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Integrating numeration in mathematics learning

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Abstract: This research is motivated by the Indonesian numeracy ranking, which is the fifth from the bottom of the PISA numeration. Based on the quality report related to numeracy abilities from several elementary schools in Semarang Regency, it can be seen that the scores of schools with numeracy-related achievements are below the minimum competency, which has an overall average of 1.6 for numeracy at the school level. This study is Research and Development that involves three stages: define, design, and develop. It intends to define the context of integrating numeracy in the management of mathematics learning, identify, and find solutions to integrate numeracy in elementary schools in Semarang Regency. The findings of the research show that (1) the significance of numeracy in the management of mathematics learning; (2) the developments obtained in integrating numeracy are conceptual understanding, problem-solving skills, independent skills, logical thinking, and the capability to integrate the learning to students everyday life; (3) the integration of the management of mathematics learning with numeration into a valid learning tool and textbook for grade V Elementary School, as proven by the results of the lesson plans validation of 3.50 and the validation of textbooks of 3.36.

Keywords: *Numeracy, Mathematics learning, Numeracy learning, Value integration.*

1. Introduction

Since 2016, the Ministry of Education, Culture, Research, and Technology has launched the Gerakan Literasi Nasional or National Literacy Movement (GLN) to promote a literacy culture. The Regulation of the Minister of Education and Culture Number 23 of 2015 concerning Character Development has been carried out through the program. The government-launched National Literacy Movement (GLN) is carried out through school education, which is known as Gerakan Literasi Sekolah or School Literacy Movement (GLS). The School Literacy Movement may be defined as an endeavor to develop a literate learning organization and to foster the character of school members via a variety of activities, such as reading others books beside the learning books for 15 minutes. Understanding other essential literacy skills, such as scientific, numeracy, digital, cultural, and citizenship, and financial literacy, may begin with the ability to read. Following the evolution of education, mathematics learning must not only be handled properly, but it must also be founded on numeration because numeracy will test one's capacity to utilize reasoning.(Seah et al., 2022) Reasoning is the process of studying and comprehending a statement by manipulating symbols or mathematical language available in everyday life and expressing the assertions in writing and verbally (Nahdi, 2020). Numerical literacy is a part of mathematics. Thus, the components of implementing numerical literacy are inseparable from the mathematics material scope.(Ristanti & Murdiyani, 2021) Mathematics is a science related to exact

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knowledge that has been systematically organized, including rules, ideas, logical reasoning, and logical structures (Purpura, 2010).

Numerical literacy is important and needed in students' lives. However, it is not in line with the research conducted by PISA to determine the students' numerical literacy abilities. Indonesian students' numerical literacy is still low, and it can be seen from the research conducted by the Program for International Students Assessment (PISA). According to PISA (2018), Indonesian students' numerical literacy score is 379, with an OECD average score of 489. The score of 386 in the 2018 survey is lower than in 2015. It is in line with the data indicating that the students' numeracy abilities remain poor or still inadequate for the mathematics learning.

Some research on numeracy learning shows that numeracy is more than just conventional mathematics learning conducted by teachers. It is hoped that numeracy learning will measure not only the cognitive aspects but also students' context, content, affective, and cognitive components; so that the disposition, concepts understanding, and ability to reason as well as problem-solving can be achieved and the students can carry out procedures (Machado, 2020). The numeracy learning approach includes determining a set of goals and actions that include teaching, learning, and assessing literacy and numeracy from early childhood to higher education. It will bring about considerable changes is areas such as teacher professional development, primary school curriculum, and literacy and numeracy assessment procedures over time (Chen, 2020). Numeracy learning is closely related to student life, whether it is at home, school, or the community. Therefore, good literacy cultivates noble character (Fanshawe, 2021). As (Abdul Rahim & Seung Chun, 2017) stated, the environment provides opportunities for students, and it is not only to make meaning but also to understand the material well and express themselves in new ways.

