Early Literacy and Numeracy Difficulties: A Comprehensive Review

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ABSTRACT

Reading and numeracy constitute foundational competencies that underpin children's academic growth, social participation, and long-term learning trajectories. Despite their importance, a substantial proportion of learners continue to experience persistent challenges in acquiring these skills during the early years of schooling. Drawing on empirical findings from Malaysian and international scholarship, this article synthesizes the multifaceted factors contributing to literacy and numeracy difficulties, including home environment, pedagogical practices, socioeconomic disparities, language background, neurodevelopmental conditions such as dyslexia and dyscalculia, and limited access to early childhood education. The review further analyses the cognitive, academic, emotional, and social consequences of these difficulties, demonstrating how they cumulatively impede students' holistic development and heighten risks of academic underachievement, reduced motivation, and long-term disadvantage. In response to these challenges, the article outlines a comprehensive framework of evidence-based strategies emphasising early identification and diagnostic assessment, differentiated and multisensory instruction, development of foundational skills, parental involvement, professional capacity-building, and technology-supported learning. It also highlights the critical role of supportive school environments and policy commitments in ensuring equitable access to intervention resources. The discussion affirms that addressing early reading and numeracy difficulties is not only an educational imperative but also a socio-moral responsibility requiring systematic, collaborative, and sustained action. Strengthening literacy and numeracy competence from the earliest stages is crucial for enabling learners to reach their potential and participate fully in future educational and societal contexts.

Keywords: Early literacy, Numeracy development, Learning difficulties, Reading challenges, Evidence-based intervention

INTRODUCTION

Learning to read and count are among the most important skills that children develop in their early school years. These abilities are the foundation of all learning. Without these two basic skills, students will face great difficulty in understanding other subjects such as history and science (Lee et al., 2022). Problems in reading and counting can affect not only academic performance but also confidence and motivation in school (Badrasawi & Abu Kassim, 2020). In Malaysia, the Ministry of Education continues to emphasize early literacy and numeracy intervention programmed to reduce illiteracy rates and support struggling learners (Ministry of Education Malaysia [MOE], 2024). This issue remains a key concern for educators, parents and policymakers, as it directly influences students' long-term educational success and lifelong learning (UNESCO, 2021).

Factors Contributing to Learning Difficulties

According to Hashim & Hamid (2021), there are several factors that cause students to have difficulties in reading and counting. Home environment and parental involvement play a significant role. Children who grow up in homes where reading materials are insufficient or where parents seldom read with them are more likely to fall behind in literacy. Similarly, parents who are unable to help with mathematics homework may unintentionally limit their child's learning opportunities.

Besides that, the second factor is teaching methods may not always suit the needs of every student. Some teachers rely heavily on traditional rote learning, which may not engage students who need more interactive or visual approaches. In addition, large class sizes make it difficult for teachers to give individual attention to struggling students (Rahim & Abdullah, 2020). Other than that, socioeconomic and language factors also contribute to this matter. Students from low-income families may lack access to resources such as books, internet or tuition class. While students from average or high-income families have easy access to internet, help from various books and can join tuition or extra class to become better in reading and counting. Those who come from English speaking backgrounds might also find it hard to grasp reading and counting concepts taught in the first language which is Bahasa Melayu (Alias et al., 2019).

Other factors are nature of reading and understanding numeracy problems. Reading is a complex cognitive process that involves decoding symbols, recognizing words, understanding meaning and integrating information with prior knowledge. Students who encounter reading problems often struggle at one or more of these stages. Some experience difficulties with phonological awareness which is the ability to recognize and manipulate the sounds of spoken language, including larger units like words and syllables, and smaller unit like individual sounds called phonemes. It is a foundational skill for reading and spelling, as it helps children understand that spoken words are made up of different sound components before they are introduced to written letters (Tan & Ariffin, 2022).

Meanwhile, understanding numeracy involves more than rote counting which includes understanding numbers, recognizing patterns, estimating quantities, and applying mathematical reasoning. Difficulties in numeracy can manifest as problems with counting sequences, basic arithmetic, number recognition or logical reasoning (Yusof & Lim, 2023). Besides that, a significant proportion of reading difficulties are associated with dyslexia, a specific learning disorder characterized by having difficulties in understanding accurate or fluent words involving recognition, decoding abilities and spelling. According to the International Dyslexia Association (IDA), dyslexia is neurobiological in origin and often run in families. Students with dyslexia typically have normal intelligence and receive adequate instruction yet continue to struggle with reading related tasks (Rahman et al., 2021).

