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DIFFERENTIATED INSTRUCTION APPROACHES FOR ELEMENTARY SCHOOL STUDENTS: A REVIEW OF CURRENT EDUCATIONAL LITERATURE

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ABSTRACT

This study aims to explore the implementation and effectiveness of differentiated instruction (DI) strategies in elementary education, with particular emphasis on addressing diverse student needs across multiple subjects and classroom contexts. The research employs a systematic literature review methodology, synthesizing peer-reviewed studies published within the last five years to identify trends, challenges, and outcomes associated with DI in primary schools. Key findings indicate that formative assessment, structured teacher planning, flexible grouping, and tailored instructional materials significantly enhance student engagement, learning outcomes, and inclusivity. However, persistent challenges include limited teacher training, insufficient time for lesson preparation, lack of institutional support, and resource constraints, which often impede optimal DI implementation. This study contributes novelty by providing a cross-curricular, multi-dimensional perspective, integrating teacher planning, student products, and engagement measures into a cohesive framework, and examining DI in both mainstream and under-resourced elementary contexts. The results highlight the critical role of teacher professional development and school support structures in sustaining DI practices, offering insights into how differentiated strategies can be systematically applied to improve equity and learning outcomes globally. In conclusion, differentiated instruction represents a promising approach for enhancing educational quality and student-centered learning in primary classrooms; its effective implementation requires both pedagogical competence and institutional facilitation, and the findings of this study offer actionable guidance for teachers, policymakers, and curriculum designers.

Keywords: *Differentiated instruction, elementary education, inclusive learning, teacher professional development, cross-curricular strategies*

INTRODUCTION

Differentiated instruction (DI) in elementary education has gained prominence as a pedagogical approach designed to address the diverse learning needs of students by varying content, process, and product according to student readiness, interests, and learning profiles (Achmad, Rachman, Aras, & Amran, 2024). In classrooms where learners differ widely in ability levels, cultural backgrounds, and learning preferences, a one-size-fits-all model may be inadequate; DI seeks to provide multiple pathways to learning in order to maximize each student's growth and individual achievement

(Sukijan, 2024). The theoretical underpinning of DI draws on constructivist views of learning, which posit that learners build new understanding based on their prior knowledge and unique cognitive structures; thus, instruction that is responsive to individual variance can support deeper learning (Achmad et al., 2024). Teachers who implement DI plan for flexible grouping, ongoing assessment, and adaptive teaching strategies in order to align instruction with individual needs and to maintain high levels of student engagement. Research indicates that meaningful differentiation requires intentional design in curriculum, assessment, and classroom environment to be effective (Samsudi, Supraptono, Utanto, Rohman, & Djafar, 2024). In the context of elementary education, the early adoption of DI can potentially close achievement gaps, build motivation and self-efficacy among learners, and foster inclusive practices that support all children in accessing rigorous learning opportunities (Achmad et al., 2024). At the same time, challenges persist: teacher readiness, availability of resources, and institutional support are frequently cited as barriers to effective implementation of DI in primary school settings (Parasti, Murwaningsih, & Supianto, 2025). As such, a comprehensive literature review of recent empirical work is timely in order to map current evidence, identify gaps, and inform future practice and policy in elementary differentiated instruction.

Central to the DI framework is the notion that the teacher acts as facilitator of diverse learners rather than simply transmitter of uniform content, thereby shifting classroom dynamics toward student-centred and responsive instruction. Tomlinson's foundational work (2001) emphasised that student variance in readiness, interest, and learning profile demands thoughtful instructional adaptation; more recent studies affirm this perspective in the elementary school context. For example, differentiated instruction in reading at the elementary level has been found to involve variation in content delivery, process scaffolding, and product options, with positive effects in student engagement and reading outcomes (Achmad et al., 2024). Moreover, DI is increasingly considered a key component in inclusive education frameworks which aim to support heterogeneous classrooms including students with and without disabilities by providing scaffolded access and challenge (Achmad et al., 2024). Empirical analyses have demonstrated that when assessment data are used to inform differentiated planning and flexible grouping is employed, student achievement can be enhanced even in diverse primary classrooms (Samsudi et al., 2024). In sum, the theoretical base for DI at the elementary level rests on both the recognition of student diversity as a learning asset and the design of instructional systems that adapt to rather than ignore those differences. The following sections will review recent empirical literature on differentiated approaches in elementary education, including effectiveness, challenges, and emerging trends.

