

Challenges and Strategies in the Implementation of Differentiated Instruction in Rural Schools: A Systematic Literature Review

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DOI: <https://dx.doi.org/10.47772/IJRISS.2025.903SEDU0489>

Received: 12 August 2025; Accepted: 19 August 2025; Published: 20 September 2025

ABSTRACT

This study is a Systematic Literature Review (SLR) aimed at identifying and analyzing the challenges in implementing differentiated teaching approaches and the strategies to address these challenges in rural schools. Differentiated instruction emphasizes the use of various strategies, methods, and teaching styles tailored to the diverse needs of students. However, its implementation in the context of small-enrollment schools faces multiple constraints. This study employs an SLR methodology based on the PRISMA approach to examine selected journal articles from 2021 to 2025, sourced from major databases such as Scopus, WoS, ScienceDirect, and ERIC. A total of 20 articles were selected and analyzed thematically. The findings indicate that the main challenges include time and planning, resources and materials, institutional support, and student management. The study recommends intensive teacher training, adaptation of teaching aids, time management, and stronger administrative support to enhance the effectiveness of differentiated instruction in small-enrollment schools. The implications of this study are expected to assist policymakers and educators in designing more effective interventions for differentiated approaches that are inclusive and responsive to the local context.

Keywords: Differentiated Instruction, Rural Schools, Challenges, Strategies, Systematic Literature Review.

INTRODUCTION

21st-century skills have become an essential aspect of learning to ensure that students remain competitive in the new millennium era. To achieve the global goal of producing a generation equipped with 21st-century competencies, teachers across education systems worldwide must master various fields, stay updated with educational policies and issues, possess strong pedagogical skills, leverage the latest technology, and instill noble values to shape students' character and moral conduct (Zamri et al., 2019). The quality of education in any country heavily depends on the effectiveness and competence of teachers (Mohammed Sani and Jamalul Lail, 2012). Many nations, including Malaysia, emphasize through their respective education philosophies that teaching is not merely the delivery of academic knowledge, but also encompasses spiritual, emotional, and physical aspects to ensure holistic student development. High-quality education, therefore, plays a significant role in shaping excellent generations across diverse cultural and national contexts (Mazura and Wak Chu Wok, 2018).

The current developments in the field of education highlight the diversity among students globally, making it increasingly difficult to apply a one-size-fits-all approach. Each learner has unique needs and preferences, and thus educators in different countries must understand and integrate this diversity. Teachers today must recognize student differences, including socioeconomic status, culture, language, religion, cognitive and affective levels, interests, inclinations, gender, and background. With this understanding, they can plan the teaching and learning process (PdP) more effectively to maximize each student's potential. Furthermore, teachers must ensure that instruction is carried out wisely and effectively, in accordance with students' cognitive abilities and tendencies, so that values, traditions, and beliefs can be nurtured within their respective contexts (Zamri et al., 2018). To engage all levels of student intelligence and ensure their needs are met, teachers worldwide must apply the most

suitable methods and approaches in the classroom. One of the most widely recognized strategies to address diverse learning needs is the differentiated instruction approach.

Differentiated instruction aims to provide equal opportunities for all students so they can learn according to their cognitive level and current situation (Zamri et al., 2015). Teachers adopt this approach by taking into account content, processes, and learning outcomes to produce knowledgeable and skilled students. The methods used in differentiated instruction ensure more effective teaching delivery across contexts. Zamri et al. (2015) emphasized that teachers must build and develop teaching routines in the classroom without ignoring student diversity in terms of readiness, interest, and personality. These routines include curriculum differentiation and teaching through one or more aspects, such as the content learned, learning processes, outcomes (knowledge or skills), and the learning environment.

However, research indicates that many teachers worldwide still lack a solid understanding of differentiated instruction. For instance, Mazura and Wak Chu Wok (2018) reported that 80% of teachers in Malaysian schools struggle with applying this approach effectively, while studies in other countries reveal similar challenges in balancing curriculum demands with student diversity. This situation suggests that knowledge and application of differentiated instruction are not yet fully developed on a global scale. Therefore, continuous efforts must be made internationally for teachers—whether in Malaysia or elsewhere—to acquire information and strengthen competencies related to this approach so that student proficiency across subjects can be improved. In conclusion, understanding and awareness of the importance of differentiated instruction must be given serious attention across education systems. As diversity remains a defining feature of classrooms worldwide, teachers must adopt differentiated teaching approaches to ensure that every student masters the skills outlined in the curriculum without denying their rights to equitable learning opportunities.

Research Objectives

The objectives of this research were:

1. To analyze the challenges faced by teachers in implementing differentiated instruction in rural schools.
2. To propose strategies to overcome the challenges in implementing differentiated instruction in order to enhance its implementation in rural schools.

Background Of the Study

Differentiated instruction

Differentiated instruction is a teaching method designed based on students' varying needs in terms of content, process, product, and learning environment. This approach emphasizes the diversity of students in aspects such as learning styles, proficiency levels, cultural backgrounds, cognitive and emotional development, among others. The main goal of differentiated pedagogy is to ensure that each student receives learning opportunities that suit their specific needs, thereby enhancing engagement and academic achievement. It also helps teachers to plan more flexible and effective teaching and facilitation (T&L) in classrooms with diverse student backgrounds.

This model was introduced by Tomlinson (2017) and is supported by the Ministry of Education Malaysia through the development of the Differentiated Pedagogy Module as a guide for implementation in schools. In every classroom, students differ in many ways, thus teachers must pay close attention to pedagogical knowledge. Effective learning in such diverse classrooms can be supported through effective pedagogical practices, the use of teaching aids from various sources, collaboration among teachers, and encouragement from school administrators (Schwarzenenthal et al., 2020).

