



## AN EXPLORATION OF THE ICTS IN USE IN THE EDUCATION OF PUPILS WITH SPECIAL EDUCATION NEEDS: A 10-YEAR LITERATURE DISCLOSURE, 2015–2025<sup>i</sup>

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### Abstract:

This study aimed to explore the use of Information and Communication Technologies (ICTs) in the education of pupils with Special Educational Needs (SEN) over the past decade (2015–2025), in response to the global call for inclusive digital education under SDG 4. Employing a systematic literature review methodology, the study analysed scholarly publications from 14 countries across six continents to identify dominant trends, tools, and implementation contexts. Results revealed five categories of ICTs widely used in the education of pupils with SENs: computers, assistive devices, assistive software, multimedia resources, and educational content delivery platforms. These technologies were found to support access, individualized instruction, and learner engagement. However, their impact varied significantly based on local context, availability of resources, educator training, and inclusive policy frameworks. The review uncovered persistent disparities in access and implementation, especially in low-resource settings, alongside mixed perceptions of ICTs' pedagogical value. The study contributes to the broader discourse on inclusive education by offering context-sensitive insights to guide policy, practice, and advocacy for ICT adoption tailored to diverse learning needs. Findings accentuate the importance of equity-driven, evidence-based ICT integration to meet the learning rights of children with SEN globally.

**Keywords:** Special Education Needs (SENs), Information Communication Technologies (ICTs), ICTs in use in education

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<sup>i</sup> UNA EXPLORACIÓN DE LAS TIC UTILIZADAS EN LA EDUCACIÓN DE ALUMNOS CON NECESIDADES EDUCATIVAS ESPECIALES: UNA REVISIÓN DE LA LITERATURA DE 10 AÑOS, 2015–2025

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## **Resumen:**

Este estudio tuvo como objetivo explorar el uso de las Tecnologías de la Información y la Comunicación (TIC) en la educación del alumnado con Necesidades Educativas Especiales (NEE) durante la última década (2015–2025), en respuesta al llamado global a una educación digital inclusiva en el marco del ODS 4. Empleando una metodología de revisión sistemática de la literatura, el estudio analizó publicaciones académicas de 14 países en seis continentes para identificar tendencias predominantes, herramientas y contextos de implementación. Los resultados revelaron cinco categorías de TIC ampliamente utilizadas en la educación de alumnos con NEE: ordenadores, dispositivos de apoyo, software de apoyo, recursos multimedia y plataformas para la impartición de contenidos educativos. Se observó que estas tecnologías favorecen el acceso, la enseñanza individualizada y la participación del alumnado en el aprendizaje; sin embargo, su impacto varió significativamente según el contexto local, la disponibilidad de recursos, la formación del profesorado y los marcos de políticas inclusivas. La revisión puso de manifiesto desigualdades persistentes en el acceso y la implementación, especialmente en entornos con recursos limitados, así como valoraciones dispares sobre el valor pedagógico de las TIC. El estudio contribuye al discurso más amplio sobre educación inclusiva al ofrecer aportes sensibles al contexto que orienten las políticas, las prácticas y las acciones de promoción para la adopción de TIC adaptadas a diversas necesidades de aprendizaje, y sus hallazgos subrayan la importancia de una integración de las TIC basada en la equidad y en la evidencia para garantizar el derecho al aprendizaje de los niños y niñas con NEE a nivel mundial.

**Palabras clave:** Necesidades Educativas Especiales (NEE), Tecnologías de la Información y la Comunicación (TIC), uso de las TIC en la educación

## **1. Introduction**

This article is part of the principal researcher's doctoral thesis. In this discourse, we review literature describing various ICTs in use in the education of pupils with Special Education Needs linked to 14 countries, namely, United States of America, United Kingdom, Turkey, China, Spain, Greece, Pakistan, Canary Island, India, South Africa, Zimbabwe, Zambia, Kenya, Tanzania and Nigeria spread across six human habitat continents. We only excluded the Antarctic continent, as nothing was reported related to the subject at hand. The article is segmented into several units: theoretical underpinnings; prevalence of pupils with Special Education Needs; methodology; databases visited; findings and discussion; conclusion and recommendations; study implications and funding.

