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Exploring the Students' Reading, Writing, and Numeracy Skills in Southeast Maluku Regency Coastal Elementary Schools

Anasufi Banawi*

*Madrasah Ibtidaiyah Teacher Education Study Program, Faculty of Tarbiyah and Teacher Training,
Institut Agama Islam Negeri Ambon
E-mail: a.banawi@iainambon.ac.id

Adam Latuconsina**

**Islamic Education Study Program, Postgraduate Program,
Institut Agama Islam Negeri Ambon
E-mail: adam.latuconsina@iainambon.ac.id

Satiah Latuconsina***

***Accounting Study Program, Politeknik Negeri Ambon
E-mail: satiah.ltc@gmail.com

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Abstract

This study aims to explore students' reading, writing, and numeracy skills in ten coastal elementary schools targeted for the 2021 Elementary School Quality Improvement Program. This study used an ex-post-facto quantitative descriptive method. The data source is a database of the 2021 Elementary School Face-to-Face Learning Quality Improvement Program in Southeast Maluku Regency, i.e., the literacy and numeracy skills scores of 500 students. Normalized gain was used to determine the magnitude of the increase in scores from the pre-test and post-test. The results showed that eight elementary schools (80%) had a mean literacy final score of more than 60 (mean 68.23). The final score of literacy in each class is above 60, with the highest average final score achieved by Grade 3 (74.83). The increase in students' reading and writing literacy scores was still in the Low category (0.28). Two elementary schools (20%) have an average final numeracy score below 60. In general, the average final numeracy score is above 60 (63.40). The lowest numeracy score is in Grade 4 (58.31). The increase in numeracy skill scores is still in the low category (0.23). The results indicate the school's need for reflection, evaluation, follow-up plans, and program sustainability to strengthen students' skills.

Keywords: *reading and writing literacy, numeracy literacy, elementary school students.*

Abstrak

Penelitian ini bertujuan untuk mengeksplorasi kemampuan literasi baca tulis dan numerasi peserta didik di sepuluh Sekolah Dasar (SD) daerah pesisir yang menjadi sasaran Program Kejar Mutu Sekolah Dasar Tahun 2021. Metode deskriptif kuantitatif *ex-post-facto* digunakan dalam penelitian ini. Sumber data berupa *database* Program Kejar Mutu Pembelajaran Tatap Muka Sekolah Dasar Tahun 2021 di Kabupaten Maluku Tenggara, yakni skor kemampuan literasi baca tulis dan numerasi dari 500 peserta didik. Gain-ternormalisasi digunakan untuk mengetahui besarnya peningkatan skor dari *pre-test* dan *post-test*. Hasil penelitian menunjukkan delapan SD (80%) telah mempunyai rerata skor akhir literasi baca tulis lebih dari 60 (rerata 68,23). Skor akhir literasi baca tulis tiap kelas di atas 60, rerata skor akhir tertinggi dicapai Kelas-3 (74,83). Peningkatan skor kemampuan literasi baca tulis peserta didik masih dalam kategori Rendah (0,28). Terdapat dua SD (20%) yang memiliki rerata skor akhir numerasi di bawah 60. Secara umum rerata skor akhir numerasi berada di atas 60 (63,40). Skor numerasi terendah pada Kelas-4 (58,31). Peningkatan skor kemampuan numerasi masih dalam kategori Rendah (0,23). Hasil yang ada mengindikasikan perlunya refleksi, evaluasi dan rencana tindak lanjut serta keberlanjutan program oleh pihak sekolah untuk memperkuat kemampuan peserta didik.

