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ABSTRACT
This study aims to review various articles that discuss numeracy literacy studies published in journals in the field of education in Indonesia. This research is categorized as a literature review. The information data used was obtained from scientific journals with Science and technology index (SINTA) accreditation. Information was collected by taking publishing data from 2019 to 2022. Researchers reviewed, analyzed, and collaborated to evaluate, compile and review the findings obtained. Selecting 10 published articles that examine numeracy literacy, consisting of 6 types of qualitative research approaches, 3 quantitative research approaches, and 1 classroom action research article. The results of the literature review found that there were still articles that were not representative in explaining the number of research subjects, not in-depth in explaining the number of meetings in each cycle, and discussions that were still not optimal in answering problems rationally. However, in general, the results of the article review have provided information systems and have excellent references in describing specific concepts. The recommendation of the collaboration results is that in addition to deepening the methodological study, namely the research subject and the number of meetings in one cycle, it also requires modeling in writing articles that are solutions to each problem in the study. Modeling can be in the form of motivation and reinforcement given to improve learners' numeracy literacy in accordance with the vision of the national literacy movement in Indonesia.

Keywords: Numeracy Literacy, Review, Literature, Learning

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INTRODUCTION

Law No. 3/2017 in article 4 point c, states that the purpose of the implementation of the book system is to foster a culture of literacy of all Indonesian citizens (Undang-undang Republik Indonesia, 2017). defines literacy, especially in schools, as "the ability to access, understand, and use information intelligently." This meaning is in line with the Law of the Republic of Indonesia No. 3/2017 on the Book System, which defines literacy as "the ability to interpret information critically so that everyone can access science and technology to improve their quality of life." Thus, literacy is closely related to the human capacity to use various resources for a quality life (Rokhmat et al., 2021). Literacy and numeracy are interpreted as the basis for thinking, based on a survey by the Ministry of Education and Culture obtained information that 67.11% of educators experience problems in operating digital devices, 88.7% of students lack supporting facilities such as laptops, electricity, and internet networks and gadgets, 51.1% of students do not concentrate on learning. On the other hand, a survey by the Indonesian Child Protection Commission obtained data that 76.6% of students do not like to study at home, due to 37.1% feeling less rested and tired of doing assignments for all subjects (Ministry of Education and Culture 2020), the impact that will be felt is not achieving the process of knowledge and skills (learning loss). This condition invites all stakeholders and supporters including academic institutions to work together and collaborate because it is a problem that must be addressed immediately. Literacy is divided into six parts, namely reading and writing literacy, numeracy literacy, science literacy, digital literacy, financial literacy, and cultural and civic literacy, this study specifically examines numeracy literacy in learning.

The main problems of education in Indonesia include learning, and facilities in education to the economic level of the community, so to get quality education it is necessary to pay attention to the pattern of measuring learning evaluation on an ongoing basis. The role of educators in facilitating students to learn becomes a benchmark for learning evaluation. As an effort, various innovations are made to find out various solutions to the problems faced. The strength of the learning process is the ability of students to apply literacy and numeracy on an ongoing basis. Education with the application of literacy and numeracy helps learners solve problems in life through the complexity of life faced. Communicating and socializing well in society requires good literacy and numeracy.

Literacy is not only the ability to read but also relates to the analysis of information through graphs, tables, and charts and the interpretation of the results of the analysis in representing meaning and solving problems while numeracy can be interpreted as the ability to perform analyses using numbers (National Literacy Movement 2017). Numeracy is different from mathematical competence although both are based on the same knowledge and skills, the difference lies in the empowerment of these knowledge and skills. Mathematical competence does not mean having numeracy skills, because numeracy has the scope of applying mathematical concepts and rules in real-life situations of learners. The introduction of knowledge and life skills through literacy and numeracy
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is a challenge for education actors that is measured, directed, and insightful. Literacy and numeracy include life skills to translate quantitative information into objects of observation. Knowledge and skills positively help solve the problems faced. The context of daily life is also influenced by literacy and numeracy because it becomes a structured, innovative, and creative insight into solving real problems. Aspects of numeracy literacy include knowledge, skills, and positive behavior.