According to Džumhur (2022), the numeracy learning strategy in elementary school can be carried out by conducting (1) Preparation by preparing supporting facilities and infrastructure for numerical literacy, time for implementing the literacy, conditioning the readiness of students and teachers, a Lesson Plan (RPP); (2) Implementation, which refers to the habituation stage and it is conducted by getting the students to count together with a loud voice while raising their fingers, getting them to count the number of presents and absent students, and getting used to writing the date, month and year. In the development stage, the teacher asks the students to come to the front of the class to write down the numbers they have mentioned. Occasionally, the teacher asks students to write down the numbers in their notebooks. The learning stage is the learning method supported by the learning media and various learning methods used by the teacher, so the students can actively participate in the ongoing learning; 3) Evaluation, which is carried out by the teacher, evaluating the readiness of teachers and students. It is then continued by evaluating the implementation of numerical literacy based on the student responses, enthusiasm, concentration, and activities in carrying out the numerical literacy and the students' numerical literacy abilities that have been achieved.

The research gap was also found in the research results between the two previous research groups. The first research group concluded that mathematics learning management could increase student interest in the learning process at SD Unggulan Muslimat Kudus (Hanik, 2020). In the same group, research conducted (Taryaman, 2017) revealed that school administration and management have a favorable and considerable impact on teacher performance in terms of student accomplishment. Another study (by Sutama, 2013) stated that the management of mathematics learning requires space, media, teaching material, and interaction management to properly conduct the learning process. Furthermore, research by Bety (2019) discovered that students who participate in the management of mathematics literacy learning at SD Muhamadiyah continue to struggle with academic accomplishment and scientific orginality. In the second research group, Rosalina (2020) revealed that the management of full-day school learning at SMP Bustanul Makmur Genteng Banyuwangi is classified as excellent, the student's learning motivation is classified as high based on the results of correlation analysis using simple linear regression techniques, and there is a significant effect between the full-day-school learning and students learning motivation.

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The second research group above shows a gap in the findings regarding the implementation of learning management on student achievement. It is different comparing to the other research group. A group of researchers stated that implementing learning management could encourage students to improve their learning achievement. However, the research results of another group showed that the implementation of learning management has no significant increase in student achievement. The current researchers suspect that the research gap in the previous research is due to the teachers' less optimal in implementing the learning management stages, such as the planning, implementation, and evaluation stage. The suspicion lies on the reason that the learning management stages are essential during the learning process. The planning stage is not optimal because the teachers may not be aware of the condition of the facilities and infrastructure availability. Meanwhile, the condition of facilities and infrastructure is one of the crucial parts that should be fulfilled and noticed as it supports the continuity of the learning. Based on the explanation above, it can be concluded that there is a gap in the previous research findings on the implementation of learning management on student achievement. In addition, there is also a gap between the theoretical concepts of learning management and basic education learning management. Therefore, the current researchers attempted to fulfilled the research gaps of the previous research.

The research related to the integration of numeracy in mathematics learning is essential so that the students can develop their conceptual understanding, problem-solving skills, independent skills, and logical thinking and integrate it into their everyday life. They do not only learn the materials in schools and have the knowledge theoretically but they can develop their responses towards the real problems in the everyday life, especially to the problems related to mathematics learning. The models they see in their surroundings also help them grasp the lesson. It is consistent with social cognitive theory, which holds that people may acquire new behaviors by merely observing others. By observing other people doing the things in their everyday life can bring new insights as well as knowledge for the students about how to do something and solve problems. The urgency behind this research is the lack of students' understanding of numeracy, especially in learning mathematics. The numeracy understanding is essential for them as they learn it at schools and it is hoped that they can understand well why they study the mathematics from the very first place.(Mazana et al., 2018) In fact, it is also increased by instructors' inability to use the environment as a learning resource, resulting in poor learning outcomes in mathematics. The role of the teacher is also significant during the learning process as they are the one who transfer the knowledge for the students and if the teachers have less skills in utilizing the environment around them, it will have less meaningful learning for the students. Moreover, there is a limited resource of documents, such as references, stories, and research results about numerical-based mathematics learning. The document resources support the research as it gives more references to the continuity of research. As a result, research is required to evaluate and assess the integration of numeracy in primary school mathematics instruction.

