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Research trends in the implementation of universal design for learning in African higher education institutions: A systematic review

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Systematic Review

Keywords: Africa, higher education, implementation, institution, universal design for learning (UDL), systematic review

Posted Date: August 14th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10691224/v1

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Additional Declarations: The authors declare no competing interests.

Abstract

The rising heterogeneity of student populations in African Higher Education Institutions (HEIs) has intensified the global demand for inclusive pedagogical frameworks. Universal Design for Learning (UDL) has emerged as a vital strategy to address learner variability and reduce instructional barriers. This systematic review aims to map the trends, geographic distribution, and methodological characteristics of UDL research within African higher education to inform evidence-based policy and practice. Adhering to Preferred Reporting Items for Systematic Review and Meta Analysis (PRISMA) guidelines, a systematic search was conducted across Dimensions, Scopus, ERIC, and Google Scholar for peer-reviewed articles published between 2013 and 2026. Following a rigorous screening of 273 records, 20 studies met the inclusion criteria. Methodological quality was appraised using CASP and MMAT tools, and data were synthesized through thematic analysis to identify recurring patterns and research gaps. Findings reveal a significant surge in UDL scholarship peaking in 2025, though research is heavily concentrated in South Africa (n = 13). Methodologically, qualitative inquiry predominates (n = 9), reflecting the field's exploratory stage. A persistent "theory-practice gap" exists, with 55% of studies focusing on theoretical discussions rather than practical application. While evidence indicates that UDL significantly improves student engagement and academic achievement particularly in Ghana and Nigeria its efficacy is frequently undermined by systemic challenges, including inadequate digital infrastructure, limited faculty awareness, and weak institutional policy support. UDL is transitioning from a theoretical ideal to a contextualized pedagogical framework in Africa. However, its transformative potential remains constrained by geographic disparities and structural hurdles. Future success depends on moving beyond localized experiments toward systemic commitment, prioritizing faculty capacity building and investment in accessible digital resources.

INTRODUCTION

The rising heterogeneity of student populations has reinforced the global demand for inclusive approaches in higher education. Higher Education Institutions (HEIs) are increasingly expected to accommodate learners with varied characteristics, including differing abilities, prior educational experiences, languages, and cultural backgrounds. Achieving equity and inclusion remains a persistent challenge across many African countries, though the nature and extent of that challenge vary considerably by national context. In Ghana, for instance, despite policy commitments toward inclusive education, the realization of equitable access, participation, and success in higher education remains limited, particularly for students with disabilities and other marginalized groups. Earlier studies characterized inclusion in Ghanaian higher education as an ambitious goal that had yet to be fully achieved (Atuahene & Owusu-Ansah, 2013; Swanzy et al., 2019; Tudzi et al., 2021), and more recent evidence suggests this situation has changed only gradually: students with disabilities continue to report barriers related to inaccessible physical environments, inadequate institutional support, limited inclusive teaching practices, and negative staff and peer attitudes (Mensah et al., 2024; Akoto et al., 2023; Amponsah et al., 2024). Ghana is illustrative rather than exceptional in this regard similar patterns of policy-practice gaps and uneven institutional support have been documented elsewhere on the continent, though the specific barriers, policy environments, and institutional capacities differ from country to country, which is itself part of the motivation for a continent-wide, rather than single-country, synthesis. These persistent hindrances underscore the need for educational frameworks that can systematically address the variability learners bring into classrooms and reduce physical and instructional barriers to participation.

Universal Design for Learning (UDL) has emerged as an inclusive instructional framework grounded in neuroscience and learning sciences, emphasizing the proactive design of flexible learning environments rather than the modification of learners after difficulties arise. Recent scholarship holds that UDL supports learner diversity by providing multiple means of engagement, representation, and action/expression, thereby reducing barriers and promoting equitable learning opportunities (Cumming & Rose, 2022; AlRawi & AlKahtani, 2022; King-Sears et al., 2023; Seymour, 2024). These principles engagement, representation, and action/expression have been consistently reaffirmed as the framework's core organizing structure (Edwards-Hudson, 2022; Leif et al., 2023), and the recently updated CAST Universal Design for Learning Guidelines 3.0 extends them further, situating learner motivation and belonging under engagement, diverse perspectives under representation, and varied forms of communication and assessment under action and expression (CAST, 2024). Much of this evidence base, however, derives from short-duration, self-report studies conducted in well-resourced educational systems; empirical work examining whether these same benefits hold under substantially different institutional conditions large class sizes, limited technological infrastructure, and constrained instructional support remains considerably thinner, a gap with direct relevance to the African context this review addresses.

Despite its origins in K–12 education, UDL's application has expanded into higher education in response to growing student diversity (Coffman & Drapper, 2022). In African HEIs specifically, conditions such as large class sizes, resource constraints, and policy-practice disparities have been proposed as reasons UDL could be a particularly useful framework for advancing inclusivity (Adom et al., 2023; Ntombela, 2021). Yet recent evidence complicates this optimism: where UDL has been adopted, implementation has often been described as "piecemeal" driven by individual champions rather than institutionalized strategy raising the question of whether UDL's theoretical promise is translating into durable institutional practice, or remaining confined to isolated pockets of enthusiasm (Ntombela, 2021; Dubazana, 2025).

While interest in UDL has grown considerably, its implementation in African higher education remains insufficiently explored, and the existing evidence base has several notable limitations. First, it is fragmented, drawn largely from isolated institutional case studies rather than coordinated, multi-country investigations, which limits the extent to which findings can be generalized across the continent's diverse institutional and policy landscapes (Moriña et al., 2025; Zhang et al., 2024). Second, the available studies are geographically concentrated in a small number of countries principally South Africa, Ghana, and a few North African nations leaving substantial parts of the continent entirely absent from the evidence base (Adom et al., 2023; Murtadlo et al., 2025). Third, the predominance of short-term, cross-sectional designs means little is known about whether UDL practices are sustained or institutionalized over time, as opposed to implemented as one-off interventions (Moriña et al., 2025; Zhang et al., 2024). Finally, and perhaps most importantly, recent scholars caution against the uncritical transfer of Western-developed UDL frameworks into African higher education without adaptation to local cultural, linguistic, and resource realities, a caution that existing empirical studies have, on the whole, not yet operationalized into testable adaptation models (Moganedi, 2025; Murtadlo et al., 2025). Taken together, these limitations mean that policymakers, institutional leaders, and researchers currently lack a consolidated evidence base from which to determine how UDL has actually been implemented across African higher education systems, which strategies show genuine promise rather than isolated success, and what contextual factors facilitate or hinder adoption at scale.

