

THE EFFECTIVENESS OF USING GOOGLE FORMS ON STUDENTS MATHEMATICAL PROBLEM SOLVING SKILLS IN THE IMPLEMENTATION OF THE FINAL SEMESTER EXAM AT THE JUNIOR HIGH SCHOOL LEVEL

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Abstract—Mathematical solving ability is the ability to solve problems related to mathematical concepts. This concept is in the form of symbols, formulas, and systematic and measurable solutions, as stated by George Polya, which has four processes, namely understanding problems, planning problem solving, implementing solutions and checking results. This research was conducted at SMPN 2 Suranenggala with a sample of 4 students in grade VIII Digital-based learning can be an alternative in delivering material and evaluating learning outcomes. The use of Google forms in schools can be one of the interactive media in learning, for example making quizzes and conducting end-of-semester exams. The final semester exam is carried out as an evaluation of learning outcomes, students who have high semester exam results have good mathematical problem-solving skills.

Keywords— *Problem-solving skills; google forms; Learning outcomes*

I. INTRODUCTION

The development of technology today is increasingly advanced and developing, this is evidenced by the many digital learning platforms used in learning media. Learning media both used individually and in groups. Digital-based learning can be an alternative in delivering material and evaluating learning outcomes. However, in this digital learning, it is necessary to select both media, discussion topics and others. The selection of the right learning media

will make students more active in learning, so that students can more easily accept the subject matter [1].

The advancement of science, technology, information and communication is very influential in all fields, especially in education. Education is the heart of science which certainly plays an important role in civilization. An increasingly advanced civilization must be accompanied by logical, analytical and objective thinking in all fields, especially learning at the school level. Therefore, this technological advancement can help teachers and students in carrying out learning at school actively and creatively. Especially in mathematics subjects in junior high schools. Mathematics is one of the learning materials that is considered difficult by some students, because it requires more reasoning and complex problem solving[2].

Mathematics Subject matter taught in schools has its own characteristics. Character in problem solving and related to strong logic. Students' comprehension skills can be obtained by looking at problem-solving skills such as solving mathematical problems that are closely related to logic. Critical thinking is the main component to get optimal learning outcomes. Facts in the field This subject is not in demand by some students because it is considered one of the difficult subjects. However, with the development of increasingly advanced and developing technology, it can be a solution to these problems [3].

Technological advancements have led to the emergence of various digital devices and resources designed to assist students in overcoming math challenges. An app or software

program that offers step-by-step tutorials and instructions can be helpful in understanding and resolving complex issues. This development allows students to learn independently and overcome their difficulties in understanding mathematics [4]. The importance of technology in advancing education is a crucial step. The goal of technology is to improve students' conceptual understanding and cultivate their communication skills, so that they can carry out their roles effectively both in the educational environment and in society[5].

Mathematical problem-solving ability is the ability to solve problems related to mathematical concepts. Mathematical concepts are both in the form of symbols, formulas, and systematic and measurable solutions. One of the skills that students need to master is the ability to solve mathematical problems [6]. This ability is very important in final exams which are often an indicator of students' understanding and mastery of the material studied. The implementation of learning outcomes in schools is a measure of understanding and skills in solving problems for students[7].

The problem-solving process is a way, process, by technique or way to solve a problem with a sequence. This process is essential for training students to become more skilled and knowledgeable in problem-solving. George Polya is one of the many experts who study problem-solving with different perspectives and methods to solve it. George Polya has four processes, namely understanding the problem, planning the solution, implementing the solution and checking the results [8].

The development of increasingly sophisticated technology can allow everyone to access the features of online services, such as Google forms that can be used as a learning medium in schools. Google forms is a tool available on Google that allows users to create forms or surveys online. Google Form is a web-based site that can be used to create quizzes and questionnaires using the internet either through laptops or mobile phones[9]. The advantages of Google forms itself are that it has an attractive appearance, respondents can give responses, and has a variety of tests.

