Analysis of Mathematical Problem Solving Ability For Grade V Students of Yapis II Elementary School, Merauke

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Submission date: 01-May-2026 10:28PM (UTC+0530)
Submission ID: 2949816267
File name: Diva_Publish_30-36.docx (55.55K)
Word count: 2535
Character count: 14277

General Education and Innovation Studies (GENIUS)
https://https://journals.khatec.id/index.php/genius/index
Volume 1, No. 1, January 2025, Pg. 30-36
Received: March 20, 2026. Accepted: April 28 , 2026

Analysis of Mathematical Problem Solving Ability For Grade V Students of Yapis II Elementary School, Merauke

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Abstract

Objectives. This study aims to analyze students' mathematical problem solving abilities in solving story problems at SD Yapis II Merauke.
Materials and Methods. The subjects of this study were the homeroom teacher and all 40 students of class VA at SD Yapis II Merauke.
Results. Based on data analysis and interviews, the results of the study showed that students in the "high" category were able to complete each problem-solving indicator with few errors. Students in the "moderate" category were able to complete each indicator, but there were still shortcomings in determining the formula and concluding the answers. Students in the "low" category were only able to complete a few indicators and many did not complete the questions because they did not understand the questions and formulas used. This study found that 70% of fifth grade students of Yapis II Elementary School had low problem-solving skills. The indicator that students mastered the most was the stage of understanding the problem, namely writing down known and asked indicators with a percentage of 31.33 % .
Conclusions. This study found that 70% of fifth grade students at SD YAPIS II Merauke have low mathematical problem-solving abilities. Students with high abilities are able to solve problems with few errors, while students with medium and low abilities still experience difficulties. The most mastered indicator is understanding the problem, while the most difficult indicator is determining the strategy or formula to be used.

Keywords: Ability Analysis, Problem Solving, Mathematics, SD Yapis II Merauke.

Introduction

In the world of education there are many subjects that must be studied, one of which is mathematics. Mathematics is one of the most important subjects in education and in everyday life, so mathematics is taught at all levels of education. This is in accordance with the opinion of Tanzimah et al., (2023) that mathematics is a very important science and must be studied because it is a systematic science and is not only used in schools but can also be used in community life. Mathematics is also highly recommended and even mandatory to be studied because it is directly related to the problem-solving process in everyday life (Laili & Qomariyah, 2022).

Mathematics can make work easier, more effective, and more efficient (Chasanah, As'ari & Sulandra, 2021). In learning mathematics, there is an approach that links the

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mathematics material taught in schools with everyday problems, namely the contextual approach. The material in learning that uses a contextual approach is arranged and developed according to real situations that students have heard or experienced themselves. The description of mathematical problems in everyday life is usually presented in the form of story problems. 1. Story questions are a form of question that contains mathematical concepts related to students' daily lives. Story problems are important for using students' knowledge in solving problems (Nugroho, Siswanto & Nuroso, 2023).

Giving story problems to students is intended to help them understand the relationship between mathematical concepts in school and mathematical concepts that occur in everyday life, with the aim that students are able to recognize and apply these concepts in real situations in everyday life (Yosua & Rusmana, 2021). In the process of solving story problems, students are required to have high-level thinking skills which include the ability to understand the problems that occur in the problem, determine a mathematical model that is appropriate to the problem, then determine the appropriate form of solution for the problem. According to Polya in (Astuti, Isnarto & Hidayah, 2019) there are 4 steps to solving a problem, namely (1) understanding the problem, (2) planning problem solving, (3) implementing problem solving, and (4) reviewing the appropriateness of problem solving. The many steps in working on story problems are what causes many students to consider story problems to be complicated and difficult to understand. Based on the results of observations conducted on January 31, 2024, homeroom teacher VA stated that most students experienced some difficulties when working on math problems. Most students tend not to like mathematics lessons because they are considered difficult and boring. This lack of interest can affect students' learning motivation and cause a lack of focus during mathematics learning. Many students play and do not pay attention when mathematics learning takes place.

The teacher also explained that there are still many students who are not yet fluent in basic arithmetic operations such as multiplication and division, where difficulties in these basic arithmetic operations can be an obstacle in solving more complex mathematical problems. Students are also still confused in determining the formula that should be used in working on questions which can also hinder the process of solving their mathematical problems. This problem was also experienced by Mirnawati (2019) where in her research it was stated that many students do not like mathematics because they are considered difficult, which affects their mathematical problem-solving abilities. A similar problem was also seen in the research of Oktasya et al., (2022) which stated that most students were considered

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unable to solve problem-solving-based mathematics problems caused by several factors, including students who were not able to plan the solution correctly because they did not remember the arithmetic operations that should be used in solving problems. Students also tend not to memorize and understand formulas so they are still confused about determining what formula should be used in solving mathematical problems. Problem-solving skills are very important for students to solve story problems related to everyday life. Therefore, it is important to conduct research that can measure the level of students' mathematical problem-solving abilities according to existing problem-solving indicators. With the description of the problems above, the researcher is interested in conducting research with the title "Analysis of Mathematical Problem Solving Ability in Grade V Students of SD Yapis II Merauke".

Materials and Methods

Study Participants.

The subjects in this study were the homeroom teacher and all 40 students of class VA at SD Yapis II Merauke.

Study organization.

