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Enhancing Teachers' Content Delivery to Children with Disabilities Using ICT-Based Technologies to Promote Inclusive Early Learning in Kenya

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ABSTRACT

Inclusive education is essential for ensuring equitable learning opportunities for all children, including those with disabilities. However, in Kenya, teachers often struggle to deliver content effectively to learners with diverse needs due to limited resources and inadequate training. This study explores the potential of Information and Communication Technology (ICT)-based technologies to enhance teachers' content delivery and promote inclusive early learning. Using a mixed-methods approach, the research examines barriers to inclusive education in Kenyan early childhood settings and evaluates the effectiveness of ICT tools such as interactive apps, assistive devices, and digital storytelling in improving engagement and learning outcomes for children with disabilities. Data was collected from 30 early childhood educators in Nairobi and Kisumu counties through surveys, interviews, and classroom observations. Findings reveal that while teachers recognize the benefits of ICT, challenges such as limited device access, inadequate training, and infrastructural constraints hinder effective implementation. The study highlights successful case studies where ICT integration has fostered participation, personalized learning, and teacher confidence in inclusive classrooms. Based on the findings, the study recommends policy reforms to support ICT adoption, targeted teacher training programs, and public-private partnerships to improve resource availability. This research underscores the transformative potential of ICT in bridging the inclusivity gap in early childhood education and advocates for a systematic approach to technology integration within Kenya's educational framework.

Keywords: Inclusive education, ICT-based technologies, children with disabilities, early learning, teacher training, Kenya.

INTRODUCTION

Inclusive education is a fundamental right recognized globally, ensuring that all children, including those with disabilities, have access to quality learning opportunities (UNESCO, 2020). The United Nations Sustainable Development Goal (SDG) 4 emphasizes inclusive and equitable education, urging nations to leverage technology to bridge learning gaps (United Nations, 2015). Despite progress, millions of children with disabilities remain excluded from mainstream education due to systemic barriers (World Bank, 2021). ICT-based technologies have emerged as transformative tools, enabling personalized and accessible learning experiences (UNICEF, 2022). However, disparities in digital access and teacher preparedness hinder their full potential, particularly in low-resource settings (OECD, 2019). Addressing these challenges is crucial for achieving global education equity.

Across Africa, inclusive education remains a pressing challenge, with an estimated 15-20% of children with disabilities out of school (African Union, 2019). Many education systems lack adequate policies, infrastructure, and trained educators to support diverse learning needs (UNESCO-IICBA, 2021). While some countries, such as South Africa and Rwanda, have adopted ICT-driven interventions, implementation gaps

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persist due to funding and technical constraints (Mugo et al., 2020). Assistive technologies, such as screen readers and speech-to-text software, show promise in enhancing accessibility (ATScale, 2022). However, their adoption remains low, particularly in rural and underserved communities (World Health Organization, 2021). Strengthening ICT integration in African classrooms is essential for fostering inclusive learning environments.

Kenya has made strides in promoting inclusive education through policies such as the National Special Needs Education Policy Framework (Ministry of Education, 2018). Despite this, over 40% of children with disabilities still face exclusion from early learning programs (KNBS, 2019). The Competency-Based Curriculum (CBC) emphasizes differentiated instruction, yet teachers struggle with limited resources and training (KICD, 2020). ICT presents an opportunity to address these gaps by enabling adaptive learning tools and digital content (Wambiri & Ndani, 2021). However, disparities in electricity, internet connectivity, and device availability impede widespread adoption (Communications Authority of Kenya, 2022). A focused approach is needed to enhance ICT accessibility in Kenyan schools.

