



Reconceptualizing Classroom Inclusivity: A Literature Review on Universal Design for Learning and Differentiated Instruction

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ABSTRACT: Inclusive education required pedagogical approaches that addressed the diverse learning needs of all students. This literature review examined Universal Design for Learning (UDL) and Differentiated Instruction (DI) as complementary frameworks for fostering inclusivity. Although extensive research had been conducted on each approach individually, limited exploration existed regarding their integrated application in classrooms, representing a significant gap in the literature. A systematic review of peer-reviewed studies, books, and policy reports published between 2010 and 2025 was conducted, focusing on inclusive practices, curriculum adaptation, and differentiated strategies. The findings indicated that UDL promoted flexible learning environments through multiple means of engagement, representation, and expression, while DI allowed instruction to be tailored according to students' readiness, interests, and learning profiles. Combined, these approaches enhanced student engagement, academic outcomes, and accessibility for learners with diverse needs. The challenges identified included limited teacher training, resource constraints, and rigid curriculum structures. The review concluded that integrating UDL and DI offered a practical and theoretical pathway to equitable education. The recommendations emphasized professional development for educators, adaptive curriculum design, and further research on the joint impact of these frameworks in diverse classroom settings.

KEYWORDS: Differentiated instruction; classroom inclusivity; equitable pedagogy; inclusive education; universal design for learning.

1. Introduction

Classroom inclusivity referred to instructional practices that ensured equitable access, meaningful participation, and the removal of learning barriers for diverse learners [1, 2]. In contemporary education, inclusivity increasingly required teaching approaches that both anticipated learner variability and adapted instruction to students' individual needs. In response to this need, the present study reconceptualized classroom inclusivity through the integration of Universal Design for Learning (UDL) and Differentiated Instruction (DI) into a unified framework of inclusive teaching. Global educational initiatives such as UNESCO's inclusive education agenda and Sustainable Development Goal 4 (SDG 4) strengthened the call for

equitable and learner-centered classroom practices [2]. As a result, instructional frameworks such as UDL and DI became central approaches to translating inclusive education policies into actual teaching practice.

Universal Design for Learning (UDL), developed by the Center for Applied Special Technology (CAST), emphasized proactive curriculum design through multiple means of engagement, representation, and action and expression [3]. By embedding flexibility into instruction from the outset, UDL sought to reduce learning barriers and improve participation and achievement for all learners [4]. In contrast, Differentiated Instruction (DI), popularized by Tomlinson [5], focused on responsive teaching practices that adapted content, process, product, and learning environments according to students' readiness, interests, and learning profiles. DI enabled teachers to make real-time instructional adjustments that supported learner diversity and improved motivation and performance [6]. Although both frameworks shared the goal of inclusive education, they were often examined separately, resulting in fragmented understandings of inclusive pedagogy. UDL primarily emphasized proactive instructional design, whereas DI focused on responsive classroom adaptation. This separation highlighted the need for a more integrated perspective that combined proactive design and responsive instruction within a single model of inclusive teaching. Figure 1 illustrated the conceptual progression of inclusive education, beginning with global policy foundations that established the mandate for equity and access (a), followed by proactive instructional design through Universal Design for Learning that anticipated learner variability (b), and responsive classroom practices through Differentiated Instruction that addressed individual learner needs (c). These elements were ultimately integrated into a unified framework (d) that conceptualized classroom inclusivity as a dynamic interaction between systemic design and adaptive teaching practices.

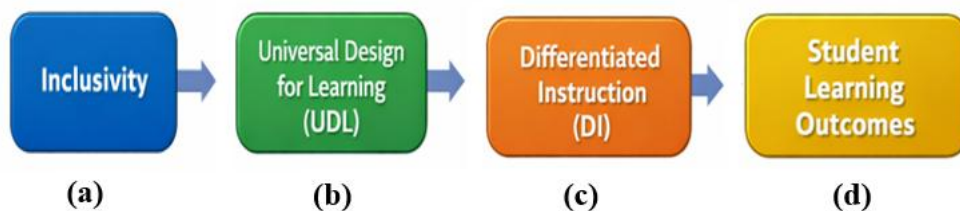


Figure 1. Global policy foundations for inclusive education (a); proactive inclusive design through Universal Design for Learning (b); responsive differentiation based on learner variability (c); integrated framework promoting classroom inclusivity (d).

Most empirical studies on UDL and DI originated from Western contexts, with limited evidence from developing countries such as the Philippines. Existing Philippine studies were largely descriptive and focused on teacher perceptions, with limited large-scale and longitudinal evidence examining implementation fidelity, learner outcomes, and contextual adaptation [7, 8]. Research gaps also remained in relation to cultural responsiveness, regional diversity, and the integration of indigenous pedagogies within inclusive instructional frameworks [9–11]. In response to these gaps, this review synthesized global and Philippine literature on UDL and DI to develop a more comprehensive and context-sensitive understanding of inclusive teaching. Specifically, the study aimed to: (1) examine global literature on UDL and DI, (2) synthesize studies in the Philippine context, (3) compare UDL and DI implementation, and (4) propose a reconceptualized model of inclusive teaching.

