

Teachers' Perception of Numeracy in Mathematics Learning in the Merdeka Curriculum

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Abstract. The new curriculum which is the Merdeka Curriculum is designed to help students develop the numeracy skills they need to succeed in the twenty-first century. The success of elevating students' numeracy skills depends on teachers' perception of numeracy as it would impact their teaching method in mathematics learning. This study aimed to explore teachers' perceptions of numeracy in mathematics learning in the Merdeka curriculum. A case study and purposive methodology sampling were employed in this qualitative research method. The subjects are six classroom teachers in one public elementary school in Kebumen Regency, Central Java. The research data were collected by interviews, observations, and documentation. It was analyzed by interactive technique done by collecting data, data reduction, data presentation, and pull conclusion. This study revealed that teachers realized it was essential to build numeracy skills from early grades. They had a fair understanding of how important it is to prepare for the national assessment. However, they were missing a crucial point in which the focus on numeracy was to improve the quality of mathematics learning, yet teachers had a misunderstanding and did numeracy drills as a separate part of mathematics learning. Teachers were unaware of "AKM Kelas" and how helpful it could be to help them to teach at the right level. This study's findings contributed to stakeholders to reflect and conduct intensive workshops for teachers to escalate their performance in designing learning environments that enrich students' numeracy skills.

Keywords: Mathematics Learning; Merdeka Curriculum; Numeracy; Perception; Teachers.

1. Introduction

Reforming mathematics classes into numeracy-oriented ones is essential for teachers to prepare students to thrive in the real world. This is significant as among the cognitive fundamental skills required for future learning across the curriculum, numeracy is one (OECD, 2018). Numeracy is defined as the capacity to engage with and manage the mathematical demands of a variety of situations by accessing, using, interpreting, and communicating mathematical information and ideas (PIAAC Numeracy Expert Group, 2009). Elementary School Directorate (2023) distinguishes numeracy and mathematics as two different concepts that have the same knowledge and skills foundation. The difference lies in the empowerment of knowledge and skills itself. Mathematical knowledge does not make someone have numeracy. The new curriculum is designed to help students develop numeracy skills. This is supported by Government Regulation Number 57 of 2021 about National Education Standards, focusing on the development of character in line with Pancasila ideals in addition to students' literacy and numeracy skills in educational units at the basic education level, as per the Graduate Competency Standards (Government Regulation Number 57, 2021).

Teachers' perception of numeracy-based mathematics learning has a significant effect on the learning environment. Students were able to attain strong learning competencies as their teachers had a positive impression of numeracy (Triani & Rofi'ah, 2023). Teachers in Samarinda believe that the National Assessment for measuring numeracy does not make things harder for them, but rather gives them a better understanding of the importance of input, process, and evaluation in the teaching and learning process (Amri & Salehudin, 2023). On the other hand, teachers aware of how important it is for them to be able to create questions for numeracy tests, but this is not optimal because of some obstacles such as difficulty in assessing students'

cognitive level and students are not used to facing numeracy test (Rahmasari et al., 2022). The success of elevating students' numeracy skills depends on teachers' perception of numeracy as it would impact their teaching method in mathematics learning. This will support the development of a thorough understanding of numeracy in the students.

1.1. Problem Statement

Based on national assessment results, students' numeracy skills were miserable. Kemendikbudristek (2023) reported that the numeracy skills of elementary students in 2022 is 46,67%. This means less than 50% of students reach the minimum level of numeracy. There are a few reasons why students' numeracy is lacking. First, low student intelligence abilities, low student interest in learning, and low student motivation to learn (Adawiyah et al., 2023). Second, teachers did not train students enough with numeracy problems in mathematics classes (Hazimah & Sutisna, 2023). Third, innovative learning models that accommodate educational abilities have not yet been implemented (Shabrina, 2022). Fourth, the government has already prepared material sources for numeracy in mathematics, but schools and parents do not use them optimally. To get a further understanding of why students' performance is not good enough, we must look deeply into teachers' perceptions of numeracy in the Merdeka Curriculum. Their perception could be material for evaluating the learning process and improving mathematics learning.

