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An Analysis of Numeracy Skills and Factors Affecting Learners in Phase C of Class V of Primary School

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Abstract
Education plays an important role in building the character and skills of the younger generation, but the numeracy skills of students in Indonesia are still low, with around 71% of students not reaching the minimum competency level in mathematics according to data from the OECD. The objectives of this study were 1) to describe the level of numeracy skills, 2) to explore the factors that cause low numeracy skills, 3) to describe the ways that schools can improve numeracy skills. The method of this research uses qualitative description. The results of this study are that there are still many students who do not understand the concept of mathematics so that it affects the numeracy skills of students in phase C. This can be seen from the test results that only the results of the test are only available in phase C. This can be seen from the test results of only 16% of learners who get scores above the minimum limit. The low numeracy skills of learners are influenced by internal and external factors. Internal factors consist of physiological and psychological aspects. Physiological is related to body fitness and health of the five senses. Psychological is related to motivation, interest and enthusiasm for learning from students. While external factors from the surrounding environment, and the family environment, namely the role of parents in supporting student learning. From the results of interviews, several ways have been done by teachers in improving numeracy skills by providing learning media, and choosing the right learning model. However, it is still constrained by the limited learning module because the material is incomplete and the presentation is less interesting. So that a more varied learning module is needed that is able to attract the curiosity of students, with the hope that students have the motivation to learn. In order to achieve good numeracy results, cooperation between parents and teachers is needed as well as environmental support in strengthening mathematical concepts in everyday life.
Keywords: *learning; numeracy skills; primary school*

Abstrak
Pendidikan memiliki peran penting dalam membangun karakter dan kemampuan generasi muda, namun kemampuan numerasi siswa di Indonesia masih rendah, dengan sekitar 71% siswa tidak mencapai tingkat kompetensi minimum matematika menurut data OECD. Tujuan dari penelitian ini 1) mendiskripsikan tingkat kemampuan numerasi, 2) mengeksplorasi faktor-faktor penyebab kemampuan numerasi rendah, 3) mendiskripsikan cara-cara yang dilakukan oleh sekolah dalam meningkatkan kemampuan numerasi. Metode dari penelitian ini menggunakan kualitatif deskripsi. Hasil penelitian ini yaitu masih banyak peserta didik yang kurang memahami konsep metematik sehingga mempengaruhi kemampuan numerasi peserta didik di fase C. Hal ini dapat dilihat dari hasil tes hanya 16% peserta didik yang mendapatkan nilai diatas batas minumum. Rendahnya kemampuan numerasi peserta didik di pengaruhi oleh faktor internal dan eksternal. Faktor internal terdiri dari aspel fisikologis dan psikologis. Fisiologis berkaitan dengan kebugaran tubuh dan Kesehatan panca indra. Pikologis berkaitan dengan motivasi, minat dan semangat belajar dari peserta didik. Sedangkan faktor ekternal dari lingkungan sekitar, dan lingkungan keluarga yakni peran orang tua dalam mendukung belajar peserta didik. Dari hasil wawancara beberapa cara yang sudah dilakukan guru dalam meningkatkan kemampuan numerasi dengan menyediakan media pembelajaran, dan pemilihan model pembelajaran yang tepat. Namun masih terkendala dari modul pembelajaran yang terbatas karena materi kurang lengkap dan penyajian kurang menarik. Sehingga dibutuhkan modul pembelajaran yang lebih bervariatif yang mampu menarik rasa ingin tau peserta didik, dengan harapan peserta didik memiliki motivasi untuk mempelajarai. Guna mencapai hasil kemampuan numerasi yang baik dibutuhkan kerjasama antara orang tua dan guru serta dukungan lingkungan dalam penguatan konsep matematis dalam kehidupan sehari-hari.
Kata kunci: *pembelajaran; kemampuan numerasi; sekolah dasar*