Early childhood education (ECE) is critical for cognitive and social development, yet children with disabilities are often left behind (Ngure et al., 2020). Public ECE centers in Kenya face overcrowding, insufficient assistive materials, and untrained teachers (MoE, 2021). Studies show that ICT can improve engagement through interactive apps and multimedia resources (Mbugua et al., 2022). However, most ECE teachers lack digital literacy, limiting effective technology use (Were et al., 2023). Targeted interventions are necessary to equip educators with ICT skills and ensure inclusive early learning. Kenya's ICT Policy in Education (2019) advocates for technology integration to support learners with disabilities (MoICT, 2019). Initiatives like the Digital Literacy Program have distributed devices, but their use in special needs education remains minimal (Ochieng & Were, 2022). Assistive technologies, such as braille e-readers and sign language apps, are underutilized due to high costs and maintenance challenges (Odek et al., 2021). Public-private partnerships could enhance affordability and scalability (KNATCOM-UNESCO, 2020). Strengthening ICT infrastructure and teacher training is key to unlocking inclusive education.

As Kenya's capital, Nairobi hosts numerous innovation hubs and pilot programs for inclusive education (iHub, 2021). Schools in urban areas have better access to digital tools compared to rural regions (KNBS, 2022). However, many teachers in Nairobi's public ECE centers still lack confidence in using ICT for disability-inclusive instruction (Kamau et al., 2023). Successful case studies, such as the use of tablet-based learning in select schools, demonstrate improved learner engagement (Njenga, 2022). Scaling such initiatives requires sustained investment and policy support. Kisumu County faces unique barriers, including limited electricity in rural schools and low awareness of ICT's role in inclusion (Oluoch et al., 2021). Despite these challenges, community-based organizations have introduced low-tech assistive tools, such as audio-based learning aids (Aoko et al., 2022). Teacher training programs led by NGOs show promise in improving digital competency (Omondi & Otieno, 2023). Expanding internet connectivity and localized ICT solutions could enhance inclusivity in Kisumu's ECE centers.

A major obstacle in Kenya is the lack of teacher training in ICT for special needs education (Chege & Sifuna, 2022). Many educators rely on traditional methods, struggling to adapt technology for diverse learners (Mwangi et al., 2021). Continuous professional development and mentorship programs could bridge this gap (TSC, 2022). Integrating ICT into Kenya's teacher training curricula is essential for sustainable inclusion. Innovative, low-cost technologies, such as mobile apps and open-source learning platforms, can enhance accessibility (Maina et al., 2023). Projects like eKitabu have demonstrated success in providing digital content for learners with disabilities (Waithaka, 2022). Leveraging such solutions, alongside government support, can drive inclusive education forward.

This study examines how ICT can enhance content delivery for children with disabilities in Nairobi and Kisumu. Assessing current challenges and successful interventions, the study aims to provide actionable recommendations for policymakers and educators. The findings will contribute to Kenya's journey toward inclusive, technology-driven early learning.

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STATEMENT OF THE PROBLEM

Despite global commitments to inclusive education, children with disabilities in Kenya continue to face significant barriers to accessing quality early learning opportunities (UNESCO, 2020). Many teachers lack the necessary skills and resources to adapt their content delivery to meet diverse learning needs, leading to low enrollment and high dropout rates among learners with disabilities (KNBS, 2019). While ICT-based technologies offer promising solutions, their integration into early childhood education remains inconsistent, particularly in under-resourced settings (Wambiri & Ndani, 2021). Without effective strategies to enhance teacher capacity and technological access, inclusive education efforts in Kenya risk falling short of their objectives (MoE, 2021). This gap underscores the urgent need for research on scalable ICT interventions that can support teachers in delivering inclusive instruction.

The challenge is the limited digital literacy among early childhood educators, which hinders the effective use of assistive technologies in classrooms (Were et al., 2023). Many teachers in Nairobi and Kisumu report inadequate training in using ICT tools for learners with disabilities, leaving them reliant on traditional, often exclusionary teaching methods (Kamau et al., 2023). Additionally, infrastructural constraints such as unreliable electricity, poor internet connectivity, and high device costs further restrict the adoption of ICT solutions (Communications Authority of Kenya, 2022). These challenges are compounded by a lack of localized, culturally relevant digital content tailored to children with disabilities (Odek et al., 2021). As a result, even where technology is available, its potential to enhance learning remains underutilized.

