

Integrating Universal Design for Learning and Individualized Education Plans in Inclusive Education: A Systematic Literature Review

Siti Rokhmah Sobariah¹, Budi Susetyo², Iding Tarsidi³, Eka Yuli Astuti⁴, Ezza Mad Baguri⁵

¹ Indonesia University of Education, Indonesia; sitirokhamahsobariah.21@upi.edu

² Indonesia University of Education, Indonesia; budisusetyo@upi.edu

³ Indonesia University of Education, Indonesia; idingtarsidi4@upi.edu

⁴ Indonesia University of Education, Indonesia; ekayuliasuti@upi.edu

⁵ INTI International University, Malaysia; ezza.madbaguri@newinti.edu.my

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Abstract

Inclusive education requires curriculum frameworks that accommodate learner diversity while ensuring individualized support for students with special educational needs. Although Universal Design for Learning (UDL) and Individualized Education Plans (IEPs) are widely recognized as complementary approaches, evidence regarding their integration within inclusive curriculum design remains fragmented. This study aims to synthesize research trends, implementation patterns, empirical impacts, and challenges associated with the integration of UDL and IEPs in inclusive education. A Systematic Literature Review (SLR) was conducted following the framework of Denyer and Tranfield (2009) and PRISMA guidelines. Literature published between 2015 and 2025 was retrieved from Scopus, Web of Science, ERIC, SpringerLink, Taylor & Francis, and Google Scholar. After a rigorous screening and quality appraisal process using CASP and JBI instruments, ten high-quality studies were included in the final synthesis. The findings reveal that UDL consistently enhances learning accessibility, student engagement, and academic achievement through flexible instructional design and multimodal learning opportunities. However, the integration of UDL and IEPs remains largely fragmented and is rarely institutionalized within formal curriculum policies. Successful implementation is supported by professional development, collaborative practices among educators, strong school leadership, and access to educational technology, while administrative burdens and limited policy alignment remain significant barriers. This review highlights the need for a systemic framework that integrates universal curriculum design with individualized planning to strengthen sustainable inclusive education practices.

Keywords

Universal Design; Learning; Education; Inclusive; Curriculum

Corresponding Author

Siti Rokhmah Sobariah

Indonesia University of Education, Indonesia; sitirokhamahsobariah.21@upi.edu

1. INTRODUCTION

Inclusive education has become a central agenda in educational reform worldwide, reflecting a



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commitment to ensuring equitable access and participation for all learners regardless of their abilities, backgrounds, or learning characteristics. This commitment is explicitly articulated in Sustainable Development Goal 4 (SDG 4), which emphasizes the provision of inclusive and equitable quality education and lifelong learning opportunities for all (UNESCO, 2024). Over the past decade, many countries have expanded inclusive education policies to increase school participation among students with disabilities and special educational needs. However, despite significant progress in access, challenges remain in ensuring meaningful participation and learning achievement within inclusive classrooms (Ainscow, 2020; Florian, 2023). Research indicates that many educational systems continue to implement standardized curricula and instructional practices that inadequately address learner variability, thereby creating barriers to participation and academic success for diverse learners (Chita-Tegmark et al., 2021; Graham, 2021).

The increasing diversity of students in contemporary classrooms requires a shift from traditional one-size-fits-all instructional approaches toward more flexible and responsive curriculum designs. Inclusive education is no longer understood merely as the physical placement of students with disabilities in mainstream classrooms but as the creation of learning environments that proactively accommodate learner differences (Florian, 2023). In this context, curriculum design becomes a critical determinant of educational equity. Several studies have highlighted that learning barriers often originate not from students' disabilities but from rigid instructional practices, inaccessible learning materials, and limited opportunities for participation (Roberts et al., 2021; Scott et al., 2022). Consequently, the development of inclusive curricula that recognize and accommodate learner variability has become a major focus of contemporary educational research and policy.

One of the most influential frameworks developed to address learner diversity is Universal Design for Learning (UDL). Originating from the work of the Center for Applied Special Technology (CAST), UDL is grounded in neuroscience and proposes that effective learning environments should provide multiple means of engagement, representation, and action and expression (CAST, 2024). Rather than adapting instruction after barriers emerge, UDL emphasizes proactive curriculum design that anticipates learner variability from the outset. This approach shifts the focus from remediating individual deficits to designing flexible learning opportunities that benefit all students. Recent empirical studies have demonstrated that UDL contributes positively to academic achievement, learner engagement, accessibility, self-regulation, and participation across various educational contexts (Espada-Chavarria, 2023; Rao et al., 2022; Roberts et al., 2021; Zhang et al., 2023).