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INTRODUCTION

Education is a key cornerstone in building the character and capabilities of the younger generation. One of the main objectives of education is to equip learners with important basic competencies, including numeracy. Numeracy is the ability to understand, analyse and apply mathematical concepts in various everyday situations. Numeracy is the knowledge and skills to (1) use various kinds of symbols and numbers in solving practical problems, (2) analyse various information displayed in the form of graphs, tables, diagrams, or charts, then interpret to predict decisions that must be taken. Meanwhile, according to the view (Ekowati, 2018). Numeracy is defined as a person's ability to use reasoning. Reasoning here is defined as analysing, understanding a statement, through activities in manipulating symbols or mathematical language found in everyday life. Numeracy skills include skills that include understanding and using basic mathematical concepts in everyday life. According to (Kurniawan, 2021). Numeracy skills include the ability to count, understand patterns, measurements, and the ability to solve problems involving numbers and data. This is reinforced by research from (Rahmawati, D., & Setiawan, 2022), which emphasises that numeracy is not just counting, but also involves the ability to think critically in analysing quantitative information, as well as making decisions based on data. Numeracy skills are very important in various aspects of life, including work, education, and daily life, where these skills help individuals to be more adaptive in facing challenges that are mathematical in nature (Hadi, 2023).

However, in reality, the numeracy skills of students in Indonesia are still relatively low. Numeracy scores in Indonesia conducted by the Organisation for Economic Co-operation and Development (OECD) state that around 71% of students do not reach the minimum competency level in mathematics (OECD, 2023). In this assessment, Indonesian students scored an average of 366 points in mathematics, which is well below the OECD average which ranges from 465 to 475 points. This shows a decline compared to previous PISA results. Most Indonesian students are at level 1a, which means they are only able to solve basic maths problems with simple contexts, such as integers and basic maths procedures, but are not yet able to think creatively or tackle more complex problems (OECD, 2023). Several studies show that the numeracy skills of primary school students in Indonesia are still very low. For example, the results of a study conducted at SDN Lingkok Lima revealed that many students, especially in the lower grades, had difficulty in basic arithmetic operations such as division and multiplication. The study showed that 96 out of 110 students were unable to solve division problems, with an alarming percentage of 87% failing this test. Similar difficulties were also found in multiplication and subtraction problems, especially in grade VI (Arif Widodo, 2022). The results of another study at SDN Talabiu also confirmed the low numeracy skills of students. The data obtained showed that most students were in the ‘less’ and ‘sufficient’ categories in numeracy skills, with only a small proportion at the ‘high’ level (Mariamah, S., 2021). Meanwhile, research conducted (Ermiana, U., & Niswatul Khair, 2021). Shows that the numeracy literacy skills of inclusive students are still said to be low.

A literature review shows that many students have low numeracy skills. This is due to the lack of learning that relates mathematics to everyday problems. So that learners know mathematics only as a science of calculation without knowing the content, the context of mathematics. Learners who have poor numeracy skills will have difficulty in solving everyday problems. Low numeracy skills cause students to have difficulty understanding further mathematical concepts such as algebra, geometry, and statistics. In order for numeracy skills not to decline further, it is necessary to know the factors that cause low numeracy skills. A movement or research that raises the issue is needed in order to provide benefits. This research focuses on how the numeracy skills of phase C primary school students and the factors that influence numeracy skills in

phase C primary school students and the efforts that have been made by schools to improve numeracy skills. The novelty of this research lies in the results of students' numeracy skills and analysing the factors in depth the reasons that cause low numeracy skills specifically for Phase C primary school students and the efforts that have been made by teachers in improving numeracy skills. The author also provides recommendations for learning methods and the use of more effective learning media to improve numeracy skills. The results of this research are expected to have cooperation from parents and schools in designing more appropriate learning to improve numeracy skills.