Based on the observation of a public school in Kebumen Regency, the school only prepared for the National Assessment in fifth grade by putting extra classes focusing on drilling numeracy tests. Schools also bought AKM preparation books to help teachers in providing drilling materials. Students often complained because they were not used to it and found it difficult. They found no relation between the mathematical concept they learned in mathematics class and the numeracy test. In contrast, China uses a single curriculum, making no distinction between mathematics and numeracy (Nelisiwe, 2023). The Chinese teachers taught early numeracy. The Montessori educational approach, which emphasizes cooperative play, self-directed learning, and practical experiences, was extensively implemented in China (Hiles, 2018). Teachers must be aware and concerned with developing a learning environment that enables students to grow their numeracy skills.

Moreover, the Merdeka Curriculum has been implemented to reform the education system. This policy is based on a PISA score that has not improved significantly in the last ten to fifteen years. There are large disparities between regions and socio-economic groups in terms of the quality of learning. It is worse by the COVID-19 pandemic (Kemendikbudristek, 2024). In this new curriculum, numeracy plays a big role in being more exposed, more concerned, and more empowered. Problem-solving and critical thinking, twenty-first-century skills, depend on numeracy. The ability to think critically and solve problems is crucial in the twenty-first century to handle challenging situations and overcome obstacles in life (Szabo et al., 2020). In addition, numeracy has leverage on students' creative thinking (Asrawati et al., 2023). Therefore, studying teachers' perceptions would play a big role in how the stakeholders should act in considering what is the best method for teachers to support them in improving their mathematics teaching.

1.2. Related Research

The numeracy theme is a new thing in our education at the elementary school level because the government launched the numeracy urgency since there was a regulation containing guidelines for implementing curriculum in education units in particular conditions during COVID-19 (Rahmawati, 2020). Numeracy in Indonesia refers to skills that are assessed in PISA or Trends in International Mathematics and Science Study (TIMSS). It is related to problem-solving, critical thinking, creativity, and other twenty-first-century skills. Some of the research related is explained below to enrich the theoretical basis.

The research conducted by Campbell et al. (2020) revealed that Scottish professional graduate diploma teachers in secondary schools had insecurity in their ability to give students in their subject area encounters with numeracy. The participants' generally low levels of confidence were probably related to the emotive and cognitive worries related to

mathematics performance and processes. The experiences that student teachers have had in the classroom have led to a variety of perspectives regarding chances for numeracy education across the curriculum. This could point to a variety of numeracy-related educational practices. It might also be a sign of the different levels of awareness that student teachers have of implicit parts of the teaching and learning that they have witnessed through their observational practicum experiences.

Mathematics teachers in Abu Dhabi had a positive overall view of TIMSS as a tool to assess students' numeracy performance at an international level (Wardat et al., 2022). Despite being interested in TIMSS for the sake of their students, math teachers in Abu Dhabi did not think their methods were in line with it. The findings of the independent t-test showed that there was no significant difference in teachers' perceptions of TIMSS based on their gender. Gender-based disparities in opinions on the school and classroom, however, point to a serious problem with how teachers view their surroundings. The study's findings of teaching experiences revealed statistically significant variations in the areas of mathematics instruction, TIMSS teaching practices, and school and classroom environments. However, readiness for TIMSS did not significantly differ when considering teaching experience. The results of the study have an important role in curriculum development, teacher preparation, and student performance on international assessments. The results of the study indicate that curriculum development, especially in mathematics education, needs to be in line with the criteria of worldwide standards. This can involve changing and tailoring the curriculum material to include the cognitive ability domain outcomes measured by international assessments like TIMSS.

Teachers found it difficult to distinguish numeracy and mathematics (Coffey & Sharpe, 2023). Ireland teachers' perspective on numeracy being taught in other subjects than mathematics across curriculum formed by their personal experiences with mathematics. This case study explored how a low-income school was implementing a comprehensive approach to teaching numeracy. The study findings pointed out that teachers' perceptions of the value of numeracy were shaped in part by their leadership. While most teachers agreed that teaching numeracy was important for their subject area, most were not aware of the details of the school development plan for numeracy. The results point to the necessity for professional development to address the issue of teachers' understanding of numeracy as well as the need for teachers to develop their identities and pedagogical practices in this domain. Schools must think about how their leadership might set up resources to promote teacher learning. To integrate numeracy throughout the curriculum, schools must be supported in using cross-disciplinary, interdisciplinary, and transdisciplinary approaches. Policymakers must also recognize the differences between mathematics and numeracy.

