

Pattern of Literacy and Numeracy Culture Development

Nurmadiyah

Postgraduate, Universitas Muhammadiyah Sumatera Utara, Indonesia

ABSTRACT: This research aims to find out the pattern of developing a culture of literacy and numeracy at state elementary school Binjai, the impact of literacy and numeracy culture development patterns on students' reading and numeracy skills in primary schools. This research is a qualitative research of case study type. The research respondents were teachers at public primary schools in Deli Serdang Regency, North Sumatra, Indonesia. The research data was collected through open-ended interviews and analysed using thematic analysis techniques. The findings of this study explain (1) the pattern of developing a culture of literacy and numeracy in public primary schools through (a) learning and (b) habituation; (2) Literacy and numeracy activities are carried out through (a) learning activities by reading 15 minutes out loud or silently, (b) counting activities for 30 minutes, (c) reading books, (d) visiting and reading library books. The impact of developing a culture of literacy and numeracy on students is that it is able to increase students' vocabulary in language, add insight and new information. Improving students' ability to write and string words together, or read and count, fostering students' ideas, creativity in thinking and analysing problems and solving them.

KEYWORDS: Literacy Culture, Numeracy, Student Ability

I. INTRODUCTION

Everyone in the modern world needs basic reading, writing and numeracy skills to compete on a global scale. In this modern era, mastering certain literacy skills is very important. Therefore, teaching reading and writing at home, in the classroom and in the community is very important. Education that emphasises reading, writing and arithmetic helps preserve and strengthen Indonesian culture while strengthening the country's position internationally. To achieve this goal, through Minister of Education and Culture Regulation No. 21/2015 on character development and literacy, the Indonesian government launched a literacy movement. The literacy movement that was initiated and taught in schools as part of the literacy movement, which aims to instil a love of reading and numeracy skills in students so that they have good character, is based on these laws and regulations. To improve children's reading and counting skills, all schools should promote this literacy culture.

The world of education cannot be separated from a culture of literacy and numeracy, as they are closely related (Hinde, 2004). Improving the success of the younger generation is highly correlated with their literacy levels (Hikmat, 2009). Children who struggle with reading and maths at the beginning of the school year will have difficulty understanding the concepts covered in subsequent subjects (Ramandanu, 2019). It is important to start teaching children reading and maths at a young age, preferably while they are still in primary school (Wandasari, 2017). The establishment of a culture of reading and arithmetic from an early age is seen as very promising as a means to achieve the goal of creating a nation that is intellectually and culturally intelligent (Wulandari, 2019).

Schools play an important role in promoting a society that values reading, writing and numeracy. Therefore, schools have a responsibility to provide an environment that enables students to hone their skills in reading and writing. Solutions to encourage students to engage in literacy and numeracy activities can be found by making maximum use of school library resources. The National Education System (Sisdiknas) Law No. 20 of 2003 stipulates, in Article 4, paragraphs 3 to 5, that education is organised as a lifelong process of acculturation and empowerment of students. To structure education, one must set an example, instil a desire to learn, and encourage students to use their imagination as they learn. With this law as a foundation, the government mandates that schools implement the school literacy movement to arouse children's interest in reading and maths. Literacy is a cornerstone of education, as is widely recognised; it refers to the capacity to read, write and understand written and spoken language. On the other hand, mathematical proficiency is a cultural trait. In contrast to numeracy, which is a culture that values maths and computing, literacy is usually defined as the ability to read and write (Sutarno, 2008). Reading and numeracy skills, according to Beers et al. (2010) are more valuable than writing and numeracy skills alone.

However, the reading culture in Indonesia is still a cause for concern (Prasetya et al., 2025). When looking at reading interest among 61 countries, Indonesia is ranked 60th, according to UNESCO data in a study by Central Connecticut State University in March

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2016 entitled World's Most Literate Nations Ranked. The reading interest index in Indonesia is reported to be 0.001, according to UNESCO. This shows that only one out of every thousand people in this country likes to read (Musfiroh, 2016). This finding is also supported by the findings of Gipayana (2010) that many of the school programmes implemented still overlook the skills and abilities of students in reading, especially in primary schools in Indonesia, the effect is that in almost every primary school there are 30% of students in grades 1 to 3 who are illiterate.

