



MATERIAL FRAMEWORKS AND INTERVENTIONS ENHANCING READING SKILLS IN STUDENTS WITH LEARNING DISABILITIES: A SYSTEMATIC REVIEW

MATERIJALNI OKVIRI I INTERVENCIJE ZA UNAPREĐENJE VJEŠTINA ČITANJA KOD UČENIKA S TEŠKOĆAMA U UČENJU: SISTEMATSKI PREGLED

Mary Jane M. Reyes^{1*}, Melda M. Uychoco¹

¹Don Mariano Marcos Memorial State University, Republic of the Philippines

Review Article

Received: 06/11/2025

Revised 25/11/2025

Accepted: 20/12/2025

ABSTRACT

This systematic literature review examines the characteristics of effective frameworks and intervention strategies designed to enhance reading skills among students with learning disabilities. Drawing on eight empirical studies published between 2015 and 2025, the review identifies four core framework features: structured design, technology integration, foundational skill development, and culturally responsive approaches. Guided by the PRISMA 2020 protocol, the analysis highlights mediating factors—teacher mediation, implementation fidelity, and contextual adaptation—as critical to intervention success. Equity-related considerations, including early identification, inclusive practices, and resource access, are shown to reduce marginalization and foster engagement. Reported outcomes include improvements in decoding, fluency, comprehension, motivation, and learner confidence. The findings underscore the importance of adaptable, context-sensitive frameworks that integrate academic and affective dimensions of literacy. Effective interventions combine multi-tiered instructional models, technology-enhanced scaffolds, and culturally relevant materials to promote inclusive and sustainable literacy development. The review concludes with recommendations for future research, emphasizing the need for comparative and longitudinal studies, deeper exploration of contextual adaptations, and enhanced teacher training to support equitable literacy instruction.

Key words: learning disabilities, reading intervention, literacy development, inclusive education.

* Correspondence author: Mary Jane M. Reyes, Don Mariano Marcos Memorial State University
E-mail: maryjane.reyes@deped.gov.ph

SAŽETAK

Ovaj sistematski pregled literature ispituje karakteristike efikasnih okvira i interventnih strategija osmišljenih za unapređenje vještina čitanja kod učenika s teškoćama u učenju. Na osnovu osam empirijskih studija objavljenih u periodu od 2015. do 2025. godine, pregled identificira četiri ključne karakteristike okvira: strukturirani dizajn, integraciju tehnologije, razvoj temeljnih vještina i kulturološki responzivne pristupe. Vođena protokolom PRISMA 2020, analiza ističe posredujuće faktore posredovanje nastavnika, dosljednost u implementaciji i kontekstualnu prilagodbu kao presudne za uspješnost intervencija. Razmatranja povezana s jednakim pristupom, uključujući ranu identifikaciju, inkluzivne prakse i dostupnost resursa, pokazuju se kao faktori koji smanjuju marginalizaciju i podstiču angažman učenika. Prijavljeni ishodi uključuju poboljšanja u dekodiranju, tečnosti čitanja, razumijevanju, motivaciji i samopouzdanju učenika. Nalazi naglašavaju važnost prilagodljivih, kontekstualno osjetljivih okvira koji integrišu akademske i afektivne dimenzije pismenosti. Efikasne intervencije kombinuju višeslojne nastavne modele, tehnološki podržano “scaffolding” i kulturološki relevantne nastavne materijale radi promicanja inkluzivnog i održivog razvoja pismenosti. Pregled se zaključuje preporukama za buduća istraživanja, s naglaskom na potrebu za komparativnim i longitudinalnim studijama, dubljim ispitivanjem kontekstualnih prilagodbi te unapređenjem obuke nastavnika u cilju podrške pravednoj i kvalitetnoj nastavi pismenosti.

Ključne riječi: teškoće u učenju, intervencije u čitanju, razvoj pismenosti, inkluzivno obrazovanje.

INTRODUCTION

INTRODUCTION

Literacy is a foundational element of academic success and personal development. For students with learning disabilities, acquiring reading skills presents persistent challenges that extend beyond the classroom. These learners often struggle with fluency, spelling, and comprehension, which can lead to emotional, social, and psychological difficulties that undermine motivation and self-confidence.

A growing body of research has explored various approaches to improving reading outcomes for students with learning disabilities. Thompson (2018) and Yılmaz and Melekoğlu (2022) documented the prevalence of decoding and comprehension difficulties. Ignacio et al. (2024) and Budomo et al. (2023) highlighted the emotional and motivational impact of these struggles. Structured instructional models such as Response to Intervention (RtI) and explicit teaching have shown promise (Nilvius & Svensson, 2022; Flynn et al., 2025), while technological innovations like bionic reading and digital literature platforms have demonstrated motivational benefits (Budomo et al., 2023; Adeoye et al., 2025). Despite these advances, the literature remains fragmented, with limited synthesis of the design principles and pedagogical frameworks that underpin these interventions.