Based on several sources of data, the numeracy skills of elementary school students are influenced by various interrelated factors. According to research by Putri and Santoso (2020), internal factors such as learning motivation, mathematical intelligence, and students' confidence in solving mathematical problems play an important role in improving numeracy skills. In addition, according to Andriani (2021), environmental factors, especially parental and teacher support, greatly influence students' numeracy development. Interactive and problem-based learning has also been shown to be effective in improving numeracy understanding (Hendrawan, 2023). In the context of school learning, the use of media and technology in learning mathematics also contributes significantly to improving students' interest and numeracy skills (Rahmawati, D., & Setiawan, 2022). Furthermore, studies show that a supportive learning environment, both at school and at home, plays a major role in encouraging students to be actively involved in the numeracy learning process (Iskandar & Yuliani, 2019). The current research gab lies in the lack of in-depth analysis of students' numeracy skills in Phase C (grade V SD) that includes understanding the content, context, and learning process, which has not been the main focus in previous studies. An approach that specifically integrates an in-depth analysis of these three aspects, thus making a unique contribution to the understanding of the factors that influence students' numeracy skills at the primary stage of education, both external and internal factors. Internal factors are from within the learner. External factors come from the family environment, parental support and the school environment related to the selection of appropriate learning methods, varied learning resources and the use of technology in the learning process greatly affect the numeracy skills of elementary school students. In addition to external and internal factors, the novelty of this research specifically focuses on analysing the numeracy skills of students in Phase C (grade V SD) from the understanding of content, context and process, which has not been discussed in depth in previous studies.

Thus it is necessary for the author to analyse what factors affect the numeracy skills of students in elementary school in phase C. The focus of this research is to 1) describe the level of numeracy skills, 2) explore the factors that cause low numeracy skills, 3) describe the ways done by schools in improving numeracy skills. The benefits of this research provide an overview of schools or teachers and stakeholders in providing learning facilities to improve numeracy skills.

METHOD

This research uses descriptive qualitative methods. Qualitative research is used by researchers to explore information in depth, so as to obtain complete and meaningful data. Descriptive qualitative is research that explains phenomena in a concrete, actual, realistic manner, because this research aims to describe, describe systematically, factually and accurately about existing facts and relationships between the phenomena studied. Qualitative research basically places research in natural settings where it is attempted to investigate and interpret the phenomenon (Almirawati, et al 2018).

Researchers collect information using various data collection procedures based on a predetermined time. This research was conducted in SD A, B and C. The research was conducted in September - October 2024. The participants in this study were grade V teachers and grade V students. The selection of participation in this study was able to assist in obtaining data and information.

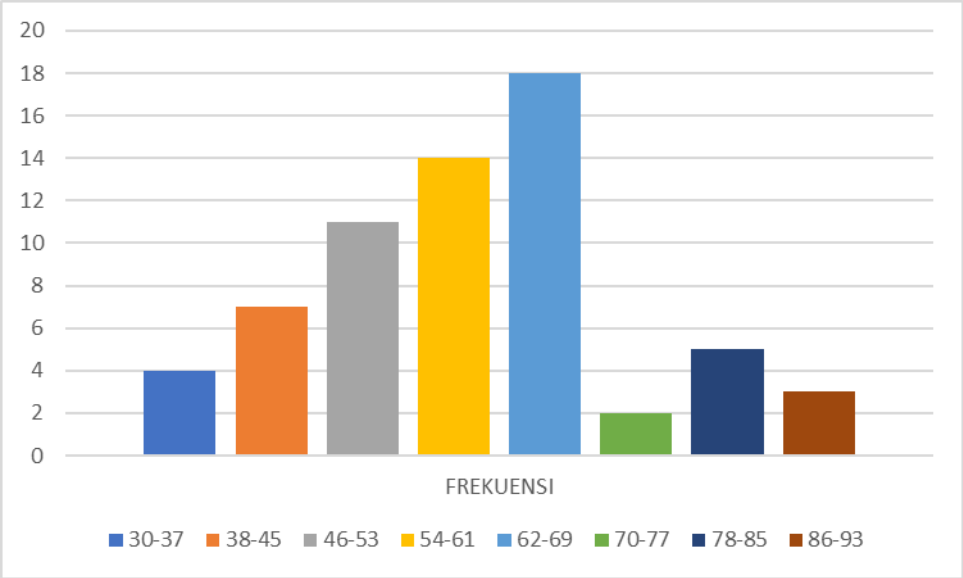
Research instruments are important in a study because they are used to obtain the necessary data. The researcher's qualitative research instrument is supported by various supporting activities such as tests, interviews, questionnaires and documentation. The test was carried out by developing according to the numeracy indicators according to Weilin (Han et al., 2017) which consisted of: a) using various kinds of numbers and symbols related to basic mathematics to solve problems in various contexts of daily life. b) analysing information displayed in various forms (graphs, tables, charts, diagrams and so on). c) interpreting results to make decisions. Interviews were conducted with phase C class 5 teachers and students related to factors affecting numeracy skills. Identifying aspects to be explored, such as student motivation, parental support, and learning methods was done using a questionnaire. Meanwhile, documentation was carried out by analysing student report cards, learning outcomes records, lesson plans, student attendance lists, and photos and videos of learning activities. The method triangulation data collection technique is to check the methods used in this study are tests, interviews, questionnaires and documentation. According to Sugiyono (2014) triangulation is a data collection technique that combines various data collection techniques and data sources that already exist. In the triangulation technique, researchers use different data collection techniques to get data from the same source..