To the best of our knowledge, this study addresses this gap by providing the first PRISMA-compliant systematic review synthesizing evidence on UDL implementation in African higher education institutions. It advances existing knowledge in three specific ways. First, unlike the context-bound case studies that currently dominate the field, this review identifies cross-national patterns and systemic barriers such as digital literacy gaps and infrastructural constraints that recur across institutional and national borders, rather than remaining visible only within single-site studies. Second, it critically appraises the methodological characteristics of existing research, making explicit where the evidence base is strong and where it rests on a narrow set of short-term, single-country designs. Third, it synthesizes reported implementation strategies, outcomes, barriers, and facilitators into a single evidence base, providing researchers, institutional leaders, and policymakers with a foundation for future empirical work, institutional practice, and policy development that no individual study can offer on its own. In doing so, this review moves the field beyond isolated case studies toward a more coherent, evidence-informed understanding of inclusive higher education in Africa.

Therefore, this review is guided by the following research question:

What are the trends in research on Universal Design for Learning (UDL) adoption and implementation in higher education institutions in Africa?

METHODS

This systematic review was undertaken on the basis of the trends in the adoption of Universal Design for Learning (UDL) in African Higher Education Institutions. This study evaluates precisely the publication trends by year, geographic distribution, research methodology or design, UDL use type, utilized and fundamental UDL emphasis areas or themes that have been explored in the literature. This study follows the procedures stated in the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement. Preferred Reporting Items for Systematic Reviews and Meta-Analysis was utilized to verify the quality and rigorousness of the review process. The review approach involves identification, screening, eligibility and included stages as demonstrated by the PRISMA standards (Moher et al.,2009).

Search strategy

The literature search for this systematic review was conducted across four major electronic databases: Dimensions (n = 49), Scopus (n = 18), ERIC (n = 6), and Google Scholar (n = 200), to capture a broad spectrum of peer-reviewed scholarship on the adoption of Universal Design for Learning (UDL) in African higher education. Data was generated from Google Scholar and Scopus through the publish or perish 8 software. The search results on UDL studies conducted in African HEIs from these publication databases were downloaded in RIS/Ref manager format. The RIS files from each of the databases were imported separately into the Zotero reference manager, which allowed us to automatically download and attach almost all of the articles to my library. Those that were unable to download were done manually using our institution's subscription for free. These databases were selected to assure broad coverage of both high-impact international publications and regionally relevant studies.

The search focuses on papers published between 2013 and 2026, a period that represents the expanding global emphasis on inclusive education and the increasing usage of UDL frameworks in higher education contexts. The search process was carried out between 19th February 2026 and 25th March 2026. A systematic Boolean search method was applied to ensure precision and relevancy.

The search string combined key descriptors related to UDL, higher education, and the African context as follows:

("Universal Design for Learning" OR UDL) AND ("higher education" OR university OR universities OR "post-secondary education" OR "tertiary education") AND (Africa OR "Sub-Saharan Africa" OR Ghana OR Nigeria OR Kenya OR "South Africa" OR Uganda OR Tanzania OR Ethiopia OR Rwanda).

To enhance the comprehensiveness of the search, manual screening of reference lists of selected articles was conducted to identify additional relevant studies that may not have been captured through database searches.

Study selection and screening process

The study selection approach followed a systematic screening procedure consistent with known systematic review protocols. A total of 273 records were initially identified through database searches. After the removal of 48 duplicate records, 225 unique studies remained for title and abstract screening. During the title and abstract screening step, records were examined against the predefined inclusion and exclusion criteria. As a consequence, 181 records were discarded, while 44 research matched the criteria for further examination and were progressed to the full-text review stage.

Subsequently, 44 full-text papers were retrieved and appraised for eligibility. Following a careful examination, 24 papers were removed due to not fully meeting the inclusion criteria, notably in respect to UDL focus, study environment, or methodological rigor. Ultimately, 20 papers satisfied all inclusion criteria and were declared appropriate for inclusion in the final evaluation. This rigorous multi-stage screening approach guaranteed that only relevant and high-quality papers guided the synthesis of research trends in the implementation of Universal Design for Learning in African higher education institutions.

Inclusion criteria

Studies were included in this review based on the following criteria:

1. The study explicitly focused on Universal Design for Learning (UDL) as a central framework, including its implementation, evaluation, theoretical application, or analysis based on CAST principles.
2. The study was conducted within a higher education context, including universities, colleges, polytechnics, or other tertiary institutions.
3. The study was conducted in Africa or explicitly examined African higher education systems as a primary or subgroup focus.
4. The study was a peer-reviewed journal article
5. The publication was written in English.
6. The study fell within the selected timeframe (2013–2026).
7. The full text was accessible for review and analysis.

Exclusion criteria

Studies were excluded from the review based on the following conditions:

1. The study did not have UDL as a central focus.
2. The study was not conducted within a higher education context.
3. The study was not conducted in Africa and did not include African higher education in its analysis.
4. The publication was not peer-reviewed
5. The study was not published in English.
6. The study was published before 2013.
7. The full text was unavailable, preventing detailed evaluation.

Quality appraisal

The study selection process was conducted independently by two researchers, who screened titles and abstracts against the predefined inclusion and exclusion criteria. Disagreements on six studies were resolved through discussion with a third researcher, increasing the inter-rater agreement from 94% to 100%. The methodological quality of the included studies was assessed using the Critical Appraisal Skills Programme (CASP) for qualitative studies and the Mixed Methods Appraisal Tool (MMAT) for mixed-methods studies. Based on the appraisal, 13 studies were rated as high quality and 7 as moderate quality. Overall, the included studies demonstrated moderate to high methodological rigor, although some were limited by small sample sizes, limited generalizability, and inconsistencies in reporting. The quality assessment guided the synthesis by giving greater weight to findings from methodologically stronger studies.

Data extraction

For the 20 eligible studies, pertinent data were systematically gathered using a structured literature matrix template (see Table 1). The retrieved information comprised bibliographic evidences (such as authors, publication year, and study setting), research focus/topic and methodology, participant characteristics, UDL use types and major findings. This matrix functioned as both an organizing tool for handling the data and a basis for later thematic analysis.

