research Samples

According to Sugiyono (2017: 81) "the sample is part of the number and characteristics that represent the population. The sampling technique in this study is the cluster random sampling technique (random group sample), in which one class is selected as a sample subject to treatment through random selection. random. Determination of random sample classes with the consideration of students from each class having almost the same characteristics as the population to be studied (Interview, 2021). The research sample was class XI TSM totaling 30 students.

3.4 Types and Sources of Data

Data is the researcher's record, both in the form of facts and figures. Sugiyono (2018: 308) data collection can be done using primary sources and secondary sources. The type of data in this study was in the form of primary data, namely questionnaires and tests (questions) and questionnaires that were directly obtained from 30 students at Sumber Mulyo Vocational School in the 2020/2021 Learning Year.

3.5 Data Collection Techniques and Instruments

The techniques used in data collection include: Tests (question instruments), questionnaires (questionnaires) and documentation studies. Instrument Testing Techniques In this study, the technique used in testing the instrument was the validity and reliability test using the SPSS version 20 affair.

3.6 Data Analysis Techniques

After the prerequisite test is carried out, then the hypothesis test is carried out to determine whether the X variable has a significant effect on the Y variable by using the t test. To know the influence of the variable clearly. If $t \text{ count} \geq t \text{ table}$: alternative hypothesis is accepted. If $t \text{ count} \leq t \text{ table}$ then the alternative hypothesis is rejected.

IV. Results and Discussion

4.1 Analysis Prerequisite Test

a. Normality Test

After calculating using SPSS Version 22.0, the normality test is using the Shapiro Wilk test, it is known that the significance value is 0.05%.

Table 3. Normality Test Results

Variable	Sig	Info
Work management	0.154	Normal
The Matametic Disposition	0.121	Normal
Problem Posing	0.201	Normal

The results of the normality test show that all research variables have a significance value greater than 0.05 ($\text{sig} > 0.05$), so it can be concluded that the research data is normally distributed, meaning that the variables in the study have a normal distribution.

b. Correlation Test

The correlation analysis using the r_{xy} formula aims to prove that there is a significant influence between the variable x and the variable y.

Table 4. Correlation Test Results of the Effect of Problem Posing on Performance

		Management	
		Problem Posing	Work management
Problem Posing	PC	1	0.623 **
	Sig		0.000
	N	30	30
Work management	PC	0.623 **	1
	Sig	0.000	
	N	30	30

Table 5. Correlation Test Results of the Effect of Problem Posing on Performance

		Management	
		Problem Posing	Mathematical Disposition
Problem Posing	PC	0.981	0.823 **
	Sig		0.000
	N	30	30
Mathematical Disposition	PC	0.823 **	0.981
	Sig	0,000	
	N	30	30

4.2 Research Hypothesis Test

Hypothesis testing in this study used the t test with the assistance of the SPSS Version 20.0 program. The t test is used to determine whether there is an effect of the independent variable on the dependent variable, namely the problem posing approach variable on performance management and mathematical disposition. Hypothesis testing using the t test is done by comparing t count with t table. The test criteria using the t test is if $t_{count} \geq t_{table}$, the alternative hypothesis is accepted and if $t_{count} \leq t_{table}$, the alternative hypothesis is rejected.

4.3 Discussion of Analysis Results

1. Based on the results of the data processing normality test, the significance value is greater than 0.05 (0.154, 0.121, and 0.201) at ($\text{sig} > 0.05$), so it can be concluded that the research data is normally distributed, meaning that the variables in the study have a distribution distribution. normal.
2. Based on the results of the correlation test, this study shows that (1) the problem posing approach has an influence on student performance management, this is evident from the rxy value of 0.623, the significance of 0.000; and (2) The problem posing approach has an influence on students' mathematical disposition. This is evident from the rxy value of 0.823. Significance of 0.000, it can be concluded that the level of influence between the problem posing approach variable on performance management and students' mathematical disposition has a high influence.
3. Based on the results of testing the research hypothesis test of the problem posing approach to performance management, it can be seen that the tcount value is 7.560 and the t table is 1.781 so that $t_{count} \geq t_{table}$ then Ha1 is accepted, that is, there is a positive and significant influence between the problem posing approach to performance management. While the results of testing the research hypothesis test of the problem posing approach to mathematical disposition, it can be seen that the tcount value is 6.630 and the t table is 1.981 so that $t_{count} \geq t_{table}$ then Ha2 is accepted, that is, there is a positive and significant influence between the problem posing approach to mathematical disposition.

V. Conclusion

Based on the results and discussion of research on the effect of the problem posing approach on performance management and mathematical disposition of the students of class XI TSM totaling 30 people with data analysis it can be concluded as follows:

1. That the performance management data of students' mathematical dispositions and problem posing are normally distributed.
2. The results of the problem posing correlation test have an influence on student performance management. It can be seen that it has a high influence and the results of the problem posing correlation test on the management of students' mathematical dispositions are known to have a high effect.
3. The results of testing the research hypothesis testing problem posing approach to performance management can be seen that Ha1 is accepted, that is, there is a positive and significant influence between the problem posing approach to performance management. Whereas the results of testing the research hypothesis test of the problem posing approach to mathematical disposition can be seen that Ha2 is accepted, that is, there is a positive and significant influence between the problem posing approach to mathematical disposition.

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