



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor (RJIF): 8.4
IJAR 2024; 10(4): 346-349
www.allresearchjournal.com
Received: 26-01-2024
Accepted: 28-02-2024

Priyanka Palei
Research Scholar,
Department of Education,
Regional Institute of
Education, NCERT,
Bhubaneswar, Odisha, India

Use of assistive technology for children with special needs in an inclusive classroom environment

Priyanka Palei

Abstract

In the 21st century due to the rapid development of technology for disabled students, utilization of assistive technology (AT) in educational settings has emerged as a transformative strategy to address the diverse needs of students with disabilities. The theme of assistive technology, examining its application, challenges, and core principles within classroom environments. Initially, assistive technology catalyzes inclusivity, offering tailored solutions to empower students with disabilities. Through facilitating access to educational resources, fostering independent learning, and enhancing communication, AT fosters a more equitable learning experience for all students. However, despite its promise, implementing assistive technology presents obstacles. Barriers such as limited awareness, insufficient training opportunities, financial constraints, and technological accessibility issues impede its effective adoption. Overcoming these challenges necessitates collaborative efforts from educators, administrators, policymakers, and technology developers to ensure equitable access and support for students with disabilities. Lastly, root into the guiding principles of assistive technology, emphasizing the significance of customization, usability, accessibility, and collaboration in its design and deployment. Adherence to these principles empowers educators to create inclusive learning environments where students with disabilities can thrive academically and beyond. Use of assistive technology in advancing educational equity and advocate for sustained efforts to optimize its potential in supporting students with disabilities in classrooms.

Keywords: Assistive technology, disability students, accessibility

Introduction

Assistive technology (AT) refers to any device, software, equipment, or system that is designed to enhance the functional capabilities of individuals with disabilities. These technologies aim to facilitate tasks, activities, or interactions that might be challenging or impossible for people with disabilities to perform independently. Assistive technology serves as a pivotal tool in enabling students with disabilities to engage fully in their educational journey and excel academically. By offering a diverse range of specialized software, hardware, adaptive devices, and communication aids, assistive technology delivers personalized solutions that cater to the distinct requirements and obstacles faced by each learner. Whether it's facilitating access to learning materials, aiding in communication, or supporting mobility, these technological innovations empower students to overcome barriers and actively participate in classroom activities. Through the integration of assistive technology, educators foster inclusive learning environments where all students can thrive, express themselves, and achieve their educational goals. An assistive product is any product (including devices, equipment, instruments, and software), specially produced or generally available, used by or for persons with disability, for participation, to protect, support, train, measure, or substitute for both functions/structures and activities, or to prevent impairments, activity limitations or participation restrictions (ISO, 2011) ^[9]. In the education process, assistive technologies offer various solutions in providing students with support that meets their needs (McKnight and Davies, 2012) ^[11]. These assistive technologies significantly contribute to aiding persons with special educational needs in learning, building self-confidence, being independent, and achieving a high quality of life (Reed, 2007) ^[12]. Furthermore, they serve as key tools for enabling students to access education, actively and independently participate in the education process, interact with their peers, and have control over their own learning experiences (Winter and O'Raw, 2010) ^[13].

Corresponding Author:
Priyanka Palei
Research Scholar,
Department of Education,
Regional Institute of
Education, NCERT,
Bhubaneswar, Odisha, India

Need of the Study

World Health Organization (WHO, 2012) [14] estimates that more than one billion people around the world need one or more inclusive products. In the realm of implementing inclusive education, the integration of technology stands as an indispensable element. Without leveraging technological advancements, the realization of inclusive educational practices faces considerable limitations. Assistive technology empowers students with disabilities to take control of their learning experiences by providing them with tools and devices that facilitate greater independence and self-reliance. These technological aids enable students to accomplish tasks and activities with less reliance on external assistance, fostering a sense of autonomy and self-confidence in their abilities to navigate academic challenges on their terms.

Principles of Assistive Technology

There are some principles of assistive technology given by Anna Trakoli, 2022 [2] in his book 5th edition. Following are these principles.

Patient-Centeredness: AT should be tailored to the individual’s needs, preferences, and environments. It should enhance the user’s quality of life and be aligned with their personal goals.

Enablement as an Outcome: The primary goal of AT is to enable the user to perform tasks they would otherwise be unable to do, thereby increasing their independence and participation in daily activities.

Evidence-Informed Process: Decisions regarding the selection, design, and implementation of AT should be based on the best available research evidence, clinical expertise, and user values.

Ethical Delivery: The provision of AT must be conducted in an ethical manner, respecting the rights and dignity of the user, ensuring confidentiality, and avoiding conflicts of

interest.

