



CHAPTER 30

CHALLENGES IN UTILIZING TECHNOLOGIES IN SPECIAL NEEDS EDUCATION

Afolakemi O. Oredein Prof
Chinenye C. Obadimeji Ph.D

*Lead City University, Ibadan,
Oyo State, Nigeria*

Introduction

Education encompasses everyone's' entire being; their actions, thoughts, and reactions to the environment and other external variables, for instance. Education is the process through which learners improve their wellness and selves by receiving and putting into practice instructions. Education was born out of the knowledge being passed down from one generation to the next by the knowledgeable to the unknowledgeable. There are three types of education: formal, informal, and non-formal education. The type of education is obtained from an organised institution, such as a school, is known as formal education. It is a time-limited education with curricular material and structure. Learner receives non-formal education to obtain professional training, such as that of a hairstylist. The length of a non-formal education curriculum and its content is somewhat flexible. Learning that takes place at home is referred to as informal education. For instance, the Yoruba ethnic group in Nigeria holds that a young girl child kneels to greet the parents or elders in a type of informal education. This type of schooling does not include paying tuition or spending money on supplies like notebooks and textbooks. Formal schooling is the main area of interest. UNESCO describes formal education as a standardized, intentional, methodical, and well-planned process carried out by both public and commercial institutions. Thus, education may include both regular education and special education (education for the disabled).

The education of learners with special needs ensures educating the learners by meeting their particular needs. It is a special kind of education designed to fulfil the needs of learners who may have had some learning challenges due to impairments. It is a particular kind of education designed to help exceptional learners reach their full potentials and make sure they contribute their fair share to the expansion and prosperity of the economy (Obani, 2004). Special education is a strategy for providing quality and evaluable education to learners with special needs (exceptional children) by recognizing and meeting those needs while integrating them into their surroundings. Learners with special needs are entitled to and qualify to receive assistance and accommodations that will help them realize their potentials (Mintz & Wasserman, 2020; Protopapes & Parrila, 2018).

Learning disabilities, speech and language impairments, autism spectrum disorders, emotional and behavioural disorders, cognitive impairments, physical



disabilities such as muscular dystrophies and cerebral palsy, sensory impairments such as vision or hearing, chronic medical conditions, and any other condition that affects the learner's right to an education are all examples of special needs. Such a group of learners might not be able to adjust to the inclusive or regular school environment. Thus, education may not be accessible to them. It is best to put these learners in a setting with other people of their sort or peers. These needs include, among other things, both services and accommodations, such as specialized teachers, specialized unskilled staff (cleaners, drivers, to mention few), and technology that will facilitate learning, such as the braille system that was created to help the blind read and write and will invariably help them in their educational pursuits. Specially created accommodations are made available for the learners to ensure that they obtain the high-quality education they are entitled to. This entails classrooms with a lower learners -to-teacher ratio, as well as specially created curricula and teaching resources to support teaching-learning activities as a result, in contrast to general education, where a learner may advance from one class to another, gradual advancement from one class to the next is done with a focus on striking a balance between the learner's educational needs and those of the environment (Pinto, Braines & Bakopoulou 2019).

Learners with severe disabilities attend schools for special needs education. These schools have five levels: kindergarten, primary, junior secondary, senior secondary and tertiary level. Learners with special needs education are taught using specialized curricula in environments with a large number of specialized teachers and a variety of resources that cater to their requirements. As a result, special needs education in schools costs around ten (10) times as much per student as standard education does (MEETS, 2001). Special need education is offered in some conventional schools as well. Special classes, which can be developed in some conventional primary and junior secondary schools, teach few courses for learners with relatively moderate disabilities. It might also be formed in a hospital for children with illnesses as a branch class. Learners with disabilities who are enrolled in and spending the majority of their time in conventional classes may also visit resource rooms a few times per week to get specialized education. Speech impairment, autism, emotional disturbance, low eyesight, hard of hearing, Learning Difficulties (LD), Attention Deficit or Hyperactivity Disorder (ADHD), and other disabilities are covered under this program (MEETS, 2001). It is crucial for today's special needs education learners to adapt to using technology across a variety of learning environments.