Furthermore, while Kenya has policies advocating for ICT in education, implementation remains fragmented, with minimal focus on early childhood and special needs education (MoICT, 2019). Existing initiatives, such as the Digital Literacy Program, have not sufficiently addressed the unique needs of learners with disabilities (Ochieng & Were, 2022). Without targeted interventions, the exclusion of these children from early learning will persist, limiting their long-term educational and socio-economic prospects (Ngure et al., 2020). This study seeks to address these gaps by examining how ICT can be effectively leveraged to improve teachers' content delivery and foster inclusive early learning environments in Kenya.

EMPIRICAL LITERATURE REVIEW

Studies indicate that ICT-based technologies enhance learning engagement for children with disabilities by providing adaptive and interactive content (UNESCO, 2020). Research in high-income countries shows that assistive tools like screen readers and speech-to-text software improve literacy and participation (OECD, 2019). However, a World Bank (2021) report highlights disparities in ICT access, with low-resource settings lagging in implementation. Empirical evidence suggests that teacher training is critical for effective technology integration in inclusive classrooms (UNICEF, 2022). Without proper support, even well-designed ICT tools may fail to achieve desired outcomes (Edyburn, 2020). These findings underscore the need for context-specific strategies in developing nations. Recent meta-analyses reveal that when properly implemented, ICT interventions can reduce achievement gaps by up to 40% for learners with special needs (Graham & Thornicroft, 2023). However, sustainability remains a challenge without ongoing funding and technical support systems in place (Ahmed et al., 2023).

Across Africa, ICT interventions have shown mixed results due to infrastructural and training gaps (Mugo et al., 2020). A study in South Africa found that tablet-based learning improved comprehension for children with visual impairments (Nel et al., 2021). However, rural schools often lack electricity and internet, limiting scalability (ATScale, 2022). Research in Rwanda demonstrated that teacher mentorship programs increased ICT utilization in special needs education (Uworwabayeho, 2021). Conversely, a Nigerian study revealed that inadequate policy enforcement hindered sustainable adoption (Ajuwon & Oyebola, 2021). These disparities highlight the need for localized ICT solutions in Africa. The African Union's 2023 report emphasizes that only 12% of special needs schools across the continent have adequate ICT infrastructure (AU, 2023). Successful cases in Botswana and Ghana show that community involvement significantly improves technology adoption rates in rural special education settings (Quartey & Mensah, 2023).

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Kenyan research emphasizes the potential of mobile learning apps to support children with hearing impairments (KICD, 2020). A Nairobi-based study found that digital storytelling increased participation among learners with intellectual disabilities (Mbugua et al., 2022). However, Wambiri and Ndani (2021) noted that only 30% of surveyed schools used ICT for inclusive instruction. Barriers included high costs, device shortages, and teacher reluctance (Communications Authority of Kenya, 2022). Successful pilot programs, like eKitabu's accessible e-books, demonstrate scalability potential (Waithaka, 2022). These studies reveal both progress and persistent challenges in Kenya. A 2023 evaluation of Kenya's Digital Literacy Programme showed improved engagement but found content was not sufficiently adapted for various disabilities (Ministry of ICT, 2023). Researchers recommend developing more locally-produced assistive technologies tailored to Kenya's linguistic and cultural context (Nyambane & Kariuki, 2023).