This study aims to conduct a Systematic Literature Review (SLR) to examine the characteristics of effective material and intervention frameworks designed to improve reading skills among students with learning disabilities. By analyzing eight empirical studies, the review seeks to identify core design features, instructional models, and contextual factors that contribute to successful literacy outcomes across diverse educational settings.

MATERIAL AND METHODS

This study adopted a Systematic Literature Review (SLR) approach to ensure a rigorous, transparent, and replicable process for identifying, analyzing, and synthesizing existing research. The SLR method is particularly suited to educational research, as it consolidates fragmented findings, uncovers patterns and inconsistencies across studies, and highlights critical gaps for future exploration. Drawing on the principles outlined by Kitchenham (2004), the review was conducted using a reliable and auditable framework that minimizes bias and enhances the credibility of results. Snyder (2019) further emphasizes that systematic reviews in education strengthen theoretical foundations and bridge research with practice.

In this context, the SLR was employed to examine intervention and material frameworks designed to support students with learning disabilities. By synthesizing evidence from diverse sources, the study aims to inform evidence-based decision-making among educators, curriculum developers, and policymakers. It highlights the structural and pedagogical elements that contribute to successful reading outcomes, offering a practical and research-informed foundation for designing inclusive literacy interventions that are adaptable across contexts and responsive to the needs of diverse learners.

Method of conducting research

Article Search Strategy

To establish a methodologically sound foundation for this review, a systematic search was initially designed to span four major academic databases: Scopus, ERIC, Google Scholar, and SpringerLink. The search covered publications from 2015 to 2025, aiming to capture a decade of contemporary research on literacy interventions for students with learning disabilities. Boolean logic guided the search process, combining two sets of keywords. The first set focused on framework-related terms—“reading materials framework,” “structured reading materials,” “reading comprehension support,” and “reading intervention.” The second set targeted the population and educational context, using terms such as “learning disabilities,” “inclusive education,” and “K–12 students.” This dual-keyword strategy facilitated the identification of studies that intersected pedagogical design and learner diversity.

To broaden the scope and minimize publication bias, supplementary records were also retrieved from grey literature, reference lists, and educational handbooks. The initial search yielded 398 records, which were systematically exported into a reference management system for deduplication, screening, and tracking throughout the review process.

This multi-layered search strategy ensured that the review was grounded in a robust and diverse evidence base, reflecting both scholarly rigor and practical relevance.

Article Selection Criteria

The selection of articles for this systematic literature review was guided by a clearly defined set of inclusion and exclusion criteria, which were applied to a pre-selected group of eight studies. This targeted approach ensured that the review corpus remained consistent, focused, and directly aligned with the research question concerning material and intervention frameworks for improving reading skills in students with learning disabilities.

Table 1 outlines the specific criteria used to determine the acceptance or rejection of studies for inclusion in the review.

Table 1. Article Acceptance and Rejection Criteria

Criteria	Acceptance	Rejection
Year of Publication	Published between 2015 and 2025	Published before 2015
Language	English	Non-English (e.g., Filipino, Chinese, Malay)
Type of Reference	Peer-reviewed journal articles, theses	Books, conference papers, editorials, conceptual essays
Study Population	K–12 students formally identified with learning disabilities	Preschool, tertiary, or adult learners
Study Context	Inclusive classroom settings	Segregated or special education-only environments
Study Focus	Reading material frameworks or structured reading interventions	Non-reading interventions or purely theoretical discussions
Accessibility	Full-text available and retrievable	Abstract-only or paywalled articles

These criteria were developed to ensure that the studies included in the review were methodologically sound, contextually relevant, and directly addressed the research objectives. The application of these criteria helped maintain the rigor and relevance of the review process.

Article Selection Process

The article selection process for this systematic literature review was conducted in accordance with the PRISMA 2020 flowchart (Page et al., 2021). This structured approach ensured transparency and rigor in identifying studies relevant to the research question on effective material and intervention frameworks for improving reading skills in students with learning disabilities. An initial pool of 312 records was identified and screened by title and abstract after duplicate entries were removed. Of these, 246 records were excluded for the following reasons: not focused on reading frameworks ($n = 92$), not related to learning disabilities ($n = 68$), targeting irrelevant age groups such as preschool or adult learners ($n = 48$), and situated in non-inclusive or segregated educational settings ($n = 38$). Subsequently, 66 full-text articles were assessed for eligibility. A total of 58 articles were excluded at this stage due to the following reasons: not framework-based ($n = 22$), not focused on students with learning

disabilities (n = 15), interventions not centered on reading materials (n = 10), theoretical or non-empirical in nature (n = 5), and classified as systematic reviews or meta-analyses (n = 6). Ultimately, eight empirical and implementation-based studies met all inclusion criteria and were included in the final synthesis. These studies were indexed across multiple databases and sources: Scopus (n = 6), ERIC (n = 5), Google Scholar (n = 8), and SpringerLink (n = 1).

