

The Role of Digital Technology in Enhancing Educational Processes for Children with Mild Intellectual Disabilities

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Abstract : This study seeks to clarify the role of digital technology in improving educational processes for children with mild intellectual disabilities. The theoretical review suggests that these learners present cognitive profiles that require educational responses tailored to their human, social, psychological, cognitive, and pedagogical needs. When digital technologies are used appropriately, many barriers to learning can be reduced, and educational provision can become more flexible, engaging, and effective. Educational technology for this group aims to provide a broad range of learning experiences by facilitating access to content through diverse digital media and instructional tools. Such tools can increase learners' motivation, support pedagogical development, and strengthen academic performance. Overall, the use of digital technology appears to play a positive and effective role in enhancing educational processes for children with mild intellectual disabilities.

Keywords: mild intellectual disability; digital technology; educational technology; special education; social inclusion

1. Introduction:

Over the centuries, educators have attempted to enrich instruction by developing methods, techniques, and media capable of reaching larger numbers of learners more effectively and efficiently. These efforts evolved from the lecture format to video, television, radio, and recorded media, and later to information and communication technologies, computers, and data networks. Such developments drew educators' attention to the possibilities of self-directed learning, reduced reliance on repetitive routine tasks, and more varied presentation of academic content than is ordinarily possible in the traditional classroom.

Attention to the education of children with intellectual disabilities is not optional; it is an educational necessity. Like all members of society, these children have the right to learn. Yet they often encounter substantial difficulties related to memory, attention, thinking, and perception, particularly as these are shaped by the severity of disability. This reality requires adequate human and material resources capable of creating supportive learning environments, compensating for existing limitations, and maximizing the development of cognitive, academic, and vocational capacities. Within this context, modern technological tools have demonstrated their usefulness in addressing learning difficulties among students with intellectual disabilities, improving both educational effectiveness and functional performance.

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The present paper therefore examines the role of technology in the educational process for children with mild intellectual disabilities.

Modern technological tools can support educational reform, improve instructional quality, and help schools achieve their objectives in accordance with standards of efficiency and effectiveness. Their careful integration into teaching is especially important for children with intellectual disabilities because it allows teachers to diversify methods, respond to individual differences, and make complex concepts more accessible. It can also help students acquire a wide range of academic and everyday skills.

2. Definition of Digital Technology

Digital technology may be defined as the conversion of specific forms of information, such as images, sounds, and text into binary codes (Abd al-Salam, 2012). It has also been described as a numerical sequence that can be stored, encoded, transmitted, decoded, and read by a computer (Abu Harjah, 2016, p. 80). More broadly, it refers to the body of scientific achievements embodied in practical applications that have shifted systems from analog and traditional modes to digital ones. In this wider sense, digital technology includes computers, the internet, mobile phones, landline telephony, satellite systems, interactive television, digital domestic devices, building management systems, and related technologies (Nasif, 2017, p. 283).

At its core, digital technology brings together several interrelated components: computer hardware, software applications, intelligent interactive programs, communication networks, and databases containing raw facts and observations about phenomena or transactions. Together, these components have produced automated control systems, robotics, and internet-based environments. In a remarkably short period, digital technologies have become smaller, faster, more efficient, and less expensive (Abd al-Latif, 2008, p. 61).

3. Importance of Digital Technology for Children

Digital technology can expand children's learning opportunities in several ways. First, it supports e-learning through devices such as tablets and smartphones, including electronic talking books and language-learning applications. These tools make books more accessible and allow children to read or listen in different settings without being constrained by library schedules.

Second, digital tools can foster social development when they are used appropriately. Through communication platforms such as Skype and similar applications, children can maintain contact with peers and relatives and practice forms of social interaction that support relationship building (Al-Jarrah & Al-Ajlouni, 2011, p. 420). Third, many digital games and activities encourage goal-directed behavior by requiring children to complete tasks or advance through graded levels, thereby reinforcing persistence and task completion.

Digital technology can also support the development of children's abilities by nurturing their interests, broadening their reading, and exposing them to information and cultures beyond their immediate environment (Qasim, 2015, p. 87). In instructional contexts, it allows lessons to be presented in engaging ways; for example, through computer games used to teach

reading, writing, and arithmetic. In some cases, it may also reduce shyness and increase participation, while offering practical support to children who experience learning difficulties, including those associated with mild intellectual impairment (Abdullah, 2003, p. 32).

4. Applications of Digital Technology in the School Environment

4.1 Computers

Computers are among the most important tools in educational technology. Their use can promote self-directed learning, help teachers address individual differences, and improve the quality of instruction. Computers can also perform functions traditionally associated with audiovisual aids by presenting images, films, animations, and audio recordings in integrated form.

They are particularly valuable for supporting the acquisition of specific skills, including learning strategies, computer literacy, and problem solving. Because computers are stimulating and interactive, they can draw students away from rote memorization and toward active participation. They also reduce the time and effort teachers must spend on repetitive instructional routines, thereby freeing time for the design of richer learning experiences that support students' intellectual and social development. In addition, computers make it easier to prepare programs suited to learners' needs, identify areas of weakness, provide remedial activities, shorten learning time, increase achievement, clarify concepts, and represent aspects of the real world that are otherwise difficult to provide in the classroom.