2. Methods

2.1. Research design.

This study employed a systematic-integrative literature review to synthesize existing research on Universal Design for Learning (UDL) and Differentiated Instruction (DI) as complementary approaches to classroom inclusivity. A systematic-integrative review combines the structured and transparent procedures of a systematic review with the broader analytical focus of an integrative review, allowing the inclusion of theoretical, qualitative, quantitative, and mixed-methods studies [12–13]. This approach is particularly appropriate for examining UDL and DI because both frameworks involve complex instructional practices that have been studied using diverse research methods and educational contexts. The review specifically focused on comparing and synthesizing literature related to: (1) the conceptual foundations of UDL and DI, (2) their implementation in inclusive classrooms, (3) reported instructional and learner outcomes, and (4) their potential integration into a unified framework for inclusive teaching. By examining both similarities and distinctions between the two approaches, the study aimed to develop a more comprehensive understanding of how proactive instructional design and responsive teaching practices can jointly support learner diversity. The integrative orientation of the review also enabled the inclusion of both international and Philippine-based studies, providing insights into how UDL and DI are applied across different educational settings. This broader synthesis supports a contextualized interpretation of inclusive teaching practices, particularly in relation to classroom realities such as learner variability, resource availability, and teacher preparedness.

2.2. Search strategy.

A structured and replicable search strategy was conducted to identify relevant studies published between 2020 and 2025. The search process followed systematic review principles emphasizing transparency, comprehensiveness, and reproducibility [14]. To ensure broad coverage of both international and local literature, the study utilized multiple electronic databases: ERIC, Scopus, Web of Science, Google Scholar, and Philippine E-Journals. These databases were selected because they collectively provide extensive access to peer-reviewed educational research, interdisciplinary studies, and region-specific publications relevant to inclusive education, Universal Design for Learning (UDL), and Differentiated Instruction (DI). ERIC was used for its strong focus on education research, while Scopus and Web of Science provided high-quality international and interdisciplinary studies. Google Scholar expanded the retrieval of emerging and accessible literature, and Philippine E-Journals ensured the inclusion of local studies contextualized within the Philippine educational system. Keywords were combined using Boolean operators (AND, OR) to maximize retrieval accuracy and coverage. Example search terms included: “inclusive teaching,” “Universal Design for Learning,” “differentiated instruction,” “learner diversity,” and “inclusive classroom.” Both international and Philippine peer-reviewed studies were included to provide a balanced global and local perspective on inclusive teaching practices. Table 1 summarizes the databases searched, search strings used, and screening outcomes. The search initially retrieved 450 records, of which 52 studies met the inclusion criteria and were retained for the final review. International databases generated the largest number of studies, reflecting the broader global scholarship on UDL and

DI, while Philippine E-Journals contributed context-specific research relevant to local classroom implementation. The screening process ensured that only studies directly related to inclusive teaching practices, learner diversity, and the application of UDL and DI were included in the synthesis.

Table 1. Database sources and search strings.

Database	Search String	Results Retrieved	Results Included After Screening
ERIC	"Universal Design for Learning" AND "inclusive education"	120	15
Scopus	"Differentiated Instruction" AND "learner diversity"	98	12
Web of Science	"Inclusive teaching" OR "UDL" OR "DI"	105	10
Google Scholar	"Inclusive classroom" AND "Philippines"	85	8
Philippine E-Journals	"Differentiated instruction" AND "K to 12"	42	7
Total		450	52

2.3. Inclusion and exclusion criteria.

Study selection was guided by predefined inclusion and exclusion criteria to ensure the relevance, quality, and consistency of the reviewed literature. Included studies were peer-reviewed publications written in English, published between 2020 and 2025, and focused on inclusive teaching practices, Universal Design for Learning (UDL), Differentiated Instruction (DI), or learner diversity within educational settings. Both international and Philippine-based studies were considered to provide a broader and more contextualized understanding of inclusive education. Studies were excluded if they were non-peer-reviewed, published before 2020, unrelated to educational contexts, or did not directly address inclusive teaching practices. Table 2 summarizes the criteria used in selecting studies for the review. From the initial pool of retrieved literature, only studies meeting the established standards for publication quality, topical relevance, educational context, and timeliness were retained. The screening process resulted in a final sample of 52 studies that directly addressed inclusive teaching practices and the application of UDL and DI in diverse learning environments.

Table 2. Inclusion and exclusion criteria for study selection.