Empirical data shows that Kenyan teachers often lack confidence in using assistive technologies (Were et al., 2023). A TSC (2022) report found that only 15% of ECE teachers received ICT training for special needs. Classroom observations in Kisumu revealed that educators preferred traditional methods due to limited technical support (Omondi & Otieno, 2023). Conversely, schools with structured ICT mentorship programs reported higher teacher efficacy (Kamau et al., 2023). These findings suggest that professional development is pivotal for successful ICT integration. Recent competency assessments indicate that teachers who completed digital literacy courses demonstrated 60% better outcomes in inclusive classroom practices (KNEC, 2023). However, the high turnover rate of trained teachers in public schools undermines these gains, necessitating continuous training programs (Teachers Service Commission, 2023).

Rural schools face acute shortages of devices, electricity, and internet (KNBS, 2022). A study in Nairobi slums found that 60% of ECE centers lacked functional computers (Ngure et al., 2020). Where devices were available, maintenance was a recurring issue (Odek et al., 2021). Innovative solutions, such as solar-powered tablets, have shown promise in off-grid areas (Maina et al., 2023). However, sustainability remains a concern without government or private sector backing (Ochieng & Were, 2022). Infrastructure gaps continue to hinder equitable ICT access. The Kenya Institute of Special Education reports that only 8% of rural special units have reliable power for assistive technologies (KISE, 2023). Public-private partnerships in Makueni County have successfully piloted mobile ICT labs that rotate between schools, demonstrating a potential solution (County Education Office, 2023).

Research indicates that parental involvement boosts ICT adoption for children with disabilities (Mwangi et al., 2021). In Mombasa, community-driven initiatives provided refurbished devices to special needs schools (Aoko et al., 2022). Conversely, some parents resisted technology, fearing reduced teacher interaction (Chege & Sifuna, 2022). Sensitization campaigns improved acceptance in pilot counties (KNATCOM-UNESCO, 2020). Engaging stakeholders is thus essential for sustainable ICT integration. A 2023 survey found that schools with active parent-teacher associations had 45% higher ICT utilization rates (Omolo & Atieno, 2023). Community-based disability organizations are increasingly partnering with tech hubs to develop low-cost assistive solutions, bridging critical gaps (Disability Rights Fund, 2023).

While Kenya's ICT Policy in Education (2019) advocates inclusion, enforcement is weak (MoICT, 2019). A KNEC (2021) audit revealed that most ECE centers were unaware of policy guidelines. Decentralized procurement also led to incompatible assistive tools (Oluoch et al., 2021). Experts recommend stronger inter-ministerial coordination to align ICT and disability policies (Etyang, 2022). Policy reforms must address these systemic inefficiencies. The 2023 National Inclusive Education Strategy acknowledges these gaps but lacks clear funding mechanisms (Ministry of Education, 2023). County-level implementation frameworks are now being developed to enhance local ownership and accountability (Council of Governors, 2023).

Low-tech innovations, like audio-based learning aids, have proven effective in resource-limited settings (Njenga, 2022). Open-source platforms (e.g., Kolibri) reduced costs for special needs schools in Nakuru (Maina et al., 2023). However, scaling such solutions requires public-private partnerships (Waithaka, 2022). Affordability remains a key determinant of long-term success. Kenyan innovators are developing voice-activated learning tools using locally available materials, reducing costs by 70% compared to imports (TechBridge, 2023). The government's new tax exemptions on assistive devices aim to improve accessibility, though awareness remains low (Treasury, 2023).

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Longitudinal studies in Kiambu linked ICT use to improved literacy and social skills among children with autism (Mugo et al., 2023). Conversely, a Kisumu study warned that over-reliance on technology could marginalize non-verbal learners (Odek et al., 2021). Balanced, learner-centered approaches are thus critical (KICD, 2020). More empirical data is needed on long-term academic impacts. Preliminary results from a five-year study show ICT-integrated schools report 35% better transition rates to primary education (Uwezo Kenya, 2023). However, researchers caution that technology should complement rather than replace individualized teacher support (Special Education Society, 2023).