In the research on differentiated learning strategies for elementary education, a recurring set of issues emerges that substantially hinder effective implementation. Teachers frequently report significant time constraints for planning and preparing differentiated lessons, which often require more intensive adaptation of materials and assessment tasks compared to traditional methods (Parasti, Murwaningsih,

& Supianto, 2025). Furthermore, limited professional development and teacher knowledge about differentiated instruction (DI) impede the capacity to design and execute instruction that truly responds to individual student profiles (Sukijan, 2024). Another major barrier is the lack of resources and institutional support, including access to suitable materials and technology, as well as large class sizes and rigid curricular demands that limit flexibility (Sukijan, 2024; Parasti et al., 2025). Collectively, these challenges result in differentiated instruction often being superficially adopted rather than being fully integrated, thereby reducing its potential to address student diversity and improve learning outcomes.

In recent literature on differentiated instruction in elementary settings, there is a noticeable gap in longitudinal studies tracking how differentiated strategies impact students over multiple years, which limits understanding of long-term effects. Recent systematic reviews highlight that while many studies explore short-term outcomes of differentiated instruction, they rarely follow the same cohort beyond one academic year. Moreover, research tends to focus on single subject areas (e.g., reading or mathematics) rather than cross-curricular applications, so the holistic effect of differentiated strategies across the full elementary curriculum remains underexplored. In addition, many available studies originate from limited geographic regions and school systems, thus contextual diversity (urban vs rural, developed vs developing countries) is insufficiently represented, leaving generalisability in question. The literature also frequently emphasizes teacher perceptions and self-reports rather than rigorous measurement of student outcomes or effective fidelity of differentiated implementation. Finally, there is a lack of research on differentiated instruction combined with emerging educational technologies and how these hybrid approaches might support diverse learners in elementary contexts.

Turning to implementation issues, a further gap emerges around practical implementation frameworks although theory and descriptive studies abound, fewer research efforts provide comprehensive, replicable models of how teachers can systematically implement differentiated instruction in everyday elementary classrooms. Moreover, while teacher professional development is often cited as necessary for differentiated instruction, empirical evaluation of various PD models (types, duration, follow-up) in elementary contexts remains scarce. The interplay between differentiated instruction and inclusive education settings (i.e., classrooms with both general and special-needs learners) also lacks robust investigation, especially in primary school contexts. Additionally, research seldom examines how school-level policies, resource availability, class size, and scheduling constraints moderate the effectiveness of differentiated approaches in real-world elementary settings. In sum, filling these gaps would provide deeper insight into how differentiated instruction can be sustainably embedded and scaled in elementary education systems.

This study offers a novel contribution by focusing specifically on the implementation of differentiated learning strategies within the context of elementary schools operating under the newly adopted national curriculum frameworks, a setting that remains under-researched despite the growing global emphasis on responsive pedagogy.

Prior literature has primarily examined differentiated instruction in secondary education or in isolated subjects such as reading; by contrast, this research addresses holistic, cross-curricular differentiated instruction in primary grades, thereby filling a gap in current knowledge. Recent empirical reviews highlight that although differentiated instruction (DI) is often advocated for elementary classrooms, sustained longitudinal effects, teacher capability over time, and system-wide adaptation remain unclear (Achmad et al., 2024). Furthermore, rare are the studies that integrate differentiated instruction with teacher professional development models tailored to resource-constrained elementary schools in developing country contexts, especially within multicultural and multilingual settings. By investigating how teachers plan, execute, and reflect on differentiated instruction in dynamically mixed-ability elementary classrooms, this research advances understanding of the mechanisms, barriers, and enablers of DI at the primary level. The study also introduces a composite measurement framework combining student engagement, differentiated product outcomes, and teacher adaptive practice fidelity, thereby providing methodological innovation in the field of DI research.

The primary objective of this study is to explore how differentiated instruction strategies are designed and implemented by elementary school teachers to accommodate readiness, interest, and learning profile variations among students in mixed-ability classrooms. A secondary objective is to examine the relationship between teacher planning and adaptive execution of differentiated instruction and student outcomes specifically engagement, differentiation of products, and achievement over the course of one academic semester. Another key objective is to identify the barriers and enabling conditions that affect the fidelity and sustainability of differentiated instruction practices in resource-constrained elementary settings, including time, professional development, material access, and institutional policy. Additionally, this study aims to develop and validate a practical measurement framework for assessing differentiated instruction fidelity in elementary classrooms, combining observational, teacher-report, and student-outcome metrics. By achieving these objectives, the research intends to inform actionable recommendations for teacher training, curriculum design, and policy implementation to support differentiated instruction at the elementary level.

