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Digital and Assistive Technologies in Occupational Therapy for Inclusive Education: A Scoping Review

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Abstract

The global push toward inclusive education has intensified interest in how digital and assistive technologies might dismantle barriers that prevent children with disabilities from full classroom participation [1,12]. While schools increasingly adopt technological solutions, occupational therapy's specific contribution to this landscape remains poorly mapped, with relevant studies scattered across rehabilitation, education, and assistive technology literatures [7]. We conducted this scoping review to systematically chart existing evidence on technology-enabled occupational therapy interventions in inclusive school settings, guided by Sustainable Development Goal 4's mandate for equitable quality education. Following PRISMA-ScR reporting guidelines [13], we searched PubMed, CINAHL, APA PsycNet, Wiley Online Library, and ProQuest for peer-reviewed studies published between 2010 and 2024. Twelve articles met our inclusion criteria, collectively examining how digital tools, assistive devices, and virtual platforms support students' educational engagement, accessibility, and functional independence. Our findings reveal considerable diversity in technological applications—from mobile apps fostering communication to immersive environments building social skills—yet also expose persistent implementation challenges including inadequate infrastructure and training gaps. This synthesis offers occupational therapists, educators, and policymakers a foundation for evidence-informed practice while highlighting urgent research priorities in this rapidly evolving field.

Keywords: *Occupational Therapy; Inclusive Education; Assistive Technology; Digital Learning Technologies; Children with Disabilities.*

1. Introduction

The idea of mainstreaming the children with special needs has shifted from ambitious idea to enforceable right over recent decades, with different frameworks. from different nations which are now openly assuring students with special needs to access to a more unified, meaningful school experiences[1]. UNESCO's constant advocacy, reinforced by the 2030 Sustainable. Development. Agenda, positions inclusive. education as foundational to broader human development goals [1,12]. Yet, interpreting policy into actuality proves stubbornly. difficult. Students with different disabilities continue navigating physical environments. that exclude them, technological systems that fail to accommodate. their needs, institutional structures that assume similarity, and attitudes that question their belonging[2]. These types of barriers constrain not merely academic achievement, but also the fundamental occupational participation that education represents.There is a sea of transformation because of the advance use of technology and this has paved way for many possibilities. This has caused a burst of information and communication technological aspect, purpose. built assistive devices, and adaptive digital platforms has created unmatched opportunities for personalized learning, independent information. access, and cooperative engagement among students with various. capabilities [6]. Screen readers release visually impaired. learners from print dependency; communication applications give voice to those who

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speak differently; virtual environments allow safe preparation of social situations that real-world complexity. might otherwise leave out [5]. These tools do not merely compensate. for impairment, they actively redistribute the environmental needs. that render activities possible or impossible, representing occupational therapy's core insight that participation emerges from person environment. fit rather than individual deficit alone. Within this technological scenario, occupational therapists. occupy increasingly vital, if not still an evolving role. Beyond traditional positioning and sensory intervention, therapist now assess students' technology needs, match individuals with apt assistive solutions, train effective device use, and adapt digital environments to support. functional performance [9]. Liddle[7] argues this expansion represents not peripheral service addition but central professional responsibility, as digital participation becomes inseparable. from educational, social, and vocational occupation. Emerging tools such as virtual reality scenarios, gamified skill-building applications, telehealth delivery models can extend therapeutic reach while demanding new competencies from practitioners [11].Despite this activity, knowledge remains frustratingly fragmented. Technologies proliferate faster than evaluative research; studies cluster in distinct disability categories or technological. silos; occupational therapy's specific contributions blur with those of speech therapists, special educators, and rehabilitation engineers [7,8]. A synthesis is urgently needed to clarify where and how occupational therapists effectively deploy technology for educational inclusion, what outcomes will come out, and what barriers may still exist. The reason for this scoping review is to addresses. that gap, to methodically map any existing evidence to inform practice development, have a policy formulation, and to develop new research prioritization.

2. Need For The Study

2.1.Growing integration. of technology in education and rehabilitation

The increasing use of digital and assistive technologies in educational and rehabilitation settings has significant potential. to enhance accessibility, participation, and. learning outcomes for students with special needs[1].