Technology is a specially designed instrument that may comfort learners. For instance, Braille is used by blind persons. It is a tool that blind persons who want to get better at school might find useful. Such a tool will support the teaching and learning processes (Kemsap, 2018). It is also known as an automated resource that can be employed in education (Abubakar, 2021). A tool designed expressly to perform a certain task is called an automated tool. An automated tool in special needs education might facilitate teaching-learning activities that would benefit



both the teachers and the learners in particular, such as a cochlear implant. This is an automated electronic instrument that could help with teaching and learning activities for persons with disabilities, such as the deaf, depending on the person's handicap type, and special needs technology. The Braille system, for instance, can be used by the blind for reading and writing. For blind persons, Braille is a written language that consists of characters that are felt as dots on the finger tips (Abubakar, 2021). Technology is a tool that modifies the natural world to serve human wants and desires. These requirements could include learning new things to improve the planet.

According to McWayne, Greenfield, Zan, Mistry and Ochoa (2002), technology is a device or a mechanism that facilitates communication, learning, and improves performance. For instance, the use of Refreshable Braille Display (RBD). RBD is an electrical computerized device that displays Braille characters. The Refreshable Braille Display allows the disabled (blind) to run their system using a series of key commands, including cursor routing keys or windows and screen reader commands. It can also locate where the cursor is and instantaneously read text. A Refreshable Braille Display is a device designed primarily as a user interface, which has a row of buttons that can be raised or lowered to show 40–80 Braille cells. In the twenty-first century, the world is changing, probably for the better. Persons with special needs are a part of society; therefore, they cannot be abandoned. They might also employ technology to improve their skills and prowess. Technology is the appropriate application of knowledge that could be utilized to facilitate the execution of many online tasks, including formulating plans for teaching-learning activities and communicating across distances (from Lagos to Ibadan) (Baylen & Dequilla, 2022). If and only if those with special needs are properly provided with the technologies that would enable them to become productive members of the community and thereby contribute to the country's economic prosperity, then there is ability in disability.

Literature Review

Education is essential for everyone. From conception to the grave, education exists. It is challenging for someone to live without education. It reveals information about a person's nature. For instance, schooling provides information on a person's intelligence (cognitive aspect), sociability, and capacity for environmental exploration. Education may include both regular education and special education (education for the disabled).

Special education, according to Benitez and Carugno (2021), is the educational setting whose curriculum is specially created for learners with special needs, who get an education while being as well integrated into the regular educational environment of their peers. According to Bryan and Barbark (2003), special education is a type of education that consists of various teaching-learning practices that are specially tailored for the needs of people with disabilities (PWDs) who have specially designed learning needs, and that are implemented by special education



teachers who have received the appropriate training. Special education is a type of instruction that specifically provides every child with the chance to learn. It is the form of education that considers a child's aptitude and prevents disability from becoming a barrier, giving such PWDs the skills they need to integrate into society without difficulty and become independent, successful, and self-reliant (Merchant & Ahmet, 2021). It is the type of education provided to individuals with specific needs in terms of a special setting, unique materials, special teaching aids, special teaching professionals, special non-teaching personnel, and also an invitation to make education accessible to all as a fundamental right of every citizen (Zigmond & Kloo, 2017). This kind of education is often referred to as inclusive education. It is a type of education that takes place in a unique setting, created for PWDs, as well as other learners, especially those who are at risk, in mind. A variety of teaching techniques are used in this type of education to meet the needs of PWDs who have specific learning demands that are taken into account by professionals (special education teachers rather than traditional teachers) (Bea Francisco, Hartman & Wary, 2020). It is a particular kind of education designed to satisfy the needs of the exceptional or disabled learners who may be deaf or blind, among other special needs.