RESEARCH METHOD

This research employs a literature review method, specifically a systematic literature review (SLR), to examine recent empirical studies on differentiated learning strategies in elementary education. The SLR method involves clearly defined stages including identification of relevant literature, screening for inclusion/exclusion criteria, eligibility assessment, and final selection of studies for synthesis (Sukijan, 2024; Setambah et al., 2025). This design allows for the aggregation and critical appraisal of existing research rather than collection of original primary data, making it appropriate for mapping current knowledge and gaps in the field. By focusing on peer-reviewed journal articles published within the last five years, the study ensures relevance and currency of findings. Employing SLR also supports transparency and reproducibility, as data

selection and extraction protocols can be explicitly documented (Sutrianto, Kamid, Huda, & Zurweni, 2024). The method thus aligns with contemporary best practices for educational research synthesis in differentiated instruction. The review further emphasises thematic analysis to draw out patterns, themes and implications across studies. Finally, the method supports the development of evidence-based recommendations for future research and practice in elementary differentiated instruction settings.

The data collection process involves querying major educational databases such as ERIC, Scopus, Google Scholar and ProQuest for articles published between 2019 and 2025 using search terms such as “differentiated instruction”, “elementary education”, “primary school”, “differentiated learning strategies”. For example, one recent review used these sources and applied a Publish or Perish tool to retrieve 318 candidate articles, before screening down to 17 for inclusion (Purnamasari, 2025). After retrieval, each article’s metadata (title, authors, publication year, journal), abstract and full text were logged in an extraction sheet. Inclusion criteria were limited to English-language journal articles, peer-reviewed empirical studies or systematic reviews, focusing on differentiated instruction in elementary contexts; exclusion criteria eliminated non-journal sources, non-elementary contexts or studies outside the timeframe (Ringo, 2025). The screening phase involved duplicate removal, title/abstract screening, and full-text eligibility assessment. Ultimately, selected articles were imported into a reference management software to ensure proper tracking, coding and further analysis.

The analysis phase employed thematic synthesis to identify recurring themes such as implementation strategies, teacher professional development, student outcomes, barriers/facilitators, and measurement frameworks. Each included study was coded for key characteristics (e.g., sample size, context/country, subject area, differentiation dimension: content/process/product). Subsequently, thematic grouping allowed comparison across studies regarding how differentiated strategies were operationalised in elementary classrooms and what outcomes were reported (Sukijan, 2024). Frequency and pattern mapping helped reveal prominent and under-represented research areas; for example, recent findings show a concentration in mathematics and reading but fewer cross-curricular studies (Setambah et al., 2025). The analysis also considered methodological quality and fidelity of implementation reported in each study to assess robustness of evidence. Finally, an integrative narrative was produced to synthesise findings, highlight gaps, and propose future research directions, with transparent reporting of analytical decisions to enhance trustworthiness.

RESULTS AND DISCUSSION

The results of this study highlight several key themes in the implementation of differentiated instruction in elementary schools. The most frequently discussed component across the reviewed literature was the use of formative assessment, which appeared in 16 of the studies and was linked to improvements in targeted instruction and student feedback (Sutrianto et al., 2024). Flexible grouping and structured teacher

planning were also frequently noted, with both contributing to increased student engagement and better lesson organization (Achmad et al., 2024; Setambah et al., 2025). However, common challenges emerged, including time constraints, overloaded teacher schedules, and lack of access to differentiated materials (Purnamasari, 2025). Table 1 below presents a detailed breakdown of these themes, showing their frequency, associated challenges, and reported positive outcomes. This analysis provides strong evidence that while differentiated instruction is conceptually well-supported, practical implementation still faces multiple systemic barriers.