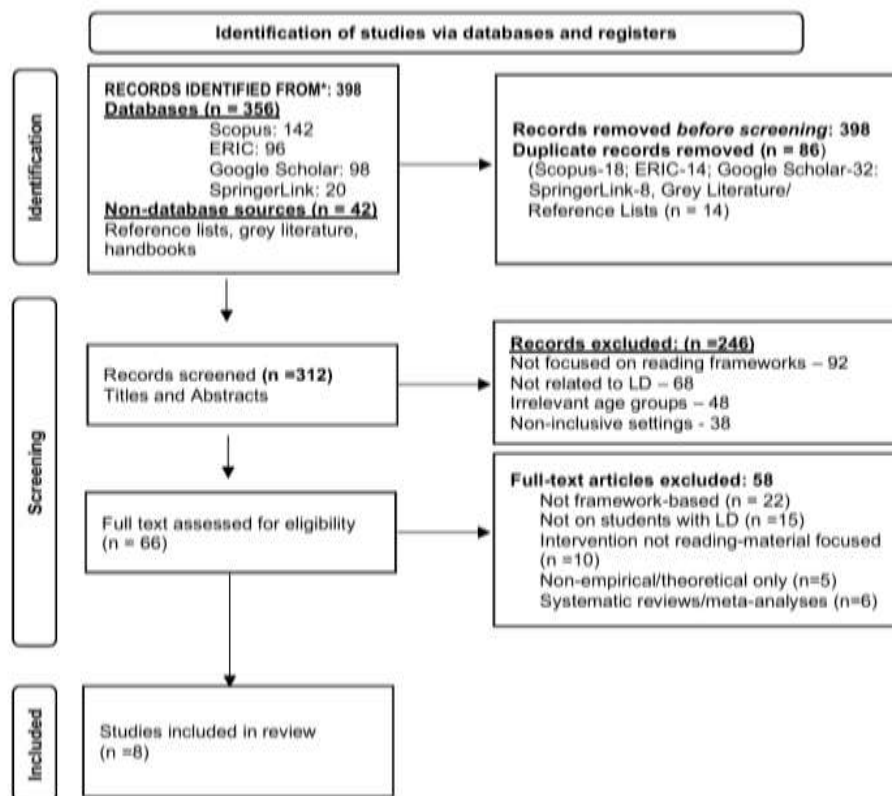


Figure 2: Flowchart of article selection process adapted from PRISMA

Data processing methods

Data collection and analysis for this systematic literature review were conducted on a fixed set of eight pre-selected studies. The process was designed to be rigorous and methodical to ensure the extraction of relevant information and the synthesis of meaningful insights aligned with the research question. A structured data extraction table was developed to maintain consistency and completeness across all studies. From each article, key data points were gathered, including bibliographic details such as author, year, country, and publication source; the stated purpose of the study; the research methodology employed; the main findings and conclusions; and a detailed description of the reading intervention or material framework being evaluated. Once data collection was completed, a thematic synthesis approach was used to analyze the findings. This involved three stages: initial coding, where key concepts and phrases related to the effectiveness and characteristics of the frameworks were identified and labeled; the development of descriptive themes, where similar codes were grouped to form broader categories that captured the nature of the interventions; and the generation of analytical themes, which synthesized the descriptive themes into higher-level insights that

directly addressed the research question. For example, codes such as “structured instruction,” “online program,” and “sequential lessons” were grouped under the theme “Systematic and Structured Approach,” while other themes such as “Technology Integration” and “Focus on Foundational Skills” emerged from similar patterns. This systematic process ensured that the conclusions drawn from the review were grounded in the evidence presented across the selected studies, resulting in a coherent and credible synthesis of findings.

Authors & Year	Country	Study Title	Journal Name / Institution	Study Purpose
Moses Adeleke Adeoye et al. (2025)	Nigeria	The Impact of Digital Literature Intervention on Reading Comprehension Skills of Elementary-Level Children with Specific Learning Disabilities	Childhood Journal	To evaluate the effectiveness of digital literature interventions in improving reading comprehension among children with specific learning disabilities.
Xerxes M. Budomo et al. (2023)	Philippines	The Impact of Bionic Reading on the Reading Motivation and Self-Efficacy of Students with Learning Disabilities	International Journal of Advanced Multidisciplinary Studies	To assess how bionic reading technology affects reading motivation and self-efficacy among students with learning disabilities.
Danielo Saint-Cyr (2020)	Haiti	Performance in Reading and Spelling of 30 Students with Disabilities: Preliminary Analyses	Science et Bien Commun	To analyze the impact of teacher practices and school settings on the reading and spelling performance of students with disabilities.
Samantha Flynn et al. (2025)	United Kingdom	Effectiveness of Headsprout Early Reading® in Special Educational Needs Schools: A Cluster Randomised Controlled Trial	Journal of Research in Special Educational Needs	To evaluate the impact of the Headsprout Early Reading® program on reading skills of children with intellectual disabilities in SEN schools.