Criteria Type	Inclusion Criteria	Included (n=52)	Exclusion Criteria	Excluded (n=148*)
Publication Type	Peer-reviewed journals, conference papers	52	Blogs, newsletters, opinion pieces	28
Year of Publication	2020–2025	52	Pre-2020 publications	65
Context	Educational settings (international & Philippine)	52	Non-educational contexts	30
Content Focus	Inclusive teaching, UDL, DI, learner diversity	52	Irrelevant topics	20
Language	English	52	Non-English (not translated)	5

2.4. Screening process.

The screening process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure a transparent and systematic selection of relevant studies [15]. To strengthen methodological rigor, two independent reviewers conducted the screening and eligibility assessment of all retrieved studies. Titles and abstracts were initially screened for relevance, followed by full-text evaluation of potentially eligible

articles. Any disagreements between reviewers were resolved through discussion and consensus, with consultation from a third reviewer when necessary. Figure 2 summarizes the study selection process following the PRISMA framework. From the initial records identified through database searching, duplicate studies were removed before title and abstract screening was conducted. Eligible full-text articles were then assessed based on the established inclusion and exclusion criteria, resulting in a final sample of 52 studies included in the review. The final set of studies provided a comprehensive evidence base for examining inclusive teaching practices, Universal Design for Learning (UDL), and Differentiated Instruction (DI) across different educational contexts. The use of a structured screening procedure also strengthened the transparency, consistency, and methodological coherence of the review process.

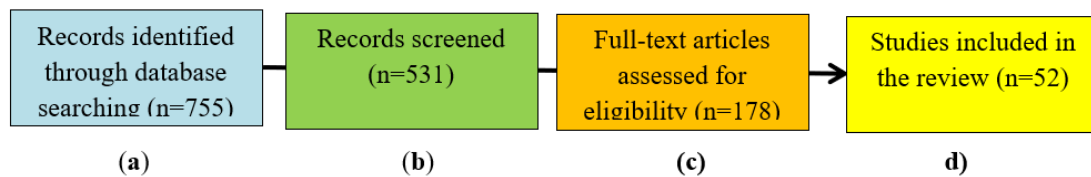


Figure 2. Identification of records through database searching (a); screening of retrieved studies after duplicate removal (b); eligibility assessment of full-text articles (c); final inclusion of studies in the systematic review (d).

2.5. Data analysis procedure.

Data analysis followed a thematic synthesis approach supported by systematic coding procedures. Each study was carefully reviewed and coded to identify recurring concepts related to inclusive pedagogy, Universal Design for Learning (UDL), and Differentiated Instruction (DI). Rather than focusing on isolated instructional practices, the analysis emphasized broader patterns across studies to develop a more integrated understanding of classroom inclusivity. The coding process resulted in several major themes that consistently emerged across the literature: instructional flexibility, equitable access to learning, learner engagement, and teacher preparedness. These themes reflected the shared goal of UDL and DI in addressing learner variability through proactive instructional design and responsive teaching practices. A comparative contextual synthesis was conducted to examine similarities and differences between international and Philippine studies. International literature generally emphasized structured and policy-supported implementation of UDL and DI, often strengthened by institutional support systems, professional development opportunities, and technology integration. In contrast, Philippine studies highlighted contextual challenges such as large class sizes, limited instructional resources, and insufficient teacher training. Despite these constraints, local studies consistently demonstrated teacher adaptability, creativity, and culturally responsive instructional practices. Cross-context analysis further revealed common characteristics of inclusive classrooms across both settings. Effective inclusive practices were associated with flexible instruction, varied assessment strategies, and intentional support for learner diversity. The primary distinction between contexts was the degree of systemic and institutional support available to educators implementing inclusive teaching approaches. Table 3 presents the data extraction matrix used to organize and synthesize the included studies. The matrix facilitated systematic comparison across international and Philippine literature by summarizing key study characteristics, methodologies, findings, and emerging themes. This process supported the identification of recurring patterns related to instructional flexibility, learner engagement, equity, and teacher development within inclusive educational settings.

Table 3. Data extraction matrix.

Context	Year	Location	Research Focus	Methodology	Sample Characteristics	Key Findings	Relevant Themes
Foreign	2021	USA/Europe	UDL in general classrooms	Literature Review	Secondary students	UDL improves access and engagement	Instructional Flexibility, Engagement
Foreign	2020	Global	Differentiated instruction	Case Study	Mixed-ability classrooms	Tiered instruction improves outcomes	Personalized Learning, Assessment
Philippine	2022	Philippines	Inclusive K–12 classrooms	Survey	Public school teachers	Teachers adapt despite resource limits	Equity, Teacher Creativity
Philippine	2021	Philippines	Teacher competence in UDL/DI	Survey	Elementary teachers	Training gaps limit implementation	Professional Development
Foreign	2020	Canada	Student engagement with DI	Experimental	Secondary learners	Personalized pacing increases participation	Active Learning
Philippine	2022	Philippines	Peer-supported learning	Survey	Elementary learners	Peer interaction improves inclusion	Collaboration, Engagement