Sustainability: AT solutions should be sustainable in terms of affordability, maintenance, and environmental impact. They should remain functional and accessible over time.

Inclusion and Participation: AT should promote the inclusion of users in all areas of society, including family, community, and social spheres, ensuring that no one is left behind.

Functionality and Independence: AT should maintain or improve an individual’s functioning and independence, promoting their well-being and ability to manage their health conditions.

Use of Assistive Technology for Disability Students

Assistive Technology is one thing that could help teachers to make the classroom inclusive, and the findings of the study published by (WHO, 2023) mentioned that Preservice teachers must have fundamental technology abilities, as well as ways to facilitate inclusive educational practices. Visual assistive instructional technology is very useful for teaching daily living skills like personal hygiene to students with intellectual disability (Anjali & Vanitha, 2021) [1]. Use of the Apple iPad2 as an assistive technology device to deliver literacy-based behavioral interventions and Social Stories (TM) to students ages 3-11 with autism spectrum disorder enrolled in an extended school year program (Flores, et. al, 2014) [7]. Technology has become deeply intertwined with our personal, academic, and professional spheres, seamlessly integrating into various aspects of our daily existence. Students with disabilities attending postsecondary institutions may require the use of Assistive Technology (AT) for their educational pursuits and access to other technology (Boen, 2014) [3]. Assistive technologies empower students with disabilities by offering them avenues to cultivate independent learning skills. There is a great deal of software and assistive technology that can open a bright future for students with disabilities (Hopkins, 2006) [8].

Table 1: Assistive Technology & Disability Needs

Category	Assistive Device
Mobility	Walking stick, crutch, walking frame, manual and powered wheelchair, tricycle Artificial leg or hand, leg or hand splint, clubfoot brace Corner chair, supportive seat, standing frame Adapted cutlery and cooking utensils, dressing stick, shower seat, toilet seat, toilet frame, feeding robot
Vision	Eyeglasses, magnifier, magnifying software for computer White cane, GPS-based navigation device Braille systems for reading and writing, screen reader for computer, talking book player, audio recorder and player Braille chess, balls that emit sound
Hearing	Headphone, hearing aid Amplified telephone, hearing loop
Communication	Communication cards with texts, communication boards with letters, symbols, or pictures electronic communication devices with recorded or synthetic speech
Cognition	Task lists, picture schedules, and calendars, picture-based instructions Timer, manual or automatic reminders, smartphone with adapted task lists, schedules, calendars, and audio recorder Adapted toys and games
Reading	Electronic books, Books adapted for page-turning, Single word scanners, Predictable texts, Tabs, Talking electronic devices/software, Speech Software
Writing	Pen/Pencil grips, Templates, Word processors, Word card/book/wall, software, Spelling/Grammar checker, Adapted papers
Math	Talking Calculators, Talking Clocks, Enlarged Worksheets, Geoboard, Measuring Devices, Scientific Calculators

Source: (Yukti Gupta, 2023)

From the above review, it is stated that some strategies for the effective use of assistive technology in the classroom environment. Following are these strategies.

- **Understanding Students' Needs:** Selecting assistive technology involves ensuring it's both accessible and

fits seamlessly into the student's capabilities and learning setting. This means considering factors like how easy it is to use, the extent to which it can be personalized, its compatibility with current devices and software, and the level of technical support accessible.

- **Collaboration and Communication:** Promote a culture of transparent communication and teamwork among everyone engaged in the student's learning journey, such as educators, caregivers, therapists, and assistive technology experts. Consistently exchange insights and updates on the student's development and the impact of assistive technology tools to ensure alignment and progress.
- **Professional Development:** Through workshops, seminars, online courses, and hands-on training sessions, educators learn about the latest advancements in assistive technology, and how to assess students' needs, select appropriate tools, and implement them in the classroom. They also gain insights into adapting curriculum materials, creating inclusive learning environments, and collaborating with other professionals to support students with diverse abilities.
- **Assistive Technology Selection:** Selecting the right assistive technology involves a thorough understanding of the individual student's needs, preferences, and abilities. It's crucial to conduct comprehensive assessments to identify specific challenges and determine the most suitable solutions.
- **Accessibility and Accommodations:** Accessibility involves crafting technology, tools, and surroundings to ensure they're easily usable by individuals with diverse abilities. This encompasses offering alternative input options, ensuring compatibility with screen readers, providing adaptable settings to suit various needs, and creating user interfaces that are intuitive and straightforward to navigate. Accommodation entails tailoring modifications to address the distinct requirements of individuals with disabilities. These adjustments can encompass personalized training sessions, customizable features, access to technical assistance, and the flexibility to adapt assistive technology tools to suit individual needs.
- **Monitoring and Evaluation:** This process entails methodically monitoring the implementation of assistive technology and assessing its outcomes to pinpoint strengths, areas needing improvement, and any required adjustments. Evaluation involves analyzing collected data to assess the impact of assistive technology on the individual's functioning, participation, and quality of life.