2.2.Lack of corroborated evidence within occupational therapy for inclusive education

Existing research on these technologies is spread across multiple disciplines, and there is limited synthesis on how digital and assistive technologies are specifically applied within occupational therapy to support inclusive education. Therefore, a scoping review is necessary to map. the current evidence and identify gaps to inform future research and practice[2].

2.3.Research. Question

This scoping review was guided by the following research question

What is the present evidence on the use of digital and assistive technologies in occupational therapy to support inclusive education?

3. Aim & Objectives

3.1.Aim

To systematically map and synthesize the existing literature on the use of digital and assistive technologies in occupational therapy for inclusive education, in order to identify the types of technologies used, their applications in educational settings, and current research gaps in studies published between the years 2010 and 2025[3].

3.2.Objectives

- To identify and collect studies published between the years 2010 and 2025 which will examine the use of digital and assistive technologies within occupational therapy interventions that supports inclusive education[4].
- To categorize the types of digital and assistive technologies used in occupational therapy for inclusive educational settings, including tools such as mobile applications, VR, assistive software, and communication technologies.
- To analyse the contexts and populations in which these technologies are applied, including educational settings, age groups, and

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types of disabilities addressed.

- To examine reported outcomes related to participation, accessibility, learning engagement, and occupational performance among students with disabilities[5].
- To identify research gaps and future directions in the application of digital and assistive technologies within occupational therapy practice for inclusive education.

3.3.Review Of Literature

Klavina. Et Al. (2024)[4] systemic review examined the role of assistive technologies (AT) in promoting practical skills among individuals with autism spectrum disorder (ASD) and intellectual disabilities (ID). The review scrutinized 18 empirical. studies that looked through the application of various digital and assistive technologies, including smartphones, tablets, robotics, virtual simulations, and mobile applications, across educational, community, and clinical settings. The findings pointed that these technologies significantly supported the development of daily living skills, communication, social interaction, and independent functioning among individuals with ASD and ID. The review also threw light on the potential of technology-enabled interventions to enhance social participation and empowerment by enabling individuals to engage more effectively in educational and community activities. Furthermore, the authors stressed on the growing trend of integrating mainstream technologies such as smartphones and tablets as assistive tools to support inclusion and independence. However, the review. also identified several research gaps, including limited longitudinal studies, lack of standardized evaluation formats or outcomes, and the need for better integration of assistive technologies. within educational and therapeutic frameworks. These findings. highlight the importance of technology-assisted interventions in promoting participation and inclusive learning. Openings. for students with developmental disabilities. Domínguez-Lucio et al. (2023) conducted a scoping review examining occupational therapy (OT) interventions that incorporate new technologies for children and adolescents. with autism spectrum disorder (ASD). The review analyzed 20 studies identified from databases such as PubMed, Scopus, EMBASE, and Web of Science. Findings indicated that technologies including computers, tablets, smartphones, virtual reality, and robotic systems were commonly used to support occupational therapy interventions. These technologies were put forth to improve communication skills, social interaction, academic abilities, and activities of daily living among children[6] with ASD. The review also threw light on the considerable. variation in intervention duration, frequency, and assessment methods across studies. Overall, the findings suggest that new technologies can serve as valuable tools in occupational therapy interventions; however, more research is required to strengthen. the evidence base and to gold standardize the intervention protocols[3]. Eligi and Mwantimwa (2017) investigated the accessibility and usability of information and communication technologies (ICT) to support learning among visually. Impaired. students at the University. of Dar es Salaam. in Tanzania. Using a mixed-methods approach involving surveys. and qualitative data, the study explored the availability of assistive ICT tools. and their impact on students' learning experiences. The findings established. that ICT tools such as screen readers, Braille translation. software, computers, and internet-based resources supported independent learning, collaborative participation, and access. to academic materials. However, the study also identified significant blocks including inadequate specialized ICT. equipment, insufficient training. on assistive technologies, and limited institutional support. The authors emphasized that while ICT[7]. has strong potential to enhance inclusive education for visually impaired students, improvements in infrastructure, training, and policy execution. are necessary to maximize its effectiveness[6]. Liddle (2023) highlighted the developing role and responsibility of occupational therapists. in promoting inclusion within. the rapidly. expanding digital technology scenario. The journal highlighted that digital. technologies progressively shape daily activities and occupational participation, making it essential for occupational therapists. to

