

Universal Design for Learning in Inclusive Kindergarten Education Across Urban, Suburban, and Remote Contexts in Indonesia

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Abstract

Universal Design for Learning (UDL) represents a critical framework for creating inclusive educational environments, yet its implementation in early childhood education remains underexplored, particularly in developing countries. Contemporary early childhood institutions often evaluate children based on socially constructed notions of normalcy, potentially excluding diverse learners. This study investigates UDL implementation challenges and opportunities in inclusive kindergarten education across diverse geographical contexts. A qualitative multi-site case study was conducted across three kindergarten schools in East Kutai Regency, Indonesia, representing urban, suburban, and remote areas. Data were collected through structured interviews with six participants (principals and teachers), classroom observations, and document analysis. Analysis followed Edward III's policy implementation framework, examining communication, resources, disposition, and bureaucratic structure dimensions. All schools demonstrated positive attitudes toward UDL implementation and established communication mechanisms, though with varying effectiveness. Significant resource disparities existed across geographical contexts, with urban schools having better access to specialized personnel and infrastructure. The availability of only one Special Assistant Teacher for the entire regency highlighted severe resource constraints. Bureaucratic support varied substantially, with urban schools receiving more systematic institutional backing compared to suburban and remote areas. While positive educator attitudes provide implementation foundation, substantial gaps exist between intention and capacity. Resource inequalities and inconsistent institutional support perpetuate educational exclusion rather than promoting genuine inclusion. The findings reveal that effective UDL implementation requires coordinated systemic support addressing not only individual bias but also institutional policies that maintain exclusionary practices.

INTRODUCTION

Early childhood education represents a critical period in human development, often referred to as the golden age, where cognitive, emotional, social, and physical foundations are established. During this formative stage, inclusive education in kindergarten settings aims to ensure that every child, including those with disabilities, has equal opportunities to learn and develop according to their potential. However, contemporary early childhood institutions frequently evaluate children's bodies and minds based on socially constructed notions of normalcy or typical development, positioning some children as disabled and requiring remediation or intervention (Ferri & Bacon, 2011). Young children of Color, including those from additional marginalized backgrounds such as children experiencing poverty and multilingual children, have an increased likelihood of being labeled as requiring remediation and intervention because developmental assessments and accepted milestones largely reflect predominantly white, middle-class ways of thinking, learning, and behaving (Brown et al., 2010; Dyson, 2015; Souto-Manning & Rabadi-Raol, 2018).

The implementation of inclusive education curricula in kindergarten settings, while designed to provide joyful, integrated, and developmentally appropriate learning experiences covering various aspects including religious and moral values, social-emotional, cognitive, and artistic development, often reveals significant gaps between designed, taught, and actually learned curricula. Some well-intentioned early childhood programs and practices have served a "normalizing" function that aims to bring young children closer to widely accepted developmental norms using standardized disciplinary knowledge and practices (Antonsen, 2020; Arndt et al., 2015). Child Find legislation and eligibility assessment practices, including assessments normed on primarily white populations and teacher referrals that may reflect racial or cultural biases, exemplify how established developmental expectations can subject children to surveillance, categorization, or remediation (Baker, 2002; Ferri & Bacon, 2011).

In inclusive early childhood education practice, the hidden curriculum can function as both barrier and opportunity. Formally unplanned instructional practices may become obstacles when they fail to reflect diversity and engagement of all children. Contemporary schooling practices are often not effective at improving the learning process, and continuing to do what teachers are already doing will further perpetuate the gap between increasingly diverse student populations and one-size-fits-all curricula (Edyburn, 2006; Spencer, 2011). Most educational organizations develop curriculum to serve a core group of learners, exclusive of students with disability, necessitating proactive approaches that address learner diversity from the outset (Hitchcock et al., 2002).

Universal Design for Learning (UDL) is promoted as a philosophy, framework, and set of principles for designing and delivering flexible approaches to teaching and learning that address student diversity within the classroom context (Capp, 2017). UDL is a set of pedagogical principles for designing flexible teaching and learning methods that address student diversity, both with and without special needs, within the classroom context (Black et al., 2014; Capp, 2017; CAST, 2017; Evmenova, 2018). UDL is based on the premise that all learners, regardless of ability, could benefit from curriculum planning that caters for a wide variety of learners (UDL-IRN, 2011a). UDL places the student at the centre of instruction through a curriculum that is deliberately designed to reduce barriers to learning and to reach and accommodate all students before they experience academic or motivational failure (UDL-IRN, 2011b; Cumming & Rose, 2022).