In the context of this research, it aims to (1) comprehend the background of integrating numeracy in mathematics learning (2) identify aspects of numeracy; and (3) find ways to incorporate numeracy in mathematics learning in elementary school as a learning resource for students. The following is the report on indicator quality of numerical skills of elementary students in Semarang Regency in 2021.

Based on the quality report related to numeracy abilities from several elementary schools in Semarang Regency, it can be seen that the scores of schools with achievement related to numeracy are below the minimum competency in which the overall average is 1.6 for numeracy achievement at the school level. The indicator's enumeration is linked to the percentage of the students who can think utilizing the concepts, processes, facts, and mathematical tools to solve daily issues in many relevant situations. In this context, the data definition of numeracy skill attainment reveals that less than half of the students acquire the minimum numeracy competence. It is low score as less than 50% of students can achieve the minimum competence for the numeracy. As a result, mathematics learning outcomes related to numeracy also do not show above 50%. According to OECD (2018), mathematical literacy is defined as an individual's capacity to formulate, apply, and comprehend mathematics in a variety of

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circumstances. It entails employing the learning concepts, methods, facts, and mathematical tools to describe, explain, and predict any kind of real situations.

Table 1.
Report on indicator quality of numerical skills of elementary students in Semarang regency in 2021.

Schools	Schools score	Achievement	Comparation			
			Similar education units at national	Average regency/ Municipality scores	Average provincial scores	Average national scores
SDN Cerme	1.64	Below minimum competence	1.59	1.62	1.62	1.57
SDN Ungaran 01	1.67	Below minimum competence	1.59	1.62	1.62	1.57
SDN Jubelan 01	1.65	Below minimum competence	1.59	1.62	1.62	1.57
SD Negeri Susukan 04	1.6	Below minimum competence	1.59	1.62	1.62	1.57
SDN Lanjan 01	1.64	Below minimum competence	1.59	1.62	1.62	1.57

Similarly, Ojose (2011) added that mathematical literacy is more than just carrying out mathematical procedures; the emphasis is on the knowledge base, competence, and confidence to apply mathematical knowledge in the practical world. The same thing was also stated by Stacey (2011), that mathematics literacy is defined as an understanding of mathematics that prepares the students for life in modern society, ranging from simple everyday tasks to professional jobs. Improving students' competence in learning mathematics in understanding concepts, connecting to real environments, being independent, being able to solve problems, and teaching resources related to numeracy are needed because teaching resources make the students able to understand numeracy knowledge or concepts easily and the teachers can relate them to real life. Therefore, the students will know how important it is to learn numerical literacy, and they will know how the concept can be used in everyday life. There is a meaning behind the learning that the students feel and it will contribute not only for solving the real problems in their daily lives but also how their response in any kind of situation which is related to the numerical skills. The more understanding the students get, the easier it is for them to solve the problem. The numeracy teaching resources also involve students' activeness in learning to ensure that they understand the material being taught. Activeness is one of the signs that the students already understand and it develops their curiosity as well. They also prioritize understanding concepts compared to memorizing, for example, teaching students to use problem-solving methods so the students will be easier and faster in solving problems. Therefore, the students can find the solution of the problems or proper responses towards the problems they face and it can improve their logical thinking as well as independence skills.

Numerical literacy is the knowledge and ability to (a) solve practical issues in diverse situations of everyday life by using a range of numbers and symbols linked to fundamental arithmetic; and (b) examine the data given in multiple formats (graphs, tables, charts, etc.) and utilize the interpretation of the study results to predict and make decisions.(Sutama et al., 2020) Furthermore, the Ministry of