Based on this description, it can be concluded that there are still primary school students who are illiterate, that is, unable to read, write and do basic arithmetic. The Research Komsiyatum (2015) found that Indonesian students ranked 69th out of 76 countries studied in 2015 for literacy and numeracy. The condition of literacy and numeracy in time for reading and choosing the right reading, as well as time for counting and determining how to study, are aspects that affect interest in reading and counting (Musfiroh, 2016). Wulandari (2021) argues that children's interest in reading is influenced by a number of elements, one of which is the family. Another element is the environment, which plays an important role in encouraging a person's desire to speak.

Based on the description above, the pattern of developing a culture of literacy and numeracy is very important to study and research. Developing a culture of literacy effectively will undoubtedly have a good impact on the development of abilities and skills in students. Therefore, this study describes the patterns of developing an effective literacy culture and the aspects that contribute to the success of numeracy and literacy programmes, such as available resources, management, the development of supporting programmes and the role of schools in developing a numeracy and literacy culture.

Based on the description above, this study aims to explore the patterns of literacy and numeracy culture development and its impact on primary school students. The research questions are (1) what are the patterns of literacy and numeracy culture development in primary schools, and (2) what is the impact of literacy and numeracy culture on primary school students?.

II. METHOD

An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it. This research is a qualitative research type of case study. Case study qualitative method that emphasises a deeper understanding of certain phenomena of individuals (Moleong, 2000). The source of information or data for this study was public primary school teachers in Deli Serdang Regency, North Sumatra, Indonesia. A total of 21 motivational teachers were purposively selected as research respondents. The data collection tool for this study was open-ended interviews. The purpose of the interviews was to obtain information. The data analysis of this research was carried out using the stages, (1) Data reduction, which includes abstracting all information collected from field notes, interviews, and document reviews, (2) Data presentation, which is a series of organised facts that facilitate actionable conclusions, (3) Verification and results. In order to find the significance of the data, it is necessary to organise it in a certain way, such as patterned, concentrated, or systematic. In any case, the conclusions are broad and provisional, (4) Data validity. To verify that the research is indeed scientific and to check the accuracy of the data collected, data validity is conducted. Data triangulation is a method used to verify the validity of data in qualitative research (Creswell, 2015; Miles & Huberman, 2014; Sugiyono, 2008). In credibility assessment, triangulation means evaluating data from various sources simultaneously until it reaches a saturation point (Bogdan & Biklen, 2003)

III. RESULT

The literacy programme is a national initiative, so it should start at an early age and be part of education from primary to junior secondary school. As an important component of education, literacy programmes improve the quality of education. Therefore, careful preparation is needed to create a school literacy programme so that it can benefit every student

1). Patterns of Literacy and Numeracy Culture Development in Primary Schools

The literacy programme in primary schools is the implementation of all the plans that have been established to achieve the goal of building a culture of reading, writing and counting. The literacy and numeracy programme in primary schools consists of three stages: (1) learning patterns, (2) habituation patterns, and (3) practical application.

Development Through Learning

The learning process also follows the pattern of fostering a culture that values reading, writing and arithmetic. To ensure that students are well prepared for the core learning levels, teachers often assign fifteen minutes of reading material to be completed before class begins. This is done to support the curriculum's demand that students read books beyond the traditional textbooks. These books may be related to specific subjects, general knowledge, hobbies, or interests, or they may be multimodal texts. The pattern of literacy and numeracy development at learning is applied through various strategies, including the following: (1) Analysing the structure, language and content of observation report texts in the form of knowledge books that are read or listened to; (2) Presenting a summary of observation report material in the form of knowledge books orally and in writing by paying attention to linguistic rules or oral aspects; (3) Find the elements of two fiction books and two non-fiction books (enrichment books) or textbooks; (4) Make a mind map or synopsis about the contents of two nonfiction books (enrichment books) and two fiction books read; (5) Analyse the subject matter, such as the relationship between elements of formulas, concepts or number patterns; and (6) Present responses to concepts, definitions or a theme that is read; and (7) Explore and find information from two or more books'.

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The Primary School's programme of literacy and numeracy culture activities is well integrated into the curriculum, with the aim of helping students learn to read and write and setting positive examples in these areas. Then, grades IV, V and VI are doing presentations, with LCD projectors installed in each classroom to showcase class materials and homework. In particular, as learning in the upper grades is more varied, teachers often change the subjects they cover. Students may also be asked to study outdoors to view an object, which is then presented in a way that relates to what they have learnt. In addition, there is a greater focus on activities that encourage students to develop their own work for lower grade children in grades I, II and III.