Data collection in this study used tests, interviews, and documentation. a . Test A test is a series of questions or exercises that can be used to measure the knowledge, skills, and abilities of 33 students. This test consists of 10 descriptive questions given to the subject. The descriptive questions are given so that it can be seen to what extent the students' ability is in answering and writing down the solution method according to the problem-solving indicators. The processing time is 60 minutes. The results of this test will be used to obtain data on solving mathematical problems according to the problem-solving steps. b . Interview An interview is a conversation between two people who exchange opinions and information through a question and answer process. The interview technique used in this study is a semi-structured interview. The purpose of this interview is to find and obtain all information from the research subjects in a straightforward and clear manner. The interviews conducted include direct questions and answers with several samples that have been determined to be interviewed. The determination of the interviewed samples is based on the test results given, namely 6 students who have scores in each of the low, medium, and high categories. c . Documentation Documentation is done by recording all information collected during the data collection process which also includes recording the results of observations, interviews, or other data in writing. The goal is to maintain the authenticity and accuracy of the data that has been collected. In this case, the results of the students' test questions and the results of interviews with the homeroom teacher and several students who were the subjects of the interview will be recorded.

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Statistical analysis.

Validity testing is done using technical triangulation. Technical triangulation is a process in which researchers will collect information using test questions, interview guidelines, and documentation.

Results

Kategori Kemampuan	Persentase (%)
Tinggi	10
Sedang	20
Rendah	70

Table 1. Research result

The table above shows the percentage of mathematical problem solving abilities of grade V students at SD YAPIS II Merauke based on three categories:

1) High: 10% of students are able to complete each problem solving indicator with few errors.
2) Moderate: 20% of students are able to complete each indicator, but there are still shortcomings in determining the formula and concluding the answer.
3) Low: 70% of students were only able to complete several indicators and often did not complete the questions due to a lack of understanding of the questions and formulas used.

This table shows that the majority of students have low problem-solving abilities, with only a small portion in the high category. This emphasizes the need for improved teaching methods and the use of more effective learning media to improve students' mathematical problem-solving abilities.

Discussion

This study revealed that the mathematical problem-solving abilities of fifth grade students at SD YAPIS II Merauke varied significantly. From the results of data analysis and interviews, it was found that the majority of students, namely 70%, were in the low problem-solving ability category. Students in this category are often unable to solve story problems due to a lack of understanding of the problems and formulas used. They were only able to

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complete some problem-solving indicators, which indicates that they need more help in understanding basic mathematical concepts and applying problem-solving strategies.

Students with moderate abilities, which include 20% of the total students, are able to complete each problem-solving indicator, but there are still shortcomings in determining the formula and concluding the answer. This difficulty shows that even though they have sufficient basic understanding, they still need further practice in applying the right formulas and strategies to solve math problems. This is important for teachers to pay attention to in designing more effective and interactive teaching methods.

Students with high ability, who only make up 10%, are able to complete each problem-solving indicator with few errors. They showed a good understanding of mathematical concepts and were able to apply problem-solving strategies effectively. This group of students can be used as an example for other students and can be involved in more challenging learning activities to further develop their abilities. The indicator that is most mastered by students is the stage of understanding the problem, namely writing down known and asked indicators with a percentage of 31.33%. This shows that most students are able to identify the information given in the story problem, but still have difficulty in the next stage, namely determining the strategy or formula to be used. This indicator is only mastered by 22.35 % of students, which shows that many students are wrong or incomplete in writing the strategy or formula to be used.

This finding is in line with the opinion of Damayanti et al. (2022) who stated that the most mastered indicator is understanding problems with a percentage of 75.3 % . However, this percentage difference shows that students at SD YAPIS II Merauke still need improvement in understanding and applying problem-solving strategies. Overall, the results of this study emphasize the need to improve teaching methods and the use of more effective learning media to help students understand and apply problem-solving strategies better. Teachers need to design more interactive and innovative learning activities, as well as provide more and varied exercises to improve students' mathematical problem-solving abilities. In addition, support from the learning environment, including parents and peers, is also important to help students overcome difficulties in learning mathematics.

Conclusions

This study revealed that the mathematical problem-solving abilities of fifth grade students at SD YAPIS II Merauke varied based on ability categories. Students with high ability are able to complete each problem-solving indicator with few errors. Students with moderate abilities are able to complete each indicator, but there are still shortcomings in

determining the formula and concluding the answers. Students with low abilities are only able to complete a few indicators and often do not complete the questions due to a lack of understanding of the questions and formulas used. Overall, 70% of students have low problem-solving skills. The most mastered indicator is understanding the problem, while the least mastered indicator is determining the strategy or formula to be used. These results indicate the need for improved teaching methods and the use of more effective learning media to improve students' mathematical problem-solving skills.

Acknowledgement

This research would not have been possible without the support and assistance of various parties. We would like to thank the principal, teachers, and staff of SD YAPIS II Merauke who have given permission and full support during the research process. Thanks also to the fifth grade students who participated enthusiastically and provided invaluable data for this research. We also thank the parents of the students who supported their children in participating in this study. We would like to express our sincere gratitude to fellow researchers and all parties who have provided input, suggestions, and moral support during this research.

Finally, we would like to thank all parties who cannot be mentioned one by one, who have helped and supported this research until completion. Hopefully the results of this study can provide a positive contribution to improving the quality of education, especially in students' mathematical problem-solving abilities.

Conflict of interest

The researcher does not have any conflict of interest in conducting this research.

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