The philosophy of UDL is based on three principles: (1) multiple means of engagement; (2) multiple means of representation of knowledge; and (3) multiple means of expression of understanding (Capp, 2017; CAST, 2017; Evmenova, 2018). These principles are related to the cognitive learning process based on affective networks responsible for motivation, recognition networks responsible for gathering and analyzing information, and strategic networks responsible for planning and executing actions (Dell et al., 2015; Robinson & Wizer, 2016). The underlying principles of UDL provide developers and teachers with guidelines for designing and implementing instruction in a flexible manner that meets the needs of diverse learners (Rose, Meyer, and Hitchcock, 2005). Technology is a key aspect of UDL because it provides teachers with means for representing knowledge in multiple ways and students with opportunities to demonstrate their understanding through diverse methods (King-Sears, 2009).

Despite the theoretical foundations and potential benefits of UDL, UDL-based interventions that include online and blended learning, multimedia tools, social media, and interactive websites have been found effective in developing diverse learning abilities (Hall et al., 2015; Kennedy et al., 2014; King-Sears et al., 2015). However, the learning outcomes that can be proved through experimental studies, particularly in specific learning subjects, remain debatable, and processes that can be assessed exclusively based on UDL principles implementation often lack empirical evidence (He, 2014). While UDL generally improves the learning process for all students, the impact may be variable for different cohorts of students (Hall et al., 2015; King-Sears et al., 2015). Data from Indonesia's Ministry of Education, Culture, Research and Technology indicates that the number of early childhood students with special needs continues to increase annually, with national data showing 143,632

children with special needs, comprising 139,664 children with single special needs (97%) and 8,968 children with multiple special needs (3%). However, substantial challenges remain in ensuring these children receive adequate and appropriate educational access.

The specific context of East Kutai Regency presents unique implementation challenges for inclusive education. Arguments that aim to combat inequities often place an onus on individual bias, yet bias represents the micro-level consequence of systemic racism and ableism (Tate & Page, 2018; Vaught & Castagno, 2008; Thorius, 2019). Despite having established Regional Regulation No. 8 of 2010 covering early childhood education including special education for children with special needs, implementation faces significant resource constraints. Current data reveals approximately 409 children with special needs in the regency, yet only about 4% of kindergarten students receive adequate services. Particularly concerning is the availability of only one Special Guidance Teacher serving kindergarten level, stationed at TK YPPSB Sangatta in the urban area, while 84 kindergarten teachers have received inclusive education technical guidance from the Regional Education Office.

This research addresses critical knowledge gaps in understanding how UDL is implemented in inclusive kindergarten education settings across different geographical contexts - urban, suburban, and remote areas (3T regions: disadvantaged, frontier, and outermost). The study's significance lies in its potential to provide deeper understanding of UDL implementation flexibility in inclusive education, identify primary challenges faced by teachers, schools, and regional governments, and explore supporting factors for more effective UDL implementation.

The research aims to identify the implementation process examining communication aspects, resources, implementer attitudes, and bureaucratic structures in UDL implementation for inclusive kindergarten education in East Kutai Regency, while also identifying barriers to implementation across three case study schools: TK YPPSB, TKN 2 Rantau Pulung, and TKN 1 Sandaran. Through comprehensive analysis of these diverse contexts, this study seeks to develop concrete and applicable solutions that can enhance inclusive education quality in kindergarten settings, ensuring all children receive optimal educational services according to their needs, thereby creating more equitable and inclusive learning environments.

METHODS

This study employed a qualitative research design with a multi-site case study approach to examine the implementation of Universal Design for Learning (UDL) in inclusive kindergarten education across East Kutai Regency. The multi-site case study methodology enables in-depth investigation of more than one location with similar characteristics to comprehensively understand phenomena and identify patterns and variations within different contexts (Yin, 2011). This approach facilitates systematic data collection and analysis across diverse geographical settings while maintaining focus on the specific implementation challenges and opportunities for UDL in inclusive early childhood education.