Kata kunci: *literasi membaca dan menulis, literasi numerasi, siswa sekolah dasar.*

INTRODUCTION

It is realized that literacy and numeracy are important role in students' cognitive development process. Students' abilities in this section are the root of lifelong learning and will contribute to school achievement (Mustofa, 2015; Husain, 2022). Developing literacy skills for children is an important part of developing critical and creative thinking skills (Rachman et al., 2021). Numeration includes the skills to apply mathematical rules and concepts in everyday life situations and relates to non-mathematical factors (Ojose, 2011; Dantes & Handayani, 2021). Reading literacy and numeracy are the benchmarks and focus of cognitive learning outcomes in the minimum competency assessment as part of the national assessment. The scope of numeracy includes numbers, geometry and measurement, algebra, data and uncertainty (Rohim, Rahmawati & Ganestri, 2021). In addition, literacy and numeracy skills are a measure or standard for children's achievement at the international level through the achievement of PISA (Program for International Student Assessment) scores, TIMSS (Trends in International Mathematics and Science Study), and PIRLS (Progress in International Reading Literacy Study), which are at the centre of an education policy (Cordero, Cristóbal & Santín, 2017).

The decrease in learning intensity, the increase in learning gaps, and the emergence of various learning barriers (physical and psychological) have caused a learning loss for students. This is one of the negative impacts of distance learning. Furthermore, long-term consequences can include a loss of learning experience, reduced in learning ability, inequity in learning access and quality, and high dropouts. It can be a problem, and immediate solutions, modifications, and support from educational institutions are necessary to mitigate its impact, especially learning loss in abilities, attitudes, and skills (Center for Policy Research of the Ministry of Education and Culture, 2020; Sagita, Bahari & Rustiyarso, 2022; Sahronih & Pujiastuti, 2022; Guntur & Riyanti, 2022; Schult et al., 2021).

The disparities in pandemic severity in each region have influenced the implementation of learning activities in Maluku Province, which has 11 regencies or cities. According to the preliminary findings, blended learning (offline and online) is still being implemented in various Maluku regions. Implementing of such a method has influenced students, teachers, parents, and schools. The positive and negative impacts of Covid-19 have affected education (Ministry of Education and Culture, 2021; Baety & Munandar, 2021; Arifuddin, Turmudi & Rokhmah, 2021; Altoris, Yunus & Nasiruddin, 2022; Yuebo, Halili & Razak, 2022).

Ma'arif Nahdlatul Ulama Educational Institution of Maluku, in collaboration with the Directorate of Basic Education, conducted the 2021 Elementary School Quality Improvement Program in ten coastal elementary schools in Southeast Maluku Regency, Maluku Province, through Face-to-Face Learning Assistance. The activities included psychosocial assistance for students in elementary school's limited face-to-face learning period. The program aims at providing schools with management skills to manage psychological issues and students' accomplishments (literacy and numeracy) in learning activities during the pandemic (LP Ma'arif NU Maluku, 2021).

Six literacy skills are essential to the 21st century. These skills include reading and writing literacy, numeracy, scientific literacy, financial literacy, civic and cultural literacy, and digital literacy. Previously, literacy was associated solely with reading and writing. Nowadays, educators and students must master a various of literacy skills, including reading, writing, mathematics, science, technology, communication, digital, culture, finance, and quantitative (Imran et al., 2021b; Anggara & Abdillah, 2022). Numerical literacy is a part of basic literacy in mathematics in numbers and algebra, geometry and measurement, and statistics and probability. Meanwhile, reading literacy is related to understanding, using, evaluating, and reflecting on various reading materials (Fathani, 2016; Directorate of KSKK Madrasah, Ministry of Religion, 2021; David, 2009; Husain, 2022). In this study, the skills discussed are related to literacy and numeracy. Reading ability (literacy) is more closely related to reading and writing.

Research related to literacy and numeracy has been carried out by several previous researchers, including Suryaman (2015), who examined student learning outcomes in reading literacy and the results showed that the average reading ability of Indonesian students was at a low level below the international median; Mahmud and Pratiwi (2019) examined students' numeracy literacy in solving unstructured problems on number material, and the results showed that students were able to solve unstructured problems in the context of everyday life and use analytical interpretations to predict and draw conclusions. However, there are also difficulties experienced by students; Dantes and Handayani (2020) examined school literacy and numeracy through a blended learning model in fifth grade students and the results showed an increase in school literacy and numeracy simultaneously in students with the implementation of the model; Perdana and Suswandari (2021) examined numeracy literacy in thematic learning of upper grade elementary school students and the results showed that numeracy literacy could be carried out by students by providing stimulus to students; Rahmawati (2021) examined numeracy literacy skills in grade 5 and the results showed that most students had low level numeracy literacy skills and the rest were moderate; and lastly, Schult et al. (2021) examined reading and mathematics competence of

