Journal of Information Systems Engineering and Management
2025, 10(18s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Teacher Perceptions of AI-Enhanced Educational Technology for Children with Multiple Disabilities

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ARTICLE INFO

Received: 22 Dec 2024

Revised: 28 Jan 2025

Accepted: 10 Feb 2025

ABSTRACT

This study explores the teacher perceptions of Artificial Intelligence AI -enhanced educational technology for children with multiple disabilities (CWMD). This is about to learn more about the attitudes, opinions, and perceptions of teacher about the usage of AI-enhanced instructional and educational technology in inclusive classrooms through qualitative research techniques like surveys and interviews. Inclusive education and technological advancements have opened avenues for learning experiences. However, little research has explored teachers perspectives on the integration of AI in educational tools specifically designed for children with multiple disabilities. Through qualitative research methods such as interviews and surveys, this study aims to analyze the perception of teachers of AI-enhanced Educational Technology for Children with Multiple Disabilities in classrooms. Kazimzade, G., et.al. (2019)This chapter offers a comprehensive overview of AI in education, focusing on inclusivity. It covers adaptive learning, disability inclusion, and cultural biases in technology. It emphasizes the importance of bias mitigation for fostering inclusivity in future developments.

Keywords: AI, Educational Technology, Multiple Disabilities.

INTRODUCTION

Artificial intelligence AI – in education field is the usage of the technology to enhance learning, outcomes and support teachers and also children with multiple disabilities (CWMD). AI supports in education for teachers and researchers are becoming increasingly interested in AI seems to make important contribution to children with disabilities and its learning experiences AI plays in important role to play in facilitating teaching, learning and special education assessment for children with disabilities. Special education involves teaching for children with unique learning needs due to physical, mental, emotional or behavioral difficulties. AI Involves in teaching for students in Inclusive education. Ojha, S. T. (2022) this paper provides a concise overview of AI's impact on special education, emphasizing its emergence, benefits, and assistive applications for individuals with disabilities. The review highlights AI transformative potential in enhancing educational experiences and benefits for children with special needs.

Children with multiple disabilities (CWMD) face elaborate challenges in their educational outing, including diverse learning requirements, varying levels of independence, and unique communication needs. Traditional educational approaches may struggle to adequately address these complexities, highlighting the need for innovative solutions. AI-enhanced educational technology helps in adaptive learning experiences for children with multiple disabilities. Patra, G. & Chander, S. (2021) paper discusses the potential of Artificial Intelligence (AI) in addressing challenges faced by students with disabilities in education. It highlights AI applications such as optical character recognition and speech recognition, aiming to create inclusive learning environments. The paper anticipates future advancements in AI for education, emphasizing language development and personalized teaching tools. Chelkowski et al. (2019) conduct a literature review of usage on mobile devices with children with disabilities, analysing 63 empirical articles. Their examination reveals a focus on students with autism spectrum disorder, primarily using Apple products. The review emphasizes the impact on school policy, accessibility, and instructional practices, highlighting implications for both general and special education. Future research directions and practical implications are also discussed.

This study explores the perceptions of teachers regarding the utilization of AI-enhanced educational technology for children with multiple disabilities. Alghamdi, R. (2022) research examines special education teachers views on using assistive technology (AT) for students with disabilities, emphasizing the importance of teachers' proficiency and confidence. The study underscores the necessity for specialized training to enhance AT integration in classrooms, emphasizing ongoing professional development to enable teachers to effect the varied educational needs of children with disabilities.

The effect of the study to learn more about attitudes, opinions, and concerns of teachers about usage of AI-enhanced instructional technology of inclusive classrooms through qualitative research techniques like surveys and interviews. Inclusive education and technological advancements have opened avenues for learning experiences. However, little research has explored teachers perspectives on the integration of AI in educational tools specifically designed for children with multiple disabilities. Through qualitative research methods such as interviews and surveys, this study aims to analyze the perception of teachers of AI-enhanced Educational Technology for Children with Multiple Disabilities in inclusive classrooms. Tegler et al. (2021) investigate communication partner strategies with high-tech SGDs for children with severe cerebral palsy (CP), emphasizing the limited use of aided augmented input and advocating for enhanced training. The study underscores the critical involvement of speech and language pathologists (SLPs) in improving communication outcomes through SGD-mediated communication for children with severe CP. This study Devi et al. (2022) advocates for child-centric Artificial Intelligence (AI) in education, highlighting its potential to transform teaching practices. The authors discuss the benefits of AI in providing 24/7 learning accessibility and real-time translations, promoting integrated global education. Additionally, they address challenges in AI-based education and propose pathways for its implementation. This study specify the about Teacher Perceptions of AI-Enhanced Educational Technology for Children with Multiple Disabilities.

OBJECTIVES

- Explore the teacher's perceptions of the usage of adaptability AI-enhanced educational technology in supporting children with multiple disabilities in various learning environments.
- To identify the benefits and challenges related in the usage of AI-enhanced educational technology for children with multiple disabilities from the perspective of teachers.
- To provide understandings and supports for the development and application of AI-enhanced educational technology to better support the learning needs of children with multiple disabilities based on teacher feedback and perceptions.