Table 1
Summary of reviewed studies (n = 20)

No	Author(s)	Year	Topic/Focus	Country	Methodology	UDL Use Type	Sample Size	Key Findings (Summarized)
1	Mollo	2024	Online formative assessment	South Africa	Qualitative	Theoretical	6 lecturers	Enhances feedback and learning but limited by tech challenges and low digital skills.
2	Ndlovu	2026	Digital accessibility	South Africa	Qualitative Review	Theoretical	10 studies	Tools like Blackboard Ally improve accessibility and inclusive learning.
3	Andrews & Fouche	2022	Emergency remote teaching	South Africa	Qualitative	Implementation	536 students	UDL supports engagement but affected by workload, feedback, and connectivity issues.
4	Hamman et al.	2025	Equity in blended learning	South Africa	Design-based	Theoretical	N/A	ENABLE framework promotes inclusive, flexible, student-centred teaching.
5	Dake et al	2025	UDL awareness (GDFs)	Ghana	Quantitative	Theoretical	61 lecturers	Limited training; moderate knowledge; strong need for UDL professional development.
6	Kanyesigye	2026	Digital inclusion (disabilities)	Uganda	Qualitative	Theoretical	126 participants	Benefits exist but hindered by poor infrastructure and limited assistive tools.
7	Ntombela	2021	Inclusive higher education	South Africa	Conceptual	Theoretical	N/A	UDL and inclusive leadership needed to improve access and outcomes.
8	Adom et al.	2023	UDL in art course	Ghana	Mixed methods	Implementation	122 students	UDL improved inclusion, engagement, motivation, and learning outcomes.
9	Moodley	2024	UDL in writing centres	South Africa	Conceptual	Theoretical	N/A	UDL supports inclusion but faces contextual and resource barriers.
10	Tunjera & Chigona	2022	Multi-platform teaching	South Africa	Qualitative	Implementation	165 students	Multi-platform tools improved access, flexibility, and participation.
11	Samuels et al.	2025	Translanguaging & UDL	South Africa	Qualitative	Implementation	10 educators	Language adaptation and UDL improve inclusion and engagement.
12	Nseibo et al.	2023	Engagement in large classes	South Africa	Qualitative	Implementation	8 participants	Engagement improved through support, collaboration, and flexibility.
13	Muhammad & Yahaya	2025	UDL blended learning	Nigeria	Quantitative	Implementation	2 schools	UDL significantly improved academic achievement over traditional methods.

No	Author(s)	Year	Topic/Focus	Country	Methodology	UDL Use Type	Sample Size	Key Findings (Summarized)
14	Mthethwa & Moleko	2026	UDL in mathematics	South Africa	Systematic Review	Theoretical	42 studies	UDL unevenly applied; limited by curriculum and resource constraints.
15	Mpolomoka et al.	2025	UDL enablers/disablers	Zambia	Meta-analysis	Theoretical	20 studies	Enabled by training and tech; hindered by low awareness and weak policy.
16	Moganedi	2025	UDL & African languages	South Africa	Qualitative	Implementation	850 students	Multilingual UDL improved inclusion but faced resource challenges.
17	Mavutha & Mansingh	2024	Learning disabilities	South Africa	Literature Review	Theoretical	N/A	Dyslexia/dyscalculia under-supported; need assistive tech and interventions.
18	Manase et al.	2024	UDL in Tanzania	Tanzania	Qualitative	Implementation	12 participants	UDL constrained by lack of skills, resources, and lecturer awareness.
19	Kahenya & Williams	2025	Faculty development	Kenya	Qualitative	Implementation	52 lecturers	Training improved teaching practices and inclusive learning.
20	Chiwandire	2019	UDL & curriculum inclusion	South Africa	Document Analysis	Theoretical	N/A	Lack of training leads to poor inclusion; calls for compulsory UDL training.

Data analysis

Data were evaluated using thematic analysis, following the reflexive thematic analysis approach developed by Braun and Clarke (2019), to synthesize findings across the included studies. This approach was selected because it is well suited to identifying patterns of meaning across a body of qualitatively and methodologically diverse literature such as the mixed case-study, survey, and mixed-methods research included in this review without requiring the studies to share a common theoretical or methodological orientation. Rather than treating themes as objectively pre-existing within the data and waiting to be "discovered," Braun and Clarke's framework conceptualizes theme development as an active, interpretive process shaped by the researchers' engagement with the data in relation to the review's research question. This orientation was appropriate here because the goal was not simply to catalogue what individual studies reported about UDL, but to interpret recurring patterns in how UDL principles have been conceptualized, adapted, and implemented across varied African institutional contexts.

In practice, this process followed Braun and Clarke's six-phase structure. Following thorough extraction using a literature matrix, the data were read and re-read to achieve familiarity with the full corpus before coding began. Initial coding was then conducted by identifying key ideas linked to the application of Universal Design for Learning (UDL) in African higher education institutions, generating codes inductively from the extracted data rather than applying a predetermined coding frame. These codes were subsequently sorted into candidate categories and developed into broader themes through an iterative process of comparison, review, and refinement across the dataset, with themes revised where they did not adequately capture patterns evident across multiple studies. The final themes identify recurring patterns in how UDL principles are implemented, along with the key findings reported across studies conducted in African higher education institutions.

RESULTS AND DISCUSSION

Results

Figure 2 indicates variation in values for the period 2019 to 2026. The values were low in 2019 (n = 1) and 2021 (n = 1), followed by a minor increase in 2022 (n = 2) and 2023 (n = 2). A further increase was seen in 2024 (n = 4), reaching a peak in 2025 (n = 7). In 2026, the value declined to 3. Overall, the data reveal swings with an overall increase into 2025, followed by a fall in 2026.

The results demonstrate substantial heterogeneity in the distribution of totals across the selected countries. South Africa records the highest value (n = 13), which is much higher than any other countries. Ghana follows with a score of 2, while Kenya, Nigeria, Tanzania, Uganda, and Zambia each report very low and identical levels of 1. Overall, the findings suggest a highly uneven distribution, with a notable concentration in South Africa relative to the other countries.