RESULT AND DISCUSSION

From the numeracy test results, only 16% of students scored above the minimum limit. From these results it can be concluded that phase c students have not been able to solve numeracy problems. Most of them have difficulty in converting sentences into mathematical form. In solving numeracy problems, students must understand mathematical concepts. For more details can be seen in the following diagram:

Tabel 1. Hasil Kemampuan Numerasi

No	Rentang Nilai	Frekuensi
1	30-37	4
2	38-45	7
3	46-53	11
4	54-61	14
5	62-69	18
6	70-77	2
7	78-85	5
8	86-93	3



Gambar 1. Hasil Kemampuan Numerasi

From the diagram above, it can be seen that children who get scores above the minimum limit are only 10 students or 16%. While out of 64 respondents 54 or 84% of learners are still below the minimum limit. Things that need to be considered in numeracy learners are able to use mathematical concepts in all situations.

Numeracy skills must be mastered by every individual. Numeracy skills are the ability to use various kinds of numbers and symbols related to basic mathematics to solve practical problems in various contexts of daily life. Analyse information displayed in the form of graphs, tables, charts and use the interpretation of the results of the analysis to predict and make decisions. It aims to understand a world full of numbers and data. It also trains students to think rationally, systematically, critically in solving problems and making decisions in various contexts. With this numeracy skill, we are expected to become global citizens who are ready to face the challenges of the 21st century with various complex advances (Han et al., 2017). Numeracy skills in this study are focused on the ability to realise the concept, content and context of numeracy as well as the process of solving numeracy problems which include the stages of formulating, using and interpreting. The concept of numeracy context consists of personal, social, cultural and scientific. The concept of numeracy problem content consists of number, geometry and measurement, algebra and data and uncertainty (Achmad Dhany Facrudin, 2022). From the results of observations and interviews, the following results were obtained:

1. Context
   The interview results show that students have difficulty understanding numeracy problems based on real-life contexts. Most students tend to only see the problem as a set of numbers or mathematical operations without understanding the scenario or context given in the problem. For example, in problems involving the concept of counting days in Javanese culture, students seemed to have difficulty linking the information in the problem with situations that they usually experience in their daily lives. This inability to understand the context hinders students in determining the right solution steps, thus causing errors in formulating the problem.
2. Content
   From the analysis of students' answers, it was found that mastery of basic content such as numbers, algebra, geometry and data and uncertainty. When problems require the use of several basic concepts at once, students tend to

make mistakes in the selection and application of concepts. For example, in problems that require the calculation of the smallest common multiple in number content, most students seem confused between the use of the concept of common multiples. This shows that their understanding of the content or basic concepts is not solid, so they cannot apply it correctly in solving numeracy problems.