Furthermore, students who have a positive teacher perspective are more likely to learn enthusiastically and attain the best possible learning results (Triani & Rofi'ah, 2023). Triani and Rofi'ah found that the teachers at Madrasah Ibtidaiyah Al-Ittihad Jombang believe that teaching mathematics with both literacy and numeracy integrated is very useful. The educators see the literacy and numeracy curriculum favorably and recognize the value of including these subjects in the teaching of mathematics. The way that teachers see literacy and numeracy programs has a big influence on the learning competencies of their students. The way that literacy and numeracy programs are implemented in the classroom is influenced by instructors' positive attitudes about them, which improves student learning outcomes. Teachers are better able to incorporate literacy and numeracy into the mathematics learning process, which improves students' problem-solving skills and overall learning capacity when they have a solid understanding of the value of these skills in everyday activities.

From the related studies explained, the participants of Campbell et al. (2020) research were secondary school teachers with limited teaching experiences. Wardat et al. (2022) highlighted mathematics teachers' perception of TIMSS impacted their teaching method in mathematics. Coffey & Sharpe (2023) pointed out how teachers' perspectives in numeracy on subjects other than mathematics across the curriculum are shaped by their personal experiences with mathematics. Triani & Rofi'ah (2023) conducted the research at Madrasah Ibtidaiyah School and studied students' and teachers' perceptions of mathematics learning integrated with literacy and numeracy. Therefore, this research involved elementary school teachers with years

of teaching experience in public schools, and how their perceptions of numeracy in mathematics learning. This study addresses in a novel way how well teachers in public elementary schools understand numeracy, face numeracy teaching challenges, and how they teach numeracy in mathematics learning in the Merdeka Curriculum.

1.3. Research Objectives

Based on the previous explanation, the researcher aimed to explore teachers' perceptions of numeracy in mathematics learning in the Merdeka curriculum. We want to see from teachers' perspectives: 1) how important to build numeracy since early grades; 2) why numeracy matters in today's ever-changing world; and 3) how to teach numeracy.

2. Theoretical Framework

2.1. Numeracy

Numeracy is defined as the ability to implement mathematics concepts and skills to solve practical problems in various contexts, e.g., at home, jobs, and society as national and global citizens. Numeracy is also interpreted as skills to analyze and interpret quantitative information, e.g., graphs, tables, charts, etc., to predict and make decisions (Han et al., 2017). Numeracy is essential in the new curriculum, the Merdeka curriculum. Teachers must fully understand how to teach and learn numeracy.

The three-dimensional "Model for Numeracy in the 21st Century," developed by Goos is a well-liked framework for comprehending numeracy instruction (see Figure 1). This framework demonstrates that being numerate involves more than just using and applying mathematical knowledge; it also involves having positive attitudes and the appropriate tools in a variety of situations. Simultaneously, the framework places these actions within individual critical orientations; evaluating the reasonableness of the results obtained and being aware of appropriate and inappropriate uses of mathematical thinking to analyze situations and draw conclusions are also necessary components of being numerate (Goos et al., 2012). In essence, it emphasized how crucial mathematical understanding is to the growth of numeracy. Maybe this explains why mathematics teachers are often the ones in charge of organizing and/or carrying out numeracy programs in schools (Seah, 2023).

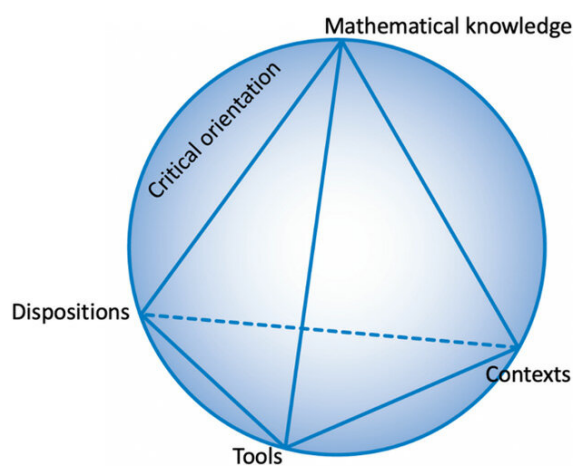


Figure 1. A Model for Twenty-First Century Numeracy

The application of mathematical concepts (e.g., bearings, averages), skills (e.g., estimation, indirect measuring), or proficiencies (e.g., reasoning, problem-solving) that can be identified through more thoughtful consideration and reflection of what the various learning areas entail is recognized and identified in an alternative approach to teaching numeracy (Bishop, 1988). Thus, instead of introducing similar squares into a lesson or topic, teachers should instead be looking out for mathematics concepts (which could be about similar squares!), skills, and proficiencies that are or could be integrated into their teachings. Since the mathematics

involved in the numeracy issue is already contextualized in and related to the relevant learning topic, teachers are less likely to feel uncomfortable or scared by it.