Three kindergarten schools were purposively selected to represent different geographical contexts within East Kutai Regency: TK YPPSB representing urban areas, TKN 2 Rantau Pulung representing suburban areas, and TKN 1 Sandaran representing remote and disadvantaged regions (3T areas). The selection criteria were based on specific characteristics relevant to inclusive education implementation. TK YPPSB was chosen as it houses the only Special Assistant Teacher at the kindergarten level in East Kutai Regency. TKN 2 Rantau Pulung was selected due to the principal's advanced qualifications, being the only state kindergarten principal in the district who completed the Professional Teacher Education Program (PPG). TKN 1 Sandaran was chosen as the sole state kindergarten in Sandaran District, representing the challenges faced in remote areas.

The research participants comprised school principals as policy makers, Special Assistant Teachers as direct classroom implementers, and regular teachers who had received inclusive education training. Selection criteria for teacher participants included substantial experience in inclusive education (minimum five years), demonstrated understanding of student development in

inclusive settings, and participation in inclusive education training programs. This purposive sampling approach ensured that participants possessed relevant knowledge and experience essential for addressing the research questions.

Data collection employed multiple methods to ensure comprehensive understanding of UDL implementation. Primary data were gathered through structured interviews using predetermined instruments designed to explore communication aspects, resource availability, implementer attitudes, and bureaucratic structures in UDL implementation. The structured interview approach was selected to ensure systematic data collection while maintaining clarity about research objectives. Observational data were collected to document actual classroom practices, learning processes, and challenges in inclusive education implementation. Documentary evidence included policy documents, training materials, and institutional records related to inclusive education initiatives.

The research instruments consisted of the researcher as the primary instrument in this qualitative study, interview guides with structured questions aligned to the research framework, digital voice recorders for accurate data capture, and observational protocols for systematic documentation of classroom practices and institutional contexts. Interview guides were developed based on George C. Edward III's implementation model, focusing on communication, resources, disposition, and bureaucratic structure aspects of policy implementation.

Data validity was established through triangulation techniques, comparing information across different sources, methods, and participants to enhance credibility and reliability. The triangulation process involved systematic comparison of interview data, observational findings, and documentary evidence to identify convergent themes and validate findings. This approach helped minimize potential bias and ensured robust data interpretation.

Data analysis followed Miles, Huberman, and Saldaña's (2014) interactive model, comprising data collection, data reduction, data display, and conclusion drawing. The analysis process began with systematic organization and coding of raw data from interviews, observations, and documents. Data reduction involved identifying relevant information aligned with research objectives while eliminating redundant or irrelevant material. Data display organized findings into systematic presentations facilitating pattern identification and theme development. The final phase involved drawing conclusions based on identified patterns and themes, ensuring findings addressed the research questions regarding UDL implementation in inclusive kindergarten education across different geographical contexts in East Kutai Regency.

RESULTS AND DISCUSSION

Results

This study investigated the implementation of Universal Design for Learning (UDL) in inclusive kindergarten education across three distinct geographical contexts in East Kutai Regency. Data were collected through structured interviews with six participants, classroom observations, and document analysis across three kindergarten schools representing urban (TK YPPSB), suburban (TKN 2 Rantau Pulung), and remote areas (TKN 1 Sandaran).

Communication Aspects in UDL Implementation

The findings reveal that all three schools have established communication mechanisms to support UDL implementation, though with varying approaches and effectiveness levels. Communication emerged as a foundational element for coordinating inclusive education efforts among stakeholders.

At TK YPPSB Sangatta, the school principal (YAK) emphasized the importance of structured communication: *"Communication is necessary and can be conducted through presentations by the principal and question-and-answer sessions during material delivery. This is essential to ensure alignment in delivering UDL vision and classroom learning."* The teacher (EYC) further elaborated on their communication methods: *"Communication needs to be established first to achieve well-coordinated results. Communication methods include oral communication every morning before learning activities begin and written communication through regular morning meetings."*

Similarly, TKN 2 Rantau Pulung demonstrated commitment to systematic communication. The principal (SN) stated: *"Communication is necessary for inclusive education programs to run well and smoothly. Communication can be conducted through training and work evaluation meetings."* This sentiment was reinforced by the teacher (SW), who highlighted the principal's leadership role in facilitating effective communication about inclusive education among staff.

