

Analysis of Elementary School Students' Mathematical Literacy Abilities Through Diagnostic Assessments Based on Metacognitive Abilities at Field Experience Practice In-Service Teacher Professional Program

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ABSTRACT

The importance of the relationship between mathematical literacy skills and higher-order thinking skills is in line with the 3 competencies needed in the 21st century. Mathematical literacy skills are very important for students to understand the function of mathematics in everyday life through the formulation, use, and interpretation of mathematics in various contexts. This research aims to analyze and describe the mathematical literacy abilities of elementary school students through diagnostic assessments based on metacognitive abilities at PPL PPG Daljab. The type of research used in this research is descriptive qualitative with research subjects of 60 elementary school students who were reviewed through a diagnostic assessment based on metacognitive abilities. data collection through test results and questionnaire results. Data reduction, data presentation, and conclusion drawing are carried out in data analysis. The research results obtained are that applying innovative learning models or methods can improve and develop the mathematical literacy skills of elementary school students, especially class V. So, teachers need to familiarize students with working on story problems, especially open-ended type story problems, and innovate in learning to motivate them. students to be actively and directly involved in the problem-solving process so that they can improve students mathematical literacy skills.

Keywords: Diagnostic Assessment, Elementary school, Mathematical Literacy Ability, metacognitive abilities

INTRODUCTION

Education in Indonesia is an evaluation material for relevant agencies to be able to find solutions to solve education problems in Indonesia. With an independent curriculum, educators have the freedom to process learning and provide a comprehensive distribution of learning. The aim is to improve the quality of learning, shape independent student character, and reduce gaps in education (Prada et al., 2024). The Merdeka Curriculum has the potential to be an educational innovation that can provide positive change in the education system in Indonesia. The Independent Curriculum concept which focuses on developing students' creativity, independence, and entrepreneurship can help produce a generation that is better prepared to face the demands of the times (Syahbana et al., 2024). According to the Minister of Education and Culture, freedom to learn stems from the desire for educational output to produce better quality and no longer produce students who are not only good at memorizing but also have sharp analytical skills, reasoning, and comprehensive understanding in learning to develop themselves. Freedom to learn in the learning process is freedom to think, freedom to innovate, freedom to learn independently and creatively, and freedom for happiness (Devi et al., 2024).

Education holds a central position in forming a society capable of these three characteristics, however, the issue of literacy in the world of education is still a fundamental problem for efforts toward a society that is ready to face the challenges of a digital literacy-based revolution (Noviyana & Sugianti, 2024). The United Nations Educational, Scientific and Cultural Organization (UNESCO) as an educational organization also emphasizes the importance of literacy for the world community. UNESCO emphasizes the individual's right to literacy as a provision for mastering various aspects and facing global developments. Literacy leads each individual to have a broader civilization to improve their quality of life (Sabilli et al., 2024).

Mathematical literacy is the fundamental ability of every student to solve mathematical problems and apply them in everyday life, and it is closely related to learning to understand mathematical concepts and the role of students in understanding and re-communicating the meaning obtained. Low mathematical literacy makes it difficult for students to understand mathematical material as a whole because students are unable to interpret contextual and abstract problems in a form that is easy to understand (Abidin & Yunansah, 2018). The importance of mathematical literacy is not in line with the quality of learning in Indonesia. This is the rational and essential reason for choosing the title of this research because there are still many students in schools who lack mathematical literacy, this can be seen from the various types of international scale tests that Indonesia takes, one of which is PISA participation which measures students' mathematical literacy abilities (Ria et al., 2023). Mathematical literacy activities can help develop critical thinking skills in mathematics lessons, so it is recommended to implement mathematical literacy activities and practice questions so that students can solve mathematical problems (Setiowati et al., 2024).

Assessment is an integrated part of the learning process. Through assessments, teachers can obtain information about students' levels of achievement, which can then be used as a basis for determining appropriate learning strategies (Firdaus et al., 2024). Diagnostic Assessment is an independent curriculum assessment/assessment that is carried out specifically to identify or know the characteristics, competency conditions, strengths, and weaknesses of student learning models so that learning can be designed according to students' various competencies and conditions (Education et al., 2024). A diagnostic assessment is an assessment carried out specifically to identify competencies, strengths, and weaknesses so that learning can be designed according to the competencies and conditions of students (Iffatul Khoiroh et al., 2024). The diagnostic assessment in this research aims to diagnose students' mathematical literacy difficulties and abilities before receiving learning materials in class.

Based on the background description above, researchers are interested in conducting research regarding the analysis of elementary school students' mathematical literacy abilities through diagnostic assessments based on metacognitive abilities in the Field Experience Practice In-Service Teacher Professional Program (PPL PPG Daljab).

METHODS

This research aims to analyze the mathematical literacy abilities of elementary school students through a diagnostic assessment based on metacognitive abilities at PPL PPG Daljab. This research discusses the results of descriptive analysis of elementary school students' mathematical literacy abilities through diagnostic assessments based on metacognitive abilities at PPL PPG Daljab. The method used is the descriptive quantitative method, namely to describe and explain the results of elementary school students' mathematical literacy abilities through diagnostic assessments based on metacognitive abilities at PPL PPG Daljab in detail from the results of processing test results and questionnaire results. The subjects in this research were fifth-grade elementary school students in the Central Tomohon cluster, Tomohon City. The data collection technique in this research uses a test technique. The instrument used is a diagnostic assessment test instrument based on metacognitive abilities. Qualitative data analysis based on Miles and Huberman, namely data reduction, data presentation, and conclusion. The validity of the data was tested by time triangulation.

