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THE EFFECT OF LEARNING QUALITY ON MATHEMATICS LEARNING RESULTS

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Abstract:
The purpose of this study was to find: (1) the positive direct effect of the quality of learning on mathematics learning outcomes, (2) the positive direct effect of the quality of learning on learning motivation. This research was conducted at State High 1 Gorontalo and State High 3 Gorontalo. Respondents amounted to 200 people determined by simple random sampling technique. This research is a quantitative research using path analysis technique to see the influence between variables. Based on the findings, it can be concluded that: (1) there is a positive direct effect on the quality of learning on mathematics learning outcomes, (2) there is a direct positive influence on the quality of learning on learning motivation. The results of the study for mathematics learning outcomes in this study were collected based on the results of the even semester exam through a multiple-choice test with a total of 30 questions. Based on the results of the answers from 200 respondents and using the Microsoft Excel for Windows 10 program, a maximum score of 87 and a minimum score of 43 was obtained so that a score range of 44, the number of class intervals was 9 and the length of class 4. The quality of learning in this study was captured through a distribution of questionnaires consisting of 32 statements. Based on the results of the answers from 200 respondents and using the Microsoft Excel for Windows 10 program, a maximum score of 88 and a minimum score of 35 were obtained so that a score range of 53 was obtained, the number of class intervals was 9 and the length of class 6.

Keywords: mathematics learning outcomes, learning quality, and path analysis

INTRODUCTION

Mathematics is an important subject that must be taught at all levels, from elementary to high school / vocational school. Today's remarkable advances in information and communication technology are based on mathematical advances in analysis, algebra, discrete mathematics, and number theory. It is very important to have a substantial knowledge and understanding of mathematics from a young age to master and build the technology of tomorrow.

Mathematics learning is a collaborative effort of teachers and students in a mathematics learning environment that is intentionally carried out by teachers using methods to help students learn successfully and effectively. This will affect how students learn mathematics. Learning outcomes are very crucial in the mathematics learning system because it manifests how much understanding students have in mathematics.

But in reality the results of learning mathematics have not been encouraging. Based on the National Examination data for the 2016/2017 school year, the 2017/2018 school year, and the 2018/2019 academic year, the average mathematics learning outcomes for State Senior High Schools in Gorontalo City are still relatively low.

Table 1.1. National High School Mathematics UN Scores in Gorontalo City

School name	School year		
	2016/2017	2017/2018	2018/2019
State High School 1 Gorontalo	49,77	42,29	39,82
State High School 2 Gorontalo	40,34	26,73	32,26
State High School 3 Gorontalo	52,10	46,50	37,96
State High School 4 Gorontalo	35,55	28,75	32,87
State High School 5 Gorontalo	-	-	30,56

Source: https://hasilun.puspendik.kemdikbud.go.id/

The low learning outcomes of mathematics are determined not only from the difficulty of the subject but also the characteristics of the students themselves and their environment. According to Slameto (2015:54), learning outcomes can be influenced by two factors, namely internal factors and external factors. External factors come from outside the individual concerned, such as family, school, and community. While internal factors such as intelligence, interest in learning, attention, talent, encouragement, maturity, and self-confidence of students.

The quality of learning is one of the factors that have an impact on learning outcomes in schools. According to the Ministry of National Education (2004:7), learning quality is defined as the identity of systematic linkages and synergies between teachers, students, curriculum, learning materials, media, facilities, and learning systems in creating learning processes and outcomes that meet curricular standards. According to Kaku (2012:17), the quality of learning is the ability of teachers to manage various components of learning, such as pre-learning activities, core aspects of learning, and closing activities, in order to fulfill the basic competencies that students must possess at the education level in each unit. The quality of learning cannot be separated from learning. Learning occurs involving two parties: the teacher and the learner. A teacher is required to provide learning resources, and students have the right to obtain teaching or learning materials. If learning activities are efficient and fun, it is likely that the learning objectives will be achieved, and the desired learning outcomes will be achieved. According to Kaku (2012:22), the quality of learning has an impact on learning outcomes in mathematics. This statement is supported by his dissertation where it is known that the quality of learning has a direct effect on mathematics learning outcomes (Kaku, 2012:45). As a result, the higher the quality of learning provided by the teacher, the easier it is for students to achieve the goals that have been set, especially in terms of improving their learning outcomes.