Challenges in Implementing differentiated instruction

Differentiated instruction (or Differentiated Instruction – DI) refers to a teaching strategy that takes into account the diversity of students in terms of abilities, learning styles, interests, and backgrounds to ensure each student

receives meaningful learning opportunities. This approach has increasingly gained attention in global education systems, including Malaysia, in line with the demand for inclusive and responsive education tailored to individual student needs. Within the context of the standardized curriculum that emphasizes the effectiveness of student-centered learning, differentiated instruction becomes one of the main strategies to help students reach their maximum potential (Tomlinson, 2001).

The Ministry of Education Malaysia (MOE) has introduced various initiatives such as the Primary School Standard Curriculum (KSSR) and Secondary School Standard Curriculum (KSSM) which emphasize skill-based learning, flexibility in teaching, and formative assessment. However, the implementation of differentiated instruction still faces various issues and challenges. Major challenges identified include time constraints, large class sizes, lack of teaching aids, and teachers' limited understanding and skills in effectively implementing the approach (Subban, 2006; Yusof et al., 2020). A study by Brighton et al. (2005) showed that many teachers struggle to fully implement differentiated instruction due to a lack of training and professional support. They also tend to revert to conventional teaching methods when faced with pressures such as covering the syllabus or exam-based assessments.

In Malaysia, a study by Yusof et al. (2020) found that although teachers acknowledge the importance of DI, they face challenges in terms of pedagogical knowledge, time management, and teaching resources. Another frequently raised issue is the lack of suitable teaching materials that cater to varying student abilities. Teachers must spend significant time planning different activities according to students' levels, which becomes even more challenging in classrooms with more than 30 students (Hall, 2002). Moreover, not all teachers receive adequate in-service training on the practical implementation of DI. According to a study by Wan Nor Azehan et al. (2017), one of the factors affecting the effective implementation of differentiated instruction is school administrative support and peer teacher collaboration. Schools that encourage collaboration and resource sharing among teachers are more likely to successfully implement this approach.

From the student perspective, differentiated instruction also requires teachers to understand students' learning profiles in depth. This requires diagnostic assessment and ongoing monitoring of student progress. However, according to a study by Pham (2012), many teachers do not have sufficient time to conduct such assessments regularly, which in turn affects the effectiveness of this approach. Therefore, this study was conducted to identify in greater depth the issues and challenges faced by teachers in implementing differentiated instruction and to propose interventions that could help enhance the effectiveness of this strategy in the classroom. Understanding these challenges is crucial to ensuring that MOE's efforts towards effective and inclusive education can be realized.

METHODOLOGY

This systematic literature review was adapted based on the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Based on the 27 items in the checklist and the four-phase flow diagram, the selected articles were analyzed and evaluated to answer three research questions. The four phases in the PRISMA methodology include the identification phase, screening phase, eligibility phase, and inclusion phase.

Resources

To collate the journal for this systematic literature review, Scopus, Wos, ScienceDirect and Eric database was used.

Systematic Searching Strategies

There are three main phases of a systematic review in PRISMA 2020 flow diagram for new systematic reviews which consists of identification (search records and duplicates), screening (abstract level screening and full text screening) and studies included (final included studies and reports). The entire process of identification of studies via database for this systematic literature review study is illustrated as shown in figure 1 below:

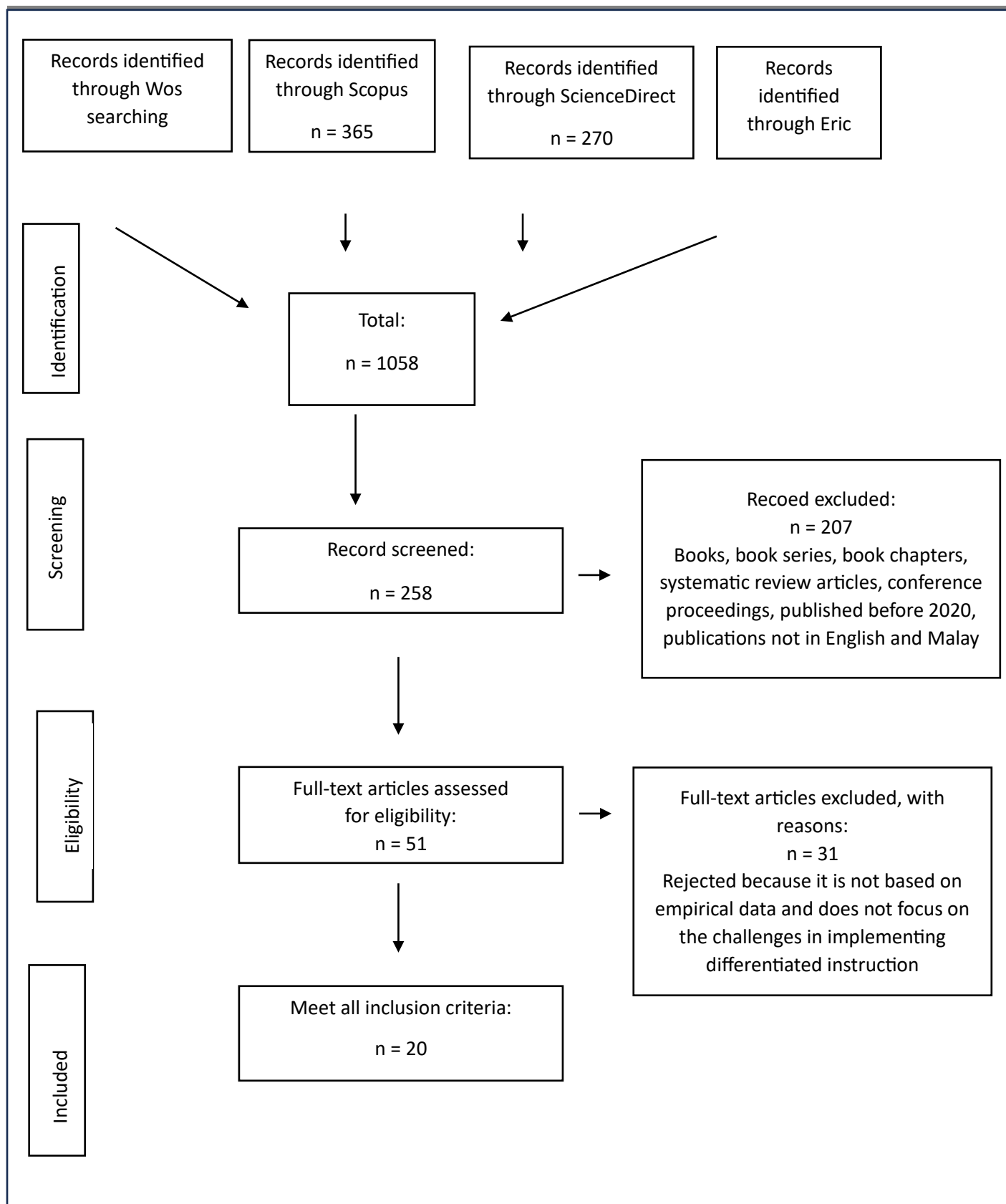


Figure 1: PRISMA 2020 flow diagram for new systematic reviews adapted from (Page et al. 2021)

Phase 1: Identification Phase

The first stage in the systematic literature review process is identification, which involves searching for related terms, synonyms, and variations of the main keywords of the study. The researcher identified keywords such as differentiated instruction, rural schools, challenges, and strategies based on the research objectives and methodology used. The purpose of this stage is to provide various alternatives to the identified literature sources

so that more relevant articles can be included in the systematic review. This process was supported by the use of identified keywords, online thesauruses, and keyword suggestions from WoS, Scopus, ScienceDirect, and ERIC.

WoS, Scopus, ScienceDirect, and ERIC are well-known international databases widely used in academic research. These four provide powerful resource search functions, enabling researchers to trace citation history, article impact, and perform bibliometric analyses. These databases cover various subject areas, including education and linguistics, making them highly relevant for this study. In this study, literature searches were conducted using keywords related to differentiated instruction, rural schools, challenges, and strategies as shown in Table 1.

Table 1: Search Strings Used for the Systematic Literature Review

Database	Keywords
Scopus, WoS, ScienceDirect, ERIC	("differentiated instruction" or ("varied instruction") AND ("rural schools") AND ("issues" or "challenges" or "implementation problems" or "barriers") AND ("strategies or recommendations")

Phase II: Screening Phase

The second stage in this systematic review process is screening. Through this process, the researcher filters out documents that do not meet the objectives or standards of the study from a large number of potentially relevant documents. The scope of the study was refined to ensure that the final set of included literature is truly relevant, of high quality, and answers the research questions. During this process, 800 duplicate articles were removed from the initial number obtained, and 258 articles were screened.

The criteria for article selection were determined based on the relevance of the article content to the study objectives and carried out through filtering within the database. Since it is impractical to review all articles thoroughly, the researcher set the publication time frame as one of the inclusion criteria, as recommended by previous studies. Observation of the search data found that the issue of implementing differentiated approaches in rural schools has been a focal point over the past five years, particularly from 2021 to 2025.

In addition, only articles written in Malay or English were selected to avoid confusion in terms of language and translation. This study was also limited to research articles only, and did not consider materials such as books, book chapters, or seminar papers. Furthermore, this study only included articles that addressed differentiated instruction, rural schools, challenges, and strategies. Refer to Table 2.

Table 2: Search Strings Used for the Systematic Literature Review

Criteria	Eligible	Excluded
Publication Year	2021–2025	Articles published before 2021
Language	Malay / English	Articles in languages other than Malay and English
Document Type	Research articles	Books, book chapters, literature reviews, seminar papers
Access	Open access	Restricted or no access
Keywords in Article	Differentiated Approach, Under-Enrolled School, Challenges, and Strategies	Articles that do not include these keywords (focused on other topics)

Phase III: Eligibility Phase

The final stage in the screening process is eligibility. A total of 51 articles were identified after the screening phase for more detailed examination. At this stage, the title, abstract, and main content of each article were thoroughly analyzed to ensure their alignment with the research objectives and the extent to which they met the inclusion criteria as outlined in Table 2. This evaluation was carried out to ensure that only highly relevant articles were included in the review. As a result of this assessment, 31 articles were excluded because they did not provide empirical data directly related to the implementation of differentiated instruction in rural schools or did not comprehensively discuss the related challenges and strategies. Therefore, only 20 articles were selected for in-depth analysis in this systematic review.

Phase IV: Exclusion Phase

After completing all three stages of the process identification, screening, and eligibility, only articles that truly met the inclusion criteria were included in this study. Several materials were excluded from the review for specific reasons. These included books, book chapters, book series, systematic review papers, conference proceedings, publications prior to 2021, and articles not written in Malay or English. In addition, articles that did not directly address the implementation of differentiated instruction in rural schools, or that did not thoroughly discuss the challenges and strategies in that context, were also excluded. This step was taken to ensure that only highly relevant and high-quality sources were used in this study.

FINDINGS AND DISCUSSIONS

A meta-synthesis of the reviewed studies reveals that the challenges in implementing differentiated instruction (DI) can be grouped into four major themes: time and planning, resources and materials, institutional support, and student management. Time and planning difficulties, particularly the need to design varied activities and assessments, consistently emerged across contexts. These challenges are compounded by limited access to appropriate teaching resources and technology, forcing teachers to spend additional effort in preparing materials. Institutional support, or the lack thereof, further constrains teachers, as administrative structures often fail to provide the training, resources, or policy backing needed to sustain DI. Finally, student management challenges ranging from diverse readiness levels to behavioral issues make it difficult for teachers to balance equity with efficiency in the classroom.

In parallel, the synthesis highlights strategic approaches to overcoming these obstacles. The most prominent strategies include professional training, stronger institutional support, effective time management and planning, and greater access to technology and teaching aids. Professional development is consistently emphasized as a means of equipping teachers with both the confidence and the practical skills to implement DI effectively. Likewise, institutional support plays a dual role providing resources while legitimizing DI as an essential practice rather than an optional approach. Teachers also identified careful time management and collaborative planning as necessary to reduce the burden of preparation. The integration of technology and innovative teaching aids further supports differentiated practices, particularly in contexts where student engagement is a concern.