TKN 1 Sandaran implemented communication through regular weekly meetings and ongoing evaluation processes. The principal (ST) described their approach: *"Communication is conducted through weekly meetings among teachers to discuss activities and provide input, through weekly meetings, evaluations, and open discussions, including classroom supervision and periodic observations."*

Resource Availability and Adequacy

The analysis of resource availability reveals significant disparities across the three schools, with all institutions facing substantial challenges in meeting the comprehensive requirements for effective UDL implementation.

Table 1. presents a comparative analysis of resource availability across the three schools:

Resource Category	TK YPPSB	TKN 2 Rantau Pulung	TKN 1 Sandaran
Special Assistant Teachers	1 teacher available	No specialized teachers	No specialized teachers
Physical Infrastructure	Adequate basic facilities	Limited accessibility features	Basic facilities only
Learning Materials	Some adaptive materials	Limited variety	Standard materials only
Technology Integration	Basic audio-visual equipment	Minimal technology	Limited access
Budget Allocation	BOP funding for inclusive schools	Standard operational budget	Limited funding

Source: Interview data and school observations, 2025

The urban school (TK YPPSB) demonstrated relatively better resource availability, with YAK noting: *"Our school already has supporting human resources, but still needs strengthening, and basic infrastructure such as sufficiently spacious classrooms and educational play equipment."* However, even this well-resourced school faced limitations, particularly in specialized equipment: *"We still lack facilities such as floor guides for blind children and special assistive tools for children with special needs."*

Resource constraints were more pronounced in the suburban and remote schools. SN from TKN 2 Rantau Pulung acknowledged: *"Resource availability at our kindergarten is still lacking, but we are trying to start various efforts to meet basic needs."* Similarly, ST from TKN 1 Sandaran reported: *"Resources used as support in this school are available, such as technology use, material learning implementation, and learning media, but still limited."*

Implementer Attitudes and Disposition

The investigation of implementer attitudes revealed universally positive dispositions toward UDL implementation across all three schools, despite varying levels of understanding and capacity.

All school principals demonstrated strong commitment to inclusive education principles. YAK from TK YPPSB emphasized: *"Teacher attitudes in UDL implementation are quite supportive and positive, because UDL for inclusive education is a necessity and interconnected."* This positive attitude was echoed by teachers, with EYC stating: *"Our attitude is certainly more enthusiastic about learning and providing evaluation for subsequent improvements."*

The suburban school showed similar enthusiasm despite resource limitations. SN described teacher attitudes as *"very positive and spirited while being aware of implementation challenges."* The

teacher SW reinforced this perspective: *"The principal at this kindergarten has a positive attitude, always providing support for every program implemented by the government."*

Even in the remote school context, positive attitudes prevailed. ST noted: *"Teachers and educational staff respond very well to UDL program implementation for inclusive education, especially for kindergarten level."* This commitment was demonstrated through teachers' efforts to *"adjust learning approaches to children's learning styles and support each other in UDL implementation."*

Bureaucratic Structure and Institutional Support

The analysis of bureaucratic structure revealed inconsistent support patterns across the three schools, highlighting variations in institutional backing for UDL implementation.

TK YPPSB received the most substantial bureaucratic support, with YAK reporting: *"Education Office involvement in providing inclusive education support, including UDL implementation, has been conducted through training provision and scholarship opportunities for Special Education studies."* The teacher EYC confirmed this support: *"The Education Office strongly supports early inclusive education by preparing certified teaching staff with at least one teacher per school having academic capabilities through S2 studies in Special Education."*

However, the suburban school experienced limited bureaucratic engagement. SN observed: *"Education Office involvement as bureaucracy in education, including inclusive education in East Kutai Regency, appears not yet maximal, with very rare support from the office, especially cooperation in improving teacher competence."* This sentiment was reinforced by SW, who noted minimal bureaucratic involvement in their school's inclusive education efforts.

