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Scoping review of ICT interventions for participation in education, communication, and leisure in children/youth with motor disabilities

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AIM and RESEARCH QUESTIONS

To examine and synthesize research on Information communication technology (ICT) interventions for children/youth with motor disabilities to participate in education, communication, and leisure

1. What types of ICT devices and programs have been applied in intervention studies, and in what areas of use?
2. What benefits are reported from the ICT intervention studies?
3. What implementation challenges are identified?

BACKGROUND

- ICT has been recognized as crucial for promoting education accessibility and fostering the development of academic, speech, and social skills.
- ICT includes computers, the Internet, mobile technologies, broadcasting technologies, and computer-based assistive technology to transmit, store, create, or exchange information.
- Limited attention has been given to how ICT supports participation for students with motor disabilities (e.g., cerebral palsy, neuromuscular disorders), and the benefits and challenges.

METHODS

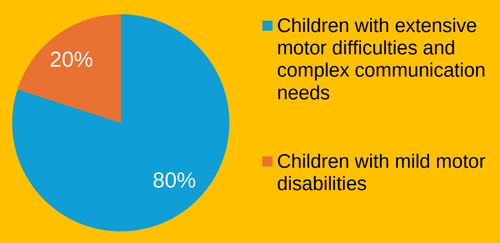
- A scoping review follows the JBI Manual for Evidence Synthesis
- Systematic search across five bibliographic databases
- Studies published in English-language peer-reviewed journals between January 2012 and May 2024
- Out of **240** screened, **20** articles was charted and analysed by two researchers, with discrepancies resolved through discussion with the third author
- The Mixed Methods Appraisal Tool was used for quality assessment

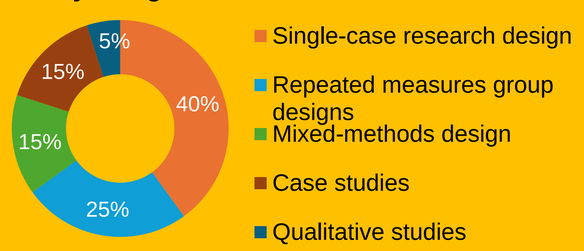
STUDY PARTICIPANTS, INTERVENTIONS, CONTEXTS

- Children below 18 years of old with motor impairments and possible co-occurring communication, intellectual, or sensory difficulties
- ICT or computer-based assistive technology interventions for participation in education, leisure, and communication in everyday contexts (homes, educational settings, and communities)

DESCRIPTION of STUDIES

- Sample sizes ranged from one to 65, with a total of 184 students.
- Study participants from Europe, North America, Australia, and Asia.





RESULTS

1. Types of ICT and Areas of Use

- Fourteen studies (70%) centered on specialized access technologies for education, communicative interactions, and play
- Three studies (15%) examined specialized programs, focusing on writing and spelling or communication skills
- Three studies (15%) addressed personalized ICT solutions, such as individual-adapted computers and Internet access