Google forms applications are generally a web form that supports comments or choice of answers to a questionnaire or practice questions easily through a device in the form of a computer or smartphone that has internet access. Another advantage in the implementation of assignments or tests, has many types of tests. This application provides a test selection facility that is free to use according to user needs. Its use as a learning process tool also supports the paper saving program as a form of caring for the environment, energy and time do not need to spend excess energy in distributing questionnaires or questions [10]. For example, the implementation of the final semester exam, the teacher prepares several questions to be tested on students using paper, but with the use of technology, teachers and students can use technology more efficiently.

The use of Google forms in schools can be one of the interactive media in learning, for example making quizzes

and conducting end-of-semester exams. The final semester exam is one of the measuring tools for students after carrying out learning activities in class. Students will be faced with questions that contain subject matter that has been taught, either in the form of multiple choice or essays. It is hoped that students can master the set material through questions that measure their ability to solve mathematical problems related to the environment and daily life. to attract students' attention and make it easier for them to convey their own ideas or ideas to solve problems[11].

The end-of-semester exam is the main component of Indonesia's educational mechanism and is used to evaluate students' academic results at the end of the semester. Mathematics in particular is a test designed to measure students' understanding and ability of various mathematics materials taught during a semester [12].

The importance of the Mathematics final exam lies in its ability to comprehensively assess not only theoretical knowledge but also practical problem-solving abilities. This exam also provides feedback to students [9]. In addition, the final exam of the Mathematics semester plays a role in determining graduation and achievement of academic achievement which will affect overall academic achievement. Therefore, this exam requires careful preparation and a deep understanding to achieve the best results. The use of Google forms is expected to be a tool for final semester exams without using paper media directly, students and teachers can use it quickly without having to write manuals[13].

The use of Google forms in schools is certainly not spared from the obstacles that occur, for example, the use of this media some students still do not understand how the features are used, lack of precision so that in filling in the questions in the final semester exam are perfunctory and require good signals. Therefore, optimizing the use of this media is very necessary so that it can be used continuously. This study emphasizes how effective the use of google forms is on solving students' mathematical problems in the final semester exam.

II. METHOD

This type of research is qualitative descriptive research in the form of case study research. According to John W. Creswell, the case study approach is a long-term investigation, a limited system or through the collection of detailed data and a variety of comprehensive sources, considering the time, existing problems and data collection techniques needed to conclude a problem to be studied[14]. The subjects in this study are students of class VIII A at SMPN 2 Suranenggala with a sample of 4 students. The research data collection technique uses written tests, questionnaires/questionnaires based on the Gerge Polya Problem-Solving Ability Scale with indicators of understanding problems, planning problem solving, implementing solutions and checking the results [8] then deepened with direct interviews.

The first data collection was carried out by conducting a written test and distributed to 2 female students and 2 male

students in class VIII A, then providing a questionnaire on the scale of mathematical problem-solving ability and using interview guidelines. The data analysis techniques in this study are data reduction, data presentation and conclusion drawn. Meanwhile, checking the validity of the data of this study uses the diligence of observers and triangulation which tests the credibility of the data by checking the same data from the results of the test and interviews.

III. RESULTS AND DISCUSSION

Research conducted at SMP Negeri 2 Suranenggala, Cirebon Regency found that students' mathematical solving skills in working on final semester exam questions are still relatively low. This is shown by the poor results of the final semester exam. Students tend to be lazy to ask questions so that in the implementation of the final semester exams, they tend to be confused. Therefore, further guidance is needed so that students can solve problems well. The implementation of the final semester exam using Google Forms students still has obstacles such as lack of reading the questions carefully, lack of focus and requiring longer time to do the questions. Students are required to be able to solve various mathematical problems, test their conceptual understanding, analytical skills, and ability to solve problems systematically and accurately. The following is presented a table of the final semester exam results for 4 students in class VIII A.