Ignacio, Turingan, & De Jesus (2024)	Philippines	<i>Lived Experiences of Senior High School Learners with Reading Difficulties: A Case in the Philippines</i>	Edelweiss Applied Science and Technology	To explore the lived experiences of senior high school students with reading difficulties and develop a tailored reading intervention program addressing emotional, social, cultural, and academic impacts.
Camilla Nilvius & Idor Svensson (2022)	Sweden	Efficacy Evaluation of a Full-Scale Response to Intervention Program for Enhancing Student Reading Abilities in a Swedish School Context	Reading and Writing	To assess the effectiveness of a three-tier RtI model in improving decoding and reading comprehension among Grade 2 students.
Engin Yilmaz & Macid Ayhan Melekoğlu (2022)	Turkey	Developing a Reading Comprehension Support Program for Primary School Students with Specific Learning Disabilities	International Journal of Progressive Education	To develop a reading comprehension support program for 2nd–4th grade students with SLD using qualitative methods.
Thompson, M. (2018)	United States	<i>Evidence-Based Reading Strategies for Students with Mild to Moderate Disabilities</i>	Bethel University (Master's Thesis)	To examine successful literacy strategies and scaffolding techniques for students with mild to moderate disabilities in both general and special education settings, aiming to improve reading and writing skills.

RESULTS AND DISCUSSION

The effectiveness of reading interventions is shaped by multiple, interrelated factors spanning program design, classroom implementation, contextual fit, equity considerations, and measurable learner outcomes. Understanding these dimensions is essential for identifying which frameworks produce meaningful gains in literacy and which contextual or instructional elements support or hinder success. This systematic literature review synthesizes findings from studies across diverse educational settings, highlighting common patterns, challenges, and best practices.

The subsequent sections are organized thematically to provide a structured analysis of the literature. Theme 1 focuses on framework characteristics, examining structural features, scaffolding, and pedagogical approaches. Theme 2 addresses classroom implementation, including fidelity, teacher mediation, training, and adaptation strategies. Theme 3 considers contextual and cultural considerations, highlighting how language, culture, and infrastructure influence outcomes. Theme 4 explores equity implications, emphasizing early identification, inclusion, resource access, and marginalization risks. Finally, Theme 5 evaluates measurable learner outcomes, integrating both academic and affective gains to illustrate the effectiveness of these interventions.

By organizing the results and discussion according to these interrelated themes, the review provides a comprehensive synthesis of how multi-tiered, evidence-based, and contextually responsive interventions can maximize literacy development for diverse learners. This thematic structure allows for clear comparisons across studies while highlighting critical factors that contribute to the success and sustainability of reading programs.

To begin, the review first examines the structural and pedagogical characteristics of effective reading intervention frameworks, highlighting how design features such as multi-tiered support, scaffolding, and cultural responsiveness contribute to successful literacy outcomes.

Design Features of Instructional Frameworks

Based on a systematic review of eight studies, several critical characteristics emerged that define effective reading intervention frameworks for students with learning disabilities. Each finding highlights a core feature that contributes to successful literacy outcomes.

Table 2. Design Features of Instructional Frameworks

Theme	Key Design Characteristics	Scaffolding Elements	Supporting Studies
Systematic and Structured Design	<ol style="list-style-type: none"> 1. Frameworks organized into clear, sequential tiers or stages—such as visual scaffolds, tiered supports or interventions, and structured phases—are highly effective. 2. These programs provide a structured roadmap for instruction and support that can be adapted to meet individual student needs (e.g., explicit instruction, progress monitoring). 	Visual tier maps Data templates Structured Visual	Nilvius & Svensson (2022); Flynn et al. (2025)
Technology Integration	<ol style="list-style-type: none"> 1. The integration of digital and online tools is a defining characteristic of successful modern instructional frameworks (e.g., bionic reading, adaptive pacing) 2. These technologies offer innovative ways to engage students and enhance motivation and self-efficacy (e.g., interactive digital literature). 	Adoptive Visuals Typographic cues	Budomo et al. (2023); Adeoye et al. (2025)
Foundational Skill Development	<ol style="list-style-type: none"> 1. Effective frameworks directly address foundational reading components such as phonics, decoding, spelling, fluency, and comprehension 2. They often emphasize explicit instruction and are grounded in proven pedagogical theories (e.g., structured, phonics-based design). 	Limited scaffolding	Thompson (2018); Yılmaz & Melekoğlu (2022); Saint-Cyr (2020)
Holistic and Contextual Approach	<ol style="list-style-type: none"> 1. Successful interventions consider the student’s broader context, addressing emotional, social, and cultural factors (e.g., being emotionally grounded and culturally responsive) 2. Frameworks designed to be flexible and responsive to individual learner needs tend to be more effective. 	Art based visuals	Ignacio et al. (2024); Saint-Cyr (2020)

The review of the studies highlights four interrelated characteristics that define effective reading intervention frameworks: systematic design, technology integration, foundational skill development, and a holistic, context-aware approach.