It was concluded that the school develops a culture of literacy (writing, reading and counting) that is integrated into all subjects, through: (1) Starting the learning process by reading or listening to a 15-minute knowledge book that addresses the following topics: structure, language, subject matter, concepts, patterns and numerical calculations; (2) Reviewing and studying the elements, performing calculations, and providing oral and written summaries of the contents of observation reports while paying attention to language rules and aspects of speech; (3) Making reading a regular part of a child's routine from an early age; this will help children develop a lifelong love of reading and a thirst for knowledge; (4) By introducing new environments, such as learning outside the classroom, we can encourage children to bring their textbooks, practise what they have learnt, and then share what they have learnt with others; (5) Create a supportive learning atmosphere, as this can allow students to concentrate and feel comfortable during the learning process. Together, parents and teachers can make the classroom a welcoming place to learn by providing LCD TVs and dedicated reading corners for each student.

Development Through Habituation

In addition to using learning patterns to develop a culture of literacy (writing, reading, and arithmetic), literacy activities in public primary schools are carried out through a process of introduction and familiarisation. School habituation is an effort to realise character education in line with the goals and ideals of national education. Habituation is one of the teaching methods for children, which includes establishing routines and practices in their lives. Schools have taken several steps to improve students' reading, writing and numeracy habits as part of their literacy programmes. Thus, as students learn, literacy-and in particular the habit of reading, writing and counting-can be embedded in society. Literacy activities through habituation in primary schools are carried out with the following development pattern: (1) Fifteen minutes of reading practice is done every day at the beginning, middle and end of class; (2) Counting activities for 30 minutes. Counting habituation activities are carried out by means of games including counting objects around the environment, counting with teaching aids (abacus, sticks or marbles, and number lines); (3) Picking up books. In the teacher's daily reading log, the title and author of the book read or assigned to the student are recorded; (4) Reading library materials. During breaks or when children are doing homework, the class always reads aloud or visits the library; and (5) Reading campaign posters throughout the school in various classrooms and hallways. Posters for reading in classrooms and neighbourhood areas.

2) The impact of literacy and numeracy culture development patterns in primary schools

Literacy is important because it affects student success and their capacity to understand information correctly. Achieving success requires mastery of these literacies. The ability to read and write gives students the opportunity to expand their worldview, which in turn gives them optimism that they can make a positive impact on Indonesian education globally. Literacy levels are a constant reflection of how much students love reading.

The research findings show that students can anticipate positive outcomes from this literacy practice. Primary school students benefit from literacy in four ways: (1) their language vocabulary increases; (2) their understanding of the world around them deepens; (3) their writing skills improve; (4) their ability to read and count increases; and (5) their ability to think critically and creatively about problems and their solutions increases. The following is a summary of the findings from the interview data study on the pattern of literacy development and its impact on primary school students.

Table 1. Linkages between literacy culture development patterns, numeracy and its impact

No	Patterns of Literacy Development		Impact
	Through Learning	Through Habituation	
1.	15 Minute reading activity at the beginning of learning. Each teacher gives time to students to read the subject matter first or the problem posed by the teacher	Reading activities 15 minutes before learning begins, or when learning has ended. This activity is carried out by students when learning has not yet begun, for example visiting the library in the morning, reading books in the school corner before the entrance bell rings.	Increase students' vocabulary in language, ability to add insight and new information, increase students' ability to write and string words, or read and count, foster, ideas, creativity in thinking and analysing problems and solving them.

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	ivities respond to enrichment textbooks, course materials or portopolio assignments	Reading activities in the classroom or school reading corner	Increase students' vocabulary in language, add insight and new information, increase students' ability to write and string words, or read and count, foster ideas, creativity in thinking and analysing problems and solving them.
3.	Hands-on learning activities in the assignments guided by the	Book reading and library visits	Increase students' vocabulary in library for language, add insight and new subject teacher information, increase students' ability to write and string words, or read and count, foster ideas, creativity in thinking and analysing problems and solving them.
4.	Portfolio activities whose results are of simple written magazines resulting from portopolio assignments information, others that are displayed in the school or	Foster reading activities and wall published language, add insight and new works, such as poems, short stories, diaries, solving maths problems and ability to write and string words, wall magazine.	Increase students' vocabulary in published in the form of simple written magazines resulting from published language, add insight and new works, such as poems, short stories, diaries, solving maths problems and ability to write and string words, wall magazine. creativity in thinking and analysing problems and solving them.
5.	Teaching activities that integrate subject matter by utilising the school environment, such as visits to parks, gardens, tourist attractions and others	Environmental study literacy activities	Increasing students' vocabulary in language, adding new insights and information, increasing students' ability to write and string words, or read and count, fostering ideas, students' creativity in thinking and analysing problems and solving them