Low literacy is caused by the use of inappropriate textbooks, learner misconceptions, non-contextual learning, low reading ability, learning climate, educational infrastructure, human resources, and educational management (Suparya dkk., 2022) while low numeracy is caused by the lack of habituation to practice counting by using meaningful learning from an early age, getting used to students analyzing numerical concepts in learning systematically by educators (Anderha & Maskar, 2021). Learning problems are always a concern in education. Cognitive, affective, and psychomotor conditions are always interesting to be represented actually in the learning process. Learners with different abilities are certain access to finding solutions from various points of view of the problem. Accommodation of knowledge and skills is so important to note because it involves the cognitive, affective, and psychomotor development of learners. The role of literacy and numeracy is to help develop knowledge and skills in planning and managing activities systematically, providing the ability to perform calculations and interpret data in the lives of learners (Salvia dkk., 2022). Numeracy literacy is the ability obtained after experiencing changes through the process of obtaining, interpreting, applying and communicating numbers or basic mathematical symbols in solving problems in real life by visualizing various objects (Ambarwati & Kurniasih, 2021). From various information, it is considered important to examine numeracy literacy to provide evaluation results, analyses, and applications of numeracy literacy that have been running in various educational sectors. Therefore, the purpose of this study is to examine Numeracy Literacy in Formal and Informal Environments.

The process of collecting review articles was carried out through data retrieval on the website https://sinta.kemdikbud.go.id/. sorting of articles was carried out by considering the source of articles from nationally accredited journals. The first article, titled numeracy literacy of Students in unstructured problem solving, explores students' numeracy literacy skills in solving problems using a qualitative research approach with a case study method. Problem-solving measurement is done by identifying students' learning difficulties. The second article, the of statistic-assisted information services to improve understanding of COVID-19 and train numeracy literacy, research using a qualitative approach, the exposure of problems in research leads to the study of numeracy literacy systematically describing factual conditions. The third article, measuring the causality element of the problem-based learning model assisted by Cabri 3D V2 software with the measurement of numeracy literacy skills, conceptual strengthening in the body of the article provides conditioning of the problems faced along with various success factors of educators in learning including the use of learning media is recommended to be more varied. The fourth article examines numeracy literacy which is important to
promote and apply to support 21\textsuperscript{st}-century skills, especially in elementary school or early on by looking at the process of acculturation of numeracy literacy. The fifth article, straightforwardly describes the implementation of the homeschooling learning model with the concept of numeracy literacy, providing references that show the alignment of the direction of learning achievement with the concept of the numeracy literacy movement. The sixth article, in the reference study, the article begins with the conditions during the COVID-19 outbreak and the impact felt, with the teaching campus program bringing fresh air to the development of numeracy literacy, by limiting the sampling process to accredited elementary schools C. The seventh article, provides an explanation of the problems faced factually, the challenges faced in physical education, sports, and healthy subjects. The section on the reasons for selecting variables, it refers to urgent problems that immediately get handled. In the eighth article, raising comic learning media to attract the attention of learners, uniqueness is shown along the linearity explanation between motivation and variavariationtive media which is still rarely used. The ninth article shows a description of solving numeracy literacy problems from the point of view of measuring students' ability to answer there are still typos in various word writing but the discussion of the problem has been carried out by setting aside aspects of the problem with the results obtained. The tenth article, combining current issues with various reference sources, elaborates and uses a problem perspective with various alternative solution references shown in the body of the article. From the various concepts with the same topic in the literature review, it is important to promote numeracy literacy as the basis of literacy development to achieve the vision of the national literacy movement.

21\textsuperscript{st}-century skills drive progress to prepare generations for global challenges, activities align with competencies in context and subject content. The digital era enables the attainment of various knowledge and skills (Azzajjad dkk., 2020). The root of the problem faced is the processing of 4C skills (critical thinking, communication skills, creativity and innovation, and collaboration).