3. Results and Discussion

3.1. Conceptualizations of inclusivity: global vs Philippine perspectives.

Global scholarship conceptualizes inclusive education as a transformative approach that addresses learner diversity through systemic and proactive instructional design. Rather than viewing inclusion solely as classroom accommodation, international literature frames it as the restructuring of curriculum, pedagogy, assessment, and learning environments to ensure equitable participation for all learners [16, 17]. Across the 8 global studies synthesized in this theme, inclusion is consistently associated with flexibility, accessibility, and learner-centered teaching practices that reduce barriers to learning. A major framework underpinning this perspective is Universal Design for Learning (UDL), developed by CAST [18]. UDL promotes proactive curriculum planning through multiple means of engagement, representation, and action and expression, enabling teachers to anticipate learner variability before instruction begins [19]. Empirical studies ($n = 5$ experimental and quasi-experimental studies) report that UDL improves learner participation, engagement, and academic achievement across diverse educational settings [20]. Florian [21] further argues that inclusive pedagogy should move beyond “differentiation for some” toward teaching approaches that support all learners within the same learning community.

In contrast, Philippine scholarship ($n = 7$ studies synthesized in this theme) conceptualizes inclusivity more strongly in relation to classroom implementation and policy compliance. Existing studies frequently emphasize the practical realities of inclusive education within the K–12 system, particularly challenges related to large class sizes, limited instructional resources, and uneven teacher preparation [22, 23]. As a result, inclusive practices in Philippine classrooms often rely on adaptive and reactive strategies such as remediation, differentiated activities, and individualized support [24]. Despite these constraints, Philippine literature also demonstrates emerging movement toward more proactive and flexible instructional approaches. Recent studies show increasing awareness of learner variability through professional development initiatives related to UDL and DI [25, 26]. Teachers have also reported positive experiences using flexible grouping, varied assessments, and learner-centered strategies to support diverse classrooms [20]. These developments suggest that Philippine

inclusive education is gradually shifting from a primarily adaptation-focused model toward more design-oriented approaches aligned with global inclusive education frameworks.

Table 4 highlights a global–local continuum in the conceptualization of inclusivity rather than a strict divide. Global literature emphasizes systemic and proactive design-based inclusion, while Philippine studies focus more on contextual adaptation within existing classroom realities. However, the synthesis suggests that both perspectives are moving toward a shared learner-centered model of inclusion. In this continuum, global frameworks provide the theoretical foundation for proactive inclusive design, whereas Philippine practices demonstrate how these principles are adapted within resource-constrained educational contexts. This emerging convergence reinforces the importance of integrating proactive instructional planning and responsive classroom adaptation in reconceptualizing inclusive teaching.

Table 4. Comparative conceptual framing of inclusivity.

Dimension	Global Studies	Philippine Studies	References
Framing	Equity-driven systemic inclusion	Policy-guided classroom implementation	[27–29]
Approach	Proactive UDL-based instructional design	Mixed proactive and reactive strategies	[30, 31]
Emphasis	Structural and curricular transformation	Classroom adaptation within contextual constraints	[32, 33]

Moreover, universal Design for Learning (UDL) and Differentiated Instruction (DI) share the common goal of supporting learner diversity through flexible and inclusive teaching practices [34, 35]. However, the literature consistently distinguishes the two frameworks according to their instructional orientation. UDL is primarily proactive, emphasizing curriculum and instructional design that anticipates learner variability before teaching occurs, whereas DI is responsive, focusing on instructional adjustments made during the learning process in response to students' readiness, interests, and learning profiles [36]. Across the global and Philippine studies synthesized in this section, findings consistently indicate that the integration of UDL and DI produces more inclusive learning environments than the isolated application of either framework alone. UDL establishes flexible structures that minimize barriers to learning, while DI enables teachers to adapt instruction according to emerging learner needs within the classroom. Together, these approaches support both accessibility and responsiveness in inclusive teaching practice.

Across 6 global and 5 Philippine studies synthesized in this section, findings show that combining both frameworks produces the most inclusive learning environments. Figure 4 illustrates the complementary relationship between UDL and DI in promoting inclusive classrooms. UDL contributes proactive instructional planning that anticipates learner variability, while DI provides responsive strategies that address learners' immediate needs during instruction. Their shared emphasis on flexibility, learner engagement, and equitable participation demonstrates how both frameworks can function together within a unified model of inclusive teaching. The synthesis further suggests that effective classroom inclusivity depends on balancing proactive instructional design with responsive pedagogical adaptation. In this integrated model, UDL provides the foundational structure for accessibility and participation, while DI operationalizes flexibility through real-time instructional support. This reinforces the study's proposed reconceptualization of inclusivity as a continuum of design-based and adaptive teaching practices rather than as separate instructional approaches.