## **2. Theoretical Underpinnings**

This study is anchored in the Technology Acceptance Model (TAM), one of the most widely applied theoretical frameworks in understanding technology adoption. Originally developed by Fred Davis (1989) during his doctoral research at the University of Michigan, TAM builds upon the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), extending it to explain user acceptance of information systems. Davis introduced two core constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU), which influence users' attitudes toward a system, their behavioural intention to use, and ultimately, actual usage. Later refinements to TAM incorporated external variables (Davis, Bagozzi, & Warshaw, 1989) to account for context-specific factors that shape user perceptions.

In the present study, TAM is used as a guiding framework to systematically review empirical literature on ICT integration in the education of pupils with SENs. Its constructs provide a conceptual lens for analysing how various stakeholders' teachers, pupils, and caregivers perceive and engage with ICT tools such as computers, assistive technologies, and multimedia resources. Specifically, PU and PEU help interpret findings related to teacher and learner attitudes toward ICTs, shedding light on adoption rates, classroom practices, and the enabling or constraining conditions. By applying TAM, the study not only categorises technologies in use but also identifies key behavioural and contextual factors influencing successful ICT adoption in education settings. Furthermore, TAM allows the study to distinguish between the acceptance of ICTs in well-resourced urban schools versus under-resourced rural environments, providing a nuanced understanding of facilitating conditions, digital readiness, and policy responsiveness across contexts.

## **3. Methodology for the Literature Review**

The literature review for this study was delimited to databases accessible to the researcher, including the Education Resources Information Center (ERIC), Directory of Open Access Repositories (OpenDOAR), University Press, JSTOR, SAGE Knowledge, SAGE Journals Online, EBSCOhost, Google Scholar, the University of Zambia Repository, and the University of Pretoria Repository, among others. The search process was conducted over a period of three months, employing a systematic approach using topic-related keywords combined with Boolean operators ("AND", "OR", and quotation marks for phrase searching) to refine results. The search was restricted to peer-reviewed journal articles published within the last ten years (2015–2025), with 77% of the selected literature published within the most recent five years (2021–2025), highlighting the study's emphasis on current trends. After the initial broad search, studies were purposively sampled based on relevance and thematic alignment with the research objectives. An in-depth literature review guide was used to critically appraise and extract

data from the selected texts. This rigorous process yielded a total of 35 scholarly articles that formed the core evidence base for this systematic review.