TABLE I. STUDENT EXAM RESULTS

No.	Siswa	L/P	Hasil Ujian	KELAS
1.	R01	P	80	VIII A
2	R02	P	60	
3	R03	L	65	
4	R04	L	50	

Based on the table of semester exam results above, it can be concluded that there is only one student who has the highest exam results and the other eleven have scores below average. Therefore, there needs to be an evaluation related to these problems. Evaluation of semester exam results is a process for assessing and assessing students' academic achievements[2]. The purpose of this evaluation is to find out how well students understand and master the material that has been studied during a semester, as well as how effective learning, teaching quality, and competency development are[15]. The following are the results of research found regarding the effectiveness of the use of Google forms on students' mathematical abilities based on Polya theory in the field:

1. Ability to understand mathematical problems

The steps to understand students' mathematical problems include determining what they already know and what they are asking and providing information. The research in grade VIII A in this step shows relatively moderate understanding because students can solve problems directly on the Google forms application.

2. Ability to plan for problem solving

This step includes identifying the problem and then finding the right technique in implementing the problem systematically[16]. Research conducted in the classroom found that only one student could plan the solution of mathematical problems well. This is evidenced by the implementation of the final semester exam which seems rushed.

3. Ability to carry out problem solving

This step includes implementing problem solving by checking the results of tests that have been carried out. The application of Google forms in the implementation of school exams is still considered moderate because of the 4 samples studied have the ability to check the exam results quite well.

4. Ability to check back the results that have been done

This step has an important role for students to check the results of the answers whether the answers that have been filled in can be collected or must be corrected. In this category, out of four samples, there were only two students who checked the results of the questions well. The results of the analysis of problem-solving skills in the field, which were reviewed from the results of students' answers, showed that students considered the given questions too difficult, which made it difficult for them to understand the meaning of the problem in the question[17].

Students identify questions, students admit that they answered questions with a lack of understanding because they felt confused and did not understand the material[18]. The results of the exam show that the students' answers have not reached the best level based on the indicators of mathematical problem-solving ability. There is no desired answer to the question because students still have difficulty connecting the concept of the set that they have learned previously with the problems faced in the problem. This is shown by the fact that the student jawaban still contains many imperfect answers and cannot answer the questions correctly[18].

Based on the results of the above presentation, it can be concluded that students who have problem-solving skills with the first indicator, namely understanding the problem, show moderate results, in the indicator of planning to solve problems is very lacking, the indicator of solving problems is low, and the ability to check the results of answers is quite good[19]. The importance of the Mathematics final exam lies in its ability to comprehensively assess not only theoretical knowledge but also practical problem-solving abilities. In addition, the final exam of the Mathematics semester plays a role in determining graduation and achievement of academic achievement which will affect overall academic achievement[20].

Based on the results of interviews conducted with 4 students, one female student at the implementation of the final semester exam revealed that from several questions tested,

there were criteria for questions that were tested using Google forms that were relatively easy, then the second student revealed that the problem of working on questions using Google forms was that the questions being tested needed a strong signal. The third student revealed that the web-based final semester exam can make it easier to work on questions because there is no need to use paper, then the fourth student revealed that solving the questions in this semester's final exam requires more precision[21]. Thus, it can be concluded that the implementation of semester exams using the web still needs to be re-evaluated.

IV. CONCLUSIONS

The research was conducted in grade VIII of SMPN 2 Suranenggala with a large sample of 4 samples of students who had good problem-solving skills, then students with poor problem-solving skills. This study uses qualitative research that illustrates that the use of Google Forms is still low, as shown by student exam results that are not optimal. Based on the results of this study, it can be concluded that students' mathematical problem-solving skills are still relatively low. Therefore, further guidance is needed so that students can solve problems well. Problem-solving skills can be improved along with students' increasing curiosity about the existing material. The implementation of the final semester exam in the classroom shows that it has not been carried out properly, in the use of Google forms, students are still less careful in working on questions compared to using paper. Therefore, there needs to be an evaluation so that in the future it can be carried out properly and efficiently. Evaluation in the implementation of the final exam using the use of Google forms needs the assistance of teachers as motivators in the implementation of learning in schools, so that its use can be maximized and controlled properly and efficiently. In the future, hopefully this feature can be an alternative for teachers and students in the implementation of final exams so that they can work directly without having to correct the results one by one, and for students, hopefully it can be a comprehensive and systematic learning tool.

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