Literacy culture in primary schools is one of the priority activities for students. This activity is carried out by involving the principal, teachers, staff and parents. The importance of literacy for students in school learning, this programme is considered one of the efforts in achieving operational and functional goals. The following is the development of reading skills (vocabulary) and numeracy skills of grade one primary school students for 2023/2024.

Table 2 Development of Students' Reading and Counting Skills

Class	Year of study	age Reading Ability	age Counting Ability	Average
I	2023/2024	90,1	89,3	85,05
II	2023/2024	86,1	88,3	87,20
III	2023/2024	92,1	93,3	92,70

Based on Table 2 above, it can be seen that the reading and counting skills of class I students have met the minimum standard criteria, reaching an average of 85.05. Grade II students' reading and counting skills exceeded the minimum criteria with an average of 87.20. Grade III students' reading and numeracy skills exceeded the minimum standard with an average of 92.70. The results of this study also explain some of the supporting factors for implementing the literacy and numeracy culture development programme in primary schools. The factors that support the implementation of the programme are as follows: (1) the availability of library facilities to implement the school's programme policy, (2) the role of teachers in implementing a culture of literacy at school, (3) the support of parents in an effort to improve the culture of literacy towards the programme made by the school.

IV. DISCUSSION

Creating and developing a culture of literacy and numeracy in primary schools has many benefits and positive effects, such as expanding students' linguistic vocabulary, introducing them to new ideas and information, improving their writing skills (including word strings), improving their reading comprehension (including numeracy), encouraging the development of original thinking and problem-solving skills, and so on. The findings of this study corroborate Wandasari (2017) findings that creating a reading corner in each classroom and organising books in an attractive way can help foster a culture of literacy. Various sources, including student

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donations, borrowing books from the library, displaying posters and student work, as well as other areas in the school, such as the waiting room, school garden, car park, school canteen and UKS, were used to fill the reading corners with books (Pratiwi, et al, 2022, Prasetya, 2024).

Students' ability to understand and paraphrase written speech is included in the reading process (Sugiarti et al., 2022). The school literacy programme seeks to produce people with strong basic skills in reading, writing, numeracy, digital literacy, science, economics, culture and citizenship (Wulandari, 2021). Aiming to improve students' aptitude so that they have commendable character is the goal of character education, as it is in the school literacy movement and the (Amini, 2011). The ability to understand through activities such as reading, writing, listening, speaking and counting is the basis of the literacy and numeracy culture movement. Improving critical thinking skills, creative capacity and self-reflection capacity are components of literacy achieved by reading, thinking and writing. According to Wulandari (2017), who conducted research on literacy culture in an effort to foster good character in primary school students, the literacy culture movement alone is enough (Wandasari, 2017).

Research entitled "Reading Literacy to Enhance Positive Character of Elementary School Students" found that teaching children to read folklore books can help them develop good traits including self-confidence, responsibility, and teamwork. Research findings from the third week of folklore role-playing activities are evidence of this. 'By the third week, things had started to improve. The students' behaviour has started to improve, from 24 students who can work together to 26 students, who can be responsible to 25 students, and who can be confident to 21 students (Ramandanu, 2019). According to Hartyatni (2021), digital literacy in line with the principles of character education will have a good impact when we enter the era of society 5.0. By practicing religious teachings, people with strong character will be better able to control themselves and resist the temptation to believe things that are not necessarily true. Develop and disseminate data ethically. Being tolerant of people who are different from us in terms of skin color, religion, opinions, and others. The ability to use one's own initiative, imagination, self-control and self-discipline in the productive use of digital media.