The effectiveness of UDL has been documented across multiple educational levels and subject areas. Ok et al., 2021 reported that UDL-based instructional practices improve access to academic content and increase participation among students with disabilities. Similarly, (Rao et al., 2022) found moderate but consistent positive effects of UDL on academic performance and engagement in K–12 education. Research by Zhang et al. (2023) further highlighted the role of digital technologies in enhancing UDL implementation by facilitating differentiated instruction and personalized learning experiences. In higher education settings, Espada-Chavarria, 2023 demonstrated that UDL contributes to increased accessibility and learner satisfaction through flexible instructional strategies. Collectively, these findings indicate that UDL provides a robust framework for reducing learning barriers and promoting inclusive participation.

Recent developments in UDL theory have expanded its scope beyond classroom instructional strategies toward systemic curriculum transformation. The emergence of UDL 3.0 emphasizes the integration of UDL principles into educational policy, school leadership, assessment systems, and curriculum planning processes (Basham, 2023). This perspective positions UDL not merely as a teaching method but as a comprehensive framework for educational design capable of supporting inclusive school reform. Such developments are particularly important because sustainable inclusion requires alignment between classroom practices, curriculum structures, and institutional policies.

While UDL emphasizes universal accessibility at the curriculum level, inclusive education also requires individualized support mechanisms to address specific learning needs. One of the most widely adopted approaches for individualized planning is the Individualized Education Plan (IEP). The IEP is a legally and pedagogically recognized document that outlines students' current performance levels, learning goals, accommodations, intervention strategies, and evaluation procedures (Yell, 2019). As a cornerstone of special education practice, the IEP ensures that educational services are tailored to individual learner needs while providing a framework for monitoring progress and accountability (Kurth, 2021; Morningstar, 2022).

The IEP is grounded in the principle that students with disabilities require individualized educational planning to achieve meaningful learning outcomes. Research has consistently shown that well-designed IEPs contribute to improved academic performance, increased student participation, and better educational transitions (Morningstar, 2022). Nevertheless, scholars have also identified persistent challenges related to implementation quality, teacher preparedness, administrative workload, and the alignment of individualized goals with general curriculum standards (Alquraini & Rao, 2020; Kurth, 2021). These challenges suggest the need for more integrated approaches that connect individualized planning with broader curriculum design frameworks.

From a theoretical perspective, UDL and IEP represent complementary approaches within inclusive education. UDL operates at the macro level by designing universally accessible curricula for diverse learners, whereas IEP functions at the micro level by addressing individual educational needs through personalized goals and supports. The integration of these approaches has the potential to create a coherent inclusive curriculum system in which universal learning opportunities support the achievement of individualized educational objectives. Such integration may reduce the need for extensive accommodations and modifications by embedding flexibility directly into curriculum design (Basham, 2023; Scott et al., 2022).

Despite the conceptual compatibility between UDL and IEP, existing literature indicates that their integration remains limited and fragmented. Most empirical studies examine UDL as an instructional framework or investigate IEP implementation as a separate planning mechanism. Although systematic reviews have documented the effectiveness of UDL in improving accessibility and learning outcomes (Rao et al., 2022; Capp & Hardman, 2023), few studies explicitly explore how UDL principles can be incorporated into IEP development, implementation, and evaluation processes. Similarly, research on IEPs often focuses on compliance, goal setting, and individualized interventions without considering how universal curriculum design can support the achievement of individualized objectives (Kurth, 2021; Morningstar, 2022).

Furthermore, current evidence remains concentrated in developed countries where inclusive education systems, teacher preparation programs, and policy frameworks are relatively mature (Saini et al., 2024). There is limited understanding of how UDL–IEP integration can be implemented in diverse educational contexts, particularly in developing countries where inclusive education policies continue to evolve. In addition, previous studies have predominantly examined short-term instructional outcomes, while research investigating the long-term implications of integrating UDL and IEP within curriculum systems remains scarce (Capp & Hardman, 2023; Scott et al., 2022).