Barriers to the Use of Assistive Technology for Disability Students

Securing funding for assistive technology remains a significant hurdle in accessing the necessary devices and services. He claimed that different public and private sources offer funding to individuals with disabilities to obtain the assistive technology they need; however, obtaining assistive technology can still be difficult for families due to the cost (Judge, 2000) ^[10]. Identify and recognize the major obstacles in assistive technology assessment and implementation for children with multiple disabilities several barriers including a lack of appropriate teacher preparation and support, negative staff attitudes, insufficient assessment and planning processes, insufficient financial support, difficulty obtaining and managing equipment, and time constraints (Copley and Ziviani, 2004) ^[5]. Insufficient training in the use of virtual devices and

platforms is a prevalent obstacle to the effective utilization of AT by students with disabilities (Byrd, & León, 2017) ^[4].

Conclusion

Integration of assistive technology into education for learners with disabilities embodies a revolutionary approach, fostering inclusivity and empowering individuals to overcome educational obstacles. By tailoring solutions to address diverse needs and capabilities, assistive technology not only enhances accessibility but also facilitates personalized learning journeys, fostering independence and bolstering self-confidence. As the field of assistive technology continues to advance through ongoing research, collaboration, and innovation, it offers increasingly effective tools and strategies to support learners with disabilities in achieving their full potential. Recognizing the significance of accessibility and accommodation in education, the adoption of assistive technology stands as a pivotal element in our collective endeavor to cultivate inclusive learning environments where all learners can flourish.

References

1. Anjali R, Vanitha C. Effectiveness of video modelling and animation learning package. *Sambodhi*. 2021;44(01):74–76.
2. Anna Trakoli. Assistive Technologies: Principles & Practice, 5th ED., Occupational Medicine. 2022;72(2):147. Available from: <https://doi.org/10.1093/occmed/kqab177>.
3. Boen RD. Evaluation of general and specific assistive technology knowledge among students with disabilities in postsecondary environments (1568444). Available from ProQuest Dissertations & Theses Full Text: The Humanities and Social Sciences Collection. (1609717978). Retrieved from <http://search.proquest.com/docview/1609717978?accountid=50681>. 2014.
4. Byrd A, León R. Assistive Technologies: Learning resources to promote the inclusion and communication of students with disabilities. *Nuevos Escenarios de la Comunicación*. 2017;2(1):167–178.
5. Copley J, Ziviani J. Barriers to the use of assistive technology for children with multiple disabilities. *Occupational Therapy International*. 2004;11(4):229–243.
6. Fernández-Batanero JM, Montenegro-Rueda M, Fernández-Cerero J, *et al*. Assistive technology for the inclusion of students with disabilities: A systematic review. *Education Tech Research Dev*. 2022;70:1911–1930. <https://doi.org/10.1007/s11423-022-10127-7>.
7. Flores MM, Hill DA, Faciane LB, Edwards MA, Tapley SC, Dowling SJ. The apple iPad as assistive technology for story-based interventions. *Journal of Special Education Technology*. 2014;29(2):27. Retrieved from <http://search.proquest.com/docview/1525818752?accountid=50681>.
8. Hopkins J. Assistive technology: Ten things to know. *Library Media Connection*. 2006;25(1):12–14.
9. ISO/IEC. ISO/IEC 13066-1((2011) Information technology — Interoperability with assistive Technology (AT). Geneva (Switzerland): ISO/IEC; c2011.

10. Judge SL. Computer applications in programs for young children with disabilities: Current status and future directions. *Journal of Special Education Technology*. 2000;16(1):29-40.
11. McKnight L, Davies C. Current perspectives on assistive learning technologies 2012 review of research and challenges within the field. *Current Perspectives on Assistive Learning Technologies*. The Kellogg College Centre for Research into Assistive Learning Technologies. 2013;(1-80). Retrieved from <http://www.kellogg.ox.ac.uk/research-centers/alt>.
12. Reed P. A resource guide for teachers and administrators about assistive technology. Wisconsin Assistive Technology Initiative. Oshkosh. 2007;(1-22). Retrieved from <http://www.wati.org/content/supports/free/pdf/ATResourceGuideDec08.pdf>.
13. Winter E, O'Raw P. Literature review of the principles and practices relating to inclusive education for children with special educational needs. National Council for Special Education. Trim, Northern Ireland. 2010.
14. World Health Organisation. Assistive technology. WHO; c2023. Available from: <https://www.who.int/news-room/fact-sheets/detail/assistive-technology>.