Effective reading intervention frameworks incorporate a multi-tiered structure, embedded scaffolds, and culturally responsive design elements. A multi-tiered structure, such as the RtI model, ensures that students receive progressively intensive support based on their individual needs, providing clear pathways for instruction and intervention (Nilvius & Svensson, 2022; Flynn et al., 2025). Embedded scaffolds—including guided practice, visual aids, and stepwise instruction—help students gradually build foundational skills while maintaining engagement and promoting mastery (Thompson, 2018; Yılmaz & Melekoğlu, 2022). Culturally responsive design recognizes the diverse social and cultural contexts of learners, ensuring that interventions are relevant, respectful, and meaningful, which enhances motivation and learning outcomes (Ignacio et al., 2024; Saint-Cyr, 2020). Together, these characteristics demonstrate that successful frameworks are structured yet flexible, integrate technology thoughtfully, target foundational literacy skills, and attend to learners' emotional, social, and cultural contexts. Collectively, they provide educators with clear, adaptable pathways to support diverse learners and maximize the impact of reading interventions.

Classroom Implementation

The success of reading interventions depends not only on their design but also on how they are implemented in classroom settings. Key factors such as fidelity to the intervention model, teacher mediation, the training provided, and classroom adaptations influence the effectiveness of programs in real-world educational contexts. Understanding these implementation dynamics allows researchers and educators to identify which components support consistent delivery and which contextual challenges may hinder outcomes. Table 3 presents a summary of classroom implementation across the reviewed studies, highlighting variations in fidelity, teacher involvement, training, and adaptation strategies.

Table 3. Classroom Implementation

Study & Year	Implementation Fidelity	Teacher Mediation	Training Provided	Classroom Adaptation	Notes
Nilvius & Svensson (2022)	High	Strong	Yes	Tiered supports	Model fidelity
Flynn et al. (2025)	Moderate	Strong	Yes	RtI protocols	Fidelity-focused
Thompson (2018)	Moderate	Moderate	Not specified	Guided practice	Traditional delivery
Saint-Cyr (2020)	Low	Weak	None	Overcrowded, inconsistent	Major gaps
Budomo et al. (2023)	Moderate	Moderate	Yes	Digital integration	Motivation-focused
Adeoye et al. (2025)	Variable	Weak	Not specified	Tech-based delivery	Digital divide noted
Ignacio et al. (2024)	High	Strong	Yes	Emotionally responsive	Teacher-led adaptation
Thomas et al. (2023)	High	Strong	Yes	Structured supports	Inclusive fidelity

Across the reviewed studies, classroom implementation of reading interventions varied considerably, with fidelity, teacher mediation, and contextual adaptation emerging as critical factors. Frameworks that maintained high implementation fidelity, such as those reported by Nilvius and Svensson (2022), Ignacio et al. (2024), and Thomas et al. (2023), were associated with strong teacher involvement and structured supports, reflecting the importance of both clear protocols and active instructional guidance. In contrast, studies in more challenging contexts, including Saint-Cyr (2020) and Adeoye et al. (2025), demonstrated low or variable fidelity, often linked to weak teacher mediation, lack of formal training, or environmental constraints such as overcrowded classrooms or digital divides.

Implementation Fidelity. Fidelity emerged as a central determinant of success. Frameworks with high fidelity, such as those reported by Nilvius and Svensson (2022), Ignacio et al. (2024), and Thomas et al. (2023), were linked to strong teacher involvement and structured supports. Conversely, studies in more challenging contexts, including Saint-Cyr (2020) and Adeoye et al. (2025), exhibited low or variable fidelity, often due to weak teacher mediation, insufficient training, or environmental constraints such as overcrowded classrooms and limited technology access.

Teacher Mediation and Adaptation. Effective interventions relied on trained, engaged teachers capable of adjusting strategies to meet students' needs. Classroom adaptations—including tiered supports, guided practice, digital integration, and emotionally responsive approaches—enabled frameworks to address diverse learners without compromising the integrity of the intervention.

These findings highlight that successful classroom implementation balances fidelity with flexibility. Programs achieve optimal outcomes when teachers are supported to deliver structured, evidence-based instruction while adapting to contextual and individual learner factors. Such an approach ensures interventions remain both consistent and responsive, maximizing the impact of reading programs across varied educational settings.

Contextual and Cultural Considerations

Reading interventions do not occur in isolation; their effectiveness is shaped by the social, cultural, and infrastructural contexts in which they are implemented. Factors such as cultural relevance, language responsiveness, classroom resources, and the ability to personalize learning experiences influence both accessibility and outcomes. Table 4 summarizes key contextual and cultural considerations across the reviewed studies, highlighting alignment with learners' linguistic and cultural backgrounds, infrastructure adequacy, and learner-centered adaptation.