The results in Fig. 4 suggest a significant prevalence of qualitative approaches within the dataset. “Qualitative” studies recorded the highest frequency (n = 9), followed by other related qualitative subcategories such as qualitative conceptual work (n = 2), and qualitative design-based and desktop review techniques (n = 1 each). In contrast, non-qualitative procedures were little represented, with document analysis (n = 1), meta-analysis (n = 1), mixed methods (n = 1), and quantitative research (n = 2). Systematic review methodologies also featured sporadically (n = 1). Overall, the distribution reveals a strong methodological preference for qualitative inquiry, with very minimal usage of quantitative and mixed-method designs in the evaluated works.

The results show the extent of Universal Design for Learning (UDL) use type in African higher education institutions. The implementation component of the reviewed studies accounted for 9 (45%) of the overall outcome, while the theoretical discussion constituted 11 (55%). This indicates that a greater proportion of the study was dedicated to theoretical discussion compared to practical implementation.

Core universal design for learning (UDL) focus areas/themes

Universal Design for Learning enhances learning outcomes and student engagement

Approximately 20% (4 out of 20) of the reviewed studies demonstrated that the implementation of Universal Design for Learning (UDL) positively influences student learning outcomes in African higher education institutions. Across studies conducted in Ghana and Nigeria, there was consistent evidence that UDL promotes learner engagement, motivation, participation, and academic achievement through learner-centred instructional approaches. Although the interventions differed across contexts, the studies converged in showing that multiple means of representation, flexible assessment methods, structured feedback, and blended instructional strategies improve students' learning experiences and academic performance (Adom et al., 2023; Muhammad & Yahaya, 2025). For instance, Adom et al. (2023) reported that over 80% of students perceived improvements in learning outcomes and self-expression following the implementation of UDL principles, while Muhammad and Yahaya (2025) found significantly higher academic achievement among students exposed to UDL-based blended learning compared with those taught using conventional methods. Collectively, these findings suggest that UDL contributes not only to inclusive learning environments but also to measurable improvements in students' academic success across different African higher education contexts.

Growing emphasis on inclusive and accessible learning

Nearly 25% (5 out of 20) of the reviewed studies highlighted the increasing adoption of UDL as a framework for promoting inclusive and accessible learning in African higher education. Evidence from South Africa, Zimbabwe and other African contexts consistently indicated that UDL is increasingly viewed as an effective strategy for addressing the diverse needs of students, including learners with disabilities and those from multilingual and multicultural backgrounds. Across these studies, common instructional practices included the integration of accessibility technologies, multilingual teaching approaches, inclusive institutional leadership, and translanguaging strategies, all of which enhanced students' participation and curriculum access (Moganedi, 2025; Ndlovu, 2026; Ntombela, 2021; Samuels et al., 2025). Despite contextual differences among institutions, the reviewed studies consistently emphasized that inclusive pedagogical practices improve learner participation and contribute to more equitable higher education environments. This synthesis indicates that UDL has become an important framework for advancing educational inclusion throughout African universities.

Digital technologies present opportunities but systemic barriers limit inclusion

About 20% (4 out of 20) of the included studies examined the contribution of digital technologies to inclusive higher education. Across studies conducted in Uganda and South Africa, digital technologies were consistently identified as important enablers of accessibility, particularly for students with disabilities. However, the studies also revealed recurring structural barriers that constrain effective implementation. Common challenges included inadequate technological infrastructure, limited availability of assistive technologies, insufficient diagnosis of learning difficulties, and inadequate institutional support systems (Kanyesigye, 2026; Mavutha & Mansingh, 2024). The consistency of these findings across different national contexts suggests that technological innovations alone are insufficient to achieve inclusive education without complementary investments in institutional capacity, infrastructure and professional support.

Persistent implementation challenges hinder effective UDL adoption

The most dominant finding emerging from the review was the persistence of implementation challenges. Approximately 40% (8 out of 20) of the reviewed studies identified institutional, pedagogical and resource-related barriers that hinder effective implementation of UDL. Regardless of geographical location or discipline, studies consistently reported inadequate lecturer training, insufficient instructional resources, limited awareness of UDL principles, and weak institutional commitment as major constraints to successful implementation (Chiwandire, 2019; Manase et al., 2024; Moodley, 2024; Mpolomoka et al., 2025; Mthethwa & Moleko, 2026). While some institutions demonstrated progress in integrating UDL into writing support, mathematics instruction and curriculum design, implementation remained inconsistent because of these systemic limitations. The convergence of evidence across multiple studies indicates that sustainable UDL implementation requires coordinated institutional investment rather than isolated classroom initiatives.

Faculty capacity building is critical for successful UDL implementation

In all, 10% of the included studies emphasized faculty professional development as a prerequisite for successful UDL implementation. Despite differences in institutional contexts, studies from Ghana and Kenya reported remarkably similar findings regarding lecturers' willingness to adopt inclusive teaching practices. Both studies showed that although many lecturers lacked formal training in UDL, they expressed positive attitudes towards inclusive education and benefited significantly from structured professional development programmes (Dake et al., 2025; Kahenya & Williams, 2025). Evidence further indicated that peer mentoring, collaborative learning opportunities and targeted training improved lecturers' confidence, instructional practices and overall satisfaction with UDL implementation. These findings suggest that continuous professional development is essential for translating institutional policies into effective classroom practice.

Technology-enhanced and contextualised teaching approaches support flexible learning

Around 15% (3 out of 20) of the reviewed studies reported an increasing shift towards technology-enhanced and context-responsive instructional approaches that support UDL implementation. Across studies conducted in South Africa, lecturers adopted multiple digital platforms including Microsoft Teams, WhatsApp and online radio to improve accessibility, learner engagement and instructional flexibility (Mollo, 2024; Tunjera & Chigona, 2022). Similarly, contextualised instructional frameworks such as ENABLE demonstrated how UDL principles can be systematically integrated into curriculum planning to promote student-centred teaching practices (Hamman et al., 2025). Although technological and contextual innovations varied across institutions, the studies consistently demonstrated that flexible instructional design enhances student participation and learner autonomy. Nevertheless, recurring concerns regarding internet connectivity, digital literacy and institutional support suggest that these innovations require sustained investment to achieve their full potential.