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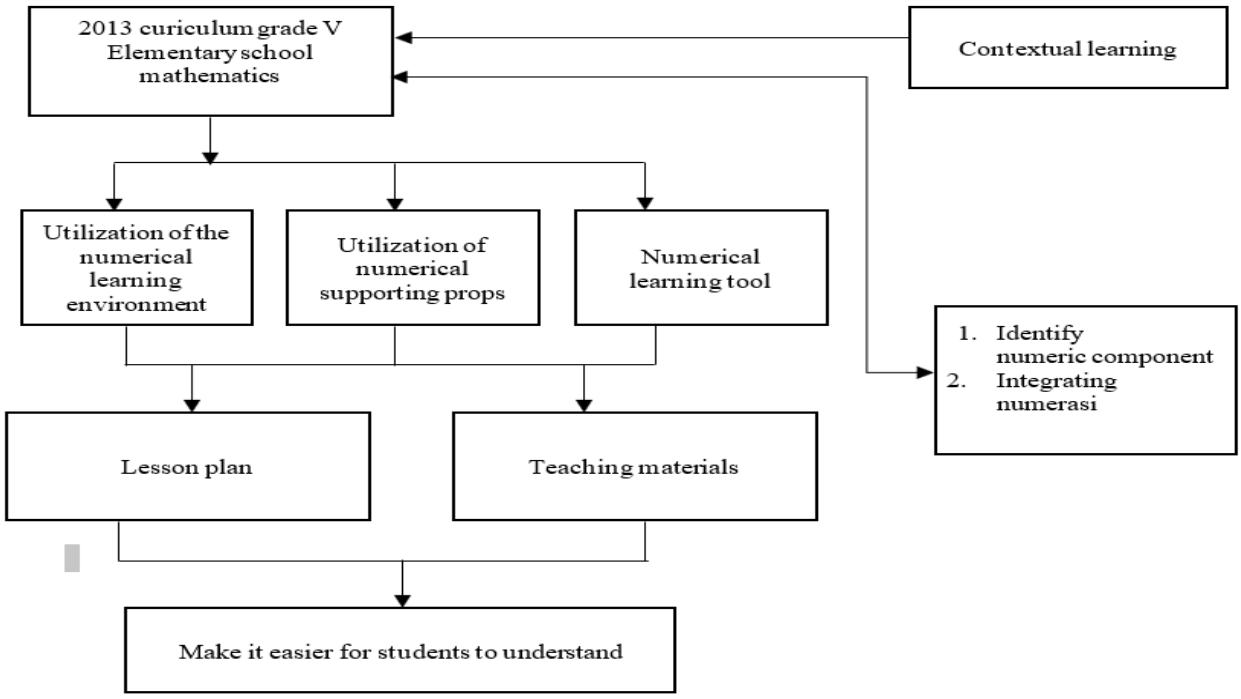
Education, Culture, Research, and Technology (2017) stated that numeracy is basically the ability to use numerical concepts and arithmetic operation abilities in everyday situations. The ability is proven by ease with numbers and practical use of mathematical abilities to fulfil life's needs.(Gorev et al., 2018) Therefore, it is not limited to theoretical material but it has the practical examples which help to develop their skills in life. It also refers to the appreciation and comprehension of quantitatively represented data such as graphs, charts, and tables. It is also supported by Jordan (2009), who stated that numeracy as a life skill is closely related to the authentic activities of students, so the teacher must make connections between informal and formal knowledge from students, one of which is activities at home that can facilitate the relationships. Lange (2003) stated that numeracy emphasizes the capacity to deal with numbers and data, as is the ability to analyze claims connected to issues and circumstances that encourage mental processes and estimate them in real-world situations. As almost every second, humans will deal with numbers in the real life, so it will be another significance for preparing students to face the real life situations regarding numeracy skills.

Numeration is not the same as mathematical competence, both are founded on the same information and abilities, but the distinction is in the empowering of those knowledge and skills. The simple understanding mathematics does not imply numeracy competence. Numeration is the ability to apply mathematical principles and rules in real-world situations or everyday life when the problem is often unstructured, has many ways of solving, or has no complete solution, as well as related to non-mathematical factors. The same thing was stated by Steen (2001) that numeration is different from mathematics and is related to real data that reflects involvement with various contexts and life situations. Likewise, Pangesti (2018) stated that numeracy requires mathematical knowledge learned in the school curriculum. However, learning mathematics will not necessarily develop numeracy skills if the learning materials are not designed for it. The conceptual framework can be built in the form of following figure:



Frame 1.
Conceptual framework.