Few Kenyan studies evaluate ICT's role in early childhood inclusion (Were et al., 2023). Most focus on primary/secondary levels, neglecting ECE (MoE, 2021). Researchers call for participatory studies involving teachers, parents, and learners (Kamau et al., 2023). This study addresses these gaps by examining ICT's potential in Nairobi and Kisumu ECE centers. Emerging research emphasizes the need for intersectional analysis considering gender, disability type, and socioeconomic factors (African Disability Forum, 2023). Future studies should also explore the role of artificial intelligence in personalizing learning for children with diverse needs (UNESCO IESALC, 2023).

METHODOLOGY

This study employed a concurrent mixed-methods research design to comprehensively examine ICT integration in inclusive early childhood education (Creswell & Plano Clark, 2018). The explanatory sequential design allowed for quantitative data collection through surveys followed by qualitative exploration via interviews and observations (Ivankova et al., 2006). This approach enabled triangulation of data sources while capturing both the prevalence and contextual nuances of ICT use (Tashakkori & Teddlie, 2010). The design incorporated elements of case study methodology to deeply examine implementation patterns across selected centers (Yin, 2018). A quasi-experimental component compared learning outcomes in centers with different levels of ICT integration (Shadish et al., 2002). The design was particularly suited to address the study's objectives while accommodating Kenya's dynamic educational context (Mertens, 2020).

This research was conducted in Nairobi and Kisumu counties, selected for their contrasting urban and peri-urban contexts in Kenya's education landscape (KNBS, 2022). Nairobi represents a well-resourced urban setting with relatively better ICT infrastructure, while Kisumu reflects the challenges of implementing inclusive education technologies in emerging urban centers (Oluoch et al., 2021). The study focused on public and private early childhood education (ECE) centers registered with the Ministry of Education, particularly those integrating learners with disabilities (MoE, 2023). These counties were chosen due to their active engagement in digital learning initiatives and the presence of special needs education programs (KICD, 2022). The geographical diversity allows for comparative analysis of ICT implementation across different resource contexts (Were et al., 2023). Fieldwork was conducted between January and March 2024 to capture current practices and challenges.

The target population comprised ECE teachers (n=450), school administrators (n=90), and parents (n=180) from 60 selected centers across both counties (KNEC, 2023). Teachers were prioritized as primary respondents due to their direct role in content delivery using ICT tools (Kamau et al., 2023). The study specifically targeted institutions with at least 10% enrollment of children with disabilities, as per the National Special Needs Education Policy Framework (Ministry of Education, 2018). School administrators provided insights on policy implementation and resource allocation, while parents offered perspectives on home-school technology linkages (Mwangi et al., 2021). The inclusion criteria required participants to have at least one year of experience in inclusive ECE settings (TSC, 2022). This multi-stakeholder approach ensured comprehensive data triangulation (Creswell, 2014).

A stratified random sampling method was employed to select 30 ECE centers (20 in Nairobi, 10 in Kisumu), representing 50% of the eligible institutions in each county (Kothari, 2004). From these centers, 120 teachers (80 Nairobi, 40 Kisumu) were randomly selected, maintaining a 1:4 teacher-to-center ratio for adequate representation (Ochieng & Were, 2022). School administrators (n=30) and parents (n=60) were purposively sampled based on their involvement in ICT-supported inclusive education (Patton, 2015). The sample size was determined using Krejcie and Morgan's (1970) table for finite populations, achieving a 95% confidence level

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with 5% margin of error. This approach ensured proportional representation of urban and peri-urban contexts while maintaining statistical reliability (Saunders et al., 2019). The final sample reflected Kenya's teacher distribution patterns and disability prevalence rates (KNBS, 2019).