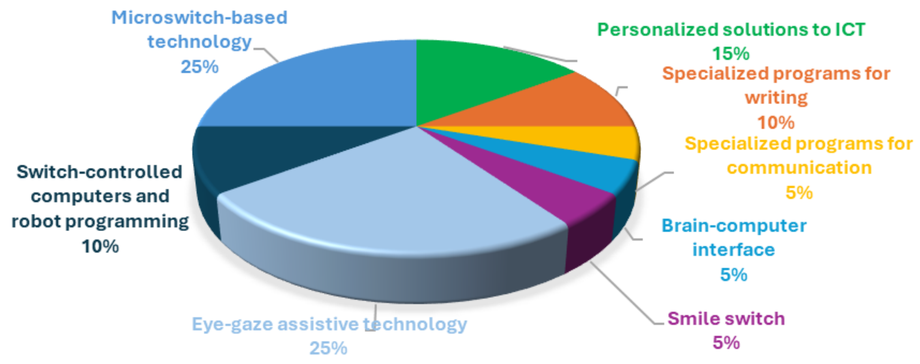


Figure 1 Types of ICT in intervention studies

2. Benefits of ICT interventions

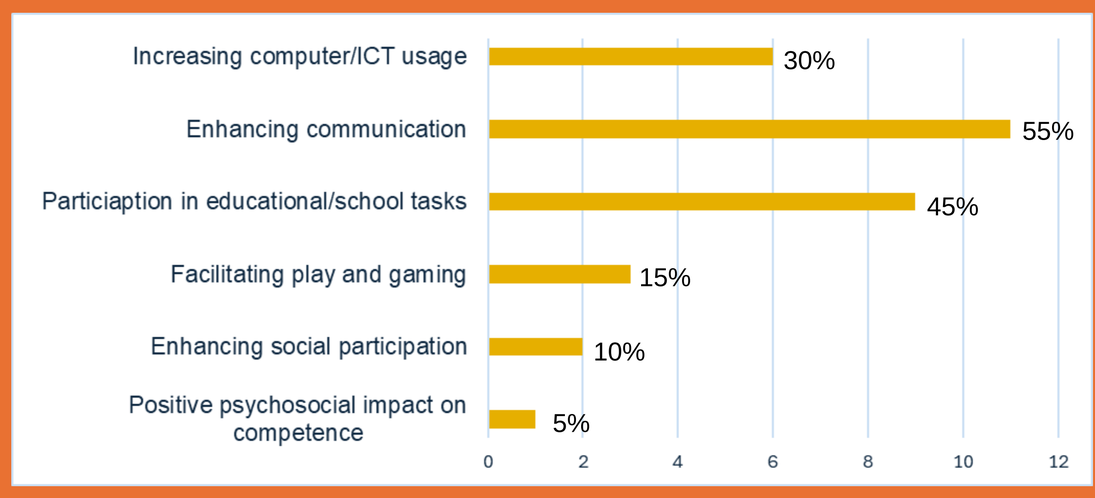


Figure 2 Reported benefits of ICT interventions (number of studies, %)

3. Challenges of Implementation

Physical factors	Social factors	Student factors
• The need for customized software and universal design programs • Unintuitive interfaces • Unreliable Internet in non-urban areas	• Insufficient ICT knowledge among teachers and parents • Lack of troubleshooting support and support to integrate ICT into classroom activities • Funding issues and affordable products	• Illness, fatigue • Operation skills using access methods • Literacy skills • Motivation

IMPLICATIONS and CONCLUSIONS

- Growing evidence worldwide supports the benefits of ICT interventions for students with physical disabilities, enhancing participation in educational tasks, communication, and social connections.
- To improve implementation, it is essential to enhance user-friendly programs, promote ICT training for teachers, and provide follow-up support to tailor ICT to students' needs, abilities, and motivations.
- Future research is needed to investigate ICT usage within classroom activities, students' perspectives on the benefits of ICT, and long-term impacts on learning and societal participation.

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Acknowledgements:

1. UNESCO. (n.d). Information and communication technologies (ICT). https://uis.unesco.org/en/glossary-term/information-and-communication-technologies-ict
2. Fernández-Batanero, J. M. Montenegro-Rueda, J. Fernández-Cerero, & I. García-Martínez. (2022). Assistive technology for the inclusion of students with disabilities: A systematic review. Educational Technology Research and Development, 70(5), 1911–1930.
3. Lidström, H., & H. Hemmingsson. (2014). Benefits of the use of ICT in school activities by students with motor, speech, visual, and hearing impairment: A literature review. Scandinavian Journal of Occupational Therapy, 21(4), 251–266.
4. Raghavendra, P., L. Newman, E. Grace, & D. Wood. (2013). ' I could never do that before': Effectiveness of a tailored Internet support intervention to increase the social participation of youth with disabilities. Child: Care, Health & Development 39(4): 552–561.

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