3. The Process of Formulating, Using, and Interpreting in Solving Numeracy Problems

   Formulating: Most students showed difficulty in formulating the given problem into logical mathematical steps. In problems that require them to translate verbal scenarios into mathematical equations, students tend to be confused and do not know how to formulate the problem. This shows that students' critical thinking skills in formulating numerical problems are still low.

   The stage of using concepts to solve problems is also a challenge. Some students were seen trying to solve problems by remembering certain formulas or procedures without understanding the concepts behind them. As a result, they tend to misapply formulas or use methods that are not appropriate to the problem, especially in problems that require stepwise calculations.

   Interpreting: Students who successfully completed the calculations still showed difficulty in interpreting the final results. Most students just stopped at the numerical answer without reviewing whether the result made sense in the context of the problem. For example, in problems that required an answer in the form of an amount of money or distance, students simply gave a number without a unit or further explanation, which showed their lack of ability to assess the appropriateness of the answer to the context.

This study shows that students' numeracy skills in understanding the context, mastering content, and undergoing the process of formulating, using, and interpreting numeracy problems are still relatively low. This is due to the lack of understanding of the context of the problem, weak mastery of basic mathematical concepts, and critical thinking skills that have not been formed optimally in formulating, applying, and interpreting the results. These findings indicate the need to strengthen numeracy learning that focuses not only on calculation skills, but also on the ability to understand the context, master the content in depth, and the critical thinking process in solving problems. It is recommended that numeracy learning integrates more context-based problems and provides repeated practice in formulating and interpreting problems more comprehensively.

From the students' questionnaire responses, the causes of low numeracy skills are influenced by several factors. Broadly speaking, there are two factors that affect numeracy skills, namely internal and external factors.

1. Internal factors come from within the learners themselves, including physiological and psychological aspects.

   Physiological aspects include body fitness and the condition of the five senses. Psychological aspects include self-motivation to learn, resilience, and competitiveness. These psychological factors also have a strong impact on numeracy skills. Because children who have
2. External factors come from the family and school environment. From the family environment includes motivation and attention of parents, facilities and infrastructure for learning at home, parental assistance when studying at home, etc. This can be seen from students who are in a supportive environment have better numeracy skills than students who are in a less supportive environment. This can be seen from students who are in a supportive environment have better numeracy skills than students who are in a less supportive environment.

The results of document analysis in the form of photos and videos of learning to find out the support of the school environment such as the learning environment at school whether it provides comfort or not, teaching practices carried out by teachers, completeness of learning facilities, and motivation from teachers. Efforts that have been made by teachers in improving numeracy skills include the use of appropriate learning models and learning media and learning resources. From the document analysis, there are several ways that class V teachers have done in improving numeracy skills by providing learning media, and selecting learning models, such as problem-based learning, and educational games that train students' activeness. However, there are still obstacles in training numeracy skills, namely the availability of learning resources which currently still lack opportunities and exercises in familiarizing numeracy skills. The results of the analysis show that teachers currently still use teaching modules sourced from the government. The questions used are also still sourced from textbooks that need to be developed further. This causes the learning style needs of students to be less facilitated because the teaching modules used are less interactive.

CONCLUSION

The test results show that the low numeracy skills of students in phase C of class V elementary school are influenced by internal and external factors. Internal factors include physiological and psychological aspects. Physiological is related to physical health while psychological includes learning motivation, resilience, and competitive nature. Learners who lack motivation towards mathematics often have difficulty understanding basic concepts, which then hinders the development of their numeracy skills. On the other hand, the external factors of family and the quality of learning at school also play a significant role. Children who lack family support have limited access to educational resources, such as tutors or supplementary materials, which contributes to low numeracy achievement. Efforts that teachers should make in improving numeracy include the use of appropriate learning models and learning media and learning resources. Providing learning media, and selecting learning models, such as problem-based learning, and educational games that train learners' activeness. Thus, solving this problem requires a holistic approach that includes improving the quality of teaching, students' learning motivation, as well as greater support for students from their families and the learning process at school.

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