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The suggested numerical literacy approach to be integrated into learning includes (1) problem solving, investigation, open problems, real situations, and the relationship between real situations and mathematics; (2) starting learning from the real world, inviting students to identify and extract mathematics from real-life situations; (3) making mathematics explicitly appear when needed in everyday life.

2. Method

This research was carried out using a research and development (R&D) approach. It is the study to develop and validate products used in the education and learning. It is a process or steps to develop or improve existing products. In this case, the product is not always in the form of hardware (books, modules, learning aids in the classroom or laboratory), but it can also be in the form of software such as data processing programs, classroom learning, educational models, learning training, guidance, evaluation, management, and others. Current research and development projects focus on complete learning systems programs, including specially developed materials and trained personnel to work in specific contexts. It is applied for practical purposes that have practical and operational uses. Therefore, it focuses on the challenges, demands, potentials, and real community needs. The development research in this study intends to design and produce the learning strategy items and resources used to solve issues in class rather than to test the theory. R&D is used to produce products and test their effectiveness. It is used to create learning media, such as lesson plans and learning resources in the form of textbooks to improve students' comprehension of the learning process in schools and educational practice. The characteristics of Research & Development in this study are in the form of a cycle, in which the cycle is carried out to determine initial needs and how to solve problems for a particular product. In the field of education, it is expected to increase the productivity of education.

This research was carried out in 2021. The methods of data collecting were divided into three parts: Data collection methods at the literature research stage on the results of numeracy skills in Semarang regency. To acquire the data during the definition, design, and development stages, there were some sources used, such as books, journals, research findings (thesis and dissertation), observations, interviews, and document analysis. The source people were elementary school class teachers and learning tools. A research model was used for incorporating numeracy into mathematics learning. It was carried out with data collection methods in the form of testing the feasibility of learning resources for the students and teachers. Furthermore, it was conducted to study the effectiveness of developing lesson plans and other learning resources, and implemented it in the learning. A rating scale was employed in the validation sheet and it has the scale ranging from 1-4. The description is very good (4), good (3), fair (2), and poor (1).

The data from the experimental instruments was evaluated using qualitative descriptive statistics. The assessment sheets filled out by experts in the form of product feasibility tables and descriptions of proposals were used to determine the quality of mathematics learning media in the form of numeration-based teaching materials. Moreover, the data was used to revise the learning material that had been created. The assessment sheet completed by the experts was then examined to establish the quality of the researcher's learning media.

3. Findings and Discussion

3.1. Findings

Numerical literacy is not only in mathematics subjects, but it is a part of mathematics, which can be seen from its component taken from the 2013 curriculum scope. It can be seen in the following table:

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Table 2.
Numerical literacy components in the 2013 mathematics curriculum.

Numerical literacy components	The scope of 2013mathematics curriculum
Estimate and count integers	Numbers
Use fractions and comparisons	
Acknowledge and use patterns and relationship	Numbers and algebra
Use spatial reasoning patterns	Geometry and measurement
Use measurement	Data processing
Interpret statistical information	

Source: Gerakan Literasi Numerasi, Kemendikbud (2017).

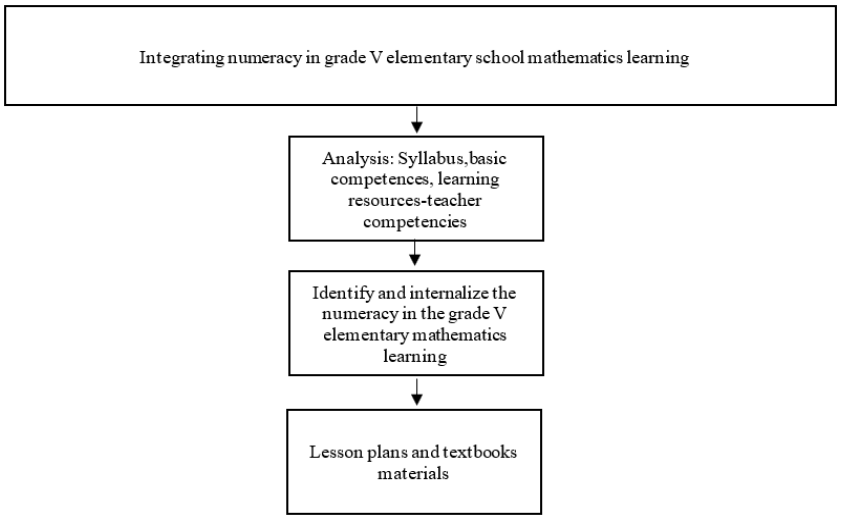
The components above can be a reference for how to develop students' numerical literacy skills. They are the main things in developing students' numerical literacy. Apart from the components described above, numerical literacy skills have broad indicators. The indicators are shown in the following table.

