ANALYSIS OF PROBLEM SOLVING ABILITY MATHEMATICAL STUDENTS ASSISTED WITH ANIMATION VIDEO MEDIA

Siska Hesti[1] , Ibnu Sina[2], Eleonora Dwi Wahyuningsih[3]

[1,2,3]Pendidikan Matematika, Universitas Pancasakti Tegal

siska.hesti1702@gmail.com[1], ibnusinaupstegal@gmail.com[2],

eleonoradwi60@gmail.com[3]

ABSTRACT

This study aims to describe student's mathematical problem solving abilities assisted by animated video media. This type of research is a qualitative descriptive research. The learning media used is Canva-based animated video media. The research subjects were class VII F students of SMP Negeri 3 Brebes Semester II for the 2022/2023 academic year. Subjects were taken using random sampling from written essay test scores for 6 subjects, namely 2 subjects with high mathematical problem solving abilities, 2 subjects with moderate mathematical problem solving abilities, and 2 subjects with low mathematical problem solving abilities. Data collection techniques in this study used tests, interviews, and documentation. According to Polya, the indicators of mathematical problem-solving ability are (1)understanding the problem, (2)devising a plan, (3)carrying out the plan, and (4)looking back. Based on the results of the study showed that: high problem-solving ability fulfill 4 indicators of mathematical problem-solving ability there are understanding the problem, devising a plan, carrying out the plan, and looking back. Moderate problem-solving ability fulfill 3 indicators of mathematical problem-solving ability there are understanding the problem, carrying out the plan, and looking back or there are understanding the problem, carrying out the plan, and looking back. Low problem-solving ability fulfill 1 indicator of mathematical problem-solving ability there is understanding the problem,or does not fulfill all indicators.

Keywords : mathematical problem solving ability, video animation media, canva.

1. INTRODUCTION

Mathematics is a science that is closely related to solving problems related to numbers. Mathematics is a basic science that has developed rapidly both in material and in its use and application in everyday life. Therefore, in the application of mathematics requires mathematical ability, one of the mathematical abilities is the ability to solve mathematical problems. If students have knowledge and skills in mathematical problem solving abilities, students will be more analytical in applying mathematics in everyday life.

According to Cooney, problem-solving abilities are very important, especially for students who are studying mathematics because they can help and improve mathematical abilities, including analytical and critical thinking(Kurniawan, et al., 2019:272). According to Mulyono, et al (2018:29) problem-solving skills must be owned by students and these skills will be owned by students if the teachers teach and stimulate students' abilities to solve problems in learning mathematics. Polya (1973) states that there are four stages when using problem solving abilities there are: (1)understanding the problem, (2)devising a plan, (3)carrying out the plan, and (4)looking back (Christina and Adirakasiwi, 2021:406).

Teachers as important as role holders in the learning process should use methods and media in the learning process that can make students easily understand the material presented. To support the achievement of learning objectives, teachers can at least use tools or media in the learning process, especially in learning mathematics. Probably, there are some medias can help and use for the learning process, for example digital platform/media can be accesable easily for all the people especially for the students by take advantage of the internet access of information and communication technology. One of learning medias can use for help learning process is video learning media. Video learning media is an audio visual media which contains learning material that contains concepts, principles, procedures, theories and examples of knowledge with the hope that the audience from the video can understand the contents of the learning materials. One of the video learning media is video animation media. According to Sadiman, et al. (2009:28) in Khomariyah (2018:124) the function of animated videos acts as a media to convey information or messages. Messages presented in video media can be fact or fictitious, can be informative, educative, or instructional.

There are some students who have problems solving math problems because in students' minds mathematics is a difficult subject. Which is there is still confusion and difficulty from students in solving math problems. Students can solve the problem if the problem is not much as

different as the example or the type of questions that only inserts numbers into the formula. It is hard for the students if they faced with questions about the application of mathematics in everyday life, which is students are not accustomed to writing down what is known in the questions, what is asked, and draw conclusions from questions about the application of mathematics given. This indicates the low ability of student's mathematical problem solving. The learning media used during class learning is still limited, such as teaching aids and there is no learning media in the form of learning video media.

Based on the description above, a study was carried out with the title "Analysis of Student's Mathematical Problem Solving Ability Assisted by Video Animation Media".

In this study the limitations of the problem studied are: (1) using Polya problem solving abilities there are: understanding the problem, devising a plan, carrying out the plan, and looking back, (2) the learning media used is *canva* based animated video media.

CANVA

Canva is an online graphic design application. *Canva* can be accesed to www.canva.com or can be downloaded in PlayStore or AppStore by smartphone. According to Fauziyah, dkk (2021:156) the function of audio-visual learning media in mathematics learning can illustrate certain material

concepts in learning at school. The application of *canva* in making learning animation videos that will be presented will be more interesting because there are several illustrations so that it better maintains students' attention in participating in the learning process and better understands the material lessons.
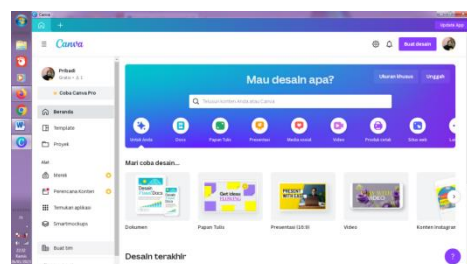
Picture 1. Screen display of *canva*
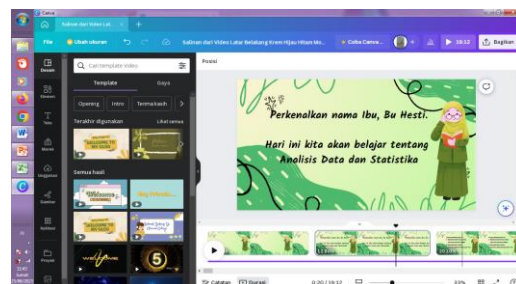
Picture 2. Display of Video Animation Media