![Figure 1. The Role of numeracy literacy in 21\textsuperscript{st}-century Skills](image)

Literacy in essence has various types, in application literacy can help various aspects of life in accordance with the cultivation of literacy as a life skill. The various concepts of literacy are as follows.
Literacy is a paradigm in interpreting learning. The nature of literacy influences people in understanding, analyzing, and transforming forms of reading and other objects. The reference to competence is more than just reading and writing. Some concepts of literacy, Literacy is the ability to communicate objects by reading, speaking, listening, and writing. Literacy has a complex meaning by taking into account the subject's point of view. Literacy comes from the Latin "literature" and the English "letter" which can be interpreted as the ability to master the symbols of letters/alphabets which are the basis for reading and writing. Literacy has a visualized scope which means the ability to recognize and understand ideas represented visually in the form of scenes, videos, and images (Rokhmat dkk., 2021). Literacy as a means of transferring knowledge is the best solution for conveying information (Aditya Jakti, 2022). Debriefing in concept mastery is always a real challenge in learning because it must use the right literacy process in supporting problem-solving in learning (Widiastuti & Kurniasih, 2021). The role of literacy in supporting intellectual development is in line with offsetting misconceptions that can occur.

Types of Literacy: Literacy with various advances in science and technology accompanies various problems and their solutions in everyday life. The concern of various education activists for literacy marks various literacy concepts that need to be instilled from an early age, following the division of the types of literacy: a) Reading and writing literacy, the ability to read and write is a potential skill in processing information, with the support of cognitive abilities the literacy process will be very relevant for the progress of thinking. Reading and writing literacy is the knowledge of using skills to read, write, search, and process information to develop understanding. Reading and writing are classified as functional literacy which is very important in achieving a better quality of life (Karataş & Kaya, 2015). Reading and writing literacy is an individual's competence in reading and writing from various sources of information. b) Numeracy literacy, numeracy literacy is closely related to numbers. It is a source of skills to obtain various kinds of symbols in solving the problems faced. Numeracy literacy is abstract, learning using mathematical symbols and language (Mahmud & Pratiwi, 2019). The development of numeracy literacy affects other literacies because numeracy literacy is the foundation in building knowledge and skills. c) Science literacy, science literacy is the ability to gain knowledge related to phenomena scientifically. The development of science literacy can encourage various issues that become sources of knowledge. Science literacy is related to numeracy literacy in various science and occupational concepts (Patriana dkk., 2021). d) Digital Literacy, digital literacy is an ability to apply information and communication technology. The millennial era is certainly no stranger to digitalization, digital literacy is the ability to operate digital media and various communication tools. Digital literacy is in line with Vygotsky's theory that social situations play an important role in students' cognition (Yana, t.t.). digitalization brings various modernizations in education. e) Cultural literacy, cultural aspects related to knowledge and skills in understanding national identity. Cultural and civic literacy unites the diversity that exists in a nation, global change certainly requires the ability to adapt. f) Financial Literacy, financial
literacy is the ability to understand concepts and risks in financial management. Financial literacy facilitates predicting to make decisions with various considerations that will occur. This skill affects the financial management system in life.

Numeracy literacy is the basis of all types of literacy, various abilities are measured through the basis of numeracy literacy. numeracy literacy includes various sources of knowledge and information, various skills acquired, and positive behavior in life from learning experiences. The skills acquired are certainly a source of skill management and positive behavior.