Quantitative data was gathered through structured questionnaires administered to teachers (n=120), assessing ICT use frequency, competency levels, and perceived barriers (KICD, 2020). Qualitative data was collected via focus group discussions (8 FGDs with teachers) and key informant interviews (15 KIIs with administrators and parents) (Braun & Clarke, 2006). Classroom observations (n=30) documented actual ICT integration practices using a standardized checklist adapted from UNESCO's (2021) inclusive education monitoring tools. Digital infrastructure audits were conducted in all sampled centers, evaluating device availability, accessibility features, and internet connectivity (Communications Authority, 2023). Quantitative data was analyzed using SPSS (v.26) for descriptive and inferential statistics, while qualitative data underwent thematic analysis following Braun and Clarke's (2006) framework. Triangulation of methods enhanced validity and reliability (Denzin, 2017).

RESULTS

The study findings revealed distinct patterns in ICT adoption between Nairobi and Kisumu counties, with Nairobi centers demonstrating significantly higher usage rates (65%) compared to Kisumu (38%). This disparity was largely driven by infrastructure limitations in Kisumu, particularly regarding reliable electricity and internet connectivity. Teachers in Nairobi incorporated an average of 3.2 digital tools per week in their lessons, more than double the 1.4 tools used by their Kisumu counterparts. While interactive whiteboards and educational apps were relatively common across both regions, specialized assistive technologies remained scarce, with only 8% of centers equipped with braille displays. A striking finding was that 68% of teachers relied on their personal devices to deliver digital content, highlighting significant resource gaps in institutional provisions. Statistical analysis confirmed that both teacher training hours and school funding allocations were significant predictors of ICT adoption rates. However, the widespread lack of maintenance protocols (affecting 73% of centers) resulted in nearly one-third of devices being non-functional at any given time.

The impact of ICT integration on learning outcomes showed promising but nuanced results. Centers with well-structured ICT programs demonstrated measurable improvements, including 28% higher learner engagement and 19% better concept retention across various disability categories. Particularly noteworthy were the gains observed among children with hearing impairments, who showed substantial progress in language acquisition when using sign language applications. However, the benefits varied considerably depending on the nature and severity of disabilities, with minimal observable impact for learners with severe intellectual disabilities. Longitudinal data provided encouraging evidence that sustained ICT use over six months or more correlated with improved school readiness scores. Yet the implementation was not without challenges, as 41% of teachers reported instances where technology use inadvertently distracted non-disabled students, underscoring the need for more strategic integration approaches.

Teacher preparedness emerged as a critical factor influencing the success of ICT implementation. The data revealed that only 29% of educators felt sufficiently confident in their ability to effectively use technology for inclusive education, with average self-efficacy scores falling below the midpoint of assessment scales. While participation in training programs significantly enhanced teacher competency, the majority (62%) had received fewer than ten hours of professional development annually. The study identified four primary barriers to effective ICT use: frequent electricity interruptions (particularly acute in Kisumu), insufficient numbers of functional devices, mismatches between available digital content and curriculum requirements, and the substantial time burden associated with lesson preparation using technology. Interestingly, schools that had established peer-mentoring systems demonstrated markedly better capacity to troubleshoot technical issues, suggesting the value of collaborative professional learning models.

At the policy and resource level, the findings indicated significant gaps between national guidelines and on-the-ground implementation, with only 17% of centers fully complying with Kenya's ICT policy framework. The most successful cases shared several common characteristics, including strong partnerships with county governments, systems for parental contributions to maintenance costs, and deliberate efforts to customize

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digital content for specific disabilities. Economic analysis suggested that an annual investment of approximately KES 28,500 per learner could yield optimal returns, with measurable academic gains offsetting costs after about two years. The research identified four key success factors for sustainable ICT integration: reliable power infrastructure, teacher communities of practice, modular training approaches that accommodate different skill levels, and multi-stakeholder monitoring systems. These findings collectively paint a picture of both the potential and the challenges of leveraging technology to enhance inclusive early childhood education in Kenya's diverse educational landscape.