### **3.1 Prevalence of Pupils with SENs**

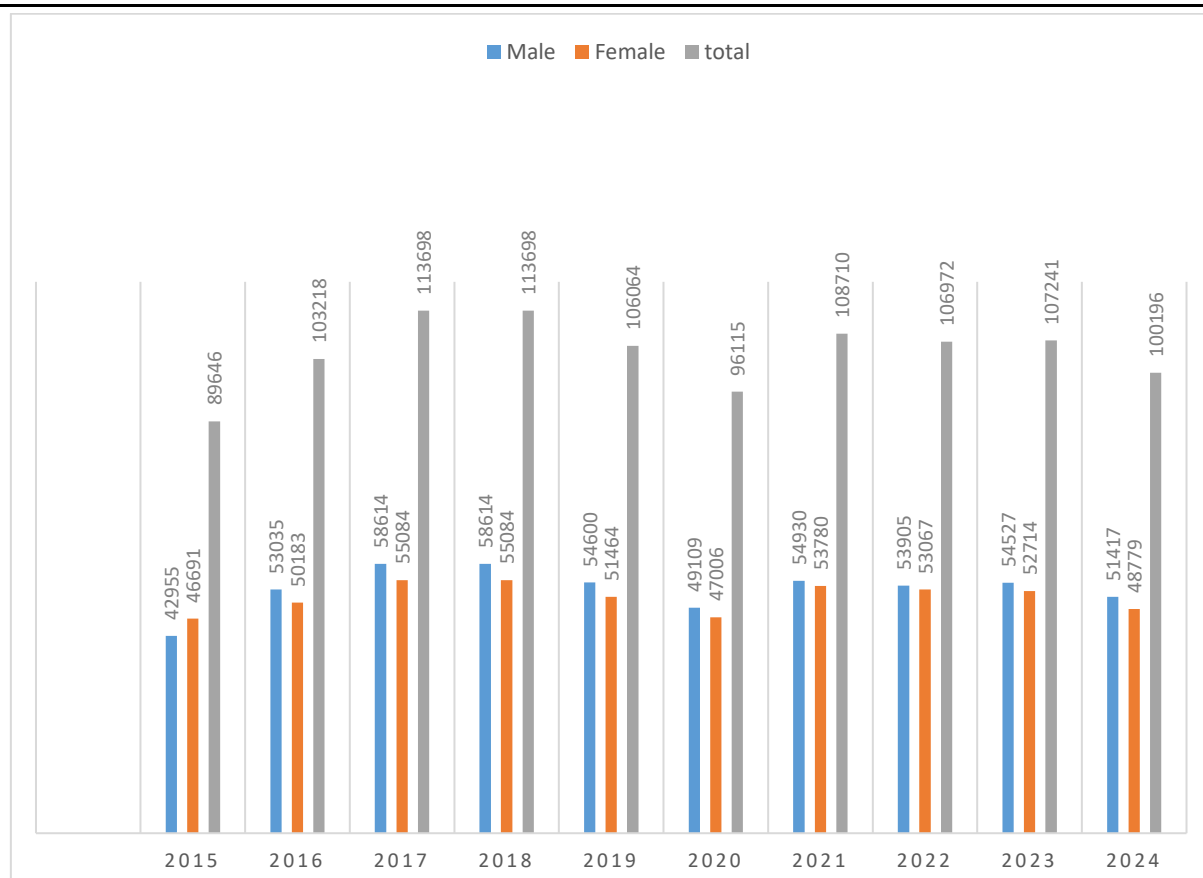
The global prevalence of individuals with Special Educational Needs remains a growing concern, with an estimated 16% of the world's population, which is roughly about 1.3 billion people, affected in 2023, the majority of whom lived in developing countries (Adebisi, 2024). This figure is projected to rise due to intersecting factors such as climate-induced displacement, ageing populations, and armed conflict (World Bank, 2022). These complexities indicate the urgency of strengthening inclusive, resilient education systems, particularly through the integration of Information and Communication Technologies to promote equitable access and participation.

In Zambia, the prevalence of individuals with SENs is both substantial and diverse. According to the World Health Organization, an estimated 1.7 million people in Zambia out of a national population of 20,569,737 in 2023 were identified as living with SENs (UN, 2023). This figure included both adults and children, reflecting a national developmental challenge that necessitated targeted interventions across sectors, especially within education.

Learners with SENs are represented across every educational level globally, from pre-primary to post-secondary institutions (Ministry of Education, 1996; MOE, 2023). Inclusive systems have responded through varied placement strategies, including adapted classroom environments and differentiated pedagogy. As noted by Thomas (2024), such frameworks provide students with the same assistance and instruction as their peers in a regular grade-level classroom. Reflecting enduring influences from international frameworks like the Salamanca Statement (Paulsrud & Nilhom, 2023; Winzer and Mozurek, 2023).

Beyond inclusive classrooms, pupils with SENs are also supported through specialized institutions tailored to specific disabilities, such as schools for the visually, hearing, or intellectually impaired. Additional modalities include special units within mainstream schools, therapy-based resource centres, and alternative learning provisions through hospital or home-based education (MOE, 2013; MOE, 2023). These diverse pathways demonstrate the flexibility essential for addressing the complex educational needs of this population segment.

Education data from Zambia between 2015 and 2024 illustrate a sustained presence of pupils with Special Educational Needs across diverse primary learning environments (MEdu, 2024). These enrolment trends demand not only systemic attention but also accentuate the urgency for responsive, inclusive pedagogies to accommodate this growing learner demographic.



**Figure 1:** Number of pupils with SENs at Primary level

Although pupils with SENs are distributed across various educational settings, recent policy reforms emphasize inclusive education as the primary model. For instance, Spain's 2020 Organic Law on Education stipulates that "schooling of students with SENs be carried out within a full-time mainstream classroom with all the necessary support." Caballero (2024) resorts to special education placements only in extreme cases requiring specialized interventions.