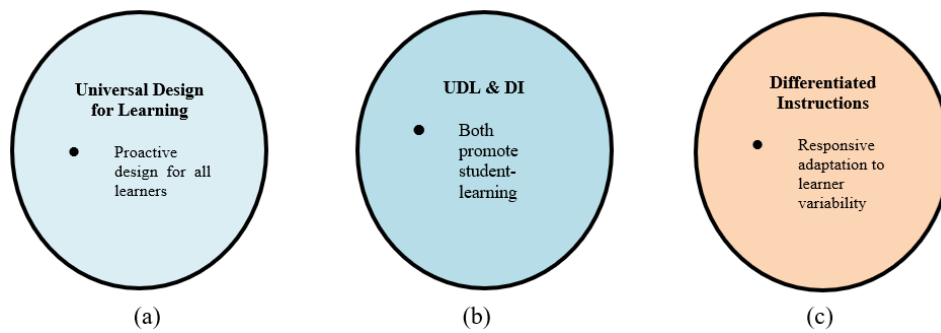


Figure 4. Proactive instructional design characteristic of Universal Design for Learning (a); shared emphasis on learner-centered and flexible teaching practices (b); responsive differentiation tailored to learner variability in Differentiated Instruction (c).

Furthermore, Global studies ($n = 8$) provide strong experimental and theoretical evidence supporting the effectiveness of UDL and DI, particularly in relation to learner engagement, accessibility, and academic outcomes [9, 15]. However, many international studies provide limited discussion of contextual and cultural factors influencing implementation across diverse educational settings. In contrast, Philippine studies ($n = 6$) offer stronger contextual relevance by highlighting classroom realities such as limited resources, large class sizes, and varying levels of teacher preparedness [37]. These studies provide important insights into how teachers adapt inclusive practices within resource-constrained environments. However, much of the Philippine literature relies on small-scale or descriptive research designs, limiting the generalizability of findings and reducing the availability of large-scale empirical evidence on UDL and DI implementation.

3.2. Reported instructional outcomes of UDL and DI.

3.2.1. Foreign empirical evidence.

International literature ($n = 10$ studies) provides strong experimental and quasi-experimental evidence supporting the effectiveness of Universal Design for Learning (UDL) and Differentiated Instruction (DI). Across these studies, consistent findings indicate improvements in academic achievement, learner engagement, classroom participation, and learner autonomy [38, 39]. In U.S.-based experimental studies ($n = 4$), UDL implementation significantly improved reading comprehension, mathematical reasoning, and science performance among both students with disabilities and general education learners [40]. These findings reinforce UDL as a universal instructional framework that benefits diverse learners rather than a remedial intervention limited to specific groups.

Studies conducted in Canada and Europe ($n = 3$) similarly reported increased engagement, collaboration, and on-task behavior following the implementation of flexible and learner-centered instructional strategies [41, 42]. Katz [43] found that structured UDL implementation improved classroom participation while reducing disengagement behaviors. Behavioral and socio-emotional outcomes were also consistently positive. Experimental findings ($n = 3$) demonstrated reductions in disciplinary referrals and improvements in classroom climate as a result of proactive instructional design and accessible learning pathways [44]. Longitudinal studies ($n = 2$) further documented improvements in learner autonomy, self-regulation, and academic self-efficacy, highlighting the role of structured choice and flexible learning environments in supporting motivation and independent learning [45]. Overall, global

studies provide robust causal evidence demonstrating that UDL and DI contribute positively to both academic and behavioral dimensions of inclusive education.

3.2.2. *Philippine empirical evidence.*

Philippine studies ($n = 8$) present emerging but comparatively limited evidence regarding the instructional outcomes of UDL and DI. Unlike the predominantly experimental orientation of global studies, most Philippine research relies on descriptive, survey-based, and action research methodologies, focusing more on classroom experiences, teacher perceptions, and localized instructional practices than on large-scale causal measurement. Classroom-based studies report positive outcomes related to learner participation, engagement, and responsiveness to differentiated instructional strategies such as flexible grouping, scaffolded activities, and varied assessments [46]. Teacher perception studies ($n = 4$) consistently indicate that educators view UDL and DI as helpful approaches for addressing learner diversity and promoting inclusive participation [48][49]. However, teacher confidence in implementation varies depending on access to professional development, institutional support, and instructional resources. Achievement-related outcomes were reported in a smaller number of quasi-experimental studies ($n = 3$), which showed moderate improvements in learner performance [50]. However, these gains were generally less pronounced than those reported in international experimental studies. This difference may be attributed to several contextual factors, including shorter intervention periods, large class sizes, limited instructional materials, inconsistent technology access, and uneven teacher training. These structural constraints often limit the depth and sustainability of inclusive instructional implementation in Philippine classrooms.