These gaps highlight the need for a comprehensive synthesis of existing evidence concerning the integration of Universal Design for Learning and Individualized Education Plans within inclusive education. Therefore, this study employs a Systematic Literature Review (SLR) to examine research trends, implementation patterns, empirical impacts, enabling factors, barriers, and future directions related to UDL–IEP integration. By synthesizing current knowledge, this review aims to contribute to the development of a more coherent and sustainable framework for inclusive curriculum design that bridges universal accessibility and individualized educational planning.

2. METHODS

This study employed a Systematic Literature Review (SLR) approach to synthesize empirical evidence regarding the integration of Universal Design for Learning (UDL) and Individualized Education Plans (IEPs) within inclusive education. SLR is a rigorous review methodology designed to identify, evaluate, and synthesize relevant studies systematically and transparently to answer specific research questions (Booth et al., 2016; Denyer & Tranfield, 2009). As a research methodology, SLR enables scholars to critically assess existing knowledge, identify research gaps, and generate evidence-based conclusions from a body of literature (Gough et al., 2017). Furthermore, literature reviews conducted systematically provide a robust foundation for theory development and future research directions (Snyder, 2019). The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure methodological transparency, reproducibility, and reliability.

The review was guided by four research questions:

- a. How are UDL principles implemented in inclusive education curricula?
- b. How is UDL integrated with Individualized Education Plans (IEPs) in the international literature?
- c. What empirical impacts result from the integration of UDL and IEP on student learning outcomes and engagement?
- d. What factors facilitate or hinder the implementation of UDL–IEP integration in inclusive education?

1) Search Strategy

A comprehensive literature search was conducted between January and March 2025 across six major academic databases: Scopus, Web of Science (WoS), ERIC, SpringerLink, Taylor & Francis Online, and Google Scholar. These databases were selected because they index high-quality peer-reviewed publications in education, special education, curriculum studies, and inclusive education.

The search strategy combined keywords related to Universal Design for Learning, Individualized Education Plans, and inclusive education using Boolean operators. The primary search string was:

("Universal Design for Learning" OR UDL) AND ("Individualized Education Plan" OR IEP OR "Individualized Education Program") AND ("Inclusive Education" OR "Inclusive Curriculum")

Additional keywords such as "Curriculum Design", "Differentiated Instruction", "Special Education", "Accessibility", and "Inclusive Pedagogy" were employed to broaden the search and improve retrieval sensitivity.

The search was restricted to titles, abstracts, and keywords to ensure thematic relevance.

2) Inclusion and Exclusion Criteria

The eligibility criteria were established prior to the review process to ensure consistency and relevance.

3) Inclusion Criteria

Studies were included if they:

- a. Were published between 2015 and 2025;
- b. Were published in peer-reviewed journals;
- c. Were written in English;

- d. Focused on UDL, IEP, or the integration of both concepts;
- e. Examined inclusive education settings;
- f. Reported empirical, conceptual, mixed-methods, qualitative, quantitative, or review-based findings relevant to the research questions.

4) Exclusion Criteria

Studies were excluded if they:

- a. Were conference abstracts, editorials, book reviews, dissertations, or non-peer-reviewed publications;
- b. Focused exclusively on higher education accessibility without discussing inclusion or individualized planning;
- c. Did not provide sufficient methodological information;
- d. Were duplicate records;
- e. Were unrelated to UDL, IEP, or inclusive curriculum implementation.

5) Study Selection Process

The study selection process followed the PRISMA 2020 framework consisting of identification, screening, eligibility, and inclusion stages.

During the identification stage, all records retrieved from the selected databases were exported to reference management software and duplicate records were removed. Subsequently, titles and abstracts were screened according to the predefined eligibility criteria. Articles that met the initial criteria proceeded to full-text assessment.

The eligibility stage involved a comprehensive review of full-text articles to determine methodological quality and relevance to the research objectives. Studies failing to meet quality standards or thematic relevance were excluded from the final synthesis.

A PRISMA flow diagram was developed to illustrate the screening and selection procedures.

6) Quality Assessment

To ensure methodological rigor, all eligible studies were subjected to quality appraisal using established assessment tools.

Qualitative studies were evaluated using the Critical Appraisal Skills Programme (CASP) checklist, whereas quantitative and mixed-methods studies were assessed using the Joanna Briggs Institute (JBI) critical appraisal tools. The assessment focused on research design, sampling procedures, data collection methods, analytical rigor, validity, reliability, and reporting quality.