In the African context, policies similarly stress inclusion while allowing for flexibility. As stated by the Ministry of General Education (MOGE): "*pupils with SENs should be integrated into mainstream educational environments to the greatest extent possible*" (MOGE, 2016; Muzata, 2021), yet with provisions that support temporary or permanent transitions to specialized institutions as needed.

Given the growing prevalence of pupils with SENs in mainstream schooling, there is a compelling need to explore how ICTs are strategically harnessed to promote equitable, inclusive, and sustainable educational outcomes. This study addresses that gap by reviewing literature on ICTs in use in the education of these pupils across various settings.

## 4. Findings and Discussions

### 4.1 Various ICTs in Use in the Education of Pupils with Special Education Needs

#### 4.1.1 Computers

Across diverse contexts, computers have emerged as a cornerstone ICT tool supporting the education of pupils with Special Educational Needs. Studies by Klein (2022) in the USA and Khan *et al.* (2015) in Pakistan highlight improvements in learner performance, access, and engagement through laptops, desktops, and tablets. High perceived usefulness is evident, especially in emergency contexts like remote learning. However, these studies provide little detail about the type and configuration of the devices or their compatibility with assistive technologies, thereby limiting insights into ease of use and actual adoption in less privileged settings.

At the policy and curriculum level, studies in Kenya demonstrate the role of computers in national initiatives such as the Digital Literacy Programme and Competency-Based Curriculum (Murithi and Yoo, 2021; Omboto *et al.*, 2022). These studies affirm governmental commitment to ICT integration through the provision of tablets, laptops, and infrastructure in schools. While these policy-oriented studies underscore strong external variables supporting ICT adoption, their generalisability is limited as they do not critically examine pedagogical outcomes, software usability, or teacher competence, which are factors central to actual classroom effectiveness and sustained adoption.

Zambian studies confirm the practical adoption of computers in urban SEN education, with Bwalya (2023) reporting widespread use in secondary schools and Ngandu (2024) documenting preferences for mobile devices in primary instruction. Simui *et al.* (2017) affirm the utility of computers in higher education for visually impaired learners. While these studies reinforce the presence of ICT infrastructure, they are geographically concentrated in Lusaka and Kasama, neglecting rural or peri-urban areas with distinct challenges. Under TAM, while behavioural intention is high where resources exist, uneven access and limited teacher training constrain broader implementation.

Subject-specific studies, such as Nsebazezu *et al.* (2022) in Tanzania, show promising results of using computer-based technologies in science subjects for learners with hearing and visual impairments. These findings add valuable disciplinary insights into ICT's role in enhancing conceptual understanding. However, there is minimal reporting on the specifications or SEN adaptive features of the devices, which are crucial for accessibility. With TAM in view, the absent consideration of software compatibility, user support, and assistive functionality weakens conclusions about ease of use and true inclusive function.

Though literature widely acknowledges the value of computers in SEN education, key limitations weaken practical relevance. Few studies differentiate between device types (e.g., new vs. refurbished), and none specify whether computers include SEN-relevant software such as screen readers or braille interfaces. This omission reflects a gap

in research on facilitating conditions under TAM. Moreover, empirical work remains urban-centric, failing to address contextual disparities in technology readiness, training, and support in under-resourced rural schools, which are key barriers to equitable ICT adoption for learners with SEN.

#### 4.1.2 Assistive Technologies

Kuar (2023) offers a comprehensive taxonomy of assistive technologies used in the education of pupils with SENs in an Indian context, categorizing them as no-tech, low-tech, and high-tech (e.g., smart canes, magnifiers, braille machines). While this breadth highlights perceived usefulness, the study is limited by its single-institution scope and lack of empirical evidence on pupil interaction and learning outcomes. From a TAM lens, the absence of data on ease of use or behavioural intention weakens insights into practical adoption and classroom impact.

Naneeth and Srihari's (2021) study enriches the conversation by documenting the use of embossers and refreshable braille displays for the visually impaired in Tamil Nadu. Although it confirms the presence of assistive tools in inclusive schools, the research is descriptive and constrained to one category of SENs and a region. It fails to interrogate how these tools integrate into teaching practices, limiting its contribution to understanding perceived ease of use and real instructional effectiveness, which is a core element of TAM.