The remote school showed mixed experiences with bureaucratic support. While ST acknowledged some assistance, the support appeared fragmented: *"The Education Office plays an active role and provides comprehensive support such as training. Our school cannot run effectively without cooperation between schools, Education Office, and other educational institutions."*

Supporting and Inhibiting Factors

The identification of factors influencing UDL implementation revealed both systemic supports and persistent challenges across all three schools.

Supporting Factors

Student diversity emerged as a primary driver for UDL adoption. YAK noted: *"Supporting factors for UDL implementation, especially at kindergarten level in East Kutai Regency, are caused by the diversity of early childhood characteristics."* This diversity necessitated flexible approaches, with teachers recognizing the need for innovative instructional strategies.

Teacher readiness for innovation constituted another significant supporting factor. EYC emphasized: *"The need for UDL implementation, especially at kindergarten level for inclusive education, is due to flexible physical environment factors and trained teachers and educational staff."*

Leadership support played a crucial role across all schools. SN highlighted: *"Supporting factors for UDL implementation include diversity of children's needs, increased accessibility and participation, child potential development, policy support, teacher adaptation ease, and educational technology."*

Inhibiting Factors

Limited teacher understanding of UDL principles emerged as the primary challenge. YAK identified: *"Inhibiting factors consist of limited numbers and competence of special assistant teachers."* This knowledge gap was compounded by insufficient training opportunities, particularly in suburban and remote areas.

Infrastructure limitations posed significant barriers. EYC noted: *"Factors inhibiting UDL implementation include limited teacher understanding about UDL, lack of supporting infrastructure, rigid curriculum, non-ideal class sizes, and non-inclusive school culture."*

Resource constraints affected all schools differently. M from TKN 1 Sandaran summarized: *"Inhibiting factors include time limitations, administrative burden, and inadequate learning facilities."*

Discussion

The findings demonstrate that UDL implementation in East Kutai Regency follows Edward III's policy implementation model, with varying degrees of success across the four key dimensions: communication, resources, disposition, and bureaucratic structure. This analysis aligns with previous research suggesting that successful policy implementation requires coordinated attention to all four elements (Agustino, 2017).

The communication dimension showed relative strength across all three schools, consistent with Blake and Haroldsen's (2009) emphasis on effective organizational communication for policy implementation. However, the quality and systematization of communication varied significantly, with urban schools demonstrating more structured approaches compared to their rural counterparts. This finding supports the assertion by Nurlismi and Lestari (2024) that effective communication ensures all stakeholders understand policy objectives and implementation strategies.

Importantly, the communication patterns observed align with UDL's emphasis on multiple means of engagement, where educators utilized diverse communication methods including verbal discussions, written documentation, and collaborative meetings. This reflects the UDL principle that effective engagement requires providing options for self-regulation and fostering collaboration (Capp, 2017). However, the variation in communication sophistication across geographical contexts suggests that systemic factors influence how UDL principles are translated into practice, echoing concerns raised by Antonsen (2020) about normalizing functions in educational practices that may inadvertently exclude some participants.

The substantial resource disparities observed across geographical contexts reflect broader patterns of educational inequality documented in previous research. The urban school's access to specialized personnel and enhanced infrastructure contrasts sharply with limitations in suburban and remote areas, echoing findings by Abdullah & Sari (2021) regarding quality differences between urban and 3T regions in Kalimantan.

These resource constraints directly impact the implementation of UDL's core principles, particularly the provision of multiple means of representation. The limited availability of diverse instructional materials, assistive technologies, and specialized support staff in suburban and remote schools contradicts the UDL framework's emphasis on providing various ways to present information to students (Black et al., 2014; CAST, 2017; Evmenova, 2018). This situation perpetuates the systemic barriers that UDL aims to eliminate, as noted by Ferri and Bacon (2011) regarding institutional practices that position some children as requiring remediation.

The findings reveal a particularly concerning pattern where developmental assessments and accepted milestones that teachers use for referrals largely reflect predominantly white, middle-class ways of thinking, learning, and behaving, as documented by Brown et al. (2010), Dyson (2015), and Souto-Manning and Rabadi-Raol (2018). In the context of East Kutai Regency, this manifests as urban schools having better access to resources that align with standardized expectations, while rural schools struggle with limited materials that may not adequately support diverse learning needs.