Each study was categorized as high, moderate, or low quality. Only studies classified as high and moderate quality were included in the final synthesis.

7) Data Extraction

A standardized data extraction form was developed to ensure consistency across studies. The extracted information included:

- Author(s) and publication year;
- Country of study;
- Research design;
- Educational context;

- Study objectives;
- UDL components examined;
- IEP-related elements;
- Key findings;
- Implications for inclusive curriculum design.

The extracted data were organized into a synthesis matrix to facilitate comparison across studies.

8) Data Synthesis and Analysis

Data were analyzed using thematic synthesis. This method was selected because it enables the integration of findings from diverse research designs while identifying recurring patterns across studies.

The synthesis process consisted of three stages:

- a. Initial coding of extracted findings;
- b. Grouping codes into broader conceptual categories;
- c. Development of overarching themes representing patterns of UDL–IEP integration.

Through iterative analysis, four major themes emerged:

- a. The effectiveness of UDL in improving learning access and outcomes;
- b. Integration of UDL within IEP planning and implementation;
- c. Supporting and hindering factors influencing implementation;
- d. Research gaps and future directions for inclusive curriculum development.

The thematic synthesis enabled a comprehensive understanding of how universal curriculum design and individualized educational planning interact within inclusive education systems.

3. FINDINGS AND DISCUSSIONS

Findings

Based on the selection process using the PRISMA guidelines, 20 articles were obtained that met the initial inclusion criteria. After conducting a methodological quality assessment using the Critical Appraisal Skills Programme (CASP) instrument for qualitative research and Joanna Briggs Institute (JBI) appraisal tools for quantitative and mixed methods research, 10 articles were categorized as high quality and were further analyzed in the final synthesis. Thematic analysis of these 10 articles yielded four main themes, namely: (1) the effectiveness of Universal Design for Learning on access and learning outcomes, (2) the integration of UDL in Individualized Education Plan (IEP) planning, (3) factors supporting and hindering implementation, and (4) research gaps in inclusive curriculum integration.

The Effectiveness of Universal Design for Learning on Access and Learning Outcomes

The synthesis of the ten high-quality articles shows consistent findings that the application of Universal Design for Learning (UDL) principles contributes significantly to improving learning access, engagement, and academic achievement of students with special needs in the context of inclusive education. This effectiveness is not only reflected in cognitive indicators, but also in affective and participatory dimensions. Quantitatively, several quasi-experimental studies reported statistically significant improvements in reading literacy and concept comprehension after teachers applied the principle of multiple means of representation through multimodal material presentation. The

integration of visual texts, narrative audio, graphic symbols, and digital scaffolding support has been shown to increase content accessibility for students with learning barriers, including specific learning disabilities and language processing barriers. This shows that learning barriers often lie not in students' cognitive capacities, but in the rigidity of instructional design.

In terms of multiple means of action and expression, flexibility in response formats allows students to demonstrate understanding through various formats—visual presentations, practice-based projects, audio recordings, and performative assessments. This approach has been consistently reported to increase students' sense of competence and self-efficacy, as evaluation is no longer centered on a single form of academic expression. Thus, UDL shifts the evaluation paradigm from a single standard to differentiation based on individual learning profiles. Qualitative data shows an increase in social participation and classroom interaction when teachers apply multiple means of engagement strategies. Providing task options, relevant learning contexts, and strengthening intrinsic motivation contribute to increased student engagement in discussions and collaborative work. This reinforces the argument that UDL is not merely a technical learning strategy, but a conceptual framework that accommodates variability as a natural characteristic of the classroom population.

These synthesized results support the fundamental assumption of UDL that variability is the norm, not the exception. By designing flexible learning from the initial planning stage, the need for reactive individual modifications can be minimized. In the context of inclusive education, this preventive approach is crucial because it reduces fragmentation between regular students and students with special needs. Several articles also highlight that the effectiveness of UDL is greatly influenced by teachers' pedagogical competence and institutional support. Partial implementation—for example, only using multimodal media without changing the assessment paradigm—does not produce optimal results. Therefore, the effectiveness of UDL cannot be separated from a systemic approach in curriculum design.

Thus, it can be concluded that UDL has a strong empirical basis in improving access and learning outcomes. However, maximum effectiveness is achieved when its principles are comprehensively integrated into curriculum planning and aligned with individual planning such as IEP. This integration is the research gap and conceptual contribution in this study.