Research on self-regulation and learner autonomy remains particularly limited, with only one identified study directly addressing these outcomes. This indicates an important gap in Philippine inclusive education research, particularly in examining the long-term cognitive and socio-emotional effects of UDL and DI implementation. Overall, Philippine studies demonstrate promising classroom-level innovations and teacher adaptability, but the evidence base remains largely developmental due to methodological and contextual limitations. Rather than providing strong causal conclusions, these studies primarily offer contextual and practice-based insights into how inclusive teaching approaches are implemented in resource-constrained educational settings. Table 5 demonstrates convergence between global and Philippine literature in terms of positive engagement outcomes associated with UDL and DI implementation. However, the nature and strength of evidence differ substantially across contexts. Global studies provide stronger experimental and longitudinal evidence supporting academic achievement, self-regulation, and behavioral outcomes, whereas Philippine studies primarily contribute descriptive and perception-based evidence grounded in classroom practice. The comparative synthesis suggests that instructional effectiveness in Philippine contexts should be interpreted within existing structural and institutional realities. While outcomes are generally positive, the moderate nature of achievement gains reflects constraints related to resources, training, and implementation scale rather than the ineffectiveness of inclusive instructional approaches themselves. Consequently, Philippine scholarship represents an emerging evidence base that highlights teacher-driven innovation and contextual adaptation while also demonstrating the need for more rigorous and large-scale empirical research on UDL and DI implementation.

Table 5. Summary of instructional outcomes.

Outcome	Global Evidence	Philippine Evidence	Pattern	References
Engagement	Strong experimental support (n=5)	Positive classroom and perception findings (n=4)	Convergent	[46–48]
Achievement	Significant gains from experimental studies (n=4)	Moderate gains from limited quasi-experimental studies (n=3)	Partial convergence	[49, 50]
Self-regulation	Strong longitudinal evidence (n=2)	Very limited evidence (n=1)	Research gap	[36]
Teacher efficacy	High outcomes linked to structured training (n=3)	Mixed confidence levels based on support and training (n=4)	Context-dependent	[41]

3.3. Implementation strategies across contexts.

The synthesis of the reviewed literature reveals that the implementation of Universal Design for Learning (UDL) and Differentiated Instruction (DI) occurs through multiple interconnected approaches shaped by policy support, technology access, teacher capacity, and contextual resources. Rather than viewing implementation solely through a global-versus-Philippine comparison, the studies suggest three major implementation categories: policy-driven approaches, technology-driven approaches, and teacher-driven approaches.

3.3.1. Policy-driven approaches.

Global implementation studies (n = 6) frequently describe UDL and DI as embedded within broader institutional and policy frameworks that support inclusive education. Many educational systems integrate inclusive practices through structured reforms, Multi-Tiered Systems of Support (MTSS), curriculum policies, and sustained professional development programs [51, 52]. Studies examining MTSS integration (n = 3) report improved identification of learner needs, more coordinated interventions, and reductions in exclusionary instructional practices [14]. These policy-supported systems also contribute to stronger implementation fidelity, defined as the extent to which UDL and DI principles are consistently and accurately applied in classroom practice. Research indicates that implementation fidelity is strengthened when teachers receive continuous training, institutional support, instructional coaching, and access to structured implementation guidelines [15]. As a result, global studies often report more systematic and sustained application of inclusive instructional frameworks across schools and classrooms. In the Philippine context, policy frameworks also support inclusive education through Department of Education mandates and K–12 reforms [10]. However, implementation remains uneven due to contextual limitations such as insufficient training opportunities, resource shortages, and variability in institutional support. Consequently, policy implementation is often dependent on individual teacher initiative rather than system-wide instructional integration.

3.3.2. Technology-driven approaches.

Technology-supported implementation is another dominant feature in global studies. International literature highlights the use of digital learning platforms, adaptive technologies, multimedia resources, and online assessment tools to operationalize UDL principles [12, 13]. These tools support multiple means of representation, engagement, and expression by providing flexible access to learning materials and differentiated learning pathways. Technology integration also contributes to higher implementation fidelity because instructional flexibility can be embedded directly into curriculum delivery systems. Studies report that schools with strong technological infrastructure are better able to sustain inclusive instructional

practices and monitor learner progress consistently [14]. In contrast, Philippine studies report more limited use of technology due to infrastructure and resource constraints, particularly in public and rural schools. While some schools utilize digital tools when available, implementation is generally less technology-centered and more dependent on teacher-created adaptations and localized materials [12]. This limitation affects the consistency and scalability of UDL and DI implementation across educational settings.

3.3.3. Teacher-driven and contextual approaches.

Philippine implementation studies ($n = 7$) strongly emphasize teacher-driven and context-responsive strategies. Common practices include flexible grouping, scaffolded instruction, modified assessments, peer-assisted learning, and the use of localized instructional materials [12]. These approaches demonstrate significant teacher adaptability and creativity in addressing learner diversity despite structural limitations. Community-based support also emerged as an important implementation strategy in Philippine settings. Studies ($n = 3$) highlight the role of parents, local government units (LGUs), and community partnerships in supporting inclusive classroom practices [10]. Although these approaches may lack the technological and institutional sophistication reported in global literature, they reflect culturally responsive and contextually grounded forms of inclusive education. However, the review also indicates that implementation fidelity in Philippine contexts is often inconsistent. Differences in teacher preparation, limited professional development, large class sizes, and resource shortages affect the depth and sustainability of UDL and DI application. In many cases, inclusive practices are implemented selectively or partially rather than systematically across all instructional processes. Figure 3 illustrates a continuum of inclusive education implementation across contexts. Global systems tend to emphasize policy-supported and technology-driven integration of UDL and DI, supported by structured professional development and institutional systems. In contrast, Philippine implementation relies more heavily on teacher-driven adaptation and community-supported innovation within resource-constrained environments. Despite these differences, both contexts demonstrate efforts to promote learner-centered and flexible instructional practices, highlighting multiple pathways toward inclusive education.