UDL strengthens online and blended learning but implementation remains context dependent

Approximately 10% (2 out of 20) of the reviewed studies specifically examined the application of UDL in online and blended learning environments. Across these studies, UDL principles such as flexible assessment, learner support, collaboration and multiple means of engagement contributed to improved student participation and self-directed learning (Andrews & Fouche, 2022; Nseibo et al., 2023). However, both studies also reported common implementation challenges, including heavy instructor workloads, inadequate feedback mechanisms and poor internet connectivity. The consistency of these findings suggests that while UDL provides an effective pedagogical framework for online education, its success depends largely on the availability of technological infrastructure, institutional support and appropriate instructional design strategies.

Discussion

The findings of this study offer more than a mere mapping of publication counts; they reveal a complex, shifting landscape of pedagogical reform within the African higher education sector. This discussion critically interprets these trends through the lenses of social justice, decoloniality, and indigenous philosophies, situating UDL not just as a teaching framework, but as a site of epistemic struggle and institutional transformation.

Beyond Temporal Trends: UDL as Epistemic Justice

The surge in scholarship peaking in 2025 (n = 7) reflects more than a post-pandemic digital pivot. Within the framework of the Capability Approach, this trend indicates a growing recognition that "formal access" to higher education is insufficient without "epistemic access" the real freedom for diverse students to achieve academic success (Mathebula & Martinez-Vargas, 2023). The move from the periphery to the center suggests that African HEIs are increasingly evaluating UDL as a mechanism for epistemic justice, aiming to dismantle the systemic exclusion that has historically marginalized students with disabilities and those from non-traditional backgrounds (Ndlovu, 2023).

Explaining "South African Exceptionalism": Policy and Path Dependency

The profound geographic concentration in South Africa (n = 13) can be critically interpreted through the lens of path dependency and unique policy landscapes. Unlike many other African nations, South Africa's scholarship is deeply rooted in the post-Apartheid constitutional mandate for social justice and specific inclusive policies like White Paper 6 (Ndlovu, 2026). Furthermore, the 2015–2016 "Fees Must Fall" protests and the COVID-19 pandemic acted as catalysts, forcing South African institutions to confront the "hidden structures of coloniality" that persist in traditional pedagogical models (Ndlovu, 2023; Hamman et al., 2025). This "exceptionalism" is therefore not merely a reflection of better infrastructure, but a result of a direct confrontation between an oppressive past and the demands for democratic, inclusive transformation.

Decolonizing UDL: From Individual Flexibility to Ubuntu

The "qualitative dominance" in the methodology (Fig. 4) underscores a critical exploratory phase where scholars seek to "Africanize" the UDL framework. While the original CAST guidelines were developed within a North American K-12 context emphasizing individual choice and flexibility, African scholars are increasingly synthesizing UDL with Ubuntu, the philosophy of collective interconnectedness (Mathebula & Martinez-Vargas, 2023). This shift transforms UDL from an individualistic methodology into a communal praxis, where inclusion is seen as a "communal capability" (Sarr & Diagne, 2024). By centering Ubuntu, African HEIs can move beyond Western-centric design, fostering a "decolonized university space" that prioritizes collective wellbeing and indigenous knowledge systems over neoliberal pedagogical models (Banwari et al., 2023).

The Theory-Practice Gap as Systemic "Patching"

The persistent "theory-practice gap" (55% theoretical vs. 45% implementation) reveals a critical structural barrier: UDL is often being "patched onto" a colonial, exclusionary system rather than being used to fundamentally redesign it (Ndlovu, 2023). This "patching" approach explains why scholars conceptually support UDL while implementation remains piecemeal. True institutionalization is hindered by what may be termed "epistemic inertia" where legacy pedagogical structures and a lack of systemic faculty training (Dake et al., 2025) prevent the full realization of the UDL promise. Without a fundamental shift from "remediating students" to "restructuring environments," UDL risks becoming another "Western import" that fails to disrupt underlying inequities.

Digital Inclusion and Design Justice

Finally, the findings regarding digital barriers highlight that in Africa, UDL is inextricably linked to Design Justice (Banwari et al., 2023). The "material access" issues noted in Uganda and South Africa (Kanyesigye, 2026; Mavutha & Mansingh, 2024) demonstrate that UDL cannot be viewed solely as a pedagogical framework. It must be integrated with advocacy for digital equity, recognizing that without the necessary infrastructure, the "multiple means of representation" remain inaccessible to the most vulnerable learners.

CONCLUSION

This systematic review demonstrates that Universal Design for Learning (UDL) is an ascending but geographically concentrated field of study within African higher education. The temporal analysis reveals a clear momentum in scholarship, peaking in 2025, which reflects a growing continental recognition of UDL as a vital framework for addressing learner variability and social justice. The evidence synthesized here confirms that when implemented particularly through multiple representations and flexible assessments UDL significantly enhances student engagement, motivation, and academic achievement, as evidenced by benchmark studies in Ghana and Nigeria. However, the transition from theory to practice remains incomplete. The "South African exceptionalism" in the literature highlights a significant disparity in research output across the continent, while a persistent "theory-practice gap" indicates that conceptual alignment has yet to be fully translated into institutionalized pedagogy.

Furthermore, the effectiveness of UDL in the African context is inextricably linked to systemic factors, including digital infrastructure, faculty capacity, and policy support. In conclusion, while UDL offers a transformative pathway for inclusive education in Africa, its success depends on moving beyond localized pedagogical experiments toward a systemic, resource-supported, and contextually grounded institutional commitment.

Limitations

Despite the rigorous application of the PRISMA protocol, several limitations characterize this review. First, the geographic imbalance is a primary constraint; with 65% of the included studies originating from South Africa, the findings may not be fully representative of the diverse

socio-economic and educational landscapes across the other 53 African nations. Second, the sample size of eligible studies (n = 20) is relatively small, reflecting the nascent stage of UDL research in the region. Third, the language criterion restricted the search to English-language publications, potentially excluding relevant scholarship from Francophone, Lusophone, and Arabic-speaking African regions.

Additionally, the methodological homogeneity of the dataset which is heavily skewed toward qualitative inquiry precluded the possibility of a meta-analysis or a robust statistical synthesis of UDL's impact. Finally, the inclusion of studies up to early 2026 introduces a temporal limitation, as the most recent data may still be emerging in the scholarly cycle.