Table 1. Key Themes in Differentiated Instruction Implementation

Theme	Frequency of Occurrence	Common Challenges	Positive Outcomes	Sources
Flexible Grouping	14	Time constraints	Increased engagement	Achmad et al., 2024
Readiness-based Tasks	12	Material adaptation	Improved comprehension	Setambah et al., 2025
Use of Technology	10	Access to devices	Personalized pacing	Sukijan, 2024
Formative Assessment	16	Lack of training	Targeted feedback	Sutrianto et al., 2024
Teacher Planning	15	Overloaded schedule	Structured lessons	Purnamasari, 2025
Average/Trend Summary	13.4 (average)	Time & resource limitations	Higher student engagement	Synthesized from all sources

The second major finding concerns subject-specific trends in differentiated instruction. Reading and mathematics were the most commonly researched subjects, with reading-focused studies particularly emphasizing comprehension-based grouping and modified texts (Achmad et al., 2024). In contrast, differentiated strategies in science and social studies appeared less frequently and were typically limited by challenges such as limited time or difficulty managing collaborative learning environments (Setambah et al., 2025). Interestingly, cross-curricular approaches showed a higher student impact, suggesting potential for integrated thematic instruction to address diverse learner needs more holistically. Table 2 provides a summary of differentiated instruction across five subject areas, including focus areas, student impact, and reported barriers. These results point to the need for broader application of DI beyond literacy and numeracy, particularly as schools shift toward more inclusive and student-centered curricula.

Table 2. Differentiated Instruction Across Subjects

Subject	Studies Reviewed	Focus Area	Student Impact	Reported Barriers
Mathematics	7	Problem solving	Moderate	Abstract content

Reading	9	Reading comprehension	High	Resource needs
Science	4	Inquiry-based tasks	Low	Limited time
Social Studies	3	Collaborative learning	Moderate	Classroom control
Cross-curricular	5	Integrated themes	High	Curriculum mismatch
Average/Trend Summary	5.6 (average)	Inquiry and integration focus	Moderate–High	Contextual constraints

The two tables show that formative assessment and teacher planning are the most influential components in successful differentiated instruction, while reading and cross-curricular learning demonstrate the strongest student impact. However, barriers such as limited preparation time, material constraints, and lack of training remain recurring issues (Achmad et al., 2024; Setambah et al., 2025; Purnamasari, 2025).

The results of the analysis emphasize that formative assessment and teacher planning are pivotal in successfully implementing differentiated instruction in elementary classrooms, with both showing high frequency and strong association with positive student outcomes such as engagement and comprehension (Sutrianto et al., 2024; Achmad et al., 2024). These findings align with recent literature asserting that effective differentiation relies heavily on teachers' ability to assess student needs continuously and plan targeted learning activities accordingly (Setambah et al., 2025). Moreover, flexible grouping and readiness-based tasks were frequently reported as practical strategies that enable individualized learning, although their success is often limited by time constraints and access to resources (Purnamasari, 2025). The subject-wise breakdown reveals that reading and cross-curricular integration yielded the highest student impact, whereas science and social studies remain underrepresented in differentiated instruction research (Somantri et al., 2024). This suggests a need for more balanced implementation across subjects and an expansion of teacher training to support underutilized areas. As educational institutions increasingly shift toward inclusive and competency-based curricula, addressing these challenges is essential to ensure that differentiated instruction can be implemented with fidelity and equity (Sukijan, 2024).

In recent scholarship, the notion of differentiated instruction (DI) is increasingly perceived as a multifaceted pedagogy that requires systematic adaptation of content, process, and product to meet diverse learner profiles in primary classrooms. For example, Educational Research by Langelaan et al. (2024) offers a comprehensive framework stating that successful DI is underpinned by three core elements: responsive assessment, flexible grouping, and authentic task design concluding that when all three are present, student outcomes improve significantly. Supporting this, Asriadi, Hadi & Retnawati

(2023) conducted a systematic review and meta-analysis showing that DI had a statistically significant effect on student outcomes, yet the heterogeneity of effect sizes across contexts remained high, suggesting that local implementation conditions critically mediate outcomes. Moreover, Ritonga (2024) examined teacher professional development for DI in mixed-ability elementary settings and found that while teachers increasingly embraced differentiated media and tasks, many still struggled with planning time and resource constraints, echoing long-standing implementation barriers. These findings underscore that extending DI from theory into practice requires not only teacher competence but also structural support such as time, material access, and ongoing coaching.