The numeracy movement in Indonesia was already triggered in 2016 as the Government published the numeracy movement handbook for schools, families, and society. Later in 2021, the Government launched the Merdeka curriculum, held a National Assessment, and developed a framework for literacy and numeracy for elementary school teachers. In 2022, there was a change in strategic planning regulations to strengthen students' literacy, numeracy, and character.

2.2. Merdeka Curriculum

The Merdeka Curriculum is the twelfth curriculum since 1947. The changes in the national curriculum adjusted to ever-changing worlds. The newest one is formed due to learning loss during the Covid-19 pandemic. The Government implemented a special conditions curriculum by cutting unnecessary materials and focusing on the essentials. Surprisingly, this decision has more impact on students' learning performance. The program's efficacy under circumstances emphasizes the need for more extensive modifications to curriculum design and implementation techniques. The Merdeka Curriculum (formerly known as the prototype curriculum) was created as a more flexible curriculum framework, concentrating on essential content, and fostering students' character and competencies, to support Indonesia's educational vision and as part of efforts to restore learning.

Here are the ideas covered in the Merdeka learning program (Poerwanti et al., 2023):

1. Distinct locations and periods. In addition to being restricted to a specific area, like the classroom, learning can also take place outside of it in a more favorable environment.
2. Freedom of choice. Students are allowed to practice their preferred learning style and are required to consistently develop their skills.
3. Personalized style of learning. Like a game, teachers can customize their students' comprehension of the subject matter and find the solution according to each student's proficiency. If he succeeds in finishing the task, he will advance fast enough that he won't need the skills of the typical student anymore.
4. Projects-based learning. Project-based learning allows students to apply their knowledge from a range of contexts and sources. The students will consider the lesson and put it to use in their daily lives.
5. Practical experience. Compatibility and connection are essential. There is no connection between the materials that students can currently access and their professional lives. As a result, field experience can improve a student's performance at work.
6. Interpretation of data. Students obtain a great deal of data. It is anticipated that the amount of information obtained would address the need and assess issues.

3. Method

3.1. Research Design

This was a qualitative descriptive method using the case study. Creswell & Creswell (2017) defined case studies as a qualitative design in which the researcher explores in depth a program, event, activity, process, or one or more individuals. The case(s) are bound by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period. This kind of case study was selected because the research would be case-specific and thoroughly examined through to the conclusion. The study will address the perception of teachers in numeracy in mathematics learning in the Merdeka Curriculum.

3.2. Participant

The participants were classroom teachers from grades 1 to 6 in public elementary schools in Kebumen Regency. They were selected through purposive method sampling. The sampling met the criteria of the school: implementing the Merdeka Curriculum; the classroom teachers had certification in the Merdeka Curriculum Workshop held by the local Department of

Education; the classroom teachers were civil servants with years of teaching experience minimum of 5 years; and had a bachelor's degree in primary school teacher education. Based on the criteria, there was a public elementary school that had six classroom teachers from grades 1 to 6 consisting of one male and five females with 6 to 17 years of teaching experience. To keep the identity of the participants confidential, teachers were referred to as teachers A, B, C, D, E, and F and did not indicate their class order.

3.3. Data Collection

The collecting data in this research used in-depth interviews, observation, and documentation over five weeks. There were two types of data sources in this research, which were primary data and secondary data. Primary data on this research was obtained directly from first-origin sources while secondary data was obtained from previous data. Primary data were collected from three sources. First, information was gathered from classroom teachers' responses by in-depth interviews. Second, the place where the data took place, was in a public elementary school in Kebumen Regency. Third, the paper was obtained from pictures, numbers, and symbols during the observation and interview process. Meanwhile, secondary data were not taken during the research. The data was collected by researchers through pre-existing sources such as web pages, official documents, school archives, etc. It would complement primary data.