RESULTS AND DISCUSSION

This research was carried out in elementary schools in the North Tomohon cluster, Tomohon city, which consists of 4 schools, namely SD Inpres Kakaskasen One, SD Inpres Kakaskasen Two, SD Inpres Kakaskasen Tiga, and SD Inpres Kayawu for class V students by involving PPG students in UNIMA Category 1 Batch 2 positions as actors in the learning process and researchers acting as observers in the research. This research aims to analyze the mathematical literacy abilities of

elementary school students through a diagnostic assessment based on metacognitive abilities at PPL PPG Daljab. This research discusses the results of descriptive analysis of elementary school students' mathematical literacy abilities through diagnostic assessments based on metacognitive abilities at PPL PPG Daljab. Below are presented the factors that result in low literacy in elementary school students.

Factors that cause low mathematical literacy in elementary schools

Based on the results of observations and interviews found at the four schools, it was found that students' literacy skills, especially in learning mathematics, were low, this was indicated by the ability to apply concepts, facts, procedures, and mathematical reasoning in class V students at SD Inpres Kakaskasen Satu and SD Inpres. Kayawu, which is still low, can be seen in the students' solutions not yet applying concepts, facts, procedures, and mathematical reasoning. Students need a long time and make many mistakes in working on questions.

Different problems were encountered in fifth-grade students at SD Inpres Kakaskasen Two and SD Inpres Kakaskasen Three. Where students experienced difficulty in formulating social situations mathematically in learning, students also had difficulty applying mathematical concepts and procedures to solve problems. Students experience difficulties in understanding problems so they are not skilled in formulating situations mathematically so they are not skilled in identifying problems that exist in situations in real contexts.

In line with research conducted by (Noviyana & Sugianti, 2024), low student literacy occurs due to a lack of school readiness in facing various developments and changes in the educational revolution. Based on the results of diagnostic tests carried out, it is clear that students' low mathematical literacy is caused by students' difficulty in solving mathematical problems, using mathematical concepts that have been learned in problem-solving, interpreting solutions in problem-solving, and difficulty in evaluating solutions in problem-solving. Likewise, research conducted by (Afidah & Waluya, 2024) shows that low mathematical literacy is also caused by the school mathematics learning process not maximizing mathematical literacy. The media and learning resources used are still not fully adapted to technology and do not maximize student literacy.

Factors that cause low mathematical literacy through the role of parents

Nowadays, literacy education is intensively carried out by educational practitioners to produce individuals who are not only intelligent in the academic field but also have a critical and logical mindset. The practice of course does not have to be tied to learning at school. Parents at home also need to take part in instilling literacy education in their children starting from preschool age. Social and cultural environmental factors of students also influence the level of mathematical literacy maturity, related to the condition of the house where they live, main tasks, level of education, parents' occupation, language used, and the items they own play a role in students' mathematical literacy skills. In this case, the family is the first environment for the child, and it is from the family that the child receives the education needed to support the child's development. Thus, the role and function of parents are very necessary in increasing children's literacy because the basics of education are also instilled through the family environment.

The conditions found by researchers when conducting interviews with several parents from the four schools in the North Tomohon cluster, Kote Tomohon showed that learning carried out at home with guidance and assistance from parents experienced several obstacles, including children who had been used to being taught spoiled since childhood. so that when studying at home children tend to challenge their parents or in everyday language the child feels smarter than their parents, apart from that parents have to work from morning to evening or night so they don't have enough time to study with their children, other factors are also sometimes children already too tired because of taking part in too many extracurricular activities such as sports practice, martial arts training, and other activities that children participate in.

Research conducted by (Amelia et al., 2023) Literacy and numeracy assistance by parents is very important in children's development. The role of parents in helping children understand written language and mathematics skills is a key factor in improving children's literacy and numeracy skills. It is necessary to provide education to parents to increase knowledge and awareness regarding children's education. related to the very large role of parents in children's education. This is also because the level of parental education is correlated with student achievement (Habibi & Suparman, 2020).

CONCLUSION

Based on the results and previous discussion, it can be concluded that the mathematical literacy ability of class V elementary school students in the North Tomohon cluster, Tomohon City in solving story problems is still low, students are not yet able to identify problems, and formulate solutions well, students are not yet able to using mathematical concepts and not being able to use mathematical procedures to solve problems accurately and systematically, students are not yet able to explain solutions and interpret conclusions. Suggestions for further research are to apply innovative learning models or methods to improve and develop the mathematical literacy skills of elementary school students, especially in class V. Suggestions for teachers include the need to familiarize students with working on story problems, especially open-ended type story problems, as well as making innovations in learning to motivate students to be actively and directly involved in the problem-solving process so that they can improve students' mathematical literacy skills.

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