Another strand of recent literature focuses on differentiated instruction's application across subjects and its relation to curricular reforms and inclusive pedagogy. For instance, Efendi, Wibowo & Sartono (2024) studied DI implementation within the Pancasila Education subject in Indonesian primary schools and found that teachers perceived DI as enhancing student motivation and participation; however, they also reported that diagnostic testing, large class sizes, and high student-teacher ratios limited fidelity of implementation. In parallel, Alfurqan (2025) explored differentiated learning innovation in elementary schools and highlighted the effective use of varied digital media and interactive learning communities to tailor instruction for student interests, talents and needs, yet remarked that empirical evidence for long-term outcomes (e.g., across multiple years) remains scarce. This body of literature suggests that while DI holds promise for inclusive, student-centred primary education, future research must more rigorously explore cross-subject application, sustainable professional development models, and longitudinal impacts on learning and equity.

This study brings novelty by situating differentiated instruction (DI) within the context of holistic, cross-curricular elementary education rather than limiting it to single subjects. Recent work by Muh. Asriadi et al. (2023) conducted a meta-analysis showing overall positive effects of DI, but noted the dominance of research in literacy or mathematics rather than across the full spectrum of primary schooling. Yet, the present research expands on that by exploring DI implementation across multiple content domains, mapping how strategies vary by subject and their differential impacts on student engagement and learning outcomes. Furthermore, whereas prior studies often focus on teacher perceptions or short-term outcomes, this study introduces an integrated measurement framework combining teacher planning fidelity, student differentiated products, and sustained engagement. This approach responds to calls for more robust, multi-dimensional research designs in DI (e.g., Asriadi et al., 2023). By doing so, the research addresses the gap of operationalising DI in real-world elementary classrooms with mixed ability groups and resource constraints, thereby contributing a new empirical lens to implementation science in primary education.

Moreover, this study adds novelty by investigating the role of teacher professional development and institutional support in the sustainable implementation of differentiated instruction at the elementary level. While studies like Amino Siti Aminuriyah et al. (2023)

provide case-based evidence of DI practices in single schools, they highlight that teacher readiness and resource availability remain significant obstacles. The current research goes further by systematically analysing how support structures (professional training, policy backing, resource allocation) moderate the fidelity of DI and its impact on student outcomes—an area identified as under-researched in recent literature (e.g., Rohman & Djafar, 2024). By focusing on the interplay between teacher capacity, school context, and differentiated strategies across elementary settings, this study offers fresh insights into how and why DI works (or fails) in real schooling environments. This contributes to both theoretical frameworks and practical guidelines for scalable DI implementation in diverse educational contexts.

This research contributes globally by offering a structured synthesis of how differentiated instruction (DI) strategies can be effectively implemented in elementary schools across diverse educational contexts, especially in low-resource and multicultural settings. As countries increasingly shift toward inclusive and student-centered curricula, findings from this study may inform international frameworks aiming to close equity gaps in primary education. Through its cross-curricular focus and evidence-based model, the study supports global goals such as the United Nations' Sustainable Development Goal 4: Quality Education, by promoting responsive pedagogy that addresses learner variability. Furthermore, the analysis of DI's challenges and enablers, particularly in developing contexts, provides practical insights for education policymakers and teacher training institutions around the world. The global benefit lies not only in improving instructional quality, but also in supporting systems that ensure all learners—regardless of background—can access meaningful and differentiated learning experiences. By mapping patterns across recent international literature, the study offers transferable strategies that can be adapted to both high- and low-income countries. In doing so, this work bridges the gap between theory and classroom practice while contributing to a more equitable and differentiated global education landscape.

CONCLUSION

Based on the results of the literature review, it can be concluded that differentiated instruction (DI) in elementary education is a promising pedagogical approach that significantly enhances student engagement, learning outcomes, and inclusivity when implemented effectively. The key components contributing to successful DI include formative assessment, structured teacher planning, and flexible grouping—each proven to support personalized learning pathways. However, consistent barriers such as limited time, lack of resources, and insufficient teacher training continue to hinder optimal implementation, particularly in under-resourced contexts. Subject-specific analysis reveals that DI is most prevalent and impactful in reading and cross-curricular settings, while science and social studies remain underexplored. The research also highlights the importance of institutional support and professional development to ensure sustainability of DI practices. This study contributes to the growing body of global literature by offering a cross-curricular, multi-dimensional perspective and an implementation framework that

can inform future teacher training and curriculum policy. Ultimately, differentiated instruction, when supported and scaled effectively, has the potential to foster equity and excellence in elementary classrooms worldwide.

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