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understand and engage with technology-enabled environments. The researcher also noted that occupational therapists. contribute to technology assessment, telehealth service. delivery, technology selection, and the design and adaptation of digital. tools that support participation and independence. In addition to this, the article underscored the importance of addressing the digital division, which can lead[8] to exclusion among individuals. with disabilities, older adults, and socially disadvantaged populations. The researcher advocates for occupational therapists. to actively participate in the co-design and evaluation of inclusive technologies to ensure accessibility and unbiased participation in digital environments[7]. Zhang et al. (2022) reviewed the use of virtual reality (VR) technology as an educational and intervention tool for children with autism spectrum disorder. The study highlighted the growing interest in VR applications within healthcare and education due to their ability to create immersive and interactive[9] simulations of real-world environments. The review found that VR interventions can effectively support the development of social communication skills, emotional recognition, language abilities, and behavioral regulation among children with ASD. VR platforms allow individuals to practice social interactions in safe and controlled environments, which can enhance learning and engagement in different activities. Despite these welcoming outcomes, the researchers found different challenges such as technological limitations, design issues, and the need for more experiential research to establish standardized VR-based intervention frameworks[5]. The UNESCO publication "Innovative Technologies for Inclusive[10] Education" (2024) presents global best practices on the integration of digital and assistive technologies to promote inclusive education for learners with disabilities and for people with special learning needs. The report documents knowledges from source centres across different countries that utilize technologies such as information and communication technologies (ICT), artificial intelligence, and assistive devices to enhance accessibility and participation in education. These technologies support adaptive learning, communication, and social interaction while enabling personalized educational experiences for students with diverse needs. The journal also emphasizes the importance of capacity building, professional training, and collective. partnerships among different educators, technology developers, and policymakers to effectively implement technology-enabled inclusive education strategies[1]. Fernández-Batanero et al. (2022) conducted a systematic review examining the barriers and facilitators affecting access and participation of students with disabilities in higher education. The review analyzed 20 studies published between 2011 and 2021. and found that students with disabilities often encounter structural, technological, and attitudinal barriers that limit their participation in academic activities. They found that these barriers include inaccessible infrastructure, limited assistive technologies, lack of awareness among educators, and inadequate institutional support. The study also identified several factors that can enhance inclusion, such as technological resources, supportive institutional policies, and environmental modifications. The authors. emphasize that addressing these barriers through inclusive policies and the integration of assistive technologies is critical to guaranteeing impartial access and participation in higher education[2]. Kokorelias et al. (2025) presented a scoping review protocol aimed at mapping equity, diversity, and inclusion (EDI) interventions in rehabilitation education. The study emphasizes the importance of integrating inclusive educational practices within rehabilitation professions such as occupational therapy[11], physiotherapy, and speech-language. pathology. The protocol outlines the use of Joanna Briggs Institute methodology and PRISMA-ScR guidelines to systematically examine. educational strategies, curricular reforms, and training interventions that promote inclusive learning environments. The authors argue that integrating EDI principles in rehabilitation. education can enhance cultural competence, reduce systemic discriminations, and prepare healthcare professionals to provide equitable care for diverse populations. The proposed review aims to identify effective interventions and highlight gaps in current

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Page No: 958 - 965

educational practices related to inclusion and diversity[8].

