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Improving Junior High School Students' Numeration Literacy Skills: Literature Review and Strategies for School Development

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A B S T R A C T

This study explores strategies to improve junior high school students' numeracy literacy, focusing on enhancing their ability to understand and apply mathematical concepts. It emphasizes the importance of efficient teaching methods, curriculum development, and the integration of technology to support students facing difficulties in reading, writing, and arithmetic. The study aims to address barriers in numeracy literacy through contextual learning methods, including the use of reading books, letter cards, and number cards. Additionally, it highlights the role of educator training and the development of appropriate curricula to foster students' problem-solving abilities and creativity. By reviewing existing literature and school development strategies, this study proposes effective teaching methods and solutions to improve numeracy literacy. The expected outcome is to equip students with essential numeracy skills, preparing them for future academic and life challenges.

INTRODUCTION

Reading culture in Indonesia is still a frequently discussed topic. Given that literacy culture in Indonesia is relatively low, this has not become a habit and has not been embedded in its society. Society absorbs the culture of speaking and listening more quickly than reading and writing. Oral culture or spoken culture dominates Indonesian society, which more often watches cellphones and updates statuses than reads (Suswandari, 2018). Since 2016, the Ministry of Education and Culture has launched a program called the National Literacy Movement (GLN). The National Literacy Movement designed by the government, one of which is implemented through schools and is called the School Literacy Movement (GLS). The School Literacy Movement is an initiative to create a community of students with a culture of literacy and instill character values for school members through various non-lesson book reading activities for 15 minutes. This literacy initiative is also prepared to enter the 21st century, and not only that, society, especially in Indonesia, needs to master six basic literacies, namely: (1) language literacy, (2) numerical literacy, (3) science literacy, (4) digital literacy, (5) financial literacy, (6) cultural and citizenship literacy. One of the School Literacy Movement programs is literacy and mathematics.

Literacy is a habit, namely the ability to read and write as part of the thinking process followed by reading and writing activities, which will ultimately produce new works from these activities (Tunardi, 2018). The growth of numeracy literacy skills is very crucial to improve because numeracy literacy is a basic ability that every individual must have to live their life in the future. With numeracy literacy, it is hoped that students can achieve their goals in every learning. According to Alfin (2018) and Permatasari (2015), literacy currently includes various skills such as reading, analyzing, and formulating a framework for thinking based on the information and data obtained. The implementation of the reading, writing, and arithmetic program aims to encourage students' reading activities, both from textbooks and stories, so that students are expected to master literacy skills. By reading, students will explore various aspects of life. Literacy should be taught from an early age, to instill moral values in students, especially at the elementary school level. This statement is in line with research by Wulanjani & Anggraeni (2019) and Safitri & Dafit (2021), which states that the literacy movement in schools is support for the government to instill moral values since elementary education.

According to the Minister of Education and Culture (2020), numeracy is the ability to solve contextual problems in everyday life by utilizing conceptual thinking, facts, procedures and mathematical tools, so as to create individuals who can explain the application of mathematics in life. Therefore, students' ability to do numeration should be mobilized so that students understand and can overcome problems in their lives through numeracy. The aim of numeracy is to improve and strengthen students' numeracy knowledge and skills in understanding numbers, data, tables, graphs and diagrams. According to Maulidina (2019), numeracy is the ability to use number concepts and counting skills in everyday life, such as when doing work in society, interacting in the

community, as well as the ability to understand information in the environment around us. This numeracy ability focuses on students' skills in analyzing, solving problems, formulating problems, expressing ideas, providing explanations, and interpreting issues in various situations and forms. Therefore, students' ability to apply numeracy should be encouraged so that students understand and can overcome problems in their lives using numeracy. Numeracy literacy is defined as an individual's ability to apply thinking. Reasoning, which refers to the ability to analyze and understand a statement, is carried out through activities involving mathematical symbols or language in everyday life, both in writing and orally; this opinion was conveyed by Ekowati et al., (2019). The purpose of numeracy literacy is to identify the basic competencies of participants in the fields of literacy and numeracy (Patriana et al., 2021). In the learning process, students need to be directed to think critically and analytically. In order to achieve this, teachers need to often provide reading materials or texts that are analyzed and discussed by students. Building and strengthening human resources (HR) so that they can compete and cooperate with other countries for the prosperity and welfare of the nation and state. In accordance with Law No. 20 of 2003 concerning the National Education System, education is a conscious and planned effort to create an atmosphere and learning process that allows students to actively develop their potential so that they have spiritual religious strength, self-control, personality, intelligence, good morals, and the skills needed for themselves, society, nation, and state (Kemendikbudristek: 2003).

According to (Mulyati, 2016) explains that education that focuses on learning with the application of various methods is very useful in improving learning outcomes. Given the fact that there are still many students who have not experienced good education, this numeracy literacy is very important so that numeracy literacy in Indonesia does not get lower, and researchers also aim to improve the culture of numeracy literacy among Indonesian students. An adaptive education system shows the importance of collaboration between the design of the educational process and the latest advances in knowledge (Afand, Junanto, & Afriani, 2016).