The meta-synthesis reveals important interconnections between the challenges and strategies. For instance, while time constraints are a persistent barrier, training and collaborative planning can mitigate this issue by providing teachers with ready-to-use strategies and shared resources. Similarly, insufficient materials and technology hinder effective DI, but institutional investment in teaching aids and digital tools offers a direct solution. Student management challenges also intersect with institutional and parental support, suggesting that DI cannot succeed through teacher effort alone but requires systemic involvement. These interwoven themes indicate that effective implementation of DI depends not on isolated solutions, but on a holistic approach that aligns teacher training, institutional policy, resource provision, and classroom practice.

In the effort to improve the quality of teaching and learning, differentiated instruction (DI) approach is increasingly gaining attention as a pedagogical strategy that is responsive to the diverse needs, learning styles,

and ability levels of students. Various studies from different countries have been conducted to examine the challenges and implementation strategies of DI in different contexts. This part discusses the findings from 20 empirical studies that focus on the implementation of DI in various educational systems worldwide, including Malaysia, Indonesia, Nigeria, Jordan, Morocco, China, and others. The discussion in this chapter focuses on two main aspects: the challenges of implementation and the strategies for implementation based on previous studies. Table 3 summarized the type of research methodology used by each article, country that taken place to collect data the findings from the articles, research gap and also conclusion where all the findings are coded.

Table 3: Table shows the details of each articles and the findings.

Bil	Titles and Authors	Country	Research Methods	Findings	Research Gap	Conclusion
1	Use of Differentiated Pedagogical Approaches by Malay Language Teachers: Issues and Challenges (Yusmim Omar, Khairul Azhar Jamaludin)	Malaysia	Qualitative	Challenges encountered by Malay Language teachers when implementing Differentiated Pedagogical Approaches: <ul style="list-style-type: none"> • Student Diversity • Teacher Preparedness • Curriculum Constraints • Parental Involvement • Availability of Teaching Aids and Materials 	<ul style="list-style-type: none"> • Enhance teacher training and professional development to build confidence and competence in implementing Differentiated Pedagogy 	Differentiated Pedagogy has the potential to enrich the educational experience for Malay Language students by providing multiple avenues to engage with the language and improve linguistic skills, several challenges hinder its effective implementation.
2	Utilization, Challenges, and Best Practices of Using Differentiated Instruction: Basis for a Pedagogical Model (Eliseo Petalta et al.)	Filipina	Mixed-methods	Challenges Encountered: <ul style="list-style-type: none"> • Time Constraints: • Behavioral Issues: • Assessment Difficulties 	<ul style="list-style-type: none"> • The long-term impact of DI on student academic performance across different subjects. • There is a lack of exploration into the professional development needs of teachers to sustain and enhance DI practices. 	Differentiated instruction is a valuable pedagogical approach in public secondary schools, promoting inclusive and effective teaching practices.
3	Teachers' Challenges in Implementing Differentiated Instruction in Teaching English at Junior High School	Indonesia	Qualitative	Teacher-Related Challenges: <ul style="list-style-type: none"> • Time and Effort • Lack of Peer Support 	Exploring strategies to overcome these challenges and in assessing the long-term impact of DI on student learning outcomes.	Implementing Differentiated Instruction in English teaching at the junior high school level presents notable challenges. Addressing these

	(Imas Suryati, Koesoemo Raith dan Maryadi)			<p>School-Related Challenges:</p> <ul style="list-style-type: none"> • Human Resources • Student Readiness 		<p>issues requires comprehensive support from educational stakeholders, including professional development for teachers, resource allocation, and strategies to enhance student readiness.</p>
4	<p>Teachers' Perspectives on the Use of Differentiated Instruction in Inclusive Classrooms: Implication for Teacher Education</p> <p>(Charity Neejide Onyishi dan MonahengSefot ho Maximus)</p>	Nigeria	Quantitative	<p>Challenges Encountered:</p> <ul style="list-style-type: none"> • Low Implementation of DI • Time Constraints 	<p>Theoretical understanding of DI and its practical application, primarily due to insufficient training and resources for teachers.</p>	<p>Differentiated instruction to be effectively implemented in inclusive classrooms. Colleges of education and university faculties should incorporate comprehensive training on DI strategies, classroom management for diverse learners, and the development of appropriate assessment tools.</p>
5	<p>Teacher's Differentiated Instruction Practices and Implementation Challenges for Learning Disabilities in Jordan</p> <p>(Mayada Al-Natour dan Siam Karam)</p>	Jordan	Quantitative	<p>Identified Challenges:</p> <ul style="list-style-type: none"> • Insufficient administrative support • Limited parental involvement • Time constraints • Shortage of learning resources 	<p>The recognized importance of differentiated instruction and its practical application in classrooms, particularly in public schools</p>	<p>The research concludes that while differentiated instruction is acknowledged as a beneficial approach for students with learning disabilities, its implementation in Jordanian schools is limited.</p>
6	<p>The Impact of Differentiated Instruction in a Teacher Education Setting: Successes and Challenges</p>	Trinidad	Qualitative	<p>Student Perceptions and Engagement:</p> <ul style="list-style-type: none"> • 90% of students in the DI group reported higher levels of intellectual growth and increased 	<p>Instructors found that implementing differentiated instruction was time-consuming, particularly in large class settings, due to the need for extensive planning and organization.</p>	<p>Differentiated instruction positively impacts student engagement, understanding, and motivation in a teacher education context. Despite the challenges associated with its implementation, the</p>