Future research directions

To advance the field of inclusive education in Africa, future scholarship should prioritize the following areas:

- **Methodological Diversification**: There is an urgent need for large-scale quantitative and longitudinal studies to measure the long-term impact of UDL on graduation rates, student retention, and post-graduate employability.
- **Geographic Expansion**: Researchers should focus on "under-researched" regions, particularly in Central, North, and Francophone West Africa, to develop a more inclusive, pan-African understanding of UDL implementation.
- **Policy and Leadership Analysis**: Future studies should investigate the role of institutional leadership and the development of national policy frameworks that mandate UDL, moving the conversation from individual classroom practices to systemic reform.
- **Contextualized Assistive Technology**: Research is needed to explore the development and efficacy of low-cost, offline, or "low-bandwidth" digital tools that align with UDL principles to bridge the digital divide in resource-constrained environments.
- **Discipline-Specific UDL**: While general pedagogical studies are valuable, more research is required on applying UDL within high-stakes STEM (Science, Technology, Engineering, and Mathematics) and vocational fields to address specific instructional barriers in those disciplines.

Declarations

Conflict of Interest Statement:

The author declares that this study was conducted independently, with no commercial or financial interests that could be viewed as a conflict of interest.

AUTHOR STATEMENT

Author 1: Conceptualization, Methodology, Formal analysis, Writing – Original Draft **Author 2**.: Data curation, Literature search, Screening (study selection), Writing – Original Draft Preparation **Author 3**: Investigation (data extraction), Validation (cross-checking included studies), Visualization. **Author 4**: Review & Editing, Quality assurance, Proofreading

ACKNOWLEDGEMENTS

The authors would like to express their sincere appreciation to all individuals who contributed in diverse ways to the successful completion of this study. This research received no specific funding from any public, commercial, or not-for-profit organizations.

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Figures

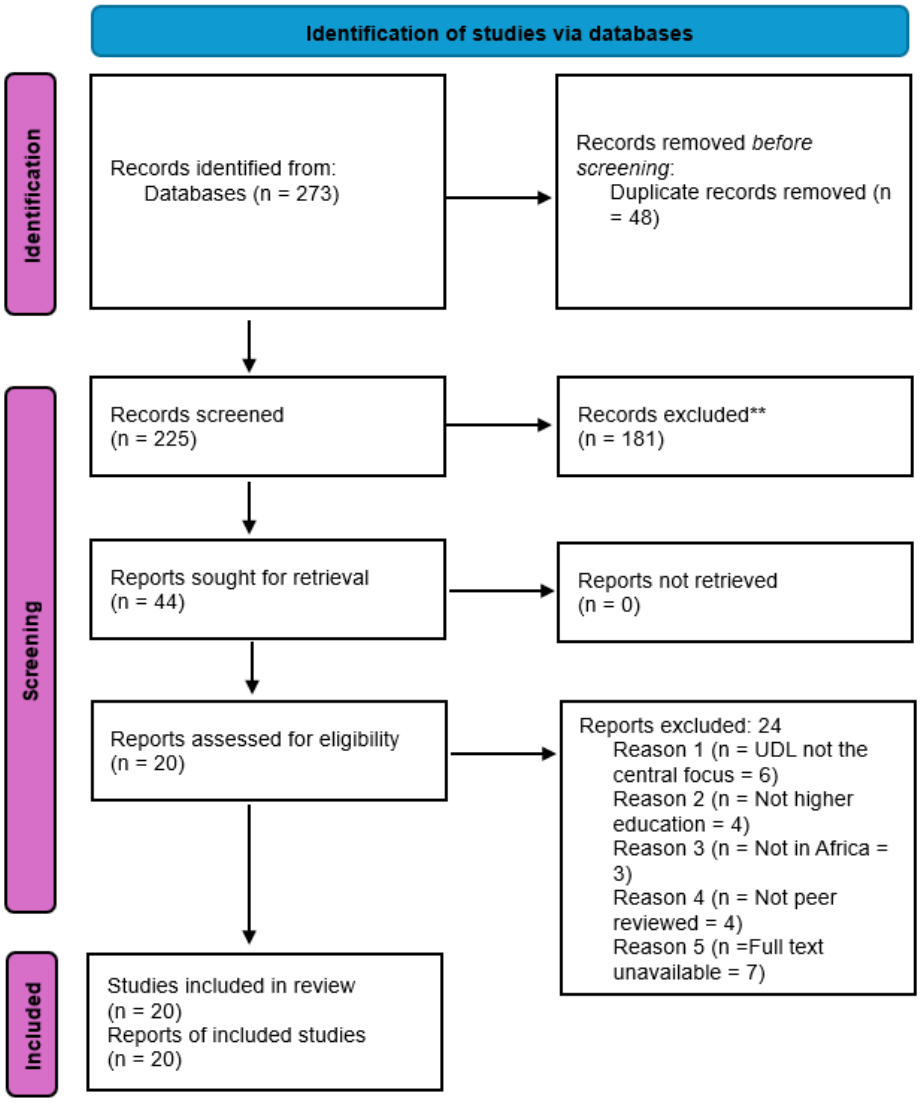


Figure 1

PRISMA 2020 diagram depicting the systematic review process and final included studies on UDL in African higher education