DISCUSSIONS

The findings of this study underscore both the transformative potential and systemic challenges of implementing ICT-based technologies in inclusive early childhood education in Kenya. The significant disparity in ICT adoption between Nairobi and Kisumu reflects broader inequalities in resource distribution, echoing previous research on urban-rural divides in educational technology access (KNBS, 2022). While the positive correlation between ICT usage and improved learning outcomes aligns with global evidence (UNESCO, 2020), the varying impact across disability categories highlights the need for more tailored approaches. The limited effectiveness for children with severe intellectual disabilities suggests current technologies may not adequately address their unique learning needs, calling for specialized design innovations (ATScale, 2022). The widespread reliance on teachers' personal devices reveals systemic underfunding, a finding consistent with national education expenditure analyses (MoE, 2023). These results collectively emphasize that technology alone cannot drive inclusion without addressing foundational infrastructure gaps and providing continuous teacher support, as emphasized in recent Kenyan policy reviews (KICD, 2022).

The study's findings on teacher preparedness and policy implementation offer critical insights for scaling ICT in inclusive education. The low teacher self-efficacy scores (mean 2.8/5) mirror regional studies showing insufficient professional development for special needs education (Were et al., 2023). The success of peer-mentoring models suggests alternative approaches to conventional training, supporting calls for localized, practice-based learning communities (TSC, 2023). The policy implementation gap (17% compliance) underscores the "know-do" gap in Kenyan education policy noted by Etyang (2022), where well-designed policies falter in execution. However, the identified success factors particularly county government partnerships and parental involvement provide actionable pathways for improvement. These findings reinforce the ecosystem approach advocated by UNICEF (2022), where technology integration requires coordinated action across government levels, schools, families, and communities. The cost-benefit analysis (KES 28,500/learner/year) provides policymakers with concrete data for budget prioritization, though sustainability requires addressing systemic issues like device maintenance and electricity access (Communications Authority, 2023).

CONCLUSIONS

This study demonstrates that ICT-based technologies hold significant potential for enhancing inclusive early childhood education in Kenya, particularly when tailored to diverse learning needs and supported by adequate infrastructure. The documented improvements in engagement and learning outcomes, especially for children with hearing and visual impairments, validate ICT’s role as an enabler of inclusion. However, the urban-rural disparity in access and usage underscores the need for equitable resource distribution to ensure no learner is left behind. Teacher preparedness remains a critical factor, highlighting the urgency of scalable professional development programs that combine technical training with pedagogical strategies for inclusion. The study further reveals that successful ICT integration requires multi-stakeholder collaboration, involving governments, schools, parents, and technology providers. Without addressing systemic barriers such as electricity access, device maintenance, and curriculum alignment, ICT’s transformative potential will remain unrealized for many children with disabilities.

To maximize the benefits of ICT in inclusive education, policymakers must prioritize context-specific solutions that align with Kenya’s unique challenges and opportunities. Investments should focus not only on

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hardware provision but also on localized content development, teacher mentorship programs, and sustainable maintenance frameworks. The findings advocate for stronger enforcement of existing ICT policies, with clear accountability mechanisms at both national and county levels. Future research should explore low-cost assistive technologies and their long-term impact on learning trajectories for children with severe disabilities. Ultimately, achieving inclusive education through ICT demands a holistic approach that bridges technological innovation with systemic educational reform. By addressing these gaps, Kenya can move closer to ensuring equitable learning opportunities for all children, regardless of ability or geographic location.

RECOMMENDATIONS

To enhance ICT-based inclusive education in Kenya, policymakers should prioritize equitable distribution of digital resources, with targeted investments in rural infrastructure and reliable electricity.

Teacher training programs must be expanded and restructured to incorporate hands-on ICT mentoring, disability-specific pedagogies, and ongoing professional support.

The government should enforce stronger public-private partnerships to develop affordable, locally adapted assistive technologies and maintenance systems.

The Ministry of Education should establish a multi-stakeholder monitoring framework to track policy implementation, with special attention to curriculum alignment and learning outcome measurement for children with diverse disabilities.

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