Simui *et al.* (2017) offer a valuable phenomenological account, showing how visually impaired Zambian university students use screen readers and typewriters for learning. The study is methodologically strong and contextualised within local infrastructural constraints, affirming perceived usefulness. However, its focus on tertiary education excludes insights at foundational levels and limits generalisability across SEN categories, thereby weakening its relevance to broader ICT in education frameworks underpinned by TAM.

Expanding beyond visual SENs, Kuar (2023) catalogues technologies for diverse needs, including autism, mobility, and speech impairments. This comprehensive catalogue spans hearing aids, alternative communication software, prosthetic limbs, and programming interfaces. This contributes a layered understanding of assistive tools and reflects high system potential. Yet, the study remains overly descriptive and lacks analysis of pedagogical application or learner outcomes. In terms of TAM, it does not address teacher self-efficacy or external conditions impacting use, thereby narrowing its practical impact.

Pedayachee (2017) identifies tools like talking textbooks, eye-gazers and mobile recordings for reading impairments in South African basic education. The study commendably situates ICT practices in an African context, but its focus on dysgraphia narrows applicability. Moreover, it lacks teacher and pupils' perspectives, limiting insights into perceived ease of use and long-term sustainability of tools, key factors in TAM. The study also omits discussion on whether ICTs are viable under structurally fragile schooling systems.

Cumulatively, these studies affirm the presence of assistive ICTs from braille interfaces to audio tutors across Indian and African educational spaces. While they illustrate the existence of high- and low-tech tools, the literature is regionally narrow, focused mostly on visual impairments, and remains descriptive. There is limited comparative analysis across SEN categories, education levels, or diverse settings, indicating a lack of exploration of facilitating conditions that shape real-world ICT uptake in line with TAM.

#### **4.1.3 Multimedia Applications**

Multimedia tools like interactive whiteboards, audiobooks, and AI-driven content platforms were credited with enhancing cognitive engagement and personalization (Al Dosary, 2018; Mitsea *et al.*, 2022). However, most studies lacked disaggregation by SEN category or empirical validation in resource-limited schools. Although learners may perceive multimedia as enjoyable (TAM: perceived usefulness), adoption is hindered by infrastructural inequities and insufficient teacher digital competencies (ease of use).

In Africa, studies like Ogah (2023) and Ngandu (2024) illustrate the practical use of multimedia (e.g., WhatsApp, YouTube, TikTok) in inclusive classrooms. While these platforms showed promise for vocabulary and cognitive engagement, their use remains localized and under-theorised. Positive perceptions suggest high behavioural intention among teachers, yet without context-specific policies and technical support. According to key TAM external variables, implementation faces systemic limits.

Nsama *et al.* (2020) documented ICT availability but low usage among educators and pupils in Zambia. While infrastructure is increasingly present, the lack of usage, especially for pupils with SENs, signals gaps in self-efficacy, training, and institutional leadership. Under TAM, this reflects high availability but low actual system use, stemming from limited perceived ease of use and weak facilitating conditions.

#### **4.1.4 Perceptions towards ICTs in Use in the Education of Pupils with SEN**

##### **4.1.4.1 Positive Perceptions**

Vega-Gea *et al.* (2021) and Khan *et al.* (2023) reported broadly positive attitudes toward ICTs among teachers of pupils with SENs, especially those with specialised training. These findings reflect high perceived usefulness and behavioural intention to integrate ICT into classrooms of pupils with SEN. However, limitations include reliance on self-reported data and lack of contextual variation, suggesting limited generalisability to other geographical settings where ease of use is constrained by infrastructural challenges. ICTs in the education of pupils with SENs are viewed to support digital equity and educator readiness. Pérez-Jorge *et al.* (2024) found that educators acknowledged skill gaps and moderate confidence in remote learning effectiveness, underlining the need for digital competency frameworks. While the study contributes to insights on behavioural intention, it misses a deeper exploration of external variables such as device availability or policy support, limiting its TAM application. Furthermore, its regional focus obscures transferability to digitally excluded environments.