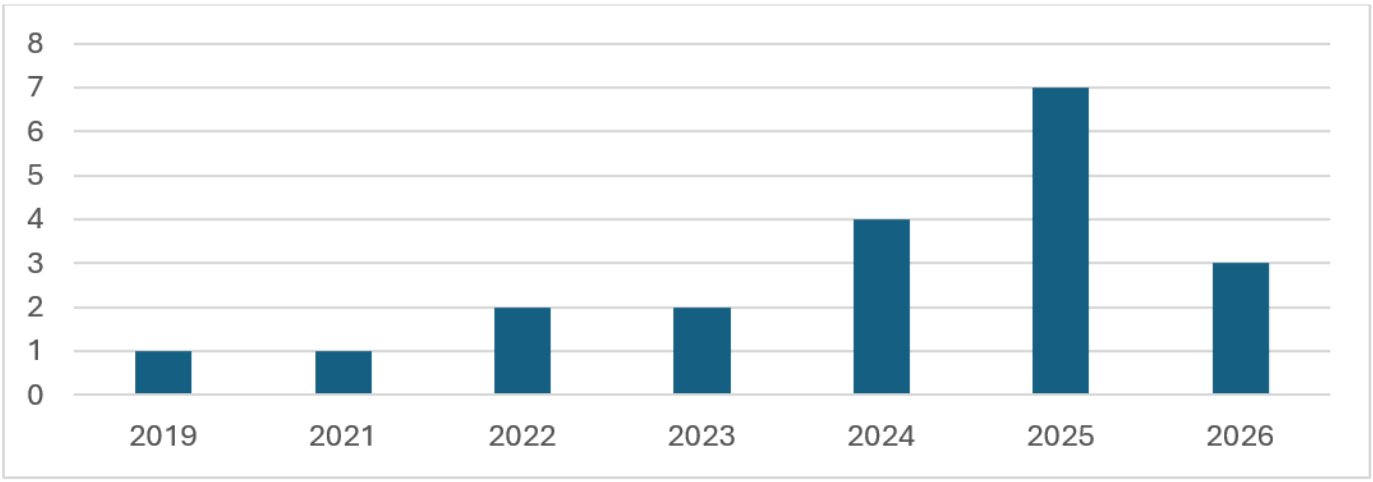


Figure 2

Publication trends by year

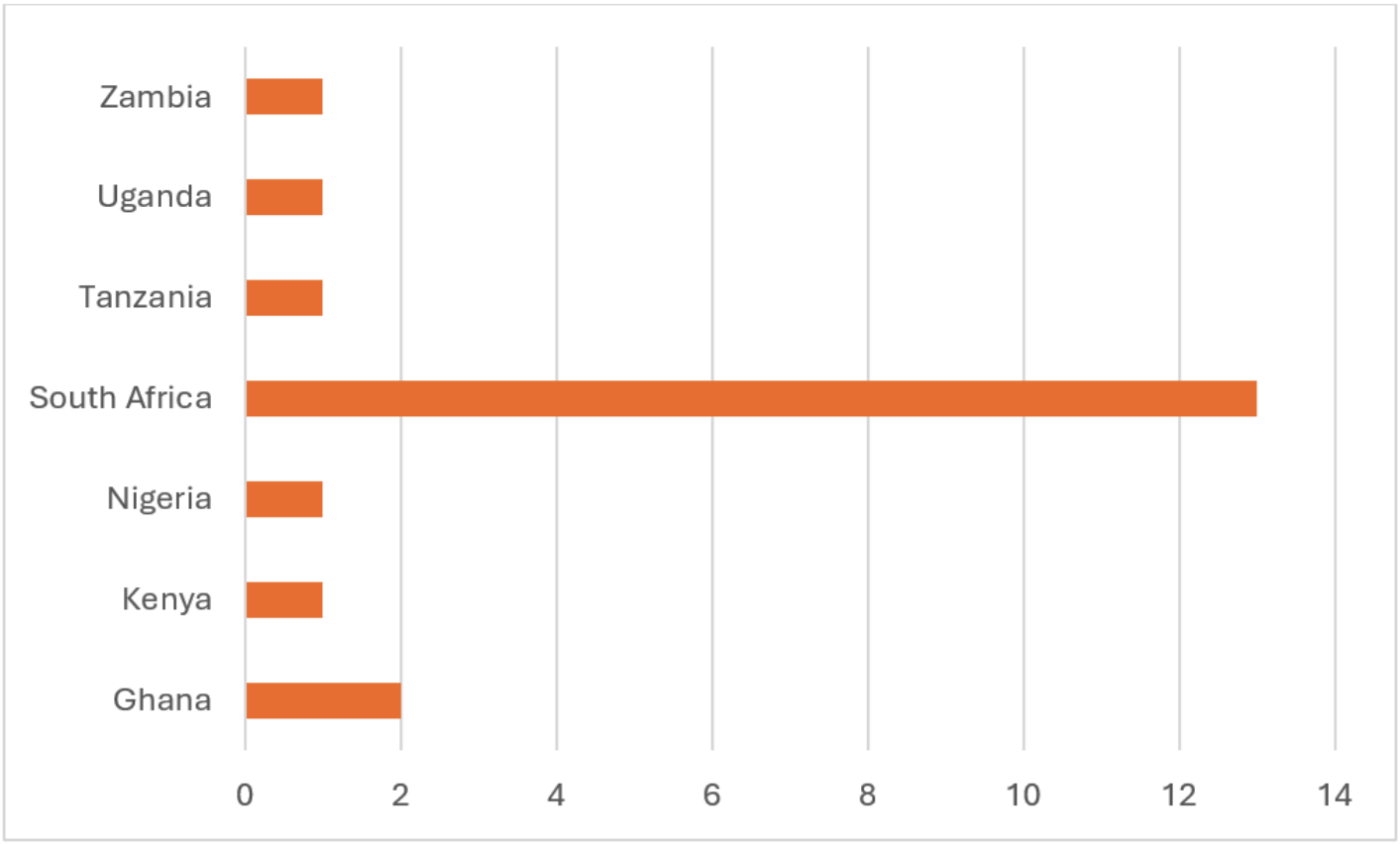


Figure 3

Geographic distribution