Table 3.
Numeracy indicators.

Numeracy skills indicators	Indicators
1	Use a range of basic mathematics-related numbers and symbols to answer issues in a variety of contexts in everyday life.
2	Examine the data presented in multiple formats (Graphs, tables, charts, diagrams, etc.)
3	Interpret the results of the analysis to predict and make decisions.

Source: Gerakan Literasi Numerasi, Kemendikbud (2017).

In the integration model, the material considered is to develop numeric indicators. The justification for integration is based on observations of syllabus documents, basic competency criteria, and textbook scope. Furthermore, as shown in Figure 2, the indicators are assessed for their values or components that have the potential to be utilized as the basis for constructing and developing learning materials in the form of textbooks and lesson plans. The process of integrating numeracy into mathematics learning begins with a needs analysis, which is followed by the identification of numeracy. It is then integrated into the construction of lesson plans and textbooks.



Frame 2.
Model integrating numeracy in grade v elementary mathematics learning.

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Vol. 8, No. 4: 1699-1710, 2024
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The calculation results of the learning device test start from expert validation. From expert validation, it is used to revise the first draft, which consists of lesson plans and textbooks. The expert validation results from the format, language, illustrations, and content are used as a reference for revising the learning tools. Validators generally write notes on the script and also a device validation sheet provided in the notes section. The results of revising the first draft based on expert validation would become the second draft. The lesson plan validation has an average score of 3.50 with very good criteria and conclusions. The textbook validation calculation results from the Validator Assessment are based on the indicators in the Teaching Material validation sheet. The Teaching Material Book assessment findings have an average score of 3.36 and have very excellent criteria with good conclusions so that it can be used with a few revisions. It means that the textbook has been considered appropriate for use as a textbook. Based on the validator's scoring criteria, the learning device is said to be valid if the device's assessment score is in a good category ($2.50 \leq$ average ≤ 3.25) and in the very good category ($3.25 \leq$ average ≤ 4.00). Some of the revisions made to the syllabus, lesson plans, and textbooks can be explained as follows: the validator assesses the lesson plans using the indicators on the lesson plan validation sheet. The first draft of lesson plans has an average score of 3.50 and has very good criteria with good conclusions, so it may be utilized with minor revision. The lesson plans are revised mainly based on learning activities, and a complete explanation of the revised lesson plans can be seen in Table 4.

Table 4.
Lesson plan revision based on validator suggestions.

Pre-revised	Revised	Reasons
1) Motivate the students to explain in detail 2) Lack of the questions redaction 3) Invisible student organization 4) In the closing activity, the students are asked to write reflective journals to habituate them in expressing their ideas. 5) The learning media has not been used well 6) In the learning introduction, inform the learning model that will be used by the students and show the character value development. 7) Assessment has not been conducted	1) Students' motivation has been in detail and the questions redaction has been improved 2) There are student organization and assessment in the lesson plans and the closing activity has been improved (the existence of reflective journal) 3) There is learning media, the learning introduction has been improved (information about the learning model and character value development), and the assessment is already in the lesson plans.	The lesson plan is understandable by the readers.

The validator assesses the teaching material book using the indications listed on the Teaching Material validation sheet. The first draft of the Teaching Material Book has an average score of 3.36 and has very good criteria with good conclusions, so it may be utilized with minor revisions. Teaching materials are revised, especially on writing/words/sentences that do not follow the PUEBI (Pedoman Umum Ejaan Bahasa Indonesia), and a complete explanation of the revised Teaching Material Book can be explained in Table 5.