Grade V students in Baden-Württemberg Germany before and after the first wave of the pandemic and the results showed that competency scores in 2020 were slightly lower than in the previous three years. Unlike from existing research, this research focuses on the achievement of literacy and numeracy skills of students in Grades 1 to 5 of elementary schools in coastal areas in Southeast Maluku Regency during Limited Face-to-face Learning. Researchers used previous research as an initial and complementary reference in conducting studies and discussions.

Elementary school students must have reading and writing literacy and numeracy skills. However, more studies must be conducted on each elementary grade level's reading and writing literacy and numeracy skills. Therefore, based on the Southeast Maluku Regency 2021 Elementary School Quality Improvement Program results, this study aims to describe the reading and writing literacy and numeracy skills of elementary school students. Based on the previous explanation, this study analyzes elementary school students' reading and writing literacy and numeracy skills in the Southeast Maluku Regency. The results of this study can be used to improve learning activities, devise follow-up plans, and support future studies.

METHODS

This research uses a descriptive method with a quantitative approach through ex-post-facto (Sappaile, 2010). The descriptive method describes a situation or event based on the accumulation of basic data or the actual situation through an explanation of the found description results. However, it is not only providing an overview of the phenomenon but also getting the meaning and implications of a problem for which you want to find a solution (Nazir, 2003; Sugiyono, 2013; Isnawati, Jalinus & Risfendra, 2020).

The subjects of this research are elementary students. There were 10 out of 142 elementary schools in coastal areas in five sub-districts in Southeast Maluku Regency were selected using multistage stratified sampling. This sampling technique is suitable for large samples because there are advantages associated with clustering efforts (Preston, 2009). Some cluster elements are chosen randomly (Ahmed et al., 2017). At least two ways can be used with this technique. School accreditation was varied, ranging from A to C. Ten students in five grades (1st to 5th) of each elementary school (a total of 500 students) were randomly selected as samples.

The study instrument was multiple-choice literacy and numeracy test questions prepared by the drafting team of the Ministry of Education, Culture, Research, and Technology's Directorate of Elementary Schools in 2021 (Directorate of Basic Education, 2021a; 2021b). The pre-test and the post-test had identical test questions. For reading and writing literacy questions, the cognitive levels include C3 to C6, and there are no questions with low cognitive levels (C1 and C2). In the meantime, the numeracy questions include all cognitive levels (C1 to C6).

The data were taken from the results of the Southeast Maluku Regency 2021 Elementary School Face-to-Face Learning Quality Improvement Program (LP Ma'arif NU Maluku, 2021). The test results (pre-test and posttest) were corrected and scored according to the guidelines in the available literacy and numeracy skill instruments exam plans.

The data were analyzed using descriptive statistics in the form of statistical measures (average, highest, and lowest scores) and presented in tables, graphs/pictures, and interpretation of the data. The data presentation is then, and conclusions are drawn based on the criteria for the disclosed information (Hopkins, 1993). Based on the pre-test and post-test scores, estimate the degree of the literacy and numeracy score improvement, the normalized gain method developed by Meltzer (2002) was adopted as follows.

$$\text{Normalized gain (N-gain)} = \frac{\text{posttest score} - \text{pretest score}}{\text{maximum possible score} - \text{pretest score}}$$

Furthermore, N-gain calculation results were classified into High (N-gain > 0.70); Medium (0.30 N-gain 0.70); and low (N-gain < 0.30).

RESULTS AND DISCUSSION

The pre-test and post-test reading and writing literacy and numeracy scores and their changes can be seen in the following tables.