3.4. Data Analysis

In this study, descriptive qualitative analysis was employed to analyze the data collected. The descriptions generated by this analysis were predicated on the findings of observations, interviews, and documentation. Data analysis was an effort to search for data and organize records of observations, interviews, and documentation as well as other things systematically so that it can support researchers to increase their understanding of the problem being investigated so that it is easier to communicate to other people. To deepen the researcher's comprehension, data analysis was carried out while meaning was discovered.

Data from recorded interviews changed into interview transcripts, simplified into effective sentences, and thus described to be ready-use data. Data from observation was described to become data that was ready to use. The documentation data was used to complete the primary data from interviews and observation. All the data was analyzed using the Miles and Huberman model namely data reduction, data presentation, and conclusion drawn (Sugiyono, 2015). The raw data from the interview, observation, and documentation were subjected to data reduction. The reduction was done to focus the collected data on research objects. The next stage after data reduction was to interpret the data into a narrative text structure, or a summary. Conclusions were derived from gathered or discovered research data. The complete analysis method yielded conclusions for this study, which might subsequently be drawn in comparison with the data gathered for the investigation.

3.5. Validity and Reliability

The validity technique in this study is triangulation techniques. Triangulation of data is a data collection process that mixes different data and pre-existing sources (Sugiyono, 2015). In addition, triangulation is the process of confirming and validating the findings by examining a study subject from several perspectives (Guion et al., 2011). In this study, we cross-check data from teachers' perceptions of numeracy, observation, and documentation.

3.6. Procedures

The procedures for this study are presented in Figure 2.

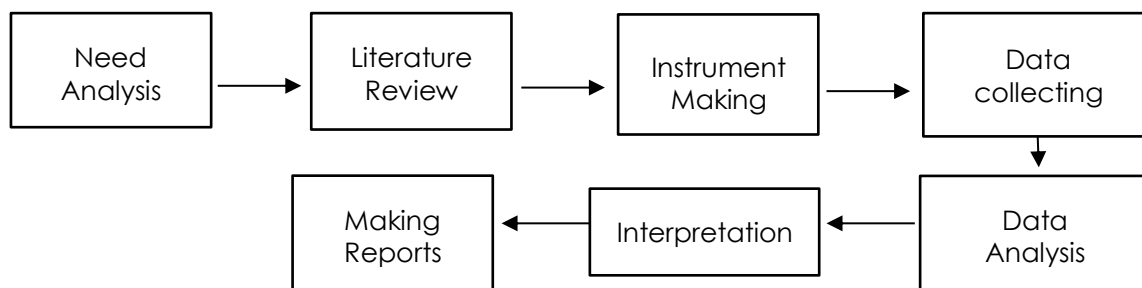


Figure 2. The study procedures (Agustin et al., 2020; Kelana et al., 2022)

Analyzing the needs of teachers and students in mathematics classes was the first stage. To have a deep understanding of how numeracy was implemented in the Merdeka curriculum and how students' numeracy skills in recent years, a collective literature review was studied. Third, making interview guidelines. Fourth, the data was gathered through interviews, observation, and documentation. Perceptions indicators were responses and opinions of numeracy in mathematics learning (Solichah et al., 2022). Fifth, the data was analyzed. Then, an interpretation of the data analysis is made to conclude. Finally, draft a report.

4. Findings

Through the data processing, there are several important findings about teachers' responses to building numeracy and opinions on how important numeracy is. The Merdeka curriculum was designed to reform the education framework as the Covid-19 pandemic disrupted the normal system of schools. Literacy and numeracy along with characteristics of Pancasila ideals are something that have major concerns. The government provided teachers with learning material for understanding the new curriculum through the "Merdeka Teaching Platform (PMM)" application. There are tons of materials for self-paced learning that are adjustable to teachers' time. It can be accessed through smartphones, tablets, personal computers, or laptops. It is also available on the Google Play Store. To get an understanding of numeracy, the local education departments ordered teachers to get individual learning through PMM. Principals also held training for teachers to promote the essentials of numeracy for children.