METHODS

Participants:

The survey was taken from the teachers in schools Chennai, using the questionnaire were distributed to the teachers in school, Questionnaire Name – Teachers Perceptions of AI-Enhanced Educational Technology for Children with Multiple Disabilities. Totally from 50 teachers in schools in Chennai the data are collected. The Questionnaire annexure is enclosed in this paper.

Methods and Instruments:

This study is Quantitative Research, 5 rating scale- not effective at all, slightly effective, moderately effective, and very effective, extremely effective the questionnaire- Perceptions of AI-Enhanced Educational Technology for Children with Multiple Disabilities are prepared with 10 questions and data was collected from the teacher in schools Chennai. Data analysis is done using SPSS Software.

Review of literature:

Cagiltay et al. (2019) explore teachers' perceptions of an AI-enhanced scaffolding system for STEM education, highlighting both positive experiences and concerns. Their study contributes perceptions into the helps of AI in education, considerations of future implementation in schools.

Sobnath et al. (2019) explore how technological innovations in smart cities can empower visually impaired communities. Their review emphasizes the role of smartphones, wearable devices, AI, IoT, and VR/AR in improving

mobility and quality of life for the visually impaired, with a focus on enhancing ICT infrastructure and optimizing public spaces, transportation systems, and residential environments.

Ventouris, Panourgia, and Hodge (2021) explore teachers' perspectives on technology's effects on children and youth. Their study emphasizes teachers' role in student well-being and learning, addressing concerns about technology use and the socioeconomic digital divide's impact. Conflicting views on technology's influence on socialization and self-esteem indicate the complexity of this issue.

Salas-Pilco et al. (2022) offer insights into AI and new technology's role in supporting inclusive education for minority students. Their review underscores benefits like academic improvement and increased interest in STEM/STEAM, alongside challenges such as technological limitations and cultural disparities. Their findings provide valuable guidance for educators and policymakers aiming to enhance inclusive education through AI integration.

McDonald, Massey, and Hamidi (2023) emphasize integrating people with disabilities into design education with AI-enhanced technologies. They advocate for careful planning to avoid user burden and promote empathy among students. Their study investigates end-user privacy perspectives, emphasizing inclusive design through intersectional thinking. Despite recognizing privacy risks, student empathy towards users of AI-enhanced assistive technologies was limited.

Choi, Jang, and Kim (2023) explore teachers receiving of Education Artificial Intelligence (AI) Tools (EAIT), focusing on importance in pedagogical beliefs and trust. Their study identifies constructivist beliefs as a significant factor influencing EAIT adoption.

Neeharika and Riyazuddin (2023) explore how artificial intelligence (AI) positively influences special needs education (SNE), improving learning outcomes. Through content analysis and interviews, they highlight AI's role in fostering inclusivity and propose a data-driven method for categorizing ASD patients and typically developing individuals' data.

Research in this area. Through the use of LEAF and Active Reading, they examine AI potential Toyokawa et al. (2023) explore AI's impact on inclusive education in Japan, highlighting the scarcity in inclusive learning contexts by analyzing the behaviors of students in resource rooms. Their findings contribute valuable insights in challenges and future directions integrating AI in Inclusive Education.

Jia and Tu (2024) investigate the impact of AI abilities college students' critical thinking awareness, facilitated by self-efficacy and motivation. Their study expands understanding AI role in education and it's possible for development critical thinking skills among children with disabilities.

RESULTS

RQ: 1.Teacher perceptions of AI-enhanced educational technology for children with multiple disabilities vary across effectiveness levels, ranging from less effective to extremely effective.

Table 1: **Table showing the result on effectiveness levels, ranging from less effective to extremely effective**

Questions	Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
Question 1	10	12	1	3	24
Question 2	8	12	2	4	24
Question 3	1	21	2	10	16
Question 4	6	14	1	3	26
Question 5	7	10	4	7	22
Question 6	14	14	5	4	13
Question 7	2	16	1	10	21
Question 8	8	22	1	1	18
Question 9	8	10	2	4	26
Question 10	7	11	2	8	22
Total	71	142	21	54	212

Figure 1: Graphical representation of result on across effectiveness levels, ranging from less Effective to extremely effective- Question 1 to 5

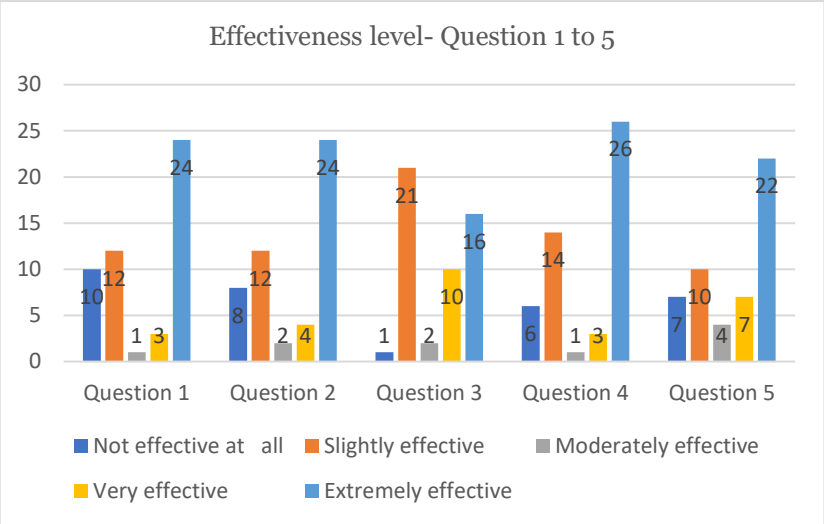

Figure (1)