**RESEARCH METHODOLOGY**

This research is a literature review study is this assumption from references (the data source used is research collected from various accredited scientific journals and accessed through the page https://sinta.kemdikbud.go.id/. SINTA is a national platform for measuring research development in various scientific fields designed by the Ministry of Research, technology, education, and Culture. The article data used is limited to the publication period of 2019 to 2022 using keywords related to the topic, namely numeracy literacy. numeracy literacy is a matter of concern for various educational activists today because it is the foundation of various scientific fields. Limiting numeracy literacy to the formal environment. Selection of 10 scientific articles (N=10) through a selection process that is considered relevant to the purpose of the literature study. The eligibility criteria were carried out by considering the empirical aspects of having the results of the analysis and measurement of numeracy literacy skills as a theoretical reference. The researcher then evaluates, compiles, and refines the findings obtained.

![Figure 2. Literature review procedure](image)

**RESULT AND DISCUSSION**

After collecting the articles, filtering was done to focus on the topic of the literature review. Table 1. The following provides a representative of the articles to be reviewed.

<table>
<thead>
<tr>
<th>Author</th>
<th>Research Title</th>
<th>Research journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahmud &amp; Pratiwi, 2019</td>
<td>Literasi Numerasi Siswa Dalam Pemecahan Masalah Tidak Terstruktur</td>
<td>KALAMATIKA: Jurnal Pendidikan Matematika</td>
</tr>
</tbody>
</table>
The literature review articles that have been collected are then mapped to their respective research designs. The review of 10 literature reviews overall used research by...
focusing on learning objects that occur at various levels of education. The literature review research was limited to quantitative and quantitative research.

Table 2. Research methods of review articles

<table>
<thead>
<tr>
<th>Author</th>
<th>Research Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahmud &amp; Pratiwi, 2019</td>
<td>A qualitative approach using the case study method to explore learners' numeracy literacy in problem-solving. Using open-ended interviews and document collection of students' problem-solving. The research was conducted offline.</td>
</tr>
<tr>
<td>Aditya Jakti, Y. G. (2022)</td>
<td>The research method used a qualitative approach using surveys, interviews, and observations. The research process was conducted online.</td>
</tr>
<tr>
<td>Widiastuti &amp; Kurniasih, 2021</td>
<td>The method used is a pseudo-experiment with a quantitative approach, and the research design is a posttest-only control design.</td>
</tr>
<tr>
<td>Patriana et al., 2021</td>
<td>Qualitative research with a phenomenological approach, sensitizing the human experience. Data collection techniques were conducted through open-ended interviews.</td>
</tr>
<tr>
<td>Yana, S. C. (2022)</td>
<td>The descriptive method with a qualitative approach. With the interview technique of recorded sentences or verbal from several samples.</td>
</tr>
<tr>
<td>Pardede et al., 2022</td>
<td>The qualitative approach is based on the philosophy of postpositivism. the technique used is open interview data triangulation.</td>
</tr>
<tr>
<td>Prabowo, 2022</td>
<td>Using classroom action research (PTK) with cycles using tests and test observations in 2 cycles.</td>
</tr>
<tr>
<td>Kustantina &amp; Marhaeni, 2022</td>
<td>Experimental research with a pretest-posttest control group design. Sample selection was carried out by purposive sampling.</td>
</tr>
<tr>
<td>Nurjanah et al., 2022</td>
<td>The qualitative approach, descriptive research and analysis used emphasizes an inductive approach.</td>
</tr>
<tr>
<td>Situmorang et al., 2022</td>
<td>Pendekatan kuantitatif yakni quasi eksperimen.</td>
</tr>
</tbody>
</table>

Review articles generally use qualitative research types, generally collecting data through interviews and questionnaires. Qualitative research is descriptive, the process and the subject's perspective are more emphasized. Qualitative research has a direction of study to provide an in-depth explanation of phenomena with in-depth data collection. The more in-depth and detailed the information obtained, the higher the quality of the qualitative research conducted.
b. Research subjects