RESEARCH METHODOLOGY

This study uses a quantitative approach with survey methods and path analysis. Siregar (2017: 9) explained that there were no changes or special treatment carried out by researchers on the variables evaluated in survey research. The constellation of his research can be seen in Figure 3.1 below.

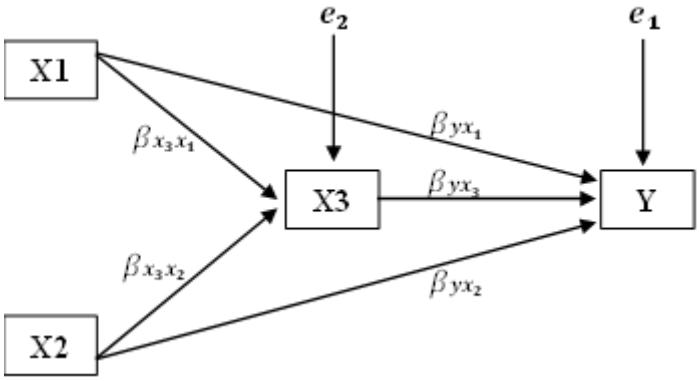

Figure 3.1. Research design

Based on Figure 3.1, in this study there are 4 (four) variables, which consist of dependent (bound), independent (free), and intervening (connecting) variables. Sugiyono (2016:61) explains that the dependent variable is a variable that is influenced or is the result of the independent variable. The dependent variable in this study is the result of learning mathematics (Y). In addition, the independent variable is a variable that affects or causes a change or emergence of the dependent (bound) variable. The independent variable in this study is the quality of learning (X1).

However, in this research activity, the researcher only uses 1 variable, in this case the quality of learning (X1) on mathematics learning outcomes (Y) in disclosing the data that will be the research report.

RESEARCH RESULTS AND DISCUSSION

Mathematics Learning Outcomes Data (Y)

The research data for mathematics learning outcomes in this study were collected based on the results of the even semester exams through a multiple-choice test with a total of 30 questions. Based on the results of the answers from 200 respondents and using the Microsoft Excel for Windows 10 program, a maximum score of 87 and a minimum score of 43 was obtained so that a score range of 44, many class intervals 9 and class length was compiled. From this information a frequency distribution table was compiled as in table 4.1.

Table 4.1. List of Frequency Distribution of Mathematics Learning Outcomes Data

Interval	Frequency	Relative Frequency (%)
43-47	8	4,00
48-52	8	4,00
53-57	36	18,00
58-62	26	13,00
63-67	60	30,00
68-72	24	12,00

73-77	29	14,50
78-82	2	1,00
83-87	7	3,50
amount	200	100

From the data in table 4.1. above, the average (Y) is 64.05, the median (Me) is 64.33, the mode (Mo) is 64.93, and the standard deviation (SD) is 8.92. The complete calculation can be seen in appendix 16. Based on the average, median, and mode scores, the data on mathematics learning outcomes for class XI science students at State High School 1 Gorontalo and State High School 3 Gorontalo in the even semesters of the academic year 2021/2022 tend to be normal.

Learning Quality Data (X1)

The research data for the quality of learning in this study were collected through a questionnaire distribution consisting of 32 statements. Based on the results of the answers from 200 respondents and using the Microsoft Excel for Windows 10 program, a maximum score of 88 and a minimum score of 35 were obtained, so that a score range of 53, many classes of intervals was 9 and the length of class 6. From this information a frequency distribution table was compiled as in table 4.2.