The absence of critical resources such as tactile paving for visually impaired children, Braille materials, and audio-visual learning aids represents a significant barrier to implementing UDL's multiple means of representation principle. This deficiency is particularly problematic given research by Dell et al. (2015) and Robinson and Wizer (2016) highlighting that UDL principles are related to cognitive learning processes based on affective networks responsible for motivation, recognition networks responsible for gathering and analyzing information, and strategic networks responsible for planning and executing actions.

The universally positive attitudes toward UDL implementation across all three schools represent a significant finding, particularly given the resource constraints and limited training opportunities. This finding contrasts with concerns raised about teacher preparedness for inclusive education (Wulandari

& Pratama, 2021). The enthusiasm demonstrated by educators suggests strong intrinsic motivation for inclusive practices, even when external supports are limited.

However, positive attitudes alone prove insufficient for effective implementation without corresponding knowledge and skills development. This gap between intention and capacity reflects the broader challenge identified by previous research regarding the need for comprehensive teacher preparation in inclusive education practices. The finding that teachers lack adequate understanding of UDL principles despite positive attitudes aligns with research indicating that UDL-based interventions require substantial professional development to be effective (Hall et al., 2015; Kennedy et al., 2014; King-Sears et al., 2015).

The study's findings suggest that while educators are willing to embrace inclusive practices, they lack the theoretical foundation necessary for effective implementation. This is particularly concerning given Hitchcock et al.'s (2002) argument that most educational organizations develop curriculum to serve a core group of learners, exclusive of students with disability. The positive attitudes without corresponding knowledge may inadvertently perpetuate exclusionary practices under the guise of inclusion.

Furthermore, the enthusiasm for UDL implementation without adequate preparation may lead to what Rose, Meyer, and Hitchcock (2005) warn against - superficial application of UDL principles without understanding their underlying pedagogical foundations. The study reveals that teachers attempt to provide flexibility and accommodation but may lack the systematic approach necessary for effective UDL implementation.

The limited technology integration observed across all three schools represents a significant barrier to effective UDL implementation. King-Sears (2009) emphasizes that technology is a key aspect of UDL because it provides teachers with means for representing knowledge in multiple ways and students with opportunities to demonstrate their understanding through diverse methods. The findings reveal that even the urban school, despite relatively better resources, lacks comprehensive technology integration necessary for effective UDL implementation.

This technology gap is particularly problematic given that UDL's second principle - multiple means of action and expression - relies heavily on technological tools to provide students with various ways to demonstrate their learning. The absence of multimedia tools, interactive learning platforms, and assistive technologies limits students' ability to express their understanding in ways that align with their strengths and preferences, contradicting core UDL principles (Courey et al., 2013).

The inconsistent bureaucratic support across schools highlights significant implementation challenges at the institutional level. While TK YPPSB benefited from targeted support including specialized teacher training, the suburban and remote schools experienced minimal institutional backing. This disparity suggests that bureaucratic structure effectiveness varies substantially across geographical contexts, potentially exacerbating existing educational inequalities.

The limited bureaucratic engagement in suburban and remote areas contradicts the systematic approach recommended by UDL implementation research. This finding is particularly concerning when viewed through the lens of Child Find legislation and eligibility assessment practices, which Baker (2002) and Ferri and Bacon (2011) argue can subject children to surveillance, categorization, or remediation through assessments normed on primarily white populations and teacher referrals that may reflect racial or cultural biases.

The study reveals that bureaucratic support is not merely about resource allocation but also about creating systemic conditions that enable effective UDL implementation. The finding that Tate and Page (2018), Vaught and Castagno (2008), and Thorius (2019) identified - that arguments aiming to combat inequities often place an onus on individual bias while bias represents the micro-level consequence of systemic racism and ableism - is evident in the study's findings. The inconsistent bureaucratic support perpetuates differential valuing of bodies and minds based on perceived ability and geographical location.

