

INFORMATION COMMUNICATION TECHNOLOGY: TRENDS IN THE EDUCATION OF PERSONS WITH SPECIAL LEARNING NEEDS.

By

FLORENCE T. GOSHIT

Federal College Of Education Pankshin

Department Of Special Education

08057900308, ufoghoshit@gmail.com

Abstract

The use of information and communication technology (ICT) as an educational resource is becoming more evident in the educational systems of most countries. When it comes to disability and education, ICT becomes a tool for social and educational inclusion. In recent years, globally including Nigeria, the view has been established that all students, regardless of any element of disability, should have equal access to learning opportunities just as their non-disabled peers. The use of Information and Communication Technologies (ICT) bridges the gap and contributes significantly to the learning process of all learners especially for learners with special learning needs in the learning process. ICT provides rich learning experiences for learners with disabilities. This paper refers to ICT application in the field of Special Education to include; assistive technology (AT), educational software computers, electronic delivery systems such as radio, television, projectors among others which provides opportunities to approach learning and socialization of individuals and removal of barriers to have access to knowledge by students with special learning needs.

Keywords: ICT, Assistive Technology, Disability, Accessibility, Persons with Special Learning Needs.

Introduction

Information and Communication Technologies have become an essential tool in the educational process of learning new methods of modern educational systems. It is believed that technology is the guarantee for the active participation of student in the learning process by transforming the learner from a passive listener to an active participant. ICT enables a more independent and autonomous approach to learning by the student base on his/her abilities and expectations.

Fytros (2005) observe that new technologies in special education enable people with special learning needs to manage and to overcome obstacles and alleviate the shortcomings and deficits experienced by learners with disabilities. ICT not only provides a new approach to learning, it also removes isolation by restoring social reality after giving them the opportunity to communicate with the environment and its interaction with ICT. ICT/AT provide students with disabilities with what they really need: step-by-step instruction, a highly successful teaching strategy, especially for students with autism (Chaidi, and Drigas, 2020). Special Education includes a wide range of disabilities: sensory, physical, mental, developmental, learning difficulties, speech and language problems as well as behavioral problems

ICT in the education of people with special educational needs is an important supportive tool in approaching the knowledge of people with disabilities and the use of software suitable for each disability adds value so that students have access to knowledge. There is software that is suitable for all students but also software that is used per category of student disability based on the characteristics and deficits of each disability. The aim is to present the knowledge to the

student with Special Educational Needs in a way that helps him but also to be actively involved in learning, to use them as supportive tools to promote his learning and autonomy.

This paper discusses ICT and special education, Assistive technologies for persons with special needs, gains of ICT/AT for persons with disabilities, barriers in the use of ICT/AT.

ICT /AT and Special Education

The terminology "Information and Communication Technologies" refers to the processing, transmission of information through various forms of representation (image, sound, video, symbols) as they are the means of conveying these messages. As mentioned by Komis (2013), these include the interface human computer (human-of computer interface), the Internet, multimedia, the hypermedia and modern software, continuously they are very friendly to the user.

Information and Communication Technologies now play an important role in people's daily lives in many areas, including education, training and employment and are an important tool for people with special educational needs with the main goal of improving the quality of life, reducing social exclusion and increasing the classroom participation of people with disabilities. In the field of education in particular, the aim of using ICT for students with disabilities or special learning needs is to give them equal educational opportunities, but also as a means to support these learning opportunities. Nevertheless, students with special learning needs belong to the group that face barriers to access to education and use of educational materials (European Agency for Development in Special Education, EADSE, 2013). As teaching with the help of technology is gaining more and more interest and ground in the educational community, it results in the development of a variety of learning educational activities and environments aimed at effective learning. The technologies used to support learning are referred to as "educational technology". Educational technology includes both electronic devices and ICT aimed at developing new cognitive skills (Styliaras and Dimou, 2015). For the integration, the use of any technology is foreseen with the main aim of supporting the student for the approach of learning. This technology may include popular technologies such as laptops, tablets, interactive whiteboards, mobile phones, etc. or more specialized assistive technologies (AT) that compensate for difficulties or limitations regarding the access of the student with special needs or special educational needs such as mobility devices, reading programs screen, alternative keyboards, assistive and alternative communication devices, etc. (EADSE, 2013). The rapidly evolving development and spread of telecommunications as well as computer hardware and software have played an important role in contributing to the integration of ICT into the various levels of education. The integration and consequently the use of ICT in education is due both to the evolution of the internet and the development of multimedia that have significantly differentiated the ways of representation (image, audio, video, text) as well as easy