4.2 Social Media Platforms

Social media can support both individual and social dimensions of learning by creating collaborative, participatory environments. In this sense, it shifts the educational process from a model centered on teaching to one centered on learning. These platforms are marked by self-directed engagement and can support dialogic, productive, and cooperative forms of learning.

They also make it possible to follow announcements, manage projects related to educational activities, and stimulate creativity, since students can collaboratively produce one or more learning tools. Through the exchange of information, discussion, and commenting, social media may help activate students' skills through activity-based learning. It also treats information as a shared resource and encourages learners to participate in building educational content. The educational value of social networking sites lies precisely in the forms of participation, conversation, openness, and connectedness they enable between teacher and learner, thereby creating a socially rich and motivating environment for learning and discovery (Awadj & Tabri, 2016, p. 113).

4.3 Interactive Whiteboards

Interactive whiteboards can increase learners' attention and enrich their educational experience. They diversify teaching methods, activate prior and ongoing learning experiences, and allow lessons and stored information to be retrieved easily by both teachers and students.

Teachers can share online storage spaces, which can improve students' efficiency and motivate them to continue studying.

These boards also allow teachers to print what has been explained, distribute it to students, or save and send it via email. As a result, learners do not need to spend all their attention copying from the board, and can instead focus more fully on understanding the lesson. Interactive whiteboards present information in engaging ways and support hands-on interaction that can improve students' retention and comprehension. They may also reduce teachers' dependence on chalk and marker types that can have negative long-term health effects. In addition, they can support distance learning and encourage students to come to the board and participate actively in instruction.

4.4 Multimedia Tablet Devices

Smartphones and tablet devices can be used to perform a wide range of educational tasks, even though each device may serve a somewhat different role. In classroom practice, these mobile devices can facilitate teaching and function as learning aids for students. They allow students to interact with one another and with the teacher without being hidden behind large screens. Because many mobile devices can be accommodated in a classroom more easily than desktop computers, they require less physical space.

Moreover, smart devices and tablet computers that store notes and electronic books are lighter, smaller, and easier to carry than bags filled with files and textbooks, and in some cases more portable than laptops. This makes them especially flexible and efficient. Handwriting-recognition applications on smartphones and small tablet devices may also help improve students' handwriting skills, since writing with a stylus can be easier for some learners than using a keyboard and mouse (Al-Ruwaili, 2014, pp. 15–25).

5. Standards for the Use of Digital Communication Technology in the School Environment

5.1 Standards for Students

For students, the effective educational use of digital technology involves a range of competencies. These include creativity and innovation, through which the learner develops knowledge and produces new processes or products; communication and participation, whereby digital media and environments are used to communicate with others and collaborate on shared work, such as completing a project remotely through internet-based communication; and research and information fluency, which refers to the ability to collect, evaluate, and use data and information through digital tools.

Students are also expected to develop critical thinking, problem solving, and decision-making skills by using appropriate digital tools to plan inquiries, manage projects, address problems, and make informed choices. Equally important is digital citizenship: learners should understand the human, social, and cultural issues related to technology and practice ethical and lawful forms of use. Finally, they should understand the basic concepts, systems, and operations of technology itself.

5.2 Standards for Teachers

For teachers, digital competence begins with facilitating and inspiring student learning and creativity. Teachers must use their pedagogical knowledge, instructional strategies, understanding of learning, and technological expertise to create experiences that foster learning, innovation, and creativity in both physical and digital environments.

They are also expected to design, develop, and assess learning experiences appropriate to the digital age by linking authentic learning with modern tools and resources so as to maximize students' mastery of content in context. In addition, teachers should model work and learning in the digital era by demonstrating the knowledge, skills, and professional practices associated with contemporary digital environments.

A further expectation concerns digital citizenship and responsibility. Teachers should understand the responsibilities and issues raised by digital culture at both local and global levels and should model lawful, ethical professional conduct. Finally, they should remain engaged in professional growth and leadership, continuously improving their own practice and promoting the effective use of digital tools and resources within their schools and professional communities (Al-Shoumli, 2018).

6. Mild Intellectual Disability

According to the psychological dictionary, mild intellectual disability is among the most common categories because it includes, at once, cases involving reduced intelligence associated with minor brain damage, limitations in mental abilities shaped by psychological conflict, disruptions in contact with reality, and children who show particular difficulty in learning reading and writing. The source also relates some cases to cultural neglect, socioeconomically disadvantaged environments, poor living conditions, malnutrition, disease, accidents, genetic factors, and forms of upbringing marked by deprivation and poverty (Dictionnaire de psychologie, 1980).

Within this category, IQ scores generally range from approximately 55 to below 70. In terms of academic functioning, the child's performance does not usually exceed that of a typically developing child of around eleven years of age by the time developmental maturation is reached. For this reason, such learners are often unable to master the curricular content taught in higher school levels and therefore require forms of special education adapted to their needs.