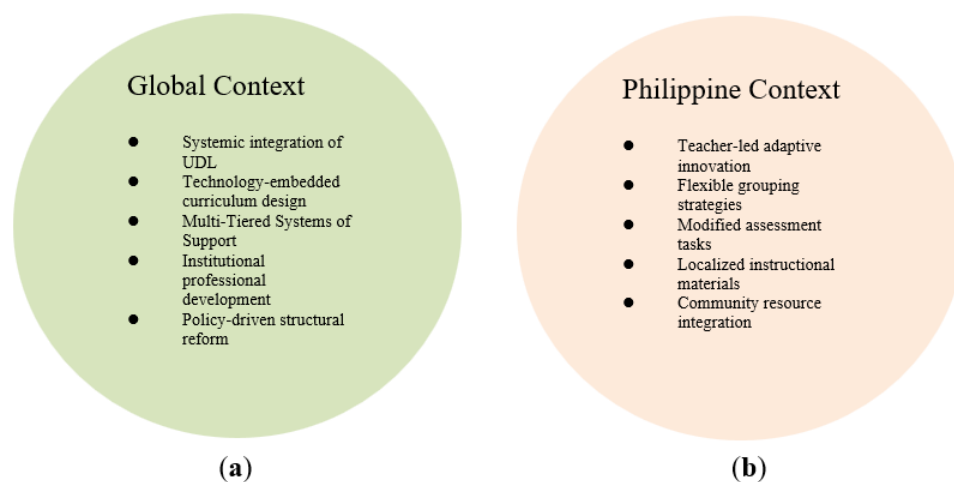


Figure 3. Systemic and technology-supported implementation of inclusive frameworks in global contexts (a); adaptive, teacher-driven implementation within structural constraints in the Philippine context (b).

3.4. *Barriers to implementation.*

The reviewed literature indicates that barriers to the implementation of Universal Design for Learning (UDL) and Differentiated Instruction (DI) can be broadly categorized into two major groups: instructional barriers and structural barriers. While both global and Philippine studies report challenges in implementing inclusive teaching practices, the nature and intensity of these barriers differ across contexts.

3.4.1. *Instructional barriers.*

Instructional barriers primarily involve challenges related to pedagogy, teacher preparedness, and implementation understanding. Global studies ($n = 6$) frequently identify teacher resistance to instructional change, curriculum overload, and conceptual confusion between UDL and DI as major concerns [13, 15]. In some cases, teachers struggle to distinguish proactive instructional design from responsive differentiation, leading to partial or inconsistent application of inclusive practices. Professional development also emerged as a critical issue across contexts. Although global systems generally provide more structured training opportunities, studies report uneven implementation quality depending on the duration, consistency, and depth of teacher preparation [15]. Limited implementation fidelity often occurs when teachers receive theoretical orientation without sustained coaching or classroom-based support. In the Philippine context, instructional barriers are intensified by limited and short-term professional development opportunities. Many teachers report insufficient preparation in inclusive pedagogy and Special Education (SPED), affecting their confidence and ability to implement UDL and DI consistently [10, 11]. As a result, inclusive strategies are often applied selectively rather than systematically across lessons and assessments. These instructional barriers directly influence learning outcomes because they affect the quality and consistency of instructional delivery. Studies suggest that when teachers have limited understanding of UDL and DI principles, inclusive strategies may become fragmented or superficial, reducing their effectiveness in improving learner engagement, participation, and achievement.

3.4.2. *Structural barriers.*

Structural barriers refer to systemic and resource-related constraints that limit the implementation of inclusive teaching practices. Philippine studies ($n = 8$) strongly emphasize challenges such as large class sizes, insufficient instructional materials, unequal technology access, and limited institutional support [7, 10, 11]. Classrooms with 40–60 learners significantly restrict teachers' ability to provide individualized support, flexible assessment, and sustained learner monitoring. Rural–urban disparities further intensify these inequities, particularly in access to technology, learning resources, and specialized training opportunities [7]. Policy implementation gaps also remain a major concern. Studies ($n = 3$) report inconsistencies between inclusive education mandates and actual classroom conditions, indicating that policy reforms are not always matched by adequate funding, infrastructure, or implementation support [10]. Although global contexts also experience structural constraints, these are generally less severe due to stronger institutional systems and wider access to educational technologies [13, 15]. Consequently, structural barriers have a more pronounced