Table 4. Contextual and Cultural Considerations

Study & Year	Cultural Fit	Language Responsiveness	Infrastructure Consideration	Learner Personalization	Notes
Nilvius & Svensson (2022)	Moderate	Swedish only	Strong infrastructure	Tiered supports	Contextually stable
Flynn et al. (2025)	Moderate	English only	Moderate	RtI tiers	US-based generalization
Thompson (2018)	Low	English only	Not discussed	Minimal personalization	Western-centric
Saint-Cyr (2020)	Low	French/Creole mismatch	Poor infrastructure	None	Severe mismatch
Budomo et al. (2023)	High	Filipino responsive	Moderate	Culturally adapted	Localized content
Adeoye et al. (2025)	Moderate	English only	Limited access	Adaptive pacing	Tech barriers
Ignacio et al. (2024)	High	Filipino literature	Responsive	Emotionally grounded	Strong contextual fit
Thomas et al. (2023)	Moderate	Swedish only	Inclusive infrastructure	Tiered personalization	Inclusive setting

The following analysis elaborates on how these contextual and cultural factors—ranging from language and cultural alignment to infrastructure and personalized supports—affect the fidelity, engagement, and outcomes of reading interventions across diverse educational settings.

The review highlights that the cultural and contextual alignment of reading interventions is a critical factor in their effectiveness. Studies with high cultural fit and language responsiveness, such as Budomo et al. (2023) and Ignacio et al. (2024), demonstrated stronger learner engagement, motivation, and comprehension, reflecting the importance of designing interventions that resonate with students' social and linguistic contexts. Conversely, interventions with low alignment, including Saint-Cyr (2020) and Thompson (2018), encountered challenges related to language mismatches and Western-centric content, which limited accessibility and relevance.

Infrastructure and resource availability further shaped implementation success. Programs implemented in settings with strong or inclusive infrastructure, such as Nilvius and Svensson (2022) and Thomas et al. (2023), supported consistent delivery and adherence to intervention protocols. In contrast, limited or poor infrastructure, as reported by Saint-Cyr (2020) and Adeoye et al. (2025), created barriers to fidelity, digital integration, and equitable access, highlighting the need for context-sensitive planning.

Learner personalization emerged as another key factor. Frameworks that incorporated tiered supports, adaptive pacing, or emotionally grounded strategies were better able to meet the diverse needs of students, fostering engagement and learning gains. Minimal personalization, on the other hand, often reduced effectiveness, underscoring the importance of flexibility within the framework.

Overall, these findings suggest that culturally responsive design, language alignment, infrastructure readiness, and individualized supports are essential for successful reading interventions. Interventions that integrate these elements provide adaptable and meaningful learning experiences, demonstrating that sensitivity to context and culture is integral to maximizing student outcomes.

Equity Implications

Equity is a fundamental consideration in designing and implementing effective reading interventions. Factors such as early identification of learning needs, inclusive instructional practices, equitable access to resources, and attention to marginalized learners influence both the effectiveness and reach of literacy programs. Interventions that fail to address these dimensions risk reinforcing existing disparities, while equity-centered approaches promote fair opportunities for all students. Table 5 summarizes how the reviewed studies incorporated these elements, highlighting variations in early identification, inclusion practices, resource access, and marginalization risks across different educational contexts. This overview provides a foundation for analyzing the relationship between equity-focused strategies and the success of reading interventions.

Table 5. Equity Implications

Study & Year	Early Identification	Inclusion Practices	Resource Access	Marginalization Risks	Notes
Nilvius & Svensson (2022)	Yes	Strong	High	Low	Equity embedded
Flynn et al. (2025)	Yes	Moderate	Moderate	Moderate	RtI supports
Thompson (2018)	No	Weak	Not discussed	High	Traditional exclusion
Saint-Cyr (2020)	No	None	Poor	Very high	Systemic neglect
Budomo et al. (2023)	Partial	Moderate	Moderate	Moderate	Tech access varies
Adeoye et al. (2025)	No	Weak	Limited	High	Digital divide
Ignacio et al. (2024)	Yes	Strong	Moderate	Low	Equity-centered
Thomas et al. (2023)	Yes	Strong	High	Low	Inclusive model

The following analysis examines how early identification, inclusive practices, resource availability, and attention to marginalization influence the equity and effectiveness of reading interventions across diverse educational contexts.

Equity considerations are central to the effectiveness and accessibility of reading interventions. Studies that incorporated strong early identification and inclusive practices, such as Nilvius and Svensson (2022), Ignacio et al. (2024), and Thomas et al. (2023),

demonstrated lower marginalization risks and more equitable participation. These programs ensured that students received timely support and that interventions were accessible to diverse learners, fostering inclusion and reducing disparities. Conversely, interventions lacking early identification or inclusion measures, including Thompson (2018), Saint-Cyr (2020), and Adeoye et al. (2025), were associated with higher marginalization risks, highlighting traditional exclusion, systemic neglect, and barriers related to limited resources or digital access. Resource availability emerged as a critical factor in promoting equity. Programs implemented in contexts with sufficient or inclusive infrastructure supported consistent participation and reduced barriers to engagement, while limited access to materials, technology, or supportive learning environments hindered intervention effectiveness. Notably, interventions that combined early identification, strong inclusion practices, and adequate resources were more likely to achieve meaningful literacy outcomes for all students, demonstrating the importance of integrating equity into both design and implementation. These findings underscore that equitable reading interventions must address systemic barriers, ensure timely support, and provide sufficient resources to all learners. Embedding equity considerations—through early support, culturally and linguistically responsive strategies, and inclusive classroom practices—enhances the reach, effectiveness, and sustainability of reading programs, ensuring that no learner is left behind.