Nussbaumer and Deuss (2024) highlighted the impact of parental attitudes and cross-environmental ICT use in reinforcing inclusive learning. This expands TAM's construct of subjective norms and reveals how family support enhances behavioural intention. However, the study's global lens lacks nuanced regional specificity, offering limited insight into how socio-economic and cultural contexts shape differing perceptions and adoption outcomes.

Serero *et al.* (2021) found generally positive perceptions toward ICTs for Visually Impaired Learners in South Africa's Full-Service Schools, with educators noting improvements in engagement and accessibility. While the study illustrates strong perceived usefulness, its focus on specialised settings limits relevance to mainstream or rural schools, revealing a gap in understanding how ease of use translates in less-supported environments.

Sarah (2024) and Kalimaposo *et al.* (2023) presented contrasting yet optimistic findings from urban and rural contexts in South Africa and Zambia, respectively. Both reported encouraging levels of ICT engagement, aligning with TAM's positive attitudes construct. However, challenges such as unreliable connectivity and hardware deficits diminish perceived ease of use in practice, and studies lacked triangulated classroom evidence and learner feedback.

Overall, studies indicate wide acceptance of ICTs in SEN education, with positive perceptions driven by teacher training and resource availability. While TAM constructs, which are perceived usefulness, ease of use, and intention to adopt, are evident, many studies overlook key external factors such as sustained technical support, contextual barriers, and stakeholder collaboration across school and home settings, limiting practical impact and policy application.

#### **4.1.4.2 Negative Perceptions**

These were rooted in systematic barriers. Chigama & Goronga (2022) and Sara (2024) revealed negative attitudes in low-resource settings due to inadequate training, poor infrastructure, and limited policy backing. These findings align with low perceived ease of use and poor facilitating conditions in TAM, inhibiting behavioural intention to use ICTs. The studies are insightful, yet geographically narrow and omit longitudinal learner data.

Empirical findings reveal that most educators perceive ICTs positively in the education of pupils with SEN, especially where teacher training and infrastructure are in place (Vega-Gea *et al.*, 2021; Khan *et al.*, 2023). TAM variables such as perceived usefulness and behavioural intention are strong across well-resourced settings, though ease of use is often constrained in low-income contexts (Sarah, 2024; Kalimaposo *et al.*, 2023). Parental support and cross-environment ICT use also enhance adoption (Nussbaumer & Deuss, 2024). However, key studies relied on self-reports, lacked contextual diversity, and overlooked external adoption factors like public policy, infrastructure, and technical support. Negative perceptions, rooted in systemic barriers such as a lack of training and devices (Chigama & Goronga, 2022), highlight low

perceived ease of use and weak external supports, limiting ICT uptake in under-resourced schools.

#### **4.1.5 Factors Influencing the Uptake of ICTs in the Education of Pupils with SENs**

##### **4.1.5.1 Individual Factors in ICT Adoption**

Studies in China (Shahzad *et al.*, 2024) and Nigeria (Lazarous, 2024) show a moderate influence of personal variables like trust, age, and experience on ICT uptake. TAM interpretation confirms that while perceived usefulness may be high, demographic factors alone do not predict usage intent. However, both studies are university-focused, neglecting the perspectives of SEN teachers at foundational levels.

##### **4.1.5.2 Interrelated Systemic Barriers and Enablers**

Turgut & Aslam (2021) mapped five key determinants of ICT uptake: infrastructure, materials, leadership, teacher competence, and student capacity. These broad categories resonate with TAM's external variables. However, the meta-synthesis lacked SEN-specific disaggregation and focused on inclusive classrooms in Turkey, limiting relevance to diverse learners in under-resourced specialised contexts.

Chirwa & Mubita (2021) stressed that successful ICT adoption is shaped by institutional leadership and policy enforcement. Teachers' readiness to adopt ICTs was closely tied to administrative commitment. Under TAM, enabling organisational climate supports uptake.

Studies by Kala (2023) and Mwiya (2022) exposed poor electrification, digital skill gaps, and hardware shortages as systemic constraints. These findings speak directly to TAM's external variables: poor infrastructure reduces perceived ease of use, regardless of attitude. However, data collection focused on administrators rather than inclusive educators or pupils, leaving classroom-level dynamics underexamined.