Integration of Universal Design for Learning in Individualized Education Plan (IEP) Planning

The synthesis results show that although most articles place Universal Design for Learning (UDL) within the framework of inclusive education, only a small number explicitly link it to the Individualized Education Plan (IEP) planning mechanism. This finding indicates a conceptual gap between universal learning design and individual learning planning, even though theoretically the two have complementary philosophical foundations (Friend, 2010; Saini et al., 2024; Spooner, 2017). UDL departs from a preventive paradigm that emphasizes flexible learning design from the curriculum planning stage, with the assumption that variability is an inherent characteristic in every class. Meanwhile, IEPs function as a responsive mechanism designed to accommodate students' specific needs based on individual assessments. From a theoretical perspective, UDL can be positioned as a universal foundation (macro-level design), while IEPs serve as individual adjustments (micro-level planning). The integration of the two enables a layered curriculum system that reduces the need for extreme modifications at the implementation stage.

Several articles analyzed show that the application of the principle of multiple means of representation helps students achieve the academic targets formulated in the IEP without having to be separated from regular classroom activities. In other words, UDL contributes to creating a learning environment that is inherently inclusive, so that the IEP is no longer understood as a segregative instrument, but rather as a tool for strengthening individual achievement in the context of collaborative learning. In terms of assessment, the flexibility of multiple means of action and expression has proven to facilitate the monitoring of IEP goal progress. An evaluation system that provides a variety of

response forms allows teachers to measure competency achievement more authentically and comprehensively. This is particularly relevant in the context of IEPs, which emphasize continuous progress monitoring. Thus, the UDL principle not only supports the learning process but also increases the validity of assessments against individual goals.

Critical synthesis shows that the integration of UDL and IEP in practice is still sporadic and depends on individual teacher initiatives. No curriculum policy model has been found that formally institutionalizes this integration in school planning documents. In many cases, UDL is applied as a pedagogical strategy, while IEP remains positioned as a separate administrative document. This fragmentation has the potential to hinder the creation of a coherent and sustainable inclusive curriculum system. The absence of a systemic integrative model indicates a research gap and a need to develop a conceptual framework that can structurally synergize universal design and individual planning. In this context, this study offers a conceptual contribution by positioning UDL as a preventive design framework that strengthens the effectiveness of IEP implementation, rather than as a parallel approach without strategic connections.

The integration of UDL and IEP should not be understood as two separate approaches, but rather as an inclusive curriculum ecosystem that reinforces each other. Systemic and policy-based implementation is a prerequisite for this integration to go beyond the level of individual practice and develop into an institutional culture in the implementation of inclusive education.

Supporting and Hindering Factors in the Implementation of UDL and IEP Integration

A synthesis of ten high-quality articles shows that the successful integration of Universal Design for Learning (UDL) and Individualized Education Plan (IEP) planning is not solely determined by teachers' pedagogical competence, but is influenced by the broader institutional ecosystem. Effective implementation requires structural support, policies, and a school culture conducive to the principles of inclusion.

Supporting Factors: (1) Teacher professional training is a key determinant of successful implementation. The articles analyzed consistently show that teachers who have a deep conceptual understanding of the principles of multiple means of representation, engagement, and action & expression are able to design learning that is aligned with the individual goals in the IEP. Continuous professional development has been shown to improve the quality of instructional differentiation and the accuracy of student progress monitoring. (2) Collaboration between regular classroom teachers and special education teachers is a strategic factor in bridging universal design and individual needs. Qualitative studies confirm that co-teaching and collaborative lesson planning models strengthen the coherence between the general curriculum and IEP goals. This collaboration allows for more systematic integration than fragmented individual practices. (3) School leadership support plays a crucial role in building an inclusive culture. Visionary leadership encourages internal policies that integrate UDL principles into school curriculum planning, including time allocation for IEP planning, academic supervision, and teacher capacity building. Without managerial support, implementation tends to be sporadic and unsustainable. (4) The availability of learning technology is an important enabler in the operationalization of UDL principles. Digital platforms, assistive technology devices, and multimodal learning resources facilitate instruction differentiation and IEP progress documentation. However, technology is only effective when integrated into appropriate pedagogical designs.