4. Methodology

4.1.Study details

- An all-inclusive literature search was conducted using the electronic databases. The records that were recovered from the exploration were screened for eligibility. The study selection has followed the PRISMA-SCR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews) and the flowchart was used to categorize the identified studies via databases during the initial phase[12].
- Study Design: Scoping review

Twelve articles which met the study criteria, as shown in Fig 1, are selected for this scoping review

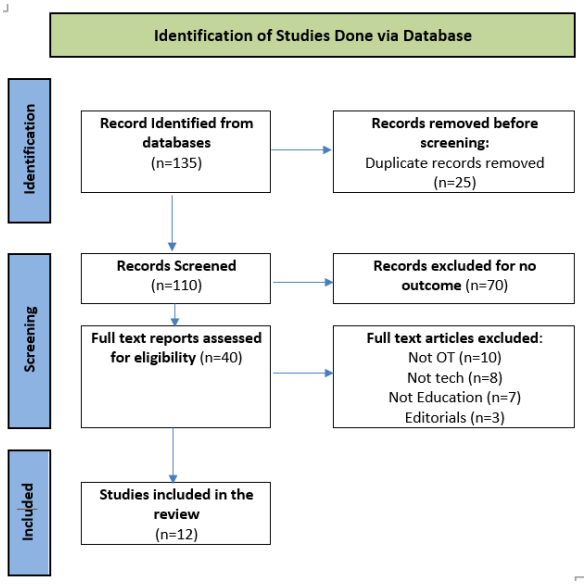

Figure- 1 PRISMA Scr- FLOWCHART

4.2. Participant details

- Source of data: PubMed, Web of Science, PsycINFO, CINAHL, ProQuest.
- Inclusion Criteria: Studies were included if they:
- Examined digital or assistive technologies
- Involved occupational therapy interventions, practices, or roles
- Focused on inclusive education or educational participation
- Included students with disabilities or diverse learning needs
- peer-reviewed articles
- published in English
- Published between 2010 and 2025

Exclusion Criteria: Studies were excluded if they

- Did not involve occupational therapy
- Focused solely on medical or clinical rehabilitation unrelated to education
- Were conference abstracts, editorials, or opinion papers without empirical or review data
- Did not address digital or assistive technologies.

5. Results And Discussion

5.1. Results

Our scoping review which included the twelve studies meeting inclusion criteria, collectively examining how occupational therapists. deploy various technologies to support inclusive education. The reviewed literature included information about communication technologies, virtual reality environments, mobile applications, assistive communication systems, and interactive digital platforms. These interventions were shown to have improved communication, enhanced social interaction, increased academic participation, and greater independence in daily living especially for students with autism spectrum disorder, where research concentration was notable [3,4,11].Occupational therapists. combined digital technologies through multiple contexts: comprehensive technology needs assessment, individualized assistive device selection and training, direct technology-mediated therapy delivery, and environmental adaptation supporting digital access [7,9,10]. For students with visual impairments, ICT tools. including screen readers, Braille translation software, and internet-based learning platforms demonstrably enhanced information access and independent learning provided implementation addressed

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individual needs and environmental barriers [6].
Synthesized outcomes suggest technology-enabled occupational therapy contributes positively to educational participation, communication competence, and learning independence [1,4,12]. However, awareness of these benefits proved consistently depending upon contextual supports. Limited technological infrastructure, inadequate practitioner training, and restricted access to specialized assistive devices emerged across studies as implementation barriers [2,6]. Most included studies appeared within the last decade, reflecting increasing technology integration such as artificial intelligence applications and complex digital learning platforms in rehabilitation and educational contexts [1,5].

5.2.Discussion

- The findings of this scoping review indicate that digital and assistive technologies are emerging as important architects of inclusive education within occupational therapy practice. The increasing use of tools such as virtual reality, mobile applications, and assistive communication technologies suggests. a shift toward technology-supported. interventions that enhance engagement and participation. among students with disabilities. These technologies. provide cooperative and adaptable environments. that can address diverse learning needs, thereby supporting occupational therapists in promoting meaningful contribution. in educational activities.
- The review also highlights the evolving role. of occupational therapists in addressing digital participation. within educational contexts. Beyond traditional rehabilitation roles, occupational therapists. are more and more involved in assessing technology needs, recommend the need of suitable assistive solutions, and supporting students in adapting to digital learning. environments. This throws light into a broader shift in occupational therapy. practice toward simplifying participation in technology-mediated occupations. that are becoming vital to current educational systems.
- However, the findings also suggest that the successful integration of digital technologies in inclusive education is influenced by mixture of relative factors such as institutional support, technological infrastructure, and expert training. The presence of barriers such as limited access to assistive devices and inadequate training indicates that technological invention. alone is not sufficient to achieve the inclusive education goals.