Table 3. Research subjects of the literature review

<table>
<thead>
<tr>
<th>Author</th>
<th>Research subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahmud &amp; Pratiwi, 2019</td>
<td>There were 34 fourth-grade students of Madrasah Ibtidaiyah in Bandung City.</td>
</tr>
<tr>
<td>Aditya Jakti, Y. G. (2022)</td>
<td>There were 32 students in class 8H and 31 students in class 8I.</td>
</tr>
<tr>
<td>Widiastuti &amp; Kurniasih, 2021</td>
<td>The control class (8H) was 40 people and the experimental class (8I) was 40 students of SMP Negeri 5 Tambun Selatan.</td>
</tr>
<tr>
<td>Patriana et al., 2021</td>
<td>3 Muhammadiyah primary schools, namely Muhammadiyah A-accredited primary schools, Muhammadiyah B-accredited primary schools, and Muhammadiyah C-accredited primary schools (did not mention the details of the sample size)</td>
</tr>
<tr>
<td>Yana, S. C. (2022)</td>
<td>Does not mention the sample in detail</td>
</tr>
<tr>
<td>Pardede et al., 2022</td>
<td>C-accredited primary schools (did not mention school identity and research sample in detail)</td>
</tr>
<tr>
<td>Prabowo, 2022</td>
<td>There are 23 students in grade VI of SD Negeri 1 Losari Kec. Rembang Kab. Purwalingga, consisting of 12 female students and 11 male students.</td>
</tr>
<tr>
<td>Kustantina &amp; Marhaeni, 2022</td>
<td>All students in class VIII MTs Kalipucang totalling 80 students</td>
</tr>
<tr>
<td>Nurjanah et al., 2022</td>
<td>Teachers and students of MI Al-Rasyidiyah Kota Bandung class 3 as many as 15 people.</td>
</tr>
<tr>
<td>Situmorang et al., 2022</td>
<td>Students of Adhyaksa Junior High School for the 2021/2022 academic year (did not mention the details of the sample size)</td>
</tr>
</tbody>
</table>

In general, all articles have provided information on observation before determining the research subject, the observation techniques carried out such as participatory observation or data collection by observing the daily life or habits of the subject, group observation or observation of the issues behind the research (object of research), unstructured observation or not following observation rules so that researchers can monitor developments in the field.

Researchers from review articles on qualitative research generally conduct interviews by interacting through communication through question and answer sessions between research subjects and researchers. In general, researchers conduct open interviews with more flexible answers. The interview process is carried out with the guidance of an excellent interview technique and produces more flexible information. Qualitative research obtained an in-depth understanding, developed theory, and described reality, and the complexity of the object (Musyadad dkk., 2022). The review of articles that have been carried out, it has referred to the appropriate procedure. Qualitative research uses the parable of looking for provocateurs or describing problems in meanings...
that have credibility. In the article review, researchers have generally conducted repeated interviews with different question indicators to triangulate information so that it is more credible. In terms of quality in the article review, the researcher has implicitly determined the research theme by raising issues according to the topic, namely numeracy literacy, the list of questions has been adjusted to the objectives and benefits of the research, and there are several review articles that have used supporting data such as documents and learning outcomes, then data filters in determining the level of credibility of information have also been carried out. The sharpness of qualitative research is influenced by the strength of the words and sentences that are represented both explicitly and implicitly in the article review.

Quantitative research in investigating problems and problems is used as a basis by researchers in data collection. Variables are determined and measured in accordance with the procedures of the statistics used. Quantitative methods understand the quantity of phenomena by measuring the relationship, interaction, and causality of the observed phenomena. The quantitative approach is seen as scientifically objective and rational. Quantitative research has the weakness of assumptions that are still not in accordance with the reality that occurs. Quantitative research explains the relationship between variables, tests theories, and generalizes the phenomena studied. The review article is in line with the procedures in quantitative research. The discussion of the research results of the review article has been carried out by explaining the phenomenon specifically using positivistic logic or positivism because it has understood a phenomenon by using concepts to explain the results obtained. The advantages in the discussion of research have shown scientific, objective, and rational characteristics. The review article has confirmed the facts by providing information on validity and reliability.