Special needs education is a form of instruction for learners with disabilities that takes into account their unique educational needs and attempts to fully develop their capacities, independence, and social participation. This is done in a variety of ways, including resource rooms, special classrooms, and specialized schools called "Schools of Special Needs Education." All of these are not found in conventional schools. Special schools were explicitly founded according to several forms of disabilities, such as schools for the blind, deaf, and the intellectually, physically, and healthily challenged. However, learners with numerous disabilities are more common now than they were previously (MEETS, 2001). With the increasing number of learners with numerous disabilities, it is important that the resource room be equipped with technology for special needs education.

Technology is a tool that facilitates study or work. It is a device that helps learners with special needs education realize their full potential and consequently contributes to the growth of the country. La Shun (2017), defined technology as an item created by humans that uses their skills, knowledge, and creativity to create methods and procedures for the accomplishment of particular goals. Every human endeavour has a practical goal, and technology is the purposeful application of knowledge to that goal. It assists in altering or producing changes to the human environment, whether they are good or bad. It consists of supplies, devices, methods, and power sources that facilitate human living (Merchant & Ahmet, 2021). Technology is also seen as the ability to learn and create tools that are suitable for people's needs, enabling them to live fulfilling lives (Nick Waddell, is it compound name? otherwise only surname should be here 2021).

Despite the usefulness of technology in this era, persons with disabilities are confronted with some challenges. Thus, this chapter focuses on the challenges of



utilizing technologies in special needs education and to be discussed under the following sub-headings:

- i. Theoretical framework
- ii. Technology for people with special needs education
- iii. Advantages of technology for people with special needs education
- iv. Difficulties using technologies among people in special needs education

The usefulness of technology could be better explained using a theory known as technological determinism theory.

Theoretical Framework

The reductionist concept known as technological determinism theory postulates that a society's technology advances according to its internal logic of efficiency, influencing the evolution of the social structure and cultural values and, as a result, becoming a fundamentally anti-democratic force. Technological determinism theory has been thought to have been invented by American economist and sociologist -Thorstein Veblen (1857–1929). Theoretically, the technological advancements of a society shape its social structure, historical development, and cultural values. Its two main assumptions are that:

- i. technological growth itself follows a predictable, traceable path independent of cultural or political influences, and
- ii. society is organized by technology in a way that allows for continued technological development.

Nevertheless, the idea of technological determinism is still widely held in society. It is the primary driver of the transformation of society. When it comes to education and communication, technological innovation conveys the message that individuals and society need to change to foster unity, promote participation, and broaden the scope of influence. Whether they like it or not, people need to adopt technology that makes it simple for them to learn. Without even realizing it, individuals have already altered the way that they communicate and improved in teaching-learning activities.

Not to be left behind are those who oppose technological determinism. Karl Marx is regarded as one of the important critics. He held the opinion that while the development of technology may boost the output of products in an economy, it also slowly erodes the social culture, including its political and economic aspects. Consequently, it gradually transforms society. He offered an illustration of how the development of technology has altered culture. For instance, the introduction of improved agricultural equipment has steadily reduced the understanding of conventional farming methods (Smith & Marx; Merrit & Leo, 1994). As a result, technology is progressively affecting the degree of traditional knowledge. This implies that society is compelled to adopt new technology, enslaving human nature to technological advancement. Work on the social production of technology gave rise to a well-known critique of the idea of technological determinism (Social



Construction of Technology, (SCOT). According to SCOT study, society as a whole shapes innovation and its social effects through the influence of factors such as culture, politics, economic arrangements, regulatory frameworks, and other factors (Schroeder, 2007). Most of these critics examined technological advances from the perspective of their fields of expertise. Technology advancements, however, have the potential to diverge from traditional norms and influence how society views those with special needs education.

Technologies for People with Special Needs

A type of education known as special needs education is designed to help exceptional learners or a particular target group, such as those who are extraordinarily gifted or may have developmental problems, physical disabilities, or learning difficulties. It is a deliberate approach to instruct learners who require special education in a manner that could cater to specific needs. In this day and age, everyone needs technology including exceptional learners. Technology is a tool that facilitates work. For instance, Ahlan and Ahmad (2015) suggested that technology could support teaching-learning activities for exceptional learners, for example, OrCamMyEye Pro. This is a wireless device, which is connected to a set of glasses, enables those who are blind or visually challenged to read and identify others. It is a recently created wireless device that supports the Braille system (Stepko, 2021). Assistive Listening Devices (ALD), Augmentative and Alternative Communication Devices (AACD), and Alerting Devices (AD) are the three main forms of technology that can assist people with hearing loss or hearing impairment, according to the NIDCD.