Table 5.
Revision of teaching material book based on validators' suggestions.

Pre-revised	Revised	Reason
1) Lack of questions redaction. 2) There must not be scanned figures. 3) Equalize some concepts with the student worksheets (LKPD).	1) The questions redaction has been improved and the scanned figures have been changed. 2) Some concepts have been equalized.	The teaching material book is understandable by the students and other readers.

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4. Discussion

The numeracy integration in mathematics learning in elementary school is motivated by the low score on the quality report of students' numeracy indicators, which is in the below-average category. Many elementary schools in Semarang Regency have not integrated numeracy into their mathematics learning. It can be shown in this discussion section based on some factors.

The learning material in mathematics is only presented as the existing learning, which means that there has been no implementation of the students being able to learn according to their environment or they can solve problems in their daily lives. It is limited to the theoretical material given to the students and there is no practical examples or models during the learning. Therefore, the reasons why students need to learn mathematics cannot be integrated into their daily lives, and the learning tends to be abstract instead of practical or experiential. They do not learn the subject empirically and have less real experience related to mathematics. Meanwhile, mathematics plays important roles in everyday life of humans. It is ranged from the basic mathematics operation to the specific one. Among five elementary schools in Semarang Regency, it shows an average score of student numerical skills of 1.62. It means there is a limited knowledge and innovation in mathematics learning. In this case, the definition of achievement of numeracy skills from the data is that less than 50% of students merely acquire the minimum competence for numeracy. As a result, mathematics learning outcomes related to numeracy also do not show above 50%. Based on the observation above, it can be said that the students still have low understanding towards the integration of the use of mathematics for their daily life and the significance on how they study it from the very beginning. The less representation of mathematics in everyday life is also seen as the concept they understand is limited to the abstract one. Numeracy integration is necessary for mathematics learning in elementary schools.(Sreylak et al., 2022) The same thing is also stated by Stacey (2011) that mathematical literacy is defined as a knowledge of mathematics learning that helps the students to prepare for their life in the modern society, which might range from simple everyday tasks to professional jobs. Hence, it is essential for the students to gain the understanding of mathematics learning since childhood as they will face the real-life situation which is related to the mathematics learning and it can also contribute to their lives ahead.(Bringula et al., 2021) Lange (2003) also stated that the capacity to engage with numbers and data, assess the statements related to the issues or problems that demand mental processes, and estimate real-world situations is emphasized by numeracy. The mental process here refers to the process on how they face and respond to something in their daily lives. Thus, the mathematics influence one's life as there are so many problems regarding to it. Therefore, integration of the learning material and the daily life situation is really important. This integration can be used as an effort so that the students (1) can solve problems, investigations, open problems, real situations, and the relationship of real situations with mathematics; (2) starting learning from the real world, inviting the students to identify and extract mathematics from the real-life situations; (3) making mathematics appear when needed in everyday life. The form of internalization which is later developed is numeracy in learning mathematics through the development of lesson plans and textbooks. Teacher plays important roles during the process and it is not only about the theoretical material but also how the teacher's skills in making innovation and creativity for the students' learning have huge impact. The integration is conducted as a form of teacher efforts so that the learning can occur well and innovatively because the learning is oriented to everyday life, making it more meaningful and beneficial for the development of student behavior. Furthermore, Hasbollah & Hassan (2022) stated that a meaningful learning experience could be provided with a fun learning process by integrating learning methods. Thus, the teachers have the task to teach the lesson in a fun way and related it to the students' real-life situation as the learning media and atmosphere really contributes to the students' understanding of the learning materials. It is as one factor in integrating the mathematics learning in the real-life situation. All the teaching and learning elements should be inserted and hand in hand one another to support the implementation.

Another supporting factor is the existence of lesson plans. The lesson plans are designed by studying the competence standards and basic skills for integrating numeracy into mathematics learning.