7. Common Manifestations of Mild Intellectual Disability

The literature groups the manifestations of mild intellectual disability into several domains. Psychologically, affected children may show anxiety, insecurity, emotional outbursts, frightening dreams or nightmares, social withdrawal, marked shyness, chronic sleep difficulties, and reduced appetite. In health-related terms, there are conditions such as allergies, scarlet fever, skin rash, and eczema.

At the physical level, development may be relatively slow. Delays can appear in psychomotor growth and speech, and the child may be more vulnerable to illness than typically developing peers. Cognitively, although children with mild intellectual disabilities pass through the same broad developmental stages as other children, their rate of mental development differs. They

may show limitations in handling abstract symbols, succeed more readily in manual tasks, and struggle to adapt to novel situations, especially when those situations involve multiple elements. This, in turn, may weaken learning capacity. There is a possible presence of behaviors such as bedwetting, stuttering, sleepwalking, thumb sucking, and nail biting (Bay, 2002).

8. Characteristics of Children with Mild Intellectual Disabilities

Children with mild intellectual disabilities are generally considered capable of learning, although they do not typically reach the level expected in mainstream schooling without support. Depending on their abilities, they can acquire the basic principles of reading, writing, and arithmetic and may progress academically to the equivalent of approximately the fifth year of primary school. Even so, they often display weaknesses in attention and memory and require frequent repetition.

The literature also describes their mental age as falling roughly between six and nine years, with some estimates extending to ten or even eleven years. These children may have difficulty identifying similarities and differences across situations, making use of prior experience, and expressing themselves linguistically in ways that match social expectations. Delays in early psychomotor development, limited imagination, and a reduced capacity for abstract thought are also commonly noted. They tend to rely more heavily on concrete, sensory-based modes of thinking.

According to Dunn (1956), as cited in the original text, they may commit more reading errors than their typically developing peers, particularly with moving syllables and sound omission. When they enter school, they are often not fully ready to learn reading and writing and may show significant delay in literacy acquisition, sometimes up to around eleven years of age. They are also more likely to experience deprivation and failure, difficulties in perceptual processes such as discrimination and recognition, and psychological problems shaped by their living conditions. When they compare themselves with non-disabled peers of the same age, experiences of failure may become more salient. At the same time, they may prefer participation with younger children in activities and games. Many, however, can succeed in certain motor skills and manual tasks, which may compensate in part for their cognitive difficulties. They can be oriented toward routine occupational roles that support a degree of economic self-sufficiency (Al-Khatib, 1998).

9. The Role of Digital Technology in Enhancing Educational Processes for Children with Mild Intellectual Disabilities

Digital technology can play a particularly important role in the education of children with mild intellectual disabilities because it helps address the marked individual differences that appear even within the same disability category. By offering varied stimuli and multiple modes of presentation, educational technology allows teachers to respond more flexibly to differences in readiness, ability, and learning style. The more diverse the media used, the greater the opportunity to support learners with special educational needs effectively.

Digital technology can also help cultivate desirable attitudes, including orderliness, cooperation, and social adaptation. When instructional media are varied and well chosen, they assist in the formation of accurate concepts. For example, if a teacher presents pictures and models of different types of birds, the learner is more likely to construct a sound and stable concept of what birds are.

In addition, these technologies help children acquire the academic skills needed to adapt to the society around them. Learning a skill typically requires observing a model of performance and practicing that performance repeatedly, and both processes can be effectively supported through educational technologies. Digital tools also reduce excessive reliance on purely verbal or abstract teaching. By providing concrete sensory experiences, they help children avoid pronouncing or writing words without understanding their meanings and broaden the range of experiences available to them.

Another major advantage is the provision of immediate feedback, especially through computer software that informs the learner at once whether a response is correct or incorrect. This type of reinforcement helps consolidate correct responses and strengthen learning. Digital tools likewise make it possible to repeat experiences as often as needed by enabling children to interact directly and repeatedly with the content they are learning.

Moreover, technology can compensate for weaknesses in attention by supplying external supports that help sustain focus. It makes learning experiences more effective, more memorable, and less vulnerable to forgetting, while also simplifying the information presented. Its benefits extend across domains: it can support cognitive, social, linguistic, sensory, and motor development in children with mild intellectual disabilities. In this way, digital technology may reduce the impact of disability, improve opportunities for learning, and increase the potential for creativity.

Finally, it can support fuller participation in general classroom settings, enrich the curriculum, strengthen motivation, encourage cooperation, foster independence, and reinforce self-esteem and self-confidence. By reducing dependence on others and helping children engage with their communities through social activities and life skills, digital technology contributes not only to educational development but also to broader social inclusion (Al-Batae, 2014, pp. 23–25).

10. Conclusion

On the basis of the foregoing discussion, the educational technology used with children with mild intellectual disabilities can be seen as both influential and necessary. Its value does not lie only in improving classroom instruction, but also in supporting the social inclusion of this group. Real progress, however, depends on coordinated effort and on the provision of the human and material resources required to create a sound educational environment—one capable of narrowing the gap created by disability, expanding children's awareness of the world around them, and enabling them to participate in it more fully.

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