Table 1. Mean Scores of Reading and Writing Literacy
Pre-test and Post-test of Each Grade in Ten Elementary Schools

Elementary School	1 st Grade		2 nd Grade		3 rd Grade		4 th Grade		5 th Grade		Mean	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	66.25	67.5	42	52.2	72	75	32.66	49.5	42	47.25	47.17	58.29
2	71	80	37	73	81.1	78	36	74	46.2	78	50.08	76.60
3	50	61.5	37	72.1	36.1	67.1	54	67.5	51	75.6	44.53	68.76
4	82	83.2	61	64.4	85	85.2	57.3	51.1	41	52	61.08	67.18
5	46	50	63	70	76.6	77	30	50	43	50	53.15	59.40
6	78	78	63	63	77	77	56	60	69	69	66.25	70.60
7	69	70	70	71	76	77	77	78	64	65.	71.75	72.20
8	54	67	64	70	40.5	60.5	50.3	59.3	47.8	57.8	50.65	62.92
9	70	70	60	60	70	70	50	53	60	60	60.00	69.00
10	44.2	78.5	55.5	72.5	71.2	80.5	39.2	75.2	45.6	80.2	52.88	77.38
Mean	63.05	71.07	55.25	67.52	68.55	74.83	48.25	62.46	50.96	65.29	55.75	68.23

Source: The data was processed in 2021

Table 1 above shows that the average literacy of all schools the in post-test scored above 60. Eight schools (2, 3, 4, 6, 7, 8, 9, 10) had average scores of literacy skills higher than 60, while two schools (1 and 5) were below 60. The average scores of literacy skills of the ten schools were higher than 60 (68.23), with School 10 having the highest score (77.38). Each grade had average scores of literacy skills higher than 60, with the 3rd grade having the highest score (74.83).

Table 2. N-gain Score of Reading and Writing Literacy of Each Grade
in Ten Elementary Schools

Aspect Grade	Elementary School										Mean
	1	2	3	4	5	6	7	8	9	10	
1 st	0.04	0.31	0.23	0.07	0.07	0.00	0.03	0.28	0.17	0.61	0.22
2 nd	0.18	0.57	0.56	0.09	0.19	0.11	0.03	0.17	0.08	0.38	0.27

Aspect Grade	Elementary School										Mean
	1	2	3	4	5	6	7	8	9	10	
3 rd	0.11	-0.16	0.49	0.01	0.02	0.04	0.04	0.34	0.00	0.32	0.20
4 th	0.25	0.59	0.29	-0.15	0.29	0.09	0.04	0.18	0.20	0.59	0.27
5 th	0.09	0.59	0.50	0.19	0.12	0.03	0.03	0.19	0.43	0.64	0.29
Mean	0.21	0.53	0.44	0.16	0.13	0.13	0.02	0.25	0.23	0.52	0.28
Category	L	M	M	L	L	L	L	L	L	M	L

Explanation: L = Low; M = Medium; H = High.

Table 2 reveals that prior learning experiences needed improvement to provide primary school students with the necessary understanding to optimally answer the reading and writing literacy-related questions. It can be inferred that assistance can improve students' literacy skills. However, the improvement was minor (0.28).