However, the facts on the ground reveal that students' understanding in learning to read, write and count is often still lacking. Many students face difficulties in basic concepts, such as reading, writing and counting which can impact their ability to solve more complex problems . Some factors that influence this understanding include teaching methods that are less varied, lack of sufficient practice, and students' inability to connect the concept of learning to read, write and count with real situations , students play and joke more in the classroom, students never study at home, students are lazy to ask questions and are lazy to communicate with teachers and talk to their classmates . Therefore, it is important to apply a more interactive and contextual approach in learning to read, write and count , so that students can understand and apply reading, writing and counting skills better.

Based on the problems that occur, researchers have several objectives, namely: 1) Providing training to improve students' understanding of reading ,

writing and arithmetic. 2) Providing training to improve students' competence in reading, writing and arithmetic to improve students' numeracy literacy. which has an impact on their learning outcomes . In addition, this numeracy literacy is an effort that is carried out continuously to improve students' competence, the importance of numeracy literacy as a basic skill in education that supports problem solving and decision making. The literature review identified various challenges faced by students in understanding the concept of numeracy and effective teaching methods. The proposed strategies include teacher training, relevant curriculum development, and the application of technology in learning. The results are expected to improve students' numeracy competence and prepare them for future challenges.

LITERATURE REVIEW

Reading culture in Indonesia remains a topic of significant discussion, as literacy levels in the country are relatively low and have not become deeply ingrained in society. Oral culture, where communication is predominantly spoken rather than written, has led to a preference for activities like watching cellphones or updating social media over reading (Suswandari, 2018). In response, the Indonesian government launched the National Literacy Movement (GLN) in 2016, which includes the School Literacy Movement (GLS) aimed at fostering a culture of reading and instilling moral values through non-academic reading activities. This initiative aims to prepare students for the 21st century by emphasizing the mastery of six basic literacies, including numeracy. Numeracy literacy, defined as the ability to apply mathematical concepts in everyday life, is crucial for student development, enhancing problem-solving skills, and preparing them for future challenges (Maulidina, 2019; Minister of Education and Culture, 2020). However, many students face difficulties in mastering basic literacy skills, including reading, writing, and arithmetic, impacting their ability to solve complex problems (Mulyati, 2016). Therefore, effective teaching methods, such as contextual learning and teacher training, are needed to improve students' numeracy skills and overall academic success (Afand et al., 2016).

METHODOLOGY

This study applies a qualitative research method with a descriptive design. This study aims to explain the implementation of reading, writing, and arithmetic to improve numeracy literacy of junior high school students. This study utilizes data collection methods through observation, interviews, and documentation. The interview process was conducted face-to-face involving three informants including the principal, two subject teachers, and students from grades 7, 8, and 9 at SMPN 3 Numfor Barat.

Table 1. Reading, writing and arithmetic of grade 7, 8, 9 students at SMPN 3 Numfor Barat

No	Informant	Results
1	Head of SMPN 3 Numfor Barat	- The implementation of reading, writing and arithmetic is carried out on Monday to Thursday after the teaching and learning activities are finished. This activity was attended by 141 students who had gone through a screening and selection process, where several children were found to have difficulty in reading, writing, and arithmetic. Generally, in students who previously did not attend kindergarten, lack of basic knowledge at the early level, lack of adequate attention, or ineffective teaching methods in elementary school caused them to still face difficulties in reading, writing and arithmetic.
2	Subject Teacher	- Reading, writing, and arithmetic activities are carried out on Mondays to Thursdays after the learning process is completed. Teachers provide additional support to students who have difficulty in reading, writing, and arithmetic. This activity applies contextual/real learning methods. Generally only carried out for 15-20 minutes. Activities utilize media such as letter cards, number cards, number cards, as well as picture books and fairy tales.
3	Students of Class VII, VIII, IX	- The procedure for implementing reading, writing, and arithmetic is carried out by the teacher providing one media every day to be studied and guided directly by the teacher. Furthermore, there is a statement that expects students to be able to answer by reading, writing, or counting. This event was very calm and enjoyable throughout the training.

Table 2. Fundamental aspects in reading, writing and arithmetic of grade 7, 8, 9 students at SMPN 3 Numfor Barat

Aspect	Implementation of Literacy	Numeracy Implementation
Read	1. By using a contextual/real learning approach. 2. Using letter cards as a medium . 3. Good reading response activities both verbally and in writing. 4. Has a reading corner and posters for read . 5. Utilizing the environment, social, emotio and academic with various media (prin visual, auditory, digital) that are rich in liter outside of textbooks to broaden one's horiz in a subject lesson .	1. By using a contextual/ real learning approach. 2. Utilizing number cards and number cards . 3. Reading Numbers. 4. Utilizing the physical, social emotional, and academic environment with various types of reading (print, visual, auditory, digital) that have a lot of literacy outside of textbooks to increase knowledge in subjects.
Write	1. By using a contextual/real learning approach. 2. Utilizing written media. 3. Customization, improvement and implementation. 4. Leveraging the physical, social emotional, and academic environments with a variety of literacy-rich reading materials (print, visual, auditory, digital) outside of textbooks to enhance knowledge in a subject.	1. By using a contextual/real-world approach. 2. Using number cards as a medium. 3. Leveraging physical, social emotional, and academic contexts with a variety of reading materials (print, visual, auditory, digital) that are abundant in literacy beyond textbooks to expand knowledge in subjects.

Count	1. By using a contextual/real learning approach. 2. Utilize cards for letters, numbers, and figures. 3. Reading basic calculations. 4. Utilizing the physical, socio-affective, and academic environments with various types of reading (print, visual, auditory, digital) that have a wealth of literacy beyond textbooks to expand knowledge in subjects.	1. By using a contextual/real learning approach. 2. Utilizing numeric and number card tools. 3. Perform basic calculations. 4. Utilizing the physical, social emotional, and academic environment with various types of reading (print, visual, auditory, digital) that have rich literacy beyond textbooks to expand knowledge in the field of study.

RESEARCH RESULT

Improving Students' Numeracy Literacy Skills Through Contextual Learning Methods in the application of reading, writing and arithmetic to improve students' numeracy literacy skills. This is in line with the research of Kamza et al., (2021) and Dantes & Handayani, (2021) which discusses the design of numeracy literacy programs, program implementation, and efforts to overcome obstacles and factors that support or hinder the implementation of numeracy literacy programs. The results of the study indicate that the implementation of the numeracy literacy program has taken place in accordance with the desired objectives. The learning model that is considered effective in developing junior high school students' numeracy literacy skills is to use a contextual learning model. Contextual learning is based on the idea that meaning will emerge if there is a relationship between content and context. The contextual learning model will make students actively involved during the learning process. This statement is in line with the studies of Kadir (2013) and Ramdani (2018) which show that contextual learning will facilitate active learning. Active learning is a teaching system that emphasizes the physical, mental, intellectual, and emotional involvement of students to achieve learning outcomes that combine cognitive, affective, and psychomotor aspects. The more relationships students find in a context, the more meaningful the content is to them. The more students can relate the material being studied to the available context, the more understanding they will gain from the learning. Contextual learning focuses more on the relationship between the material being studied by students and practical applications in everyday life. Contextual learning is learning that is directly related to real life, the knowledge gained by each person develops based on the experiences they have, with the ultimate goal being personal satisfaction (Eliza, 2013). The significance of students' numeracy literacy skills greatly influences learning objectives. Numeracy literacy has a contextual practical character, related to understanding issues in communication, professionalism in work, recreational, and cultural. This explanation indicates that the scope of numeracy literacy is very broad, not only in mathematics subjects, but also includes other literacies. Numeracy literacy is defined as a skill.

CONCLUSIONS AND RECOMMENDATIONS

The implementation process of reading, writing, and arithmetic trains and improves the numeracy literacy skills of students who have difficulty learning

to read, write, and count. Through the method of teachers who provide additional time to students and convey material information before activities and provide learning media that are appropriate to student needs. However, the current limitations of school facilities mean that media in the form of images and sound cannot yet be displayed. In teaching and improving the numeracy literacy skills of students with low abilities, there are several challenges faced by teachers. The very varied character of students, such as the presence of active and inactive students, is a difference that can hinder the process of implementing reading, writing, and arithmetic at SMPN 3 Numfor Barat.

Based on the results of the implementation of Calistung that have been mentioned, it is concluded that this training is effective in improving students' understanding and ability in reading, writing, and arithmetic. In addition, this training can also increase students' motivation and inspiration to improve critical thinking skills, improve students' creativity, and hone students' ability to solve problems. Therefore, the calistung activity which began with learning to recognize through the media of letter cards, number cards, number cards, and picture story books and fairy tales has gone well. It can be seen that the children feel happy and cheerful when participating in the joint learning activities that are carried out. However, the researcher believes that support and cooperation from various parties such as parents, the surrounding environment, village government, and community leaders are very important so that these activities can take place consistently and more effectively.

ADVANCED RESEARCH

Further research should explore the long-term impact of the reading, writing, and arithmetic (Calistung) program on students' numeracy literacy skills, particularly focusing on the role of teacher training and media utilization. While the current study demonstrates the effectiveness of Calistung activities in improving students' understanding and motivation, challenges remain, particularly in the limited availability of teaching media such as images and sound due to school facility constraints. Future studies could examine the integration of low-cost, alternative media solutions or digital tools to support learning in under-resourced schools. Additionally, research should investigate strategies to address the diverse learning needs of students, such as fostering greater student engagement among both active and inactive participants. Collaboration with parents, local communities, and educational stakeholders, as suggested by the findings, could be further examined to evaluate how external support can enhance the sustainability and effectiveness of such literacy programs in improving numeracy skills.

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