Measurable Learner Outcomes

Evaluating the effectiveness of reading interventions requires systematic measurement of learner outcomes, including gains in reading skills, comprehension, motivation, and confidence. Assessments provide evidence of how interventions impact both academic and affective domains, highlighting which strategies are most effective for diverse learners. Table 6 summarizes the measurable outcomes reported across the reviewed studies, including the tools used for assessment and notable observations regarding learner progress.

Table 6. Measurable Learner Outcomes

Study & Year	Reading Gains	Comprehension	Motivation	Confidence	Assessment Tools Used	Notes
Nilvius & Svensson (2022)	↑ Fluency, decoding	↑	Moderate	Moderate	Standardized fluency tests	Strong outcomes
Flynn et al. (2025)	↑ Decoding, comprehension	↑	Moderate	Moderate	RtI progress logs	Fidelity-linked gains
Thompson (2018)	↑ Spelling, decoding	Moderate	Low	Low	Phonics assessments	Basic outcomes
Saint-Cyr (2020)	↓ Reading, spelling	↓	Low	Low	Alouette-R, BALE	Severe deficits
Budomo et al.	↑ Motivation, access	Moderate	↑	↑	Digital engagement	Affective gains

(2023)					t metrics	
Adeoye et al. (2025)	↑ Engagement	Moderate	↑	Moderate	Bionic reading logs	Typographic impact
Ignacio et al. (2024)	↑ Identity, motivation	↑	↑	↑	Qualitative reflections	Holistic outcomes
Thomas et al. (2023)	↑ Comprehension, fluency	↑	Moderate	Moderate	RtI assessments	Inclusive gains

The following analysis examines how variations in instructional design, classroom implementation, and contextual adaptations are reflected in learner outcomes, illustrating the connection between framework features and tangible gains in reading and engagement.

Across literature, structured and well-implemented interventions consistently led to improvements in core reading skills. Nilvius and Svensson (2022), Flynn et al. (2025), and Thomas et al. (2023) reported significant gains in decoding, fluency, and comprehension, with fidelity to multi-tiered models linked to stronger academic outcomes. In contrast, studies with implementation challenges or insufficient infrastructure, such as Saint-Cyr (2020), showed declines in reading and spelling, underscoring the importance of consistent and context-sensitive delivery.

Motivation and confidence were enhanced when interventions incorporated technology, culturally responsive content, or individualized supports. Budomo et al. (2023), Adeoye et al. (2025), and Ignacio et al. (2024) reported increased engagement, self-efficacy, and identity development, suggesting that affective dimensions of learning are integral to achieving holistic outcomes.

Assessment strategies varied, ranging from standardized fluency tests and RtI progress logs to qualitative reflections, providing complementary insights into both skill acquisition and learner experiences. Collectively, these findings indicate that measurable gains are maximized when interventions combine structured instruction, adaptive scaffolds, culturally and contextually responsive design, and engagement-focused strategies. Such approaches not only enhance academic proficiency but also foster motivation, confidence, and a sense of inclusion among learners.

Essential Factors in the Effectiveness of Reading Intervention

A deeper analysis of the studies reveals additional elements that contribute to the success of reading intervention frameworks beyond structural design, classroom implementation, cultural context, equity, and measurable outcomes. These factors highlight the importance of systematic measurement, teacher practices, and the broader impact of interventions on learners' affective and psychosocial development. Table 7 summarizes these essential factors across the reviewed studies.

Table 7. Essential factors in the Effectiveness of Reading Intervention

Essential Theme	Key Characteristic	Supporting Studies
Measurement and Data	<ol style="list-style-type: none"> 1. Effective frameworks rely on objective, data-driven methods to assess student progress and evaluate outcomes. 2. Systematic measurement is critical for program success. 	Nilvius & Svensson (2022); Flynn et al. (2025)
The Role of the Teacher	<ol style="list-style-type: none"> 1. The effectiveness of a framework is significantly influenced by the pedagogical practices of the teacher. 2. The human element is integral to overall framework success. 	Saint-Cyr (2020); Thompson (2018)
Impact Beyond Academic Skills	<ol style="list-style-type: none"> 1. Effective frameworks extend beyond academic gains, also improving learners' motivation, self-efficacy, and overall well-being. 	Budomo et al. (2023); Ignacio et al. (2024)

The following discussion elaborates on how these essential factors—measurement and data, teacher practices, and broader learner impacts—interact with the core framework characteristics to enhance the overall effectiveness and sustainability of reading interventions. Systematic measurement is fundamental to understanding and optimizing intervention effectiveness. Studies by Nilvius and Svensson (2022) and Flynn et al. (2025) demonstrate that data-driven assessment tools, such as standardized fluency tests or RtI progress logs, provide critical feedback for adjusting instructional strategies, ensuring fidelity, and tracking progress across multiple tiers.