Meanwhile, similar to dyslexia in reading, dyscalculia refers to a specific learning disorder affecting number processing and arithmetic. Children with dyscalculia may struggle to grasp fundamental mathematical concepts, understand place value or remember arithmetic facts. Research suggests that dyscalculia has a neurotically basis, often linked to differences in the structure and function of the parietal lobe, which is responsible for numerical cognition (Ismail & Omar, 2022). Insufficient early childhood education also leads to learning problems. Early childhood education plays a vital role in preparing children for formal schooling. It is during the early years, typically from ages three to six, that children develop foundational skills in reading and counting. However, when children do not receive sufficient early education, they often face serious challenges in learning to read and count once they enter school. Several factors contribute to the lack of early childhood education. In many areas, especially rural or low-income communities, there is limited access to affordable and quality early learning programs. Some parents may not be aware of the importance of early education or may lack the time and resources for preschool teachers that can further reduce the effectiveness of early education programs (Hashim & Hamid, 2021).

Finally, some students struggle due to underlying cognitive or developmental issues such as attention deficit disorders, language processing difficulties or anxiety. Without early diagnosis and intervention, these conditions can severely affect literacy and numeracy acquisition. Emotional well-being also plays a role where students who experience stress or low self-esteem due to repeated academic failure may develop negative attitudes toward learning, further maintaining the cycle of underachievement (Sani et al., 2020).

Effects On Students' Development

Difficulties in learning to read and count can greatly affect a student's overall development. Academically, reading and numeracy difficulties can negatively affect performance across all subjects. Many areas of study, including history, science and even art, rely on literacy and basic mathematical understanding. As a result, students may experience poor grades, diminished motivation and a loss of interest in learning. Continuous frustration can also increase the likelihood of school avoidance or dropping out altogether (Alias et al., 2019).

According to Sani et al. (2020), emotional and psychological development are also impacted. Students who consistently perform below their peers may develop low self-esteem and feelings of inadequacy. Fear of failure, anxiety and embarrassment during reading or mathematics activities can lead to learned helplessness which mean a belief that no amount of effort will lead to improvement. Such emotional distress can further hinder academic engagement and growth.

Socially, struggling students may experience isolation or rejection from peers, particularly if their difficulties become visible in classroom settings. Reluctance to read aloud or participate in group discussions may limit their social interactions and communication skills. Additionally, poor reading ability can restrict vocabulary growth, making it harder for them to express themselves effectively (Rahman et al., 2021). The long-term effects of literacy and numeracy difficulties are equally concerning. Limited reading and counting skills can restrict access to higher education, reduce employment opportunities and hinder the development of essential life skills such as managing finances or understanding written information (MOE, 2019). These challenges can sustain cycles of disadvantage, affecting not only academic achievement but also overall quality of life.

According to Ismail & Omar (2022), learning difficulties in reading and counting affect multiple dimensions of student development via cognitive, academic, emotional, social and long-term. Addressing these challenges requires early identification, individualized intervention and sustained support from educators and parents. By providing targeted assistance, schools can help students overcome these barriers and foster their holistic development, ensuring that every learner reaches their full potential.

Strategies and Recommendations

a. Early Identification and Assessment

Early detection of learning difficulties is essential for timely intervention. Schools should conduct regular diagnostic assessment to identify students who struggle with reading and counting at the earliest possible stage. Through observation, standardized tests and progress monitoring, teachers can determine specific areas of weakness, such as phonemic awareness, decoding skills or number sense. Early intervention can prevent minor difficulties from developing into more severe learning problems (Ismail & Omar, 2022).

b. Differentiated and Individualized Instruction

According to Nor & Jamaludin (2020), instruction should be tailored to meet the diverse learning needs of students. Teachers can apply differentiated teaching methods by adjusting the level of difficulty, pacing and teaching materials according to students' abilities. Providing individualized learning plans or remedial programs allows students to learn at their own pace and focus on areas that require improvement. Small groups or one-on-one instruction can also enhance understanding and provide targeted support.

c. Use of Multisensory and Interactive Teaching Approaches

Integrating multisensory learning techniques such as visual aids, tactical activities and auditory materials can help students engage more deeply with reading and counting tasks. For example, using letter tiles, manipulatives, flashcards and digital learning tools can make abstract concepts more concrete. Incorporating games, storytelling and songs can further stimulate interest and motivation especially among younger learners (Rahman et al., 2021).

d. Development of Foundational Literacy and Numeracy Skills

Teachers should focus on strengthening the basic components of reading and counting. For reading, this includes vocabulary building, phonemic awareness, fluency development and comprehension strategies. For counting, emphasis should be placed on number recognition, sequencing, basic arithmetic operations and problem-solving skills. Continuous practice, guided reading sessions and interactive mathematics activities can reinforce these foundational skills (Tan & Ariffin, 2022).

e. Creating a Supportive and Inclusive Learning Environment

A positive classroom climate encourages students to participate without fear of failure or embarrassment. Teachers should promote empathy, patience and encouragement to help struggling learners build confidence.