	(Stephen Joseph et al)			<p>interest in the subject matter.</p> <ul style="list-style-type: none"> • 99% expressed a willingness to experiment with differentiated instruction during their practicum sessions • 88% indicated a desire to implement differentiated instructional approaches in their future classrooms post-graduation. 		<p>overall findings support the integration of DI strategies in teacher training programs</p>
7	<p>Strategi dan Cabaran Pelaksanaan Pendekatan Pembelajaran Terbeza dalam Kalangan Guru di Sekolah Rendah</p> <p>(Nur Hanisah Radi dan Syawal Amran)</p>	Malaysia	Qualitative	<p>Challenges:</p> <ul style="list-style-type: none"> • Focus on Content and Student Readiness • Time Constraints • Large Class Sizes • Diverse Student Proficiency Levels • Lack of Suitable Teaching Materials 	Exploring the impact of targeted training programs on teachers' ability to implement differentiated instruction could inform policy and practice.	<p>Differentiated instruction is a recommended approach to address student diversity and achievement gaps, its implementation in primary schools faces significant challenges. To overcome these obstacles, the study suggests that teachers, administrators, and educational development departments collaborate to develop more relevant and holistic strategies.</p>
8	<p>Masalah Dihadapi Oleh Guru Bahasa Melayu Dalam Melaksanakan Pendekatan Terbeza Dalam Pengajaran Dan Pembelajaran Di Rumah</p> <p>(Ain Nur Atika Agus)</p>	Malaysia	Qualitative	<p>Challenges:</p> <ul style="list-style-type: none"> • Time Constraints • Technological Limitations • Student Engagement. • Assessment Difficulties 	Developing comprehensive training modules to equip teachers with skills for differentiated instruction in remote settings.	<p>Differentiated instruction is beneficial for addressing diverse student needs, its implementation during home-based learning poses significant challenges. To overcome these, there is a pressing need for targeted teacher training, improved technological infrastructure, and supportive educational policies.</p>

9	<p>Malaysian Chemistry Teachers' Challenges to Practice Differentiated Instruction in Classroom</p> <p>(Muhamad Furkan Mat Salleh et al)</p>	Malaysia	Qualitative	<p>Challenges:</p> <ul style="list-style-type: none"> • Catering to Students' Need • Lesson Planning and Delivery • Support and Skill • Time Constraints 	<p>While differentiated instruction has been widely studied, there is a scarcity of research focusing specifically on the challenges of implementing DI in Malaysian chemistry classrooms. This study addresses this gap by providing insights into the unique obstacles faced by Malaysian chemistry teachers, highlighting the need for context-specific strategies and support systems to facilitate effective DI practices.</p>	<p>Malaysian chemistry teachers encounter significant challenges in practicing differentiated instruction, primarily due to factors such as diverse student needs, limited time, inadequate training, and insufficient institutional support.</p>
10	<p>Implementing Differentiated Instruction in Indonesian Secondary Schools: Opportunities and Challenges from Language Teachers</p> <p>(Syarifuddin Tundreng et al.)</p>	Indonesia	Qualitative	<p>Challenges</p> <ul style="list-style-type: none"> • Time Constraints • Varied Student Responsiveness • Lack of Parental Support 	<ul style="list-style-type: none"> • Effective strategies to manage time and resources for DI planning and execution. • Approaches to increase student responsiveness and engagement in differentiated activities 	<p>Differentiated instruction offers significant benefits in enhancing student engagement and catering to diverse learning needs, its implementation is hindered by challenges. Addressing these challenges through targeted strategies and further research is essential for the effective integration of DI in Indonesian secondary education.</p>
11	<p>Differentiated Instruction in Islamic Senior High School: Aspects,</p>	Indonesia	Qualitative	<p>Challenges Encountered:</p> <ul style="list-style-type: none"> • Time Constraints. 	<p>Limited Exploration of Islamic Context: There is a need for more research on the application of differentiated instruction within</p>	<p>Teachers employ various strategies to cater to diverse student needs, including integrating Islamic content into lessons. However,</p>

	Strategies and Problems (Herwanto)			<ul style="list-style-type: none"> Resource Limitations Classroom Management 	Islamic educational settings, particularly in integrating Islamic values with language learning	challenges such as time constraints, resource limitations, and classroom management issues impede the full potential of differentiated instruction
12	Exploring Challenges of Differentiated Instruction in English Foreign Language Classroom (Rifqi)	Indonesia	Qualitative	Challenges in DI Implementation: <ul style="list-style-type: none"> Preparati on Phase: <ul style="list-style-type: none"> Time-consuming. Difficulty in sourcing appropriate learning references Implemen tation Phase: <ul style="list-style-type: none"> Managing large class sizes Teachers' intrinsic factors Assessmen t Phase: <ul style="list-style-type: none"> Developing varied assessment rubrics 	Lack of Student Perspective: The challenges and experiences of students regarding DI were not explored.	DI holds promise for enhancing student engagement and learning outcomes in EFL classrooms, its successful implementation is contingent upon addressing several challenges. Teachers require adequate preparation time, access to appropriate resources, and institutional support to effectively differentiate instruction.
13	Voices in Practice: Challenges to Implementing Differentiated Instruction by Teachers and School Leaders in an Australian Mainstream Secondary School (K.W. Gibbs)	Australia	Qualitative	Teachers' Barriers to Implementing DI: <ul style="list-style-type: none"> Limited Resources Student Behaviour Issues Time Constraints 	Teacher Education Programs: There's a need for clearer and more comprehensive training in DI during pre-service education to better prepare future teachers.	DI holds promise for addressing diverse student needs, its successful implementation is impeded by various challenges. Teachers and school leaders identified resource limitations, time constraints, and gaps in training as significant barriers.
14	Differentiated Instruction: A Survey of Novice Teachers' Understanding	Malaysia	Quantitative	Barriers to Implementation: <ul style="list-style-type: none"> Time Constraints 	Support Systems: Insufficient institutional support and resources hinder	The study concludes that while novice teachers have a foundational understanding of