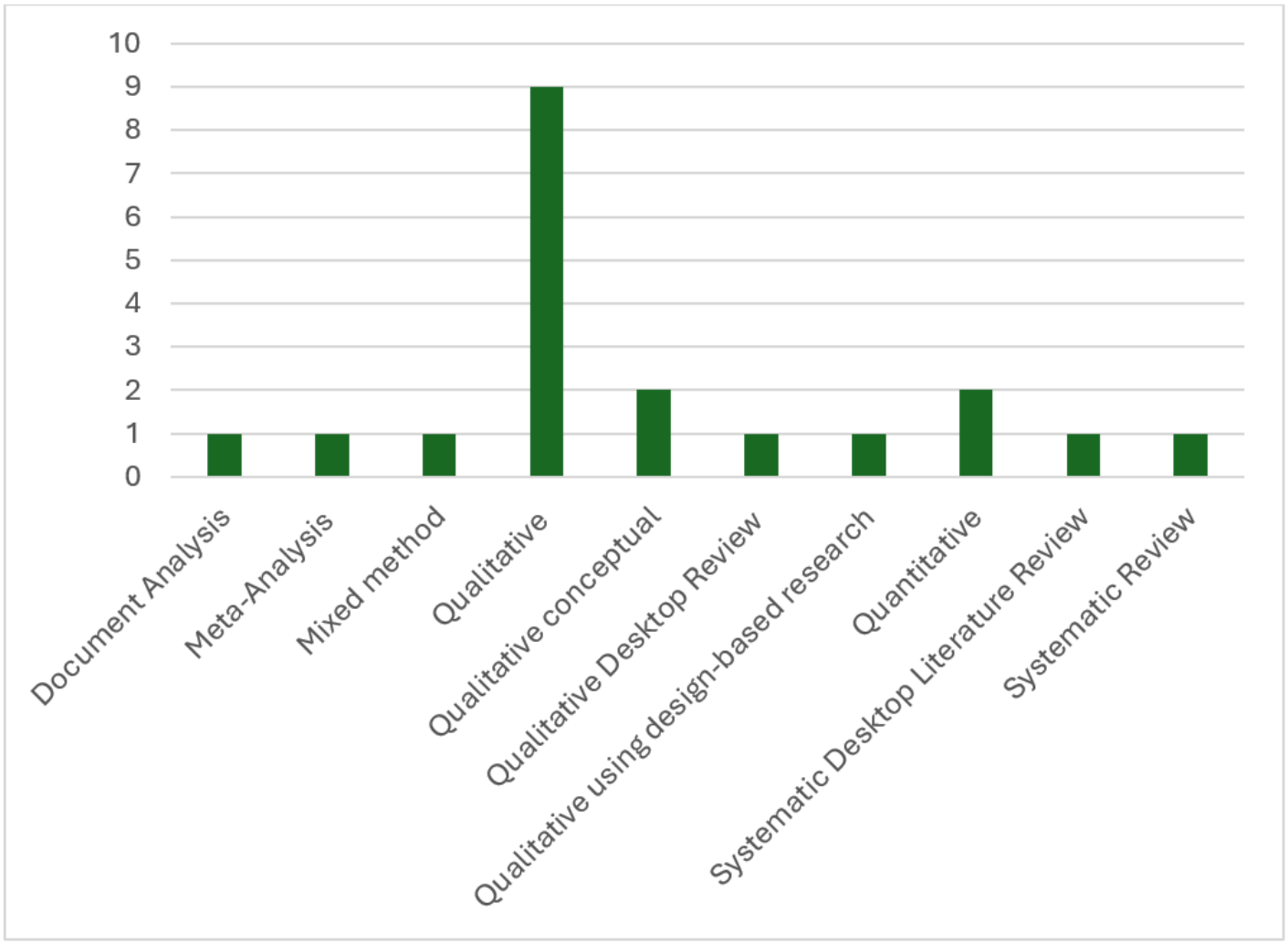


Figure 4

Research methodology/study design

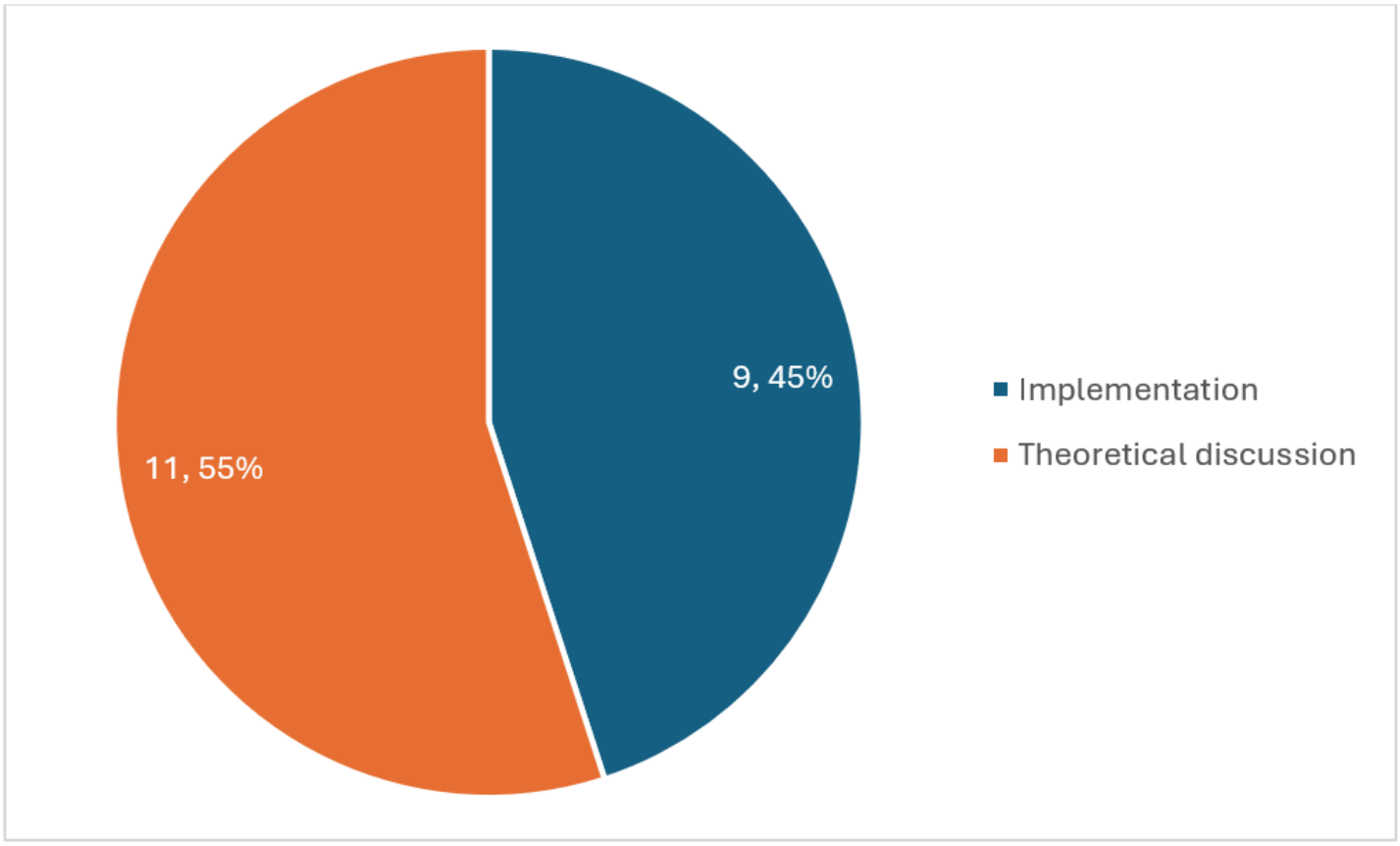


Figure 5

Universal design for learning (UDL) use type