Barriers: (1) Time constraints in IEP development and evaluation are a major obstacle, especially in schools with high teacher-student ratios. Complex administrative burdens often reduce space for pedagogical reflection and collaborative planning. (2) Lack of conceptual understanding of UDL results in implementation that stops at the use of varied media without changing the learning design paradigm. In some cases, UDL is perceived merely as a technical innovation, rather than as an epistemological framework in an inclusive curriculum. (3) The lack of school policies that explicitly integrate UDL into curriculum documents is also a systemic obstacle. Without clear internal regulations, the practice of

integrating UDL–IEP is highly dependent on the individual commitment of teachers, making its sustainability uncertain.

This study confirms that the implementation of UDL–IEP is not only a pedagogical issue, but also a matter of educational governance. The transformation towards an integrated inclusive curriculum requires a systemic approach that encompasses policy, leadership, teacher capacity, and supporting infrastructure.

Research Gaps

A comprehensive analysis of the literature reveals several significant gaps that open up opportunities for scientific contributions to this research. (1) The majority of studies have been conducted in developed countries with relatively well-established inclusive education systems and strong policy support. The context of developing countries, particularly in Southeast Asia, remains largely underrepresented in the international literature. In fact, the characteristics of the education system, resources, and school culture in developing countries have different dynamics and require contextual adaptation of UDL–IEP concepts. (2) Most studies focus on short-term instructional effectiveness, such as improving academic scores or class engagement within a certain period. Research evaluating the integration of UDL–IEP at the long-term curriculum design level is still minimal. This means that the structural impact on the school curriculum system has not been explored in depth. (3) No research has been found that simultaneously evaluates the integration of UDL and IEP in a comprehensive research design based on an integrated conceptual framework. Most studies position UDL and IEP as two parallel entities, rather than a strategically integrated system.

These gaps indicate the urgency of developing an integrative model capable of synergizing universal design and individual planning within a coherent inclusive curriculum framework. Thus, this study not only replicates previous findings but also offers conceptual and contextual contributions to strengthening inclusive education, particularly in developing education systems.

Table 1. Article Synthesis Matrix

No	Author & Year	Country	Research Design	Focus Study	Key Findings	Relation to IEP
1	Ok et al., 2017	USA	Quasi-experimental	UDL in literacy	Significant improvement in reading comprehension	Supports IEP targets in academic through multimodality
2	Coyne et al., 2019	USA	Eksperimental	UDL & basic literacy	Increased vocabulary retention	Flexibility of representation supports individualization
3	Lowrey et al., 2020	Australia	Mixed Methods	UDL in inclusive mathematics	Increased numeracy participation	Helps achieve IEP numeracy goals
4	Rao et al., 2019	USA	Systematic Review	Effectiveness of UDL	Moderate impact on academic achievement	Recommendations for integrating UDL into individual plans
5	Basham et al., 2020	USA	Conceptual-empirical	UDL Framework	3.0 UDL as a systemic design	Suggests alignment of UDL–IEP

No	Author & Year	Country	Research Design	Focus Study	Key Findings	Relation to IEP
6	Rappolt-Schlichtmann et al., 2018	USA	Eksperimental	Technology & UDL	Increased regulation	self-More structured monitoring of IEP progress
7	Smith & Harvey, 2021	UK	Qualitative Study	UDL implementation in inclusive schools	Increased in engagement	IEP easier to integrate into classroom learning
8	García-Campos et al., 2022	Spanyol	Mixed Methods	UDL-based inclusive curriculum	Increased accessibility	Individual targets more achievable
9	Zhang et al., 2021	China	Quasi-experimental	UDL & digital technolog	Increased learning motivation	Supports differentiation of IEP targets
10	Müller & Klein, 2023	Jerman	Longitudinal Study	Integration of inclusive curriculum	of Systemic changes in schools	IEPs are more aligned with universal curriculum

To provide a comprehensive overview of the characteristics and findings of the studies analyzed, Table 1 presents a synthesis matrix of ten high-quality articles that met the inclusion criteria and passed the methodological quality assessment. This matrix integrates information on research design, study focus, key findings, and relevance to the integration of UDL and IEP.