Equally important is the role of the teacher. Even well-designed frameworks may fail if pedagogical practices are weak or inconsistent. Saint-Cyr (2020) and Thompson (2018) show that teacher mediation, instructional expertise, and the ability to adapt materials meaningfully are pivotal for translating structured interventions into measurable learning gains.

Finally, the impact of interventions extends beyond academic performance. Budomo et al. (2023) and Ignacio et al. (2024) highlight improvements in motivation, self-efficacy, and learner identity, suggesting that effective frameworks foster both cognitive and affective growth.

Recognizing these broader outcomes underscores the value of holistic intervention design, integrating measurable skill development with support for learners' engagement, confidence, and overall well-being.

CONCLUSION

The findings of this systematic review indicate that the effectiveness of reading interventions for learners with disabilities is contingent upon the integration of structured frameworks, context-sensitive implementation, and equity-focused practices. Multi-tiered, scaffolded designs that incorporate technology, foundational skill development, and culturally responsive strategies consistently yield significant gains in reading proficiency, comprehension, motivation, and learner confidence. Successful classroom implementation requires fidelity to intervention models, active teacher mediation, and adaptive strategies that account for diverse learning contexts. Contextual alignment, including cultural relevance, language responsiveness, and infrastructure readiness, emerged as critical determinants of learner

engagement and intervention impact. Moreover, equity considerations—such as early identification, inclusive practices, and resource accessibility—enhance both participation and outcomes, ensuring that interventions support all students rather than perpetuating disparities. Beyond measurable academic gains, effective reading interventions foster affective development, including self-efficacy, motivation, and learner identity, highlighting the importance of holistic approaches. Collectively, these results demonstrate that interventions are most successful when they combine systematic design, responsive classroom practices, cultural and contextual sensitivity, and attention to equity, thereby providing clear, adaptable pathways for maximizing literacy outcomes among diverse learners.

ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to all individuals and our institution (DMMMSU) who contributed to the completion of this study. Special thanks are extended to the academic mentors and peer reviewers whose insights and feedback greatly enhanced the quality of this work. Appreciation is also due to the researchers whose empirical studies formed the foundation of this review. Finally, heartfelt thanks to colleagues and collaborators for their encouragement and constructive dialogue throughout the research process.

REFERENCES

1. Adeoye, A., & Jamiu, T. A. (2025). *The impact of digital literature on reading comprehension skills of elementary-level children with specific learning disabilities*. <https://doi.org/10.21608/jchild.2025.363217.1430>
2. Budomo, X. M., Dela Cruz, R. P., & Manalo, J. L. (2024). *The impact of bionic reading on the reading motivation and self-efficacy of students with learning disabilities*. *International Journal of Advanced Multidisciplinary Studies*, 4(11), 402–416. <https://www.ijams-bbp.net/wp-content/uploads/2024/02/11-IJAMS-November-402-416-1.pdf>
3. Flynn, S., O'Connor, L., & Patel, R. (2025). *Effectiveness of Headsprout Early Reading® in special educational needs schools: A cluster randomised controlled trial*. *Journal of Research in Special Educational Needs*. Advance online publication. <https://doi.org/10.1111/1471-3802.70037>
4. Ignacio, A. T., Turingan, V. T., & De Jesus, F. S. (2024). *Lived experiences of senior high school learners with reading difficulties: A case in the Philippines*. *Edelweiss Applied Science and Technology*, 8(6), 2937–2970. <https://doi.org/10.55214/25768484.v8i6.2636>
5. Nilvius, C., & Svensson, I. (2022). *Efficacy evaluation of a full-scale response to intervention program for enhancing student reading abilities in a Swedish school context*. *Reading and Writing*, 35(6), 1239–1264. <https://doi.org/10.1007/s11145-021-10237-3>
6. Saint-Cyr, D. (2024). *Performance in reading and spelling of 30 students with disabilities: Preliminary analyses*. In *Disabilities in Haitian Schools* (Chapter 8). <https://scienceetbiencommun.pressbooks.pub/handicaphaitienglish/chapter/performance-in-reading-and-spelling-of-30-students-with-disabilities-preliminary-analyses/>

7. Thompson, M. (2018). *Evidence-based reading strategies for students with mild to moderate disabilities* (Master's thesis, Bethel University). <https://spark.bethel.edu/cgi/viewcontent.cgi?article=1623&context=etd>
8. Yilmaz, E., & Melekoğlu, M. A. (2022). *Developing a reading comprehension support program for primary school students with specific learning disabilities*. *International Journal of Contemporary Educational Research*, 9(1), 46–61. <https://files.eric.ed.gov/fulltext/EJ1352241.pdf>
9. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). *The PRISMA 2020 statement: An updated guideline for reporting systematic reviews*. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
10. Kitchenham, B. (2004). *Procedures for performing systematic reviews*. https://www.researchgate.net/publication/228756057_Procedures_for_Performing_Systematic_Reviews
11. Snyder, H. (2019). *Literature review as a research methodology: An overview and guidelines*. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>