- i. Assistive Listening Devices (ALD) assist in enhancing or raising the pitch of the desired sounds.
- ii. Argumentative and Alternative Communication Devices are tools that enable hearing-impaired or hard-of-hearing individuals to interact with others in a certain setting. It is a tool that allows two people to converse in the same space and has a keyboard, touch screen, and display panel. This kind of technology improves feedback and effective communication.
- iii. An additional one is an alerting device. A gadget known as an alerting device communicates by sound (Santoso, Astuti, Ratnawulan, Hakim & Khoeriah, 2020). It alerts learners with hearing loss to a variety of external sounds by using a loud tone, flashing lights, or even sensations. Other names for these gadgets include signalers and notification gadgets. The majority of devices work by transmitting signals to receivers placed in various surroundings. A visual alert is produced by the receiver. Baby cry signalers, carbon monoxide detector signalers, smoke alarm signalers, doorbell signalers, wake-up signalers, weather alert signalers, and telephone signalers are a few examples of signalers that are employed.

Intellectual disability is yet another. This happens when a person's intellectual capacity falls short of expectations. When compared to other learner of



his age, it can cause a learner's learning to progress relatively slowly. For instance, intellectual limitations that make it difficult for a learner to communicate, move, write, or comprehend without assistance may impede the teaching-learning process. This could be caused by an illness, an injury, or a brain disorder, such as Down syndrome, fetal alcohol spectrum disorder, or birth deformities, among others. A computerized design could help with this particular set of disabilities. The use of computerized training and software applications would enhance the developmental functioning of people with intellectual disabilities, according to Robb, Northridge, Politis and Zhang (2018). To use such assistive technology to enhance the intellectual development of such an individual, the computerized training requires the support of the parents or guidance. The kind of assistive technology to utilize depends on the severity of the intellectual disability. Software programs like Ginger, Grammarly, Paraphrasing Tools, and Co-Writer, among others, could be utilized to support this intellectual development through teaching-learning activities (Boot, Louw, Kuo&Chem, 2019). Researchers have identified with the value of technology to special needs education which among them is to provide lens for the blind to aid vision (Lynch, Singal & Francis, 2022).

Advantages of Technology for People with Special Needs Education

The advantages of technology for the PWDs education cannot be overstated; however, some are identified below:

- i. it lessens the obstacles that PWDs education must overcome. The exceptional learners need to exercise the various parts of their sense organs. For example, the deaf would need someone to interpret to him or her but with the aid of technology, it will lessen the obstacle of having an interpreter to demonstrate or interpret.
- ii. it makes it possible for the disable to blend with the populace. The world is occupied with two kinds of people: the disable and the able. Technology assists the disable to carry out their daily activities which enables them to fit with the populace and live a regular life alongside a person who is non-disabled.
- iii. it encourages PWDs education to reap the benefits of digitalization. Digitalization develops the society which improves the wellbeing of every individual. PWDs are also part of the society, hence, are not to be left behind. Therefore, it enables PWDs education to reap the benefit of digitalization.
- iv. Education for those with exceptional needs promotes self-worth. People are uniquely created. Through the use of technology, PWDs are better able to recognise and value who they are, which allows them to discover and realise their full potentials.
- v. it enables PWDs education to communicate and connect with diverse people. No individual can exist without communication. Communication is germane to every individual. It enables people with special needs education to interact freely with others around them.



However, utilization of technology amongst PWDs education has its peculiar challenges.