Table 4.2. Learning Quality Data Frequency Distribution List

Interval	Frequency	Relative Frequency (%)
35-40	59	29,50
41-46	37	18,50
47-52	21	10,50
53-58	24	12,00
59-64	21	10,50
65-70	20	10,00
71-76	14	7,00
77-82	2	1,00
83-88	2	1,00
amount	200	100

From the data in table 4.2. above, the average ((X_1)) is 50.97, the median (Me) is 47.64, the mode (Mo) is 38.87, and the standard deviation (SD) is 12.72. The complete calculation can be seen in appendix 16. Based on the average value, median, and mode, data on the quality of teacher learning is based on the perception of class XI science students at State High School 1 Gorontalo and State High School 3 Gorontalo in math subjects in the even semester of the academic year 2021/2022 tends to be low.

DISCUSSION

Positive Direct Effect of Learning Quality on Mathematics Learning Outcomes

The results of testing the research hypothesis which states that: "There is a positive direct influence on the quality of learning on mathematics learning outcomes". These findings indicate that the quality of learning affects the learning outcomes of mathematics. In other words, the higher the quality of learning provided by mathematics teachers, the higher the quality of mathematics learning outcomes that will be achieved by students.

High quality learning can be achieved if the instructor focuses on the three features of the activity outlined by Muslich (2007:72). There are three elements of activity: pre-learning activities, which are often general in nature and are not directly related to the competencies or topics to be covered in the core learning activities; core learning activities; and post-study activities. In this activity, the teacher prepares students for learning and engages in tasks such as linking students' prior knowledge with new information. After students are ready to learn and the apperception activity is complete, the teacher brings students into the core learning activities, where the process of forming student experiences and abilities is carried out programmatically within a certain period of time, so the teacher must master the material being taught. to students, can use various approaches/learning strategies, can utilize learning resources/media, can trigger and injure students, and can injure students. After some of these tasks have been completed, the last one is completing the learning activities, which are used to assess the level of achievement of students and teachers in teaching and learning activities through reflection and follow-up.

By focusing on these three activities, teachers will be able to provide high quality learning that will increase students' knowledge and understanding of the mathematics subjects being taught, resulting in better mathematics learning outcomes for these students.

Positive Direct Effect of Learning Quality on Learning Motivation

The results of testing the research hypothesis which states that: "There is a positive direct influence on the quality of learning on learning motivation". This finding provides information that students' learning motivation is directly

influenced positively by the quality of learning provided by the teacher during the lesson. According to Suprihatiningrum (2012: 75), learning motivation can be interpreted as a person's strength (energy) that causes a degree of readiness to engage in a learning activity. This vitality or enthusiasm will make someone more eager to continue their studies. Learning motivation can be influenced by internal and external variables. Interesting learning activities are one of the extrinsic elements that affect learning motivation.

Interesting learning activities focus not only on what is learned but also on how the instructor conducts a successful learning process, from structuring content to delivering material and controlling learning. That is, teachers must be able to distinguish the quality of students who are taught to construct learning activities that provide equal opportunities for individuals to show and develop their potential. To do this, a teacher must be professional in his specialty. A skilled teacher will be able to build an environment that encourages students to ask questions, observe, conduct experiments, and find the right facts and concepts, making students more enthusiastic and eager to learn. As a result, children will be more enthusiastic and engaged in math, as well as more comfortable and excited to learn.

CONCLUSION

From the findings and discussion of the research results, the following can be concluded:

1. There is a direct positive influence on the quality of learning on mathematics learning outcomes. This shows that the quality of learning affects students' mathematics learning outcomes, meaning that the higher the quality of learning provided by the teacher during mathematics learning, the better the achievement of students' mathematics learning outcomes.
2. There is a positive direct influence on the quality of learning on learning motivation. This shows that students' learning motivation is influenced by how good the quality of learning provided by the teacher is, meaning that the better the quality of learning provided by the teacher in learning mathematics, the higher the level of student motivation in learning mathematics.

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