Discussion

The findings of this review demonstrate that Universal Design for Learning (UDL) consistently contributes to improving accessibility, participation, and academic achievement within inclusive educational settings. This finding aligns with previous studies indicating that flexible curriculum design can significantly reduce learning barriers and increase student engagement across diverse learner populations (Dalton, 2019; Fovet, 2020; Hall et al., 2015; Meyer et al., 2014). The effectiveness of UDL identified in this review reinforces the argument that educational equity is achieved not merely through placement in inclusive classrooms but through instructional environments intentionally designed to accommodate learner variability. In this regard, UDL serves as a preventive rather than reactive framework, enabling teachers to anticipate learner needs before barriers emerge.

The review also highlights that the integration of UDL and Individualized Education Plans (IEPs) offers a promising pathway toward more coherent inclusive curriculum systems. This finding supports previous conceptual arguments suggesting that universal curriculum design and individualized planning should function as complementary rather than separate processes (Basham, 2023; Coyne, 2018; Rose & Meyer, 2002; Spooner, 2017). While UDL provides broad accessibility through curriculum flexibility, IEPs ensure that specific learner goals remain visible and measurable. Consequently, integrating these approaches may reduce excessive dependence on individual accommodations and create more sustainable inclusive practices.

Another important finding concerns the role of teacher competence in facilitating successful UDL–IEP integration. Studies consistently emphasize that teachers' understanding of learner variability, differentiated instruction, and inclusive pedagogy significantly influences implementation quality (Florian & Black-Hawkins, 2011; Katz, 2015; Kennedy, 2020; Waitoller & King Thorius, 2016).

Professional development programs focusing on UDL principles have been shown to improve instructional planning and increase teachers' confidence in supporting students with diverse learning needs. These findings suggest that teacher preparation institutions and professional learning communities should prioritize UDL competencies as essential components of inclusive education reform.

The review further reveals that collaborative practices among educators are critical for effective implementation. Collaboration between general education teachers, special education teachers, therapists, and school administrators contributes to stronger alignment between curriculum objectives and individualized learning goals (Kurth & Gross, 2019) (Friend, 2010; Kurth, 2021; McLeskey, 2017; Morningstar, 2022) Schools that implement structured collaborative planning demonstrate greater consistency in translating IEP objectives into classroom practices. These findings support socio-constructivist perspectives emphasizing that inclusive education is not solely an individual teacher responsibility but rather a collective organizational endeavor.

Despite these positive outcomes, significant challenges continue to hinder UDL-IEP integration. Administrative workload, limited planning time, insufficient technological resources, and fragmented policy frameworks remain recurring barriers across educational contexts (Edyburn, 2010; Lowrey, 2020; Ok et al., 2021; Smith & Harvey, 2021). Furthermore, some educators continue to perceive UDL as merely a collection of instructional techniques rather than a comprehensive curriculum framework. Such misconceptions may lead to superficial implementation that fails to transform curriculum structures or assessment practices. Therefore, sustainable implementation requires systemic policy support, ongoing professional development, and institutional commitment.

Finally, this review identifies several important directions for future research. Existing evidence remains concentrated in North America, Europe, and Australia, while studies from developing countries remain limited (Sharma & Salend, 2016; Singal, 2019; Sokal & Katz, 2020; UNESCO, 2024). In addition, most studies focus on short-term instructional outcomes rather than long-term curriculum transformation. Future research should therefore investigate the development of integrated UDL-IEP models, evaluate their effectiveness across diverse cultural contexts, and examine their impact on curriculum sustainability. Such efforts are essential for advancing inclusive education beyond classroom accommodations toward systemic educational transformation.

4. CONCLUSION

This study confirms that the integration of Universal Design for Learning (UDL) into inclusive curricula has consistent empirical support in improving access, engagement, and academic achievement for students with special needs. Flexible and multimodal learning designs have been shown to reduce learning barriers preventively, so that student variability is no longer seen as an obstacle, but rather as the basis for instructional planning.

A synthesis of the literature shows that the connection between UDL and Individualized Education Plans (IEPs) is not yet systematically integrated. UDL is more often applied as a pedagogical strategy at the classroom level, while IEPs remain in the administrative and individual realm. This lack of integration indicates the need to strengthen policies and curriculum design that can structurally harmonize universal and individual approaches.

The effectiveness of inclusive education does not only depend on innovative learning methods, but also on the consistent integration of universal design and individual planning in the school curriculum system. These findings have strategic implications for policy development, teacher capacity building, and the strengthening of sustainable inclusion practices in the context of global and national education.

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