	and Barrier to Implementation (Suganty Kanapathy)			<ul style="list-style-type: none"> • Lack of Resources • Classroom Management • Institutional Support. • Professional Development 	the effective implementation of DI.	differentiated instruction, several barriers impede its effective implementation.
15	Challenge and Opportunities: A Qualitative Exploration of Junior High School English Language Educators' Perspectives on Implementing Differentiated Instruction (Rahmaniar Rahmaniar)	Indonesia	Mixed methods	<p>Challenges in Implementation:</p> <ul style="list-style-type: none"> • Time constraints were a major hurdle, especially for planning varied activities and assessments. • Managing large classrooms made it difficult to differentiate instruction effectively. • Some teachers struggled with balancing curriculum coverage and DI approaches. 	More investigation is required on designing and implementing fair and reliable differentiated assessments, as this remains a contentious area among educators and learners.	The article concludes that differentiated instruction holds significant promise for enhancing student learning outcomes by addressing diverse learner needs. However, its effectiveness depends heavily on adequate teacher training, institutional support, and practical strategies to overcome time and resource constraints.
16	Implementing Differentiated Instruction in Indonesian Secondary Schools: Opportunities and Challenges from Language Teachers (Syarifuddin Tundreng)	Indonesia	Qualitative	<p>Challenges in Implementing DI:</p> <ul style="list-style-type: none"> • Time Constraints • Student Responsiveness • Parental Support 	Professional Development: Need for targeted training programs to equip teachers with the skills necessary for effective DI implementation.	DI holds significant potential for enhancing student engagement and learning outcomes, its successful implementation in Indonesian secondary schools is hindered by challenges such as time constraints, varying student responsiveness, and limited parental support.
17	Teachers' Perceptions of Differentiation and the Struggle for Consistent Implementation	United States	Qualitative	<ul style="list-style-type: none"> • Ability Grouping • Technology • Planning for Differentiated Instruction: 	Training Programs: Research should explore the effectiveness of various professional development programs in	Teachers recognize the importance of differentiated instruction to meet diverse student needs, several challenges

	(Felicia D. Fordyce et al.)			<ul style="list-style-type: none"> • Profession al Supports. • Lack of Training • Instruction al Support. 	enhancing teachers' DI practices.	impede its consistent implementation.
18	Understanding Differentiated Instruction (DI): Practices and Challenges in the EFL Classroom in Morocco (Abdelmoula El khdar)	Morocco	Qualitative	<p>Challenges in DI Implementation: Teachers identified several obstacles to effective DI, including:</p> <ul style="list-style-type: none"> • Equity and fairness concerns. • Large class sizes. • An outdated and rigid curriculum. • Classroom management issues. • Lack of administrative support. • Insufficient resources and training. 	Conceptual Clarity: There is a need for a unified and clear definition of DI to ensure consistent understanding and application among teachers.	The study concludes that while Moroccan EFL teachers recognize the importance of DI and attempt to implement it, their practices often lack a solid theoretical foundation. This "micro-differentiation" approach may not adequately address the diverse needs of students
19	Teachers Identified Challenges to Implement Differentiated Instruction in Mathematics Learning (Thabisile Maphumuloa)	South Africa	Qualitative	<p>Challenges:</p> <ul style="list-style-type: none"> • Time Constraints • Resource Limitations • Overcrowded Classrooms. • Parental Support 	Classroom Management: Research into effective classroom management techniques that accommodate diverse learning needs is essential.	The study concludes that while differentiated instruction has the potential to enhance mathematics learning by addressing the diverse needs of students, its successful implementation is impeded by various challenges.
20	Assessing Practices and Challenges in Implementing Differentiated Instruction in Mingde Primary School	China	Qualitative	<p>Challenges Faced:</p> <ul style="list-style-type: none"> • Large Class Sizes. • Diverse Student Needs • Teacher Commitment 	Comparative Analyses: Comparing DI practices across different schools or regions could highlight contextual factors influencing its effectiveness.	The study concludes that while DI has the potential to enhance educational equity and address diverse learning needs, its successful implementation in Mingde Primary School is impeded by

	(Abera Adare et al.)			<ul style="list-style-type: none"> Lack of Professional Training <p>Implementation Strategies:</p> <ul style="list-style-type: none"> Teachers employed strategies such as grouping students based on ability, using varied instructional materials, and incorporating interactive activities to address diverse learning needs. 		factors such as limited teacher understanding, large class sizes, and lack of professional development.
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Challenges In Implementing Differentiated Instruction

This study has identified four main challenges faced by teachers in implementing differentiated instruction: time and planning, resources and materials, institutional support, and student management. These findings were derived from an analysis of 20 articles related to the implementation of differentiated instruction. Table 4 shows the findings of these challenges in rural schools.

Table 4: Table shows the findings of these challenges in rural schools.

No.	Article	Time & Planning	Resources & Materials	Institutional Support	Student Management
1	Yusmim Omar et al.	✓	✓	✓	✓
2	Eliseo Petalta et al.	✓			✓
3	Imas Suryati et al.	✓		✓	✓
4	Onyishi & Sefotho	✓		✓	
5	Mayada Al-Natour et al.	✓	✓	✓	
6	Stephen Joseph et al.	✓			
7	Nur Hanisah Radi et al.	✓	✓		✓
8	Ain Nur Atika Agus	✓	✓		✓
9	Muhamad Furkan et al.	✓		✓	✓
10	Syarifuddin Tundreng et al.	✓		✓	✓
11	Herwanto	✓	✓		✓
12	Rifqi	✓	✓		✓

13	K.W. Gibbs	✓	✓		✓
14	Suganty Kanapathy	✓	✓	✓	✓
15	Rahmaniar	✓		✓	✓
16	Syarifuddin Tundreng	✓		✓	✓
17	Felicia D. Fordyce et al.	✓	✓	✓	✓
18	Abdelmoula El Khdar		✓	✓	✓
19	Thabisile Maphumuloa	✓	✓	✓	✓
20	Abera Adare et al.		✓	✓	

Time and Planning

The most common challenge faced by teachers is time and planning. A majority of studies (17 out of 20) indicate that time constraints are a major obstacle preventing teachers from effectively planning and delivering creative differentiated instruction. According to Yusmim Omar et al., teachers must deal with limited teaching hours alongside administrative duties and preparation of materials, making it difficult to organize differentiated learning activities. Imas Suryati et al. and Mayada Al-Natour et al. also point out that planning alternative learning activities requires additional time that may not be available in teachers' schedules. Moreover, differentiated instruction requires content adjustments based on the curriculum and students' needs, further adding to the workload (Muhamad Furkan et al.; Ain Nur Atika Agus). As a result, many teachers opt for traditional teaching methods that are easier and quicker to implement.