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It is expected that the existing learning material would be connected to with the material that contains instruction for the students to solve problems and investigate them. It should lead the students to the higher curiosity in recognizing and investigating the problems. The development and designation of textbooks are based on mandatory school textbooks. It is because mandatory school textbooks are the learning sources that the students use to help their learning process and there is only some of them who have another additional text books. Based on the observation, it can be said that the textbooks still fail to internalize the numeracy level. There are some elements that must be improved in order to make better learning for the students better understanding. In addition, teachers have not developed numeracy-based materials with a real environment that relates to the students, so many do not understand the reasons they study mathematics and the learning significance. Meanwhile, it is important for the students aware of their learning process since the beginning, so they can make more meaningful learning process that stimulates their ways of thinking. The research by Ismail et al. (2022) stated that higher-order thinking skills are also an advantage of teaching strategies through various planning of learning resources. As a result, learning integration is required in order to be included as a learning resource.

The construction of textbooks begins with preliminary activities, such as assessing syllabus material, competence requirements, and basic competencies. It is subsequently followed by the preparation of textbooks. Therefore, it is in line with the statement (Abdullah, 2017) that innovation, diversity, interest, and context regarding students' situations are crucial for making the teaching material book. Based on the validation results, which demonstrate that the developed lesson plans and textbooks are good and feasible, the integration can make the students better at applying what they have learned in their everyday lives. Hence, it can help them grasp the lesson better by developing their basic competencies through the lesson plans and textbooks. The knowledge they gain is theoretical and adapted to their experience both in the school and community settings. It leads to the students' capability and skills in internalizing the learning to their behavior and ways of thinking in the broader scope. Based on the validation findings, the developed lesson plans and textbooks are classified as good and feasible the integration, the integration of numeracy in mathematics instruction is believed to improve the students' conceptual comprehension, ability to solve problems and link the meaning with the lives surround them as well as the enthusiasm in learning. Hence, they can improve their knowledge of the content by achieving the basic competencies in mathematics subjects developed in the form of lesson plans and textbooks. The students can improve their understanding and skills related to the material using the learning sources provided by the school. This research is part of the school curriculum, which is primarily responsible for assisting students in acquiring the information, skills, attitudes, and values required to engage in community life at the local, national, and global levels (Nikmah et al., 2020). The students obtain the theoretical knowledge in both the classroom and community settings. It is in line with the social cognition theory, which argues that people comprehend and think about their social environment, as well as how they see themselves and others (John W. Santrock, 2017). Social cognition influences social attitudes since it is a result of how a person observes and comprehends other people and social events. They tend to observe, gain the information on how to do something or deal with something, and they internalize the information to themselves. Moreover, it has obtained favorable feedback from the teachers, particularly those who teach mathematics as they have not taught optimally to integrate numeracy in mathematics learning in the learning process they previously did in developing their lesson plans and textbooks. The development of the learning tools is also adjusted to the relevant basic competencies regarding elementary mathematics and adapted to the learning objectives of elementary mathematics.

5. Conclusion

The integration of numeracy in mathematics learning at SD in Semarang Regency needs to be conducted to shape the students' abilities in learning mathematics. Aside from that, it also becomes an effort to apply what they obtain from mathematics learning in everyday life. In this case, implementing

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mathematics learning by integrating numeracy will make the learning more meaningful because it will be useful for the students in their everyday life. They can implement what they have learnt from the school in their daily life, in which it also empowers them to have better logical thinking, independence skills, and good problem-solving. The utilization of the environment as a source of learning numeracy is one of the efforts to make the students understand the concept of learning mathematics and be able to solve mathematical problems in a real context. They can have better comprehension of the learning concept and apply the practical lesson for their daily activity related to mathematical learning. The integration is included in learning materials adapted to the core or related lessons. Furthermore, the teachers can try to innovate in learning by utilizing the surrounding environment in learning mathematics, both in the school environment and community. It will help the students to have real portrayal of the daily-life problems that the students might have. Thus, the learning process does not only occur inside the class but it continues outside the class. On the other hand, other elementary school teachers can be socialized to construct numeracy-based mathematics teaching materials as a result of product development in the form of teaching materials. It is hoped that it will help other teachers to develop their skills in teaching the materials related to the numeracy skills.

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