2. METHODOLOGY

Research conducted in class VII F semester II SMP Negeri 3 Brebes academic year 2022/2023. The research design used in this study is descriptive research. According to Susongko (2015:47) descriptive research tries to describe, explain, and interpret current/actual conditions. A descriptive research is related to conditions, practices, existing opinions, processes that occur or

trends. In this study using descriptive qualitative research which aims to describe how the mathematical problem solving skills of class VII students of SMP Negeri 3 Brebes for the 2022/2023 academic year are assisted by animated video media on material data analysis and statistics based on Polya stages. Determination of subjetcs using random sampling. The subjects consist of 6 subjects based on the results of written description tests on mathematical problem solving abilities, they are 2 subjects with high mathematical problem solving abilities, 2 subjects with moderate mathematical problem solving abilities, and 2 subjects with low mathematical problem solving abilities.

According to Lofland and Lofland (1984:47) in Moleong (2017:157) the main data sources in qualitative research are words, actions, the rest is additional data such as documents and others. Sources of data in this study were essay test questions and student answer sheets related to mathematical problem-solving ability tests, interview results, and documentation as well as several additional research supporting documents. Meanwhile, data collection techniques in this research included tests, interviews, and documentation. This research presentation of the results of data analysis is a descriptive analysis containing explanations related to the mathematical problem solving abilities of class VII F students

of SMP Negeri 3 Brebes for the 2022/2023 academic year.

3. RESULTS

The research entitled "Analysis of Student's Mathematical Problem Solving Ability Assisted by Video Animation Media" is conducted to analyze the mathematical problem solving abilities of students in class VII F semester II SMP Negeri 3 Brebes for the academic year 2022/2023 on the material Data Analysis and Statistics.

The results of the mathematical problem-solving ability test will then be analyzed based on Polya's problem-solving ability indicators there are understanding the problem (M_1), devising a plan (M_2), carrying out the plan (M_3), and looking back (M_4). This is the achievement of the research subject's ability to solve mathematical problems:

Table 1. Research Subjects

No.	Subject	Category	Subjects Code
1.	Initial QDA	High	S-1
2.	Initial SSA	High	S-4
3.	Initial MRA	Moderate	S-7
4.	Initial RAP	Moderate	S-8
5.	Initial JPE	Low	S-11
6.	Intsial W	Low	S-15

Table 2. Achievement of Research Subjects Mathematical Problem Solving Ability

No.	Subject	Achivement Indicator

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No.	Subject	M_1	M_2	M_3	M_4
1.	S-1	✓	✓	✓	✓
2.	S-4	✓	✓	✓	✓
3.	S-7	✓	×	✓	✓
4.	S-8	✓	✓	×	✓
5.	S-11	✓	×	×	×
6.	S-15	×	×	×	×

Based on the results of the analysis above, for students in the category of high mathematical problem solving ability it can be concluded that the S-1 subject fulfills all Polya's mathematical problem solving indicators there are understanding the problem (M_1), devising a plan (M_2), carrying out the plan (M_3), and looking back (M_4). As well as for S-4 subject fulfills all Polya's mathematical problem solving indicators there are understanding the problem (M_1), devising a plan (M_2), carrying out the plan (M_3), and looking back (M_4).

Students in the category of moderate mathematical problem solving ability can be concluded that the S-7 subject fulfills 3 indicators of Polya's mathematical problem solving there are understanding the problem (M_1), carrying out the plan (M_3), and looking back (M_4). Meanwhile S-7 subject fulfills 3 indicators of Polya's mathematical problem solving there are understanding the problem (M_1), devising a plan (M_2), and looking back (M_4).

Students in the category of low mathematical problem solving ability can be concluded that the S-11 subject only fulfills 1 Polya mathematical problem solving indicator, namely the indicator of understanding the problem (M1), while the S-15 subject does not fulfill all Polya's mathematical problem solving indicators.

4. CONCLUSIONS

Conclusions

Based on the research results, the results obtained from the analysis of student's mathematical problem solving abilities assisted by video animation media are as follows: students with high mathematical problem solving abilities fulfill 4 indicators of Polya's mathematical problem solving, students with moderate mathematical problem solving abilities fulfill 3 indicators of mathematical problem solving Polya, and students with low mathematical problem solving abilities meet 1 indicator of Polya's mathematical problem solving or even do not fulfill all of Polya's mathematical problem solving indicators.

Recommendations

This research is expected to help and become a reference for conducting research on students' mathematical problem solving abilities assisted by animated video media. Future research should pay more attention to the background of the problem and the mathematical problem solving abilities of each student. The application of animated video learning media can be

used as a reference for conducting relevant research on learning media.

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