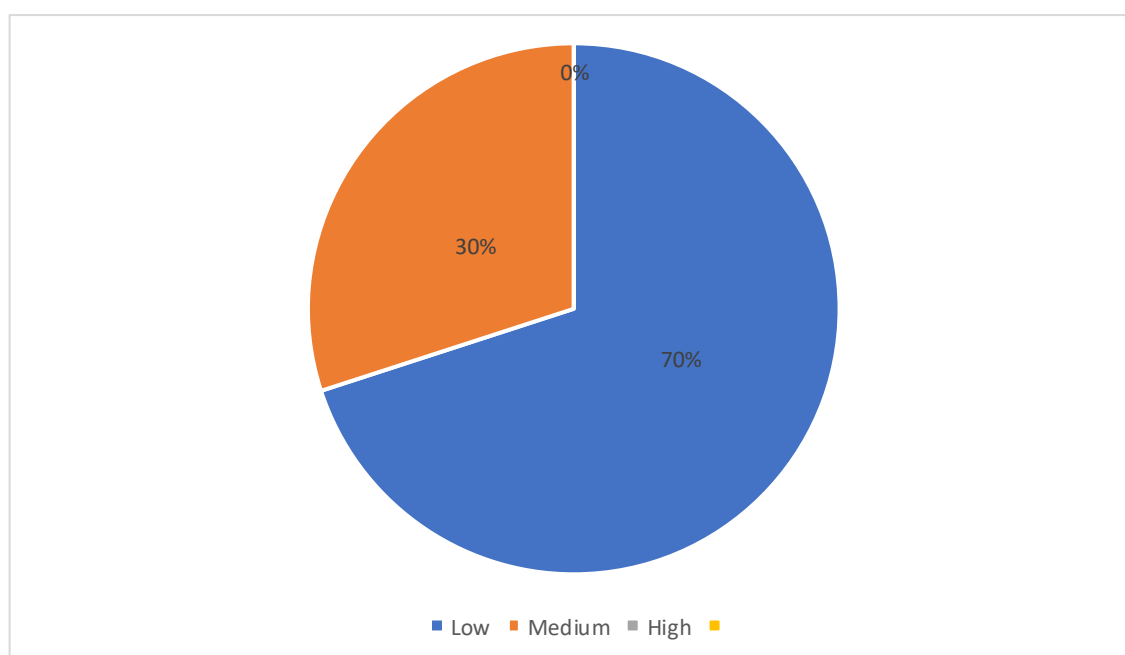


Figure 1. N-gain Percentage of Students Reading and Writing Literacy Skills

From Figure 1, it can be seen that the N-gain of literacy in the medium category is less than half (30%), most of them (70%) are in a low category, and there is no high category.

Table 3. Mean Scores of Numeracy Pre-test and Post-test of Each Grade in Ten Elementary Schools

Elementary School	1 st Grade		2 nd Grade		3 rd Grade		4 th Grade		5 th Grade		Mean	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	77.00	84.00	44.40	45.70	72.70	74.28	46.66	53.30	35.00	47.50	55.15	60.96
2	71	72.3	40	79	65.	68.2	23	70	24	73	44.60	72.50
3	56.6	69.5	35.9	66.5	38.9	69.1	31	69	39	70	40.28	68.82
4	78.3	81	76.4	76	64	66	56	56.3	28	49	60.54	65.66
5	34	40	45.7	45.7	25	30	30.5	30.5	34	45	33.84	38.24
6	69	69	56	57	45	50	53	60	56	70	55.80	61.20

Elementary School	1 st Grade		2 nd Grade		3 rd Grade		4 th Grade		5 th Grade		Mean	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
7	74	75	87	88	69	70	50	51	44	45	64.80	65.80
8	59	67	70.7	74	75.1	75	68.9	70	70.6	72	68.86	71.60
9	60	65	50	55	45	50	50	53	50	60	51.00	56.60
10	35.5	70.5	90.5	80.6	52.5	72	34.37	70	31	70	48.77	72.62
Mean	61.44	69.33	59.66	66.75	55.22	62.46	44.34	58.31	41.16	60.15	52.36	63.40

Source: The data were processed in 2021

Table 3 shows that previous learning experiences were inadequate to help elementary school students solve numeracy-related questions during the pre-test. Eight schools (1, 2, 3, 4, 6, 7, 8, 10) had average scores of numeracy skills higher than 60, with two schools (5 and 9) having scores lower than 60. The average scores for numeracy skills of the ten schools were higher than 60 (63.40), with School 10 having the highest score (72.62). It was found that four grades (1st, 2nd, 3rd, and 5th) had numeracy skill scores higher than 60, while the 4th had a score lower than 60 (58.31).