Resources and Materials

The second challenge concerns the availability of teaching resources and materials, identified in 12 articles as a significant issue. Studies by Herwanto and Rifqi show that the lack of suitable and accessible teaching aids hinders effective teaching. Teachers also struggle to access technological equipment such as computers, projectors, or stable internet—especially in rural schools (Abdelmoula El Khdar; Thabisile Maphumuloa). Additionally, teachers face difficulties creating engaging and interactive digital content due to limited training and access to appropriate educational software (Suganty Kanapathy; Eliseo Petalta et al.). Some teachers even have to use personal funds to purchase additional materials, as reported by K.W. Gibbs.

Institutional Support

Fifteen articles highlighted a lack of guidance and encouragement from schools and educational authorities as a barrier to implementing differentiated instruction. Imas Suryati et al. and Onyishi & Sefotho emphasized that the absence of professional development and ongoing mentorship reduces teachers' confidence in trying new teaching methods. Suganty Kanapathy and Rahmaniar reported that some schools do not offer recognition or autonomy to teachers to experiment with creative strategies. Institutional support is crucial not only for providing training and resources but also for creating a supportive work environment that fosters innovation.

Student Management

Student management challenges were noted in 13 articles. Yusmim Omar et al. and Nur Hanisah Radi et al. explained that differentiated instruction often involves group work or technology use, which requires strong classroom management skills. Teachers struggle to keep students focused, follow instructions, and avoid misusing the freedom given in open-ended activities. Felicia D. Fordyce et al. and Ain Nur Atika Agus highlighted that not all students are ready to participate actively in differentiated instruction particularly passive or less disciplined students. In tech-based learning contexts, Imas Suryati et al. and Muhamad Furkan et al. noted that teachers must also monitor digital device use to prevent distractions or misuse.

Strategic Implementation of Differentiated Instruction

Based on the analysis of previous studies, four main challenges were identified: time and planning constraints, lack of resources and materials, insufficient institutional support, and issues with student management. Therefore, various strategies have been proposed in the literature to overcome these challenges. The most prominent strategies include enhancing teacher training, strengthening institutional support, effective time management, and providing adequate technology and teaching aids. Table 5 presents findings on strategies to address the challenges in implementing differentiated instruction in rural schools.

Table 5: Table presents findings on strategies to address the challenges in implementing differentiated instruction in rural schools.

No	Article Author	Training	Institutional Support	Time Management	Technology/Materials
1	Yusmim Omar et al.	✓			
2	Eliseo Petalta et al.		✓	✓	
3	Imas Suryati et al.		✓		
4	Onyishi & Sefotho	✓			
5	Mayada Al-Natour et al.		✓		
6	Stephen Joseph et al.	✓			
7	Nur Hanisah Radi et al.	✓			
8	Ain Nur Atika Agus	✓			✓
9	Muhamad Furkan et al.	✓	✓		
10	Syarifuddin Tundreng et al.		✓	✓	
11	Herwanto	✓			
12	Rifqi			✓	✓
13	K.W. Gibbs	✓			
14	Suganty Kanapathy	✓	✓		
15	Rahmaniar			✓	
16	Syarifuddin Tundreng	✓			
17	Felicia D. Fordyce et al.	✓	✓		
18	Abdelmoula El Khdar	✓			
19	Thabisile Maphumuloa			✓	
20	Abera Adare et al.	✓	✓		

Training

Teacher training is among the most critical strategies to ensure that differentiated instruction (DI) can be implemented smoothly. Thirteen articles in this analysis emphasized the need for effective training to enhance teachers' skills and confidence. Studies by Yusmim Omar et al., Onyishi & Sefotho, Stephen Joseph et al., and others show that ongoing training enables teachers to master DI strategies that align with the needs of 21st-century learners. For example, teachers trained in educational technology and active pedagogy are more prepared

to implement collaborative learning or use online tools such as Quizizz or Padlet. Training also helps teachers understand alternative assessment methods and the preparation of materials aligned with learning objectives. Therefore, structured training programs provided by the Ministry of Education Malaysia (MOE) and the support of professional learning communities (PLC) at the school level are essential in strengthening DI implementation.

Institutional Support

Institutional support also plays a significant role in overcoming challenges in DI implementation. In this analysis, at least eight articles (e.g., by Eliseo Petalta et al., Imas Suryati et al., and Suganty Kanapathy) emphasized that teachers need continuous support from school administrators and educational authorities. Without encouragement and facilitation from administrators, teachers feel less motivated to try new approaches that may be time-consuming or seen as risky. Institutional support can take many forms, including moral encouragement, financial aid for teaching aids, recognition of teachers' innovative efforts, and opportunities for external training or collaboration with higher education institutions. Furthermore, a school culture that supports innovation in DI can boost teacher collaboration and generate more impactful DI initiatives.

Time Management and Planning

Time management and planning of DI also emerged as a central focus in implementing these strategies. Five articles, including those by Rifqi, Rahmانيar, and Syarifuddin Tundreng et al., stated that DI approaches often require more time for planning and execution. Teachers must prepare materials, schedule lessons, and manage more complex classroom activities such as role-plays, presentations, or group work. If the teaching and learning (T&L) time is too short and packed, teachers are likely to revert to traditional, easier-to-manage methods. Therefore, proposed strategies include using the “flipped classroom” model, where students are given pre-class materials and classroom time is used for active learning. Teachers may also structure T&L around thematic or long-term projects, integrating multiple skills into one unit to save time. Both annual and weekly lesson plans must be carefully crafted to balance curriculum demands with innovative approaches.