V. CONCLUSIONS

The conclusions from the findings of this study are as follows: (1). The pattern of developing a culture of literacy and numeracy in primary schools goes through two stages of development, namely: (a) learning and (b) habituation; (2) Literacy activities are implemented through (a) learning activities, either silently or audibly, for fifteen minutes; (b) counting activities, for thirty minutes; (c) reading books; (d) visiting and reading books in the library; (e) the school library or a special room for storing nonsubject books; (f) a reading corner or class reading corner in each class; (3) Building a culture of literacy in primary schools has the potential to improve students' communication skills, broaden their understanding of the world, improve writing and word processing skills, improve reading and numeracy skills, encourage the development of original thinking and problem-solving skills, and so on; (4) it can be seen that the reading and counting skills of class I students have met the minimum standard criteria, reaching an average of 85.05. Grade II students' reading and counting skills exceeded the minimum criteria with an average of 87.20. Grade III students' reading and numeracy skills exceeded the minimum standard with an average of 92.70

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REFERENCES

- 1) Amini. (2021). Analysis of principal academic supervision to improve teacher performance at SMP Negeri 13 Binjai. *Jurnal Guru Kita*, 6 (3), 23-31
- 2) Arikunto, S. (2006). *Research Procedures A Practical Approach*. Jakarta: Rineka Cipta
- 3) Beers, C. S., Beers, J. W. & Smith, J. O. (2009). *A Principal's Guide to Literacy Instruction*. New York: Guilford Press
- 4) Bogdan, R.C & Knop Biklen, (2007). *Qualitative Research for Education*. London: Allyn & Bacon, Inc
- 5) Creswell, J.W. (2015) *Qualitative Research and Research Design*. Translation. Yogyakarta: Student Library
- 6) Gipayana, Muhana. (2010). *Teaching Literacy*. Malang: Asih Asah Asuh
- 7) Hartyatni, M. S. (2021). Building a reading culture through classroom reading corner media management with "12345". *Journal of Elementary School Thought and Development*, 6(1): 201-218
- 8) Hikmat. (2009). *Education Management*. Bandung: Faithful Library
- 9) Hinde, E.R. (2004). School culture and change: An examination of the effects of school culture on the process of change. *Journal Essays in Education*, 11, December 2004. 1-14
- 10) Komsiyatum (2019). Patterns of language literacy development in early childhood students. *Metabasa Journal*, 1 (2), 21-32.
- 11) Miles, M.B., & Huberman, A.M. (2014). *Qualitative Data Analysis*. University of Indonesia. Jakarta
- 12) Moleong, L.J. (2000). *Qualitative Research Methodology*. Bandung: Teenage Workshop

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- 13) Musfiroh, T. (2016). Literacy competency constructs for elementary school students. *Litera Journal*, 15 (1), April, 51-67.
- 14) Prasetya, I. (2024). The Influence of Literacy Movement Programs and Library Facilities on Literacy Culture in Primary School. *International Journal of Arts and Social Science*, 7(1) 7-12.
- 15) Prasetya, I., Pasaribu, F., Nurmadiyah., Arifin, M., Nasution, D.K., and Suprayetno, E. (2025). The Power of the Mobilizer Lecturer in the Independent Campus Program: An Exploration of Roles, Strategies, and Impact. *International Journal of Learning, Teaching and Educational Research*, 24(6) 609-631.
- 16) Pratiwi, S.N., Prasetya, I., Gajah, N. (2022). Literacy Culture in Elementary: The Impact of the Literacy Movement Program and Library Facilities. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, 8(3), 2022. (*Journal of Education: Journal of Research Results and Literature Reviews in the Field of Education, Teaching and Learning*, 8(3), 2022).
- 17) Ramandanu, F. (2019). School literacy movement as an alternative means of growing interest in reading. *Journal of Mimbar Ilmu Universitas Pendidikan Ganesha*. 24 (1), 76-82.
- 18) Sugiharti, Prasetya, I., Sulasmi, E. (2022). The effect of literacy programs and library facilities on literacy culture in elementary schools. *Journal of Primary, Secondary and Higher Education Management*, 3 (1), 21-27
- 19) Sugiono. (2008). Educational Research Methods, Qualitative, Qualitative and R & D Approaches. Bandung: Alfabeta
- 20) Wandasari, Y. (2017). Implementation of the school literacy movement as the formation of character education. *Journal of Education Management, Leadership, and Supervision*, 1(1), 325-342
- 21) Wulandari, R. (2021). Implementation of the literacy movement at Lukman Al Hakim International integrated Islamic primary school. *Journal of Education Policy*, 3(6), 319- 329



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