Table 4. N-gain Score of Numeracy of Each Grade in Ten Elementary Schools

Aspect Grade	Elementary School										Mean
	1	2	3	4	5	6	7	8	9	10	
1 st	0.30	0.04	0.30	0.12	0.09	0.00	0.04	0.20	0.13	0.54	0.20
2 nd	0.02	0.65	0.48	-0.02	0.00	0.02	0.08	0.11	0.10	-1.04	0.18
3 rd	0.06	0.09	0.49	0.06	0.07	0.09	0.03	0.00	0.09	0.41	0.16
4 th	0.12	0.61	0.55	0.01	0.00	0.15	0.02	0.04	0.06	0.54	0.25
5 th	0.19	0.64	0.51	0.29	0.17	0.32	0.02	0.05	0.20	0.57	0.32
Mean	0.13	0.50	0.48	0.13	0.07	0.12	0.03	0.09	0.11	0.47	0.23
Category	L	M	M	L	L	L	L	L	L	M	L

Explanation: L = Low; M = Medium; H = High.

Table 4 shows that after assistance, more than half (80%) of the numeracy post-test scores were higher than 60. However, the improvement was considered low (0.23).

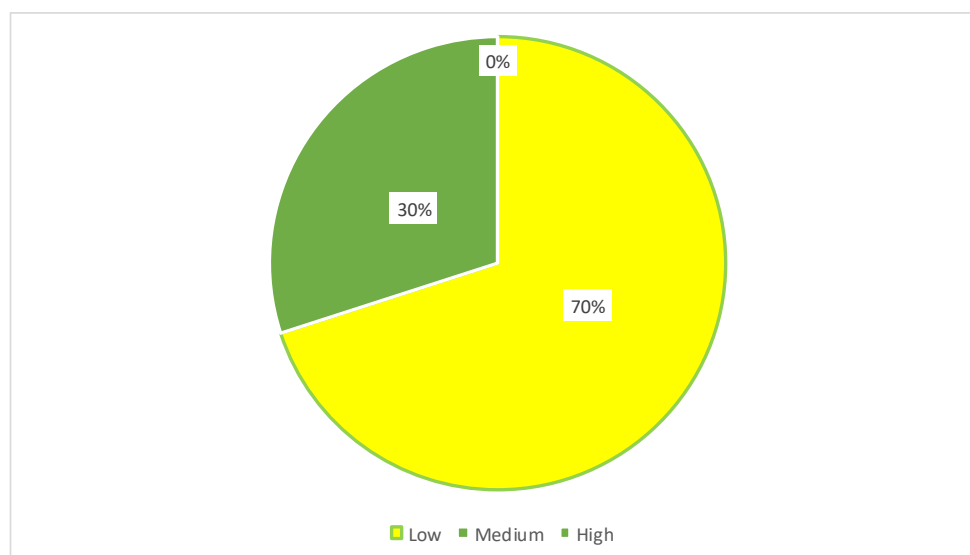


Figure 2. Students' Numeracy Skills N-gain Percentage

In addition, the N-gain was categorized as low, as shown in Figure 2 (70%). This study revealed that assistance for students during the limited face-to-face learning in elementary schools could slightly increase their reading-writing literacy and numeracy skills.

The slight increase indicates that student assistance is required to be further improved. It is similar to the Indonesian Student Competency Assessment (Asesmen Kompetensi Siswa Indonesia/AKSI) activities (Pusat Penilaian Pendidikan Badan Penelitian dan Pengembangan, 2016) that were done to encourage students' competencies in reading and mathematics. By doing this, appropriate interventions can be done to improve the concerned competencies so that education standards can be refined. Based on the findings, it is not easy to synchronize learning and enhance the literacy and numeracy skills of elementary school students educators. A study found that students' quantitative literacy skills were below the difficulty level of standard question items (Anggara & Abdillah, 2022). This is in line with previous research that reading and mathematics competency scores after the first wave of the pandemic (2020) were lower than in the previous three years (Schult et al., 2021). A variety of problems can impede numeracy and reading and writing literacy programs, including a lack of teacher training, difficult-to-assess literacy practices, parents' lack of concern for numeracy and literacy programs at home, and children's poor mathematical competence (Ekowati et al., 2019). Manten et al. (2020) and Imran et al. (2021a) revealed that educators needed help determining the best model for teaching literacy skills.