Classroom action research is still the least conducted review article in numeracy literacy studies. The steps taken in classroom action research are planning, action or action, observation, and reflection. The review articles are appropriate and describe the research steps well. Cycle Classroom action research, for the purpose of improvement, is carried out at least 3 times a meeting in one cycle, the review article has not provided detailed data regarding the number of meetings and in-depth discussions in each cycle. Classroom action research with the aim of improvement takes a long time compared to qualitative and quantitative research, this is not found in detail in the discussion. Success Classroom action research is categorized as successful by following the indicators. The characteristics of class action research are based on problems faced by educators, there is a combination in implementation, researchers as a medium for reflection, and aims to improve and improve quality. The review article has provided information that is generally in accordance with the characteristics.

c. Evaluation of research results

The researcher's interpretation provides a descriptive report in answering the phenomenon, raising issues relevant to the object of study, namely numeracy literacy. In contrast to qualitative research, quantitative research is interpreted using the results of
mathematical measurements (Kaharuddin, 2020) while class action research looks at the development of the results of each cycle.

A review of qualitative research articles, in general, has answered the research objectives. All articles have used focusing on in-depth observations so as to produce phenomena that are comprehensively described. In the research, it shows that data collection refers to questions about the problems that have been formulated by the researcher, data reduction or categorization has been done well, and drawing conclusions has used the results of information triangulation (Fadli, 2021). The discussion of all qualitative research articles has shown the relationship between the parts studied in the research. Numeracy literacy has been connected by looking at the conditions and developments in the results of interviews and other data reviews, this shows that research has been more concerned with the process than the results, in line with the statement in qualitative research that clarity in interpretation is highly dependent on the process. The credibility of the concept of researchers and informants must be done through triangulation by analyzing the results that have been collected (Yanti et al., 2022).

Review of quantitative research articles, changes that occur from treatment show a causal relationship that interprets data objectively, in the discussion has provided information related to problem identification, relevant literature studies, and a directed research conceptual framework, but not so detailed in the identification of variables and research design.

The review of class action research articles, the presentation of cycles I and II interpret the data from practical tests and observations, and the measurement of numeracy literacy skills explicitly still does not describe information on the indicators of the reduction of the two types of data collection techniques only provides an explanation of the main activities, as between instruments in practical tests and observations only measure the observation of game movements.

CONCLUSION

This article review research was conducted through a study of the conceptual parts of the article, namely the type of research, methodology, and evaluation of research results. Literacy and numeracy are objects of concern in the article review research, among the ten articles, research using a qualitative approach was found to be the most dominant, in addition, the research subjects chose still dominate from the elementary school/madrasah ibtidaiyah level, research methods from ten articles, still found several articles have not been detailed in describing research subjects by detailing the number of informants/respondents. In the study of research results, all articles have provided explanations in answering various problems in the research study. In data analysis techniques, all articles have done well. Recommendations, in writing articles it is important to pay attention to detailed explanations of research subjects and the number of meetings as well as explanations of various problems encountered when conducting research with reference to providing solutions for further relevant research. Explanations in several literature reviews, especially in qualitative research, in the description of
scientific philosophy have not answered the entire phenomenon of the problem under study, it is necessary to do a factual description and in-depth reality that describes the conditions that support and strengthen. Numeracy literacy as a manifestation of the national skills movement is important to promote and help drive through various modeling and learning innovations using media and learning models that are in accordance with the cognitive development of learners. At the level of early childhood education and elementary school, numeracy literacy needs to be instilled using various conceptual models and learning activities to familiarize early learners with numeracy literacy, at the secondary school level (SMP / MTs and SMA / MA) who already have basic abilities it is important to provide reinforcement and assistance with various reviews to help learners be motivated to do numeracy literacy, and at the university level, the maturity of age in learning certainly needs to strengthen and motivate both through digitalization and various learning that can encourage learners to do numeracy literacy well. Lifelong learning becomes a system that can be a suggestion, learners use the principle of discovering various knowledge and insights to support learners success in the future.

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