4.1. Perception of How Important To Build Numeracy Since Early Grades

Based on interviews with six teachers, 3 of them stated that it was important to build numeracy skills from early grades, while the rest stated that it was very important to build numeracy skills from early grades. Teachers said that building numeracy from early grades was essential because numeracy was the basis for another subject.

....(building numeracy from early grades) is very important, because numeracy is the basis for learning another subject. Students with good numeracy comprehension sometimes could master another subject easily....(interview excerpt from teacher A)

....(building numeracy from early grades) is really important, as students are going to be used to solving numeracy problems since grade one, they will have no difficulties in the next grades for solving numeracy problems....(interview excerpt from teacher B)

....it is important...(interview excerpt from teacher C)

....I think (building numeracy from early grades) is important as students will get used to thinking critically about problems in their life and being creative...(interview excerpt from teacher D)

....(building numeracy from early grades) is important because the Merdeka curriculum gives a bigger room for teachers to promote students' numeracy through intracurricular and Strengthening Pancasila Student Profiles Projects...(interview excerpt from teacher E)

....it is super important because building students' numeracy is quite challenging. This is not something that we can build instantly, should have been exposed to students since early grade...

(interview excerpt from teacher F)

4.2. Perception of Why Numeracy Matters

Through the interview, teachers explained why numeracy matters the most in mathematics learning. Based on interview results with six teachers, there were a few reasons why numeracy matters in the Merdeka curriculum. It helped students to solve problems in real life; prepare for the National Assessment; and nourish student problem-solving skills.

....(why numeracy matters) because numeracy is in everyday life, so teachers have to develop students' strong numeracy skills, also numeracy needs to be exposed to students for preparing for national assessment....(interview excerpt from teacher A)

....(why numeracy matter) because it is a part of preparation for national assessment....(interview excerpt from teacher B)

....(why numeracy matters) it will be useful for students' life, their future working life and social life.... (interview excerpt from teacher C)

....(why numeracy matters) It helps students to solve problems in real life, for instance, their parents ask them to buy groceries in nearby stores, parents tell them to use change money to buy snacks, as students have learned about numeracy in school, they can estimates which snacks they can afford(interview excerpt from teacher D)

....numeracy is not just about numbers but understanding the world around us, so it is teachers' duty to build their numeracy skills in mathematics learning....(interview excerpt from teacher E)

.... numeracy indeed matters in the new curriculum because it plays a big role in nourishing students' problem-solving skills....(interview excerpt from teacher F)

4.3. Perception of Teaching Numeracy

Despite understanding the school level of numeracy which needed to be improved, all teachers did not integrate numeracy into mathematics learning. They admitted the importance of numeracy for the national assessment but missed a crucial point in which the focus on numeracy was to improve the quality of mathematics learning, yet teachers had a misunderstanding and did numeracy drills as a separate part of mathematics learning.

....I do not use numeracy context to deliver mathematical concepts in mathematics learning. Students do numeracy exercises like AKM content in separate lessons from mathematics....(interview excerpt from teacher B)

....I know how importance of numeracy for national assessment, but I never gave my students AKM questions to solve in mathematics learning....(interview excerpt from teacher C)

5. Discussion

5.1. Perception of How Important To Build Numeracy Since Early Grades

Based on Teacher D, students' critical thinking and creativity also could be nourished since early grade through numeracy. In line with (Melani et al., 2023), students' worksheets based on numeracy were effective in improving students' critical thinking. Moreover, Teacher E stated that the Merdeka curriculum gave teachers the opportunity to build numeracy skills through intracurricular and Strengthening Pancasila Student Profiles Projects. Numeracy in intracurricular is mainly delivered in mathematics or across subjects. The numeracy in Strengthening Pancasila Student Profiles Projects in this school delivered through challenging projects such as market day, and cooking. Activities related to market days were perfect for fostering the development of kids' numeracy abilities, including number recognition, money recognition and value knowledge, and basic sales principles (Hikmah et al., 2023). In cooking activities, students use mathematical concepts to estimate recipe measurements.

Teacher B considered building numeracy from early grade as students would get used to problem-solving. AKM occurred in grade five. Giving students exposure to questions like AKM since grade one would train students early for AKM. This could be a good thing if only teachers do it in the right way. On the other hand, students could be bored and have difficulties with numeracy since early grade. Like Teacher B, Teacher F regarded the numeracy skills from early grades were not something that teachers could build instantly; it is something that students should get used to solving numeracy problems.