Conclusion

This scoping review confirms that digital and assistive technologies play an important role in supporting the children with special needs via. inclusive education through occupational therapy. interventions. The reviewed evidence shows that technologies. such as ICT tools, virtual reality, mobile applications, and assistive communication devices can enhance participation, communication, and learning outcomes for students. with disabilities. However, the findings also highlight persistent challenges, including limited. technological infrastructure, insufficient. training, and lack of access to specialized assistive. devices, which limit the successful implementation in educational settings. Checking for. these barriers. through improved technological. accessibility, institutional support, and interdisciplinary collaboration. is essential for make the most of the potential of digital and assistive technologies in occupational therapy. practice and advancing inclusive. education.

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References

[1] UNESCO Institute for Information Technologies in Education. (2024). Innovative technologies for inclusive education: A review of best practices from global resource centres.

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e ISSN: 2584-2854
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Page No: 958 - 965

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[2] Fernández-Batanero, J. M., Montenegro-Rueda, M., & Fernández-Cerero, J. (2022). Access and participation of students with disabilities: The challenge for higher education. International Journal of Environmental Research and Public Health, 19(19), 11918.

[3] Domínguez-Lucio, S., Compañ-Gabucio, L. M., Torres-Collado, L., & García de la Hera, M. (2022). Occupational therapy interventions using new technologies in children and adolescents with autism spectrum disorder: A scoping review. Journal of Autism and Developmental Disorders, 53, 332–358.

[4] Klavina, A., Pérez-Fuster, P., Daems, J., Lyhne, C. N., Dervishi, E., Pajalic, Z., Øderud, T., Fuglerud, K. S., Markovska-Simoska, S., Przybyla, T., Klichowski, M., Stiglic, G., Laganovska, E., Alarcão, S., Tkaczyk, A. H., & Sousa, C. (2024). The use of assistive technology to promote practical skills in persons with autism spectrum disorder and intellectual disabilities: A systematic review. Digital Health, 10, 1–26.

[5] Zhang, M., Ding, H., Naumceska, M., & Zhang, Y. (2022). Virtual reality technology as an educational and intervention tool for children with autism spectrum disorder: Current perspectives and future directions. Behavioral Sciences, 12(5), 138.

[6] Eligi, I., & Mwantimwa, K. (2017). ICT accessibility and usability to support learning of visually-impaired students in Tanzania. International Journal of Education and Development Using Information and Communication Technology, 13(2), 87–102.

[7] Liddle, J. (2023). Considering inclusion in digital technology: An occupational therapy role and responsibility. Australian Occupational Therapy Journal, 70(2), 157–158.

[8] Kokorelias, K. M., Chau, V., Boutros, H. M., Wijekoon, S., Singh, H., Kalu, M., & Harris, M. T. (2025). Building inclusive rehabilitation education: A scoping review protocol on EDI approaches and impact. PLOS ONE, 20(4), e0322110.

[9] Proffitt, R., & Lange, B. (2023). Considerations in the use of virtual reality for rehabilitation and occupational therapy practice. Physical & Occupational Therapy in Pediatrics, 43(1), 1–15.

[10] Smith, R. O., Scherer, M. J., Cooper, R., Bell, D., Hobbs, D., Pettersson, C., & Lane, J. P. (2023). Assistive technology products: A position paper from the first global research, innovation, and education on assistive technology summit. Disability and Rehabilitation: Assistive Technology, 18(2), 123–132.

[11] Odom, S. L., Thompson, J. L., Hedges, S., Boyd, B. A., Dykstra, J. R., Duda, M. A., Szidon, K., Smith, L. E., & Bord, A. (2023). Technology-aided interventions and instruction for adolescents with autism spectrum disorder. Journal of Autism and Developmental Disorders, 53(6), 2413–2428.

[12] World Health Organization & United Nations Children's Fund. (2022). Global report on assistive technology. Geneva: World Health Organization.