effect on implementation fidelity and instructional outcomes in developing educational settings. Among all identified barriers, structural constraints appear to have the strongest impact on learning outcomes because they directly affect teachers' capacity to sustain inclusive instructional practices. Large class sizes, inadequate resources, and limited institutional support reduce opportunities for differentiated instruction, individualized feedback, and flexible learning experiences. Even when teachers demonstrate strong commitment and adaptability, structural limitations often restrict the depth and consistency of UDL and DI implementation. Table 6 demonstrates that barriers to inclusive teaching differ not only in type but also in impact across contexts. Global challenges are more commonly instructional and organizational, whereas Philippine barriers are predominantly structural and systemic. The synthesis further suggests that implementation fidelity—and ultimately learner outcomes—is most strongly influenced by the interaction between teacher preparedness and structural support systems. Addressing these barriers therefore requires both instructional reform and sustained systemic investment in teacher development, educational infrastructure, and equitable resource distribution.

Table 6. Comparative barriers to inclusive teaching.

Barrier	Global Context	Philippine Context	References
Class size	Moderate constraint	Severe (40–60 learners)	[13]
Training	Uneven professional development	Limited and short-term training	[15]
Technology	Widely available	Unequal access	[13]
Policy alignment	Strong institutional support	Implementation gaps	[15]

3.5. Implications for policy and practice.

Findings from the 52 studies reviewed indicate that effective classroom inclusivity requires stronger alignment among teacher preparation, curriculum design, and institutional support systems. Across both global and Philippine contexts, consistent evidence shows that successful implementation of Universal Design for Learning (UDL) and Differentiated Instruction (DI) depends heavily on sustained teacher capacity building and implementation support [8, 15]. As many Philippine studies identified limited training and inconsistent implementation fidelity as major barriers, teacher education institutions and schools should provide structured and practice-oriented professional development programs focused on inclusive instructional design, differentiated assessment, and flexible teaching strategies. The findings also suggest that curriculum policies should move beyond compliance-based inclusion and support proactive instructional planning that anticipates learner variability [6]. Integrating UDL principles into curriculum standards, assessment practices, and instructional planning guidelines can help schools establish more accessible and learner-centered learning environments. In the Philippine context, a major priority action for policy is the integration of UDL and DI training into Department of Education (DepEd) teacher development and in-service training programs. Given the reported challenges related to large class sizes, limited resources, and uneven teacher preparedness [10, 11], professional development initiatives should include sustained mentoring, classroom-based coaching, and contextualized implementation support rather than short-term seminars alone. The review further highlights the need for greater investment in educational infrastructure, instructional materials, and technology access, particularly in underserved and rural schools. Addressing these structural inequities is essential for improving implementation fidelity and ensuring that inclusive teaching practices can be consistently applied across diverse educational settings.

5. Conclusions

This systematic-integrative review highlights that both UDL and DI are essential and complementary frameworks for advancing inclusive education. UDL consistently functions as a proactive, system-level design approach that anticipates learner variability by embedding flexibility into curriculum design, instructional materials, and assessment from the outset. In contrast, DI operates as a responsive instructional strategy that allows teachers to adjust content, process, and product based on learners' readiness, interests, and contextual needs. The findings show that inclusive education is most effective when these frameworks are intentionally integrated rather than applied separately. UDL provides the structural foundation for accessibility and equity, while DI enables real-time instructional adaptation to learner diversity, forming a coherent model that connects system design with classroom practice. International evidence strongly supports both frameworks in improving student engagement, academic achievement, and learner autonomy. However, Philippine studies remain largely descriptive and small-scale, focusing mainly on teacher perceptions, classroom adaptations, and short-term interventions. Limited longitudinal and large-scale research restricts understanding of long-term impact, scalability, and sustainability in local contexts. A key implication is that inclusive education should be viewed as an integrated instructional ecosystem where proactive design and responsive teaching work together. UDL serves as the structural blueprint for inclusion, while DI functions as the adaptive mechanism responding to immediate learner needs. However, implementation is constrained by systemic barriers such as large class sizes, limited resources, uneven teacher training, and unequal access to technology, all of which affect implementation fidelity. Therefore, advancing inclusive education requires not only pedagogical innovation but also sustained policy support, institutional investment, and continuous professional development. Future research should prioritize large-scale, longitudinal, and experimental studies in the Philippine context, along with tools for measuring implementation fidelity and culturally responsive adaptations. Overall, this review confirms that meaningful inclusivity emerges from the synergy of proactive design and responsive instruction, supported by strong institutional systems and evidence-based practice.

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Author Contribution

The author conceptualized the study, conducted the literature review, analyzed the findings, and wrote the manuscript in its entirety.

Competing Interest

The author declares no competing interests in the completion or publication of this study.

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