Figure 2: Graphical representation of result on across effectiveness levels, ranging from less effective to extremely effective- Question 6 to 10

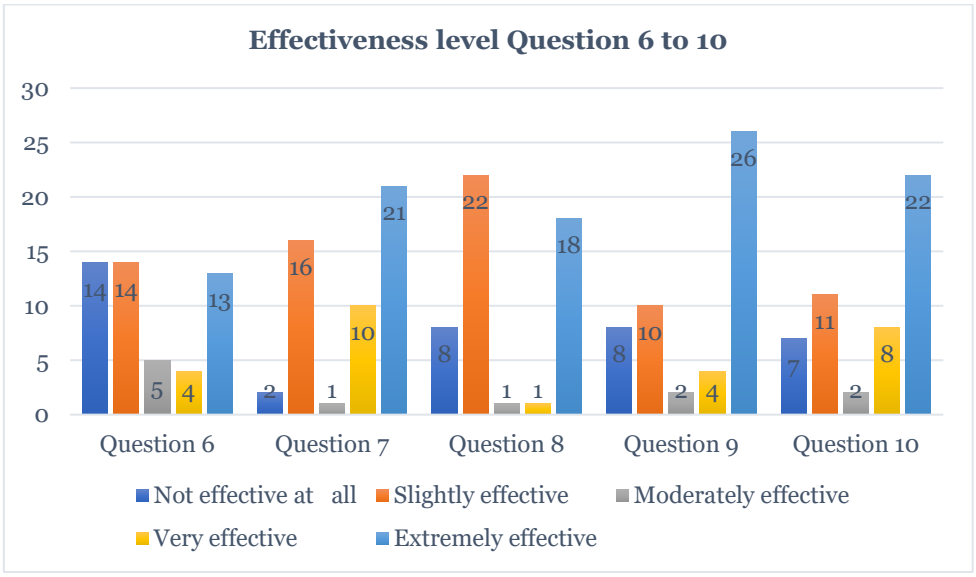

Figure (2)

This study shows the result on Teacher perceptions AI-enhanced educational technology for children with multiple disabilities vary across effectiveness levels, ranging from less effective to extremely effective.

Question 1: Among the 50 respondents, 24 teachers perceived AI-enhanced educational technology for children with multiple disabilities to be extremely effective.

Question 2: Similarly, 24 teachers rated the technology as extremely effective.

Question 3: For this question, 16 teachers considered the technology extremely effective.

Question 4: The majority of teachers (26) viewed the technology as extremely effective.

Question 5: 22 teachers rated the technology as extremely effective.

Question 6: 13 teachers perceived the technology as extremely effective.

Question 7: 21 teachers considered the technology extremely effective.

Question 8: 18 teachers rated the technology as extremely effective.

Question 9: 26 teachers perceived the technology as extremely effective.

Question 10: Finally, 22 teachers considered the technology extremely effective.

The findings expose a reliable trend among teachers, with the majority perceiving AI-enhanced educational technology for children with multiple disabilities as extremely effective across all questions. This specifies a high level in confidence and confidence in capabilities of AI technology to support the learning needs of children with multiple disabilities. However, further research is needed to explore possible factors influencing these perceptions and to address any challenges or concerns associated with the implementation of AI-enhanced educational technology for children with disabilities. Almeida et al. (2019) investigate the training needs of caregivers regarding assistive technologies for children with cognitive and/or motor disabilities. Their study emphasizes importance in reducing technology and enhancing use of family setting to promote communication, independence, and inclusion. The research underscores the significance of conducting interviews with informal caregivers to assess their needs and improve their digital literacy and access to practical information on assistive technologies. Garg and Sharma (2020) this study explores the AI on special education needs, emphasizing inclusivity and accessibility. Their study, based on qualitative research and content analysis, examines AI's influence on both students and educators, proposing a framework for the future of special needs education.

DISCUSSION

This study explores the targeted professional development to teacher to develop their understanding and application in AI-enhanced educational technology, addressing the varying perceptions of effectiveness. This training should focus on strategies for optimizing technology usage to meet the needs of children with multiple disabilities, advancement of inclusive learning environments. Baig Muntajeeb Ali et al. (2023) investigate AI role in enhancing educational outcomes for special needs children. Their study emphasizes AI potential in improving knowledge retention and skill development, particularly through intelligent tutoring systems and social robots. The research highlights AI's positive impact on educators' professional development and underscores the importance of continued exploration and education in this domain.

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