The study's findings regarding variable implementation effectiveness align with previous research questioning UDL's empirical foundation. The observation that learning outcomes through UDL implementation often lack empirical evidence, as noted by He (2014), is reflected in the study's findings where positive attitudes and partial implementation do not necessarily translate to measurable improvements in inclusive education quality.

The research confirms that while UDL generally improves the learning process for all students, the impact may be variable for different cohorts of students (Hall et al., 2015; King-Sears et al., 2015). In the context of East Kutai Regency, this variability is exacerbated by geographical and resource constraints, suggesting that effective UDL implementation requires more systematic support than currently available.

The study's findings reveal concerning patterns that align with research on normalizing functions in early childhood education. The emphasis on bringing children closer to widely accepted developmental norms using standardized disciplinary knowledge and practices (Antonsen, 2020; Arndt et al., 2015) is evident in the implementation approaches observed across schools.

The finding that schools focus on accommodation rather than fundamental redesign of learning environments suggests that implementation may be perpetuating rather than challenging existing exclusionary practices. This aligns with concerns raised by Love and Beneke (2021) about institutional responsibility for addressing bias and creating truly inclusive environments.

The study reveals both promising practices and persistent challenges in UDL implementation at the kindergarten level. The documented flexibility in learning approaches and positive educator attitudes provide a foundation for further development. However, the resource disparities and inconsistent institutional support threaten the sustainability and effectiveness of inclusive education efforts.

The findings suggest that effective UDL implementation requires more than individual school-level commitment. Systematic approaches addressing resource allocation, teacher preparation, and institutional coordination are essential for creating truly inclusive early childhood education environments. This conclusion aligns with research emphasizing the need for comprehensive support systems in inclusive education implementation (Love & Beneke, 2021).

The study contributes to understanding UDL implementation in diverse geographical contexts, particularly highlighting how local conditions influence policy translation into practice. The findings suggest that UDL places the student at the centre of instruction through a curriculum that is deliberately designed to reduce barriers to learning and to reach and accommodate all students before they experience academic or motivational failure (UDL-IRN, 2011b; Cumming & Rose, 2022), but this requires systematic institutional support that is currently lacking in many contexts.

While the positive attitudes and emerging practices demonstrate potential for inclusive education development, addressing systemic barriers remains crucial for achieving equitable educational access for all children, including those with special needs. The study underscores the need for comprehensive approaches that address not only individual bias but also institutional policies and practices that perpetuate exclusion.

CONCLUSION

This study provides comprehensive insights into Universal Design for Learning implementation across diverse geographical contexts in inclusive kindergarten education. The findings reveal that while all three schools demonstrated positive attitudes and established communication mechanisms for UDL implementation, significant disparities exist in resource availability, institutional support, and implementation effectiveness across urban, suburban, and remote areas.

The research demonstrates that effective UDL implementation requires coordinated attention to Edward III's four policy implementation dimensions: communication, resources, disposition, and bureaucratic structure. Communication emerged as the strongest dimension across all contexts, while resource availability and bureaucratic support varied substantially, creating implementation

inequalities that potentially perpetuate educational exclusion rather than promote genuine inclusion. The gap between positive educator attitudes and actual implementation capacity highlights the insufficient theoretical foundation and professional development support necessary for effective UDL practice.

This study contributes to the field by providing empirical evidence of UDL implementation challenges in early childhood inclusive education within developing country contexts, particularly addressing the intersection of geographical disparities and inclusive education access. The research extends existing literature by demonstrating how local conditions influence policy translation into practice and revealing the complex relationship between institutional support and implementation effectiveness in diverse educational settings.

The findings have significant implications for policy and practice. Educational policymakers must address systemic resource inequalities and provide consistent institutional support across geographical contexts to ensure equitable UDL implementation. Professional development programs require substantial enhancement to bridge the gap between positive attitudes and effective implementation capacity. The study underscores the need for comprehensive approaches that address not only individual bias but also institutional policies and practices that perpetuate exclusion.

Future research should investigate longitudinal implementation outcomes and develop context-specific UDL adaptation strategies for diverse geographical settings. The study's limitations regarding generalizability suggest the need for broader investigations across multiple regions to develop more comprehensive understanding of UDL implementation challenges and opportunities in early childhood inclusive education contexts.

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