Difficulties using Technologies among People in Special Needs Education

As beneficial as technologies are to the growth of the economy for all citizens, persons with Special Needs Education encounter the following issues that prevent them from accomplishing their objectives. Some of them are:

- i. *Access to the Internet Network:* Having access to the internet allows one to arm oneself with accurate information. Concern should be raised about the special needs person's inability to use the internet to better themselves, which has led to a discrepancy between their statistics and those of the general population. Due to the unstable internet network, for instance, persons with Special Needs Education unlike the general population, who may simply go in search of the internet network, may not be able to roam around the environment to access the internet network.
- ii. *Education-related Problems:* Learning takes place during a teaching-learning process, which is a lifelong process. Depending on the kind of disability, individuals with disabilities may not be able to use technology (devices) in a learning environment. For instance, the blind can utilize a tool called Speech Recognition to access information with ease, but someone who is intellectually retarded (due to cognitive impairment, dementia, or traumatic brain injury) and unable to think independently may find this to be challenging. Because of their unusual limitations, it seems particularly difficult for people with mental retardation to use technology.
- iii. *Difficulties in the Workplace:* Due to the expense of purchasing specialized equipment for persons with impairments, the majority of organizations do not provide equipment(s) for PWDs in their workplace. Consequently, it becomes more difficult for them to support their families and find a white-collar job that pays well.
- iv. *Costs Incurred by People with Disabilities using Technologies:* Disability has many peculiarities and is not a death sentence. The specifics of their disabilities will also dictate the technology employed. The government would have to pay for the various technologies. In other words, purchasing technologies for individuals with disabilities will be expensive on the part of the government.
- v. *Nature/Type of Disability:* Persons with disabilities of many kinds, including those who are hard of hearing, deaf, or have cognitive impairments due to dementia, autism, or traumatic brain injury issues, may have trouble using technology. For instance, if a person need to press a button and the button is very small for a visually impaired person, it becomes a problem for PWDs. Another example is a person who is without both arms and may have similar challenges when using technology.



Summary

Everyone must have access to education. Education exists from conception to death. For someone to live without education is difficult. Education is essential to everyone's existence. Everyone is their total education. Regular education and special education (education for the disabled) are both possible forms of education. The exceptional and other people with special needs attend special schools (the blind, deaf, dumb, and gifted among all others). These people obtain this kind of education so that they can quickly develop themselves. A type of education known as special education is made up of various teaching-learning strategies that are specifically designed or adapted for the needs of learners with disabilities who have individually tailored learning requirements. Special education teachers who have undergone the necessary training use these strategies. Learners with special needs are eligible for and entitled to support and accommodations that will enable them to reach their full potentials. Learners for special needs education include learners who have learning disabilities, speech and language impairments, autism spectrum disorders, emotional and behavioural disorders, cognitive impairments, physical disabilities like cerebral palsy and muscular dystrophies, sensory impairments like vision or hearing, chronic medical conditions, and any other situation.

Special needs education is provided in schools for learners with wide ranges of disability.. Special education schools do have kindergarten, primary and junior secondary among others. Today's special education learners must be flexible in their use of technology in a range of classroom settings. Technology is a tool that makes studying or working easier. It is a tool that supports the development of the nation by enabling learners with special needs to reach their full potential.

Technology for people with special needs education require a deliberate approach to instruct learners who need special education in a manner that could cater to their specific needs. Difficulties using Technologies among people with Special Needs are; Access to the Internet network, education-related problems and the nature/type of disability among others.

Suggestions

Learners with special needs are part of the society and should be able to contribute their quota to the development of the society. In a bid to achieve that, the followings are made:

- i. for people with special needs to have access to the internet network, there needs to be a reliable and strong internet connectivity throughout the country.
- ii. to decrease traffic on a particular network, the government should foster an atmosphere that is beneficial to the internet service provider.
- iii. user-friendly and unobstructed design should be a priority for technology designers in building technology.
- iv. when creating a tool or gadget, technology or software designers should be able to take PWDs into account such that those with special needs won't be left out of the learning process.



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- v. government should have or build synergy with groups, persons, non-governmental organizations, and others for sponsorship to lower the cost of providing technology for people with disabilities.

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