Despite the findings, educators can employ multi-literacy learning techniques related to students' multi-intelligence, multi-style learning, and multimodal to assist their literacy and numeracy, as well as other literacy skills development (Abidin, Mulyawati & Yunansah, 2018; Imran et al., 2021a). Educators' knowledge of students' learning styles and literacy activities in schools, such as skimming and scanning, can help them to improve their reading skills (Maxwell, 1972; Musthafa, 2014; Kharizmi, 2021). A study found that students' learning styles (kinesthetic, visual, auditory) could affect their digital literacy skills (Permanasari, Panuntun, & Hayati, 2021), and multimodal-based learning has proven to be effective in improving students' reading skills (Lenters, 2016; Abidin, 2022). To train reading and writing literacy in students. Teachers should start classroom instructions with reading activities, as they will help students build information and knowledge (Haryati et al., 2019). In addition, problem-solving instruction supports literacy training for students (e.g. scientific literacy). (Subaidah et al., 2019). For example, scientific literacy skills are not just reading and understanding an article but also using the information in a real context or solving everyday problems (Okada, 2014; Pertiwi, Atanti & Ismawati, 2018).

According to the learning and motivation theory, learning is a process of changing behaviour, perception, or knowledge that humanizes humans through information processing (Ridwan, 2013). To increase students' motivation to learn, educators must recognize their starting skills, provide learning experiences, and develop learning media, facilities, and environment. Educators can help students to develop positive attitudes toward the subjects (for example, mathematics), increase self-efficacy and self-concept, encourage them, and minimize fears in the classroom (Susanti & Syam, 2017; Hadi & Zaidah, 2021; Khotimah, Budi & Sumantri, 2019; Sholeh, Supena & Arifuddin, 2021). On the other hand, students

need to increase their accuracy in understanding the contents of a text in question and improve their ability to solve numeracy and literacy problems (Nurjanah et al., 2022).

There are several approaches to deal with children-related issues, including predictive, descriptive, unilateral, and school factor analysis approaches. A unilateral approach is a solution that can be considered. The unilateral approach involves all the root causes of the problems of the students (Bagaskorowati, 2014; Banawi, 2015). Identification, diagnosis, prognosis, remedial or referral, evaluation, and follow-up are some of the measures that can be taken by educators (Idris, 2012). Educators can use the data obtained from their students as evaluation materials by adopting educational theory and science to improve learning, address learning challenges, and make learning easier for students. The evaluation will provide information about the subject given by the teacher that students understand. Literacy skill needs to be used as a solution to overcome problems related to communication skills other than a communicative approach (Rahman et al., 2019). This is related to a teaching strategy, whether teachers apply a new strategy or stick with the traditional method (Rusdiana, 2017). Self-evaluation needs to be done by the teacher. It could be that students' skills assessment made by the teacher has yet to be maximized, one of which is because the teacher's assessment literacy level still needs to be higher. Therefore, teachers should be able to improve their assessment literacy (Jusuf et al., 2019).

School leaders can also utilize the existing data to evaluate and devise a follow-up plan and ensure the long-term viability of the mentoring programs that have been implemented. It can also be adopted to improve the effectiveness and efficiency of the learning process and to improve student quality to meet educational standards. Schools need help equipping students with attitudes, knowledge and skills to develop basic literacy. Another way that can be done to motivate and improve student understanding is through the use of software, mobile devices, facilities at home that support learning, and so on (Okada, 2014; Marwa et al., 2020).

It should be noted that the scope of the study is limited to only describing reading and writing literacy and numeracy skills without considering other factors such as psychosocial. Furthermore, this study only used descriptive statistics, and the normalized gain method did not utilize inferential analysis (hypothesis testing). These could be the study's other aspects that need to be explored further.

CONCLUSION

Reading and writing literacy and numeracy assistance can increase students' scores in that section. Even so, the increase is still in the Low category. An increase the score (low category) indicates that the activities carried out need further strengthening. These activities are carried out to improve student competencies in reading and mathematics, so that appropriate intervention can be carried out on aspects of competence that need improvement to meet educational standards. Teachers and school leaders can utilize these results as an educational study to improve students' learning facilities. They can also use the data to evaluate and devise a follow-up plan. By doing this, program sustainability and students' skills can be improved to meet the standards.

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