Peer tutoring and cooperative learning activities can also foster social interaction and mutual support among students, reducing stigma and isolation (Rahim & Abdullah, 2020).

f. Parental Involvement and Home Support

Parents play a crucial role in reinforcing learning outside the classroom. Schools should encourage parents to engage in their children's reading and counting activities at home through storytelling, shared reading or simple mathematics games. Providing parents with resources and guidance can strengthen home for example school collaboration and create a consistent learning experience for the child (Hashim & Hamid, 2021).

g. Professional Development for Teachers

Teachers should receive continuous training in identifying and managing learning difficulties. Professional development programs focusing on evidence-based reading and numeracy interventions can equip educators with the skills needed to address diverse learning needs effectively. Collaboration with special education speech therapists, specialists and psychologist can also enhance the quality of instructional support provided (Ismail & Omar, 2022).

h. Integration of Technology in Learning

The use of educational technology can significantly support students with learning difficulties. Digital tools, such as interactive reading programs, educational apps and adaptive mathematics software, allow for personalized learning experience and provide immediate feedback. These technologies can make learning more engaging and accessible for students who struggle with traditional methods (Yusof & Lim, 2023).

i. Continuous Monitoring and Evaluation

Effective intervention requires regular monitoring of student progress. Teachers should assess improvements in reading fluency comprehension and mathematical proficiency through formative assessments and feedback. Adjusting instructional strategies based on assessment results ensures that interventions remain relevant and effective (Ismail et al., 2021).

j. Policy and Institutional Support

Finally, schools and education authorities should implement policies that prioritize literacy and numeracy development. This includes allocating resources for remedial programs, providing access to learning materials and establishing support systems for students with persistent difficulties. Collaboration among educators, administrators and policymakers is vital to create sustainable and inclusive learning environments (Rahim & Abdullah, 2020).

CONCLUSIONS

In conclusion, problems in learning to read and count have profound and significant effects on a student's overall development. Reading and numeracy are not merely academic skills, they are fundamental tools for understanding, communication and reasoning that influence every aspect of learning. Students who experience difficulties in these areas often face a cascade of challenges that affect their cognitive, academic, emotional and social growth (Ismail & Omar, 2022).

Cognitively, such problems slow the development of higher order thinking skills, comprehension and analytical abilities that are vital for academic progress. As a result, learning becomes more difficult and less effective, creating persistent gaps between struggling learners and their peers (Tan & Ariffin, 2022).

Academically, the inability to read fluently or perform basic numerical operations can result in poor performance across multiple subjects, declined motivation and eventual disengagement from school activities. When these difficulties remain unaddressed, students may lose interest in learning altogether, which can increase the risk of academic failure and school dropout (Rahman et al., 2021).

Emotionally, continuous struggles in reading and counting can lead to frustration, anxiety and low self-esteem, as students often compare themselves negatively with their peers. These emotional responses can further reinforce negative attitudes towards learning and reduce their willingness to participate in classroom tasks (Sani et al., 2020).

Socially, students who struggle with literacy and numeracy may encounter isolation, teasing or misunderstanding from classmates, leading to social withdrawal and a decline in self-confidence. Limited reading ability also hinders vocabulary development and communication skills, making it more difficult for students to express their thoughts and engage effectively in social and academic contexts. Over time, these challenges can accumulate and manifest as lifelong difficulties, influencing future educational achievement, employment prospects and even daily life skills such as managing finances or interpreting information (Hashim & Hamid, 2021).

According to Ismail & Omar (2022), the problems surrounding the acquisition of reading and numeracy skills in schools are varied and deeply interconnected with social, pedagogical and psychological factors. Addressing these challenges requires an integrated approach that involves not only teachers and students but also parents, policymakers and the wider community. Ensuring that every child achieves literacy and numeracy proficiency is not merely an educational goal but a moral and societal obligation. By investing in early intervention, teacher development, inclusive pedagogies and equitable educational policies, we can lay the foundation for a generation of learners who are confident, competent and capable of contributing meaningfully to society.

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