Sahin & Simsek (2024) found that social influence, innovativeness, and enjoyment significantly shape intention to adopt assistive technologies. These align well with TAM variables, specifically perceived ease of use mediated through self-efficacy. Yet, focus on teacher candidates omits implementation realities, such as infrastructure and policy enforcement faced by in-service educators in less-supportive contexts.

The integration of ICTs into the education of pupils with Special Education Needs has garnered increasing scholarly attention, yet its adoption remains uneven and complex. A comprehensive review of the literature reveals that multiple interwoven factors influence this process. At the forefront are individual factors which are closely linked to interrelated factors. Compounding these challenges are limited ICT resources. Furthermore, national policies and institutional practices play a pivotal role in either enabling or constraining ICT adoption, depending on their clarity, inclusivity, and alignment with SEN priorities.

## 5. The Implications of the Study

Given the discourse above, if institutions are to meaningfully respond to the global call for accelerating ICT uptake in the education of pupils with Special Educational Needs, as outlined in the 2030 Sustainable Development Goals, urgent systemic interventions are required, and these include:

- 1) **Policy Formulation and Contextual Adaptations:** Policymakers must develop ICT strategies that are sensitive to local socio-economic and infrastructural realities, particularly in under-resourced rural settings where generic models may fail to address contextual barriers.
- 2) **Inclusive Technology Design:** Developers and educational technologists should prioritize the creation of assistive devices that accommodate diverse SEN profiles, ensuring usability across cognitive, sensory, and physical impairments.
- 3) **Teacher and Pupil Capacity Building:** Continuous professional development is essential to enhance teacher efficacy in deploying ICT tools, with emphasis on pedagogical integration and adaptive instruction for pupils with SENs. Capacity building on the part of the pupils is also necessary to equip pupils with skills on how to navigate the various ICTs in use in their education.
- 4) **Equity in Resource Allocation:** Governments and institutions should address disparities in ICT access by investing in equitable distribution of digital infrastructure, especially in marginalized and rural communities.
- 5) **Multimedia Integration in Curriculum:** Curriculum designers should embed multimedia resources such as interactive whiteboards, audiobooks, and 3D simulations into instructional frameworks to foster cognitive development and learner motivation.
- 6) **Cross-Sector Collaborations:** Effective ICTs availability and adoption require coordinated efforts among teachers, parents, technologists, policymakers, and community stakeholders to ensure sustainability and relevance of interventions.
- 7) **Monitoring and Evaluation Systems:** Institutions should implement robust monitoring mechanisms to assess the effectiveness, reception, and scalability of ICT interventions in the education of pupils with SENs.
- 8) **Global Knowledge Exchange:** Comparative studies across developed and developing contexts can enrich understanding of best practices and inform scalable models for ICT integration in the education of pupils with SENs.
- 9) **Evidence-Based Practice:** Future research should move beyond descriptive accounts to empirically evaluate the impact of specific ICT modalities on learning outcomes, engagement, and social inclusion among pupils with SEN.

## 6. Conclusion/Recommendation

This review of 35 studies confirms that a wide range of ICTs, including computers, assistive technologies, and multimedia tools, are actively used to support the education

of pupils with Special Educational Needs across the globe. These technologies enhance access, inclusion, and pupil engagement, particularly where digital infrastructure and teacher preparedness are in place. However, their integration is uneven, with most studies concentrated in urban, well-resourced settings and rarely addressing software adaptiveness, teaching strategies, or long-term impact across diverse SEN categories. Positive perceptions among educators indicate strong perceived usefulness and behavioural intention. Yet perceived ease of use and facilitating conditions remain weak in low-resource environments. Contextual challenges such as poor infrastructure, limited digital skills, and inadequate policy support continue to hinder meaningful ICT uptake, especially in rural areas. Applying the Technology Acceptance Model, it is evident that external variables such as policy clarity, institutional leadership, and cross-sectoral collaboration play a decisive role in enabling inclusive ICT adoption. Therefore, without targeted, context-sensitive interventions, the transformative potential of ICTs for inclusive education remains largely unrealised.

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### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

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