Availability of Technology and Teaching Aids

Lastly, the availability of technology and teaching aids is a crucial factor influencing the effectiveness of DI. Studies by Ain Nur Atika Agus and Rifqi stressed that the lack of materials or technological equipment such as computers, projectors, internet access, and educational software is a major barrier to digital or interactive T&L. Hence, effective strategies include providing free, accessible digital resources for teachers, such as question banks, educational videos, and learning apps. Schools can also encourage the Bring Your Own Device (BYOD) concept and create flexible learning spaces that support student-centered T&L. Technical support from school ICT technicians is also necessary to ensure smooth classroom operations.

LIMITATIONS AND RECOMMENDATIONS

This systematic literature review, while offering valuable insights into the implementation of differentiated instruction in rural schools, acknowledges certain limitations that may influence the breadth and depth of its findings. Primarily, the study was constrained by its selection criteria, which limited reviewed articles to those published between 2021 and 2025 and written exclusively in Malay or English. This temporal and linguistic filter potentially excluded significant research published outside this timeframe or in other languages, which could have offered alternative perspectives or uncovered additional challenges and strategies. Furthermore, the review's focus solely on research articles meant that other valuable forms of scholarly output, such as books, book chapters, or conference proceedings, were not considered. These exclusions might have omitted rich insights, practical experiences, or theoretical frameworks that could have further enriched the study's understanding of differentiated instruction.

To address these limitations and advance the field, several recommendations for future research emerge. Future studies should broaden their scope to include a wider range of publication years, languages, and scholarly sources in order to provide a more comprehensive understanding of the challenges and strategies of differentiated instruction. In addition, there is a pressing need for empirical studies that specifically target the unique contexts

of under-enrolled or rural schools, allowing for a deeper understanding of the specific challenges and the effectiveness of differentiated instruction strategies within these environments. Longitudinal studies would also be beneficial to assess the long-term impact of differentiated instruction on student academic performance and engagement, providing concrete evidence of its sustained benefits. Furthermore, future research should delve into the efficacy of various teacher training programs, evaluating different methodologies and their impact on teacher confidence and classroom practices. The development and evaluation of context-specific teaching materials and technological tools for resource-limited settings are also crucial. Lastly, exploring the specific types and levels of administrative support that most effectively foster differentiated instruction, as well as analyzing student perspectives and current policy implications, would provide a more holistic understanding and pave the way for more effective interventions.

CONCLUSION

The synthesis of studies across multiple countries demonstrates that differentiated instruction (DI) has become an increasingly recognized pedagogical approach to address the diverse needs of learners in the 21st century. Whether in Asia, Africa, the Middle East, Europe, or beyond, educators acknowledge that student diversity in terms of ability, readiness, interests, learning styles, and backgrounds necessitates instructional practices that move beyond the “one-size-fits-all” model. DI, therefore, is widely seen as a strategy to promote inclusivity, equity, and improved learning outcomes. However, while the concept is broadly accepted, the implementation of DI continues to face substantial challenges across cultural and educational contexts.

A consistent pattern across the studies is that teachers encounter significant barriers when attempting to apply DI in practice. Among the most frequently cited challenges are time constraints, particularly in lesson planning and assessment design, as teachers are required to prepare multiple pathways of learning to cater to varied student needs. Large class sizes further complicate this task, especially in countries such as China, South Africa, and Indonesia, where managing student diversity in overcrowded classrooms remains a pressing concern. Similarly, the lack of sufficient resources, inadequate teaching materials, and limited access to technology emerge as recurring obstacles in both developing and developed contexts. Teachers in Malaysia, Morocco, and Australia, for instance, highlighted the difficulty of sourcing suitable materials to implement DI effectively.

Another critical issue identified is the lack of professional training and ongoing development opportunities for teachers. Across Malaysia, Jordan, Nigeria, and the United States, educators reported that while they may have some theoretical knowledge of DI, they often lack the practical skills and confidence to apply it effectively in the classroom. This points to a broader structural issue within teacher education programs, which often do not provide comprehensive exposure to DI strategies, classroom management for diverse learners, or differentiated assessment techniques. Without sufficient professional preparation, many teachers revert to traditional, uniform methods of instruction that may not adequately address the needs of all students.

Institutional and parental support also plays a decisive role in shaping the success of DI. Studies from Jordan, Indonesia, and the Philippines noted that weak administrative backing and limited parental involvement hinder the sustainability of DI practices. At the same time, cultural and contextual factors shape how DI is interpreted and applied. For example, research from Morocco and Indonesia highlighted tensions between maintaining cultural or religious values while attempting to diversify instructional practices. This suggests that DI cannot be applied as a universal formula; rather, its success depends on context-sensitive adaptations that align with local values, policies, and resources.

Taken together, these findings underscore both the promise and the complexity of implementing differentiated instruction on a global scale. While DI has demonstrated potential to enhance student engagement, foster inclusivity, and improve academic outcomes, systemic barriers continue to limit its full realization. The research gaps identified—such as the need for more comparative, cross-cultural studies, clearer conceptual frameworks, and effective models of teacher training highlight areas that require urgent attention. For DI to move from theory to widespread practice, policymakers, institutions, and educators must work collectively to address these challenges. Adequate resourcing, sustained professional development, and stronger collaboration between teachers, administrators, and parents are critical to ensuring that DI can achieve its intended purpose.

In conclusion, differentiated instruction is not confined to any single country or subject area; rather, it is a global educational imperative shaped by diverse cultural, institutional, and policy contexts. The collective evidence suggests that with the right support systems in place, DI can serve as a powerful tool to nurture students' unique abilities, bridge achievement gaps, and prepare learners for the demands of the 21st century. However, without addressing the recurring challenges identified across countries, DI risks remaining an ideal rather than a practical reality.

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