5.2. Perception of Why Numeracy Matters

Based on interview data, Teacher E understood that numeracy is not just numbers but beyond that. Numeracy become a relevant and sensible topic to consider in mathematics classes as it promises to reflect modern reality (Craig, 2018). Modern reality with its complex social structures, Industry Revolution 4.0, and Smart Society 5.0 demands schools as educational institutions to foster relevant skills to thrive in this modern society. Numeracy is one of those fundamental skills. Numeracy is also the focus of the new curriculum. The exposure of numeracy in basic levels of education none other than for nourishing students' problem-solving skills, said Teacher F. According to the (Xiao et al., 2019) findings, persons who possessed greater reading and numeracy skills were also more likely to be proficient problem solvers. Teachers already understand that numeracy is critical in mathematics learning.

Teacher C and Teacher D had the same view on the importance of numeracy in mathematics learning. They argued that numeracy would benefit students to live to their fullest. For example, students sometimes get asked by parents to help them with household activities. They sometimes asked to buy some groceries in a nearby local store. As a tradition, parents would give them a return for doing the task by letting them buy snacks with the change money. In this context, students learned how to estimate what snacks they could afford. The ability to estimate is part of mathematical understanding. If this situation had not been manipulated in mathematics class as a learning context, students would have been in some difficulties. (Muñoz et al., 2022) suggests that numeracy training programs might benefit students with difficulties to a larger extent. Moreover, Teacher C underlined how important numeracy is for students' lives, and their future working and social lives.

All teachers also understood how important numeracy is for national assessments. They all agreed that numeracy intervention is prepared for it. The national assessment has been held annually since 2021. Two skills that have been assessed were numeracy and literacy skills. Teacher A and Teacher B had the same point of view about numeracy interventions in mathematics class for preparing students for the assessment. The assessment reports of each school will be provided in "Rapor Pendidikan"; a national education system report. It contains databases about students' literacy and numeracy, learning environments, and character surveys. This database is open access to schools, local governments, and the public. The result of students' numeracy skills in this report was something that needs to be considered by schools and local education departments to improve the quality of mathematics learning.

5.3. Perception of Teaching Numeracy

Based on the interview, Teacher C even confessed that AKM questions had never been exposed in the class, similar to Teacher A, D, E, and F. The government already provided "AKM Kelas"; a tool to help teachers diagnose students' learning outcomes and contribute to designing lesson plans that accommodate teaching at the right level; but teachers did not acknowledge it. This might be one of the reasons why it was tough for Indonesian students to outperform international assessments such as PISA because teachers had a low understanding of how numeracy should be delivered.

Teacher B was one step ahead in training students to do numeracy exercises but still had misunderstandings. Numeracy should be integrated with mathematics learning. Numeracy is relevant across the curriculum, but mathematics plays a big role in fostering students' numeracy. However, they were missing an important point, though, which was that teachers misunderstood the purpose of numeracy, to improve the quality of mathematics learning. Teacher B included numeracy drills as a separate component of mathematics learning.

6. Conclusion

Teachers realized it was essential to build numeracy skills from early grades. They had a fair understanding of how important it is to prepare for the national assessment. However, they were missing a crucial point in which the focus on numeracy was to improve the quality of mathematics learning, yet teachers had a misunderstanding and did numeracy drills as a separate part of mathematics learning. Teachers were unaware of "AKM Kelas" and how helpful it could be to help them to teach at the right level. The schools need to reflect and conduct intensive workshops for teachers to escalate their performance in designing learning environments that enrich students' numeracy skills.

Limitation

The data gained from this study was limited as it only took place in a public school in Kebumen Regency, Central Java. In addition, this study explores teachers' perspectives on numeracy matters in early grades, the essentials of building numeracy skills, and how they exposed numeracy in mathematics classes.

Recommendation

This study unravels that there is a misunderstanding in teaching numeracy at elementary school. Further research is needed to help teachers develop numeracy learning that fosters students' numeracy skills in mathematics class.

Acknowledgments

The Indonesian Education Scholarship Program (BPI), run by the Ministry of Education, Culture, Research, and Technology, provides all the funding for this project. The teachers who participated in this study and provided input are appreciated by the authors.

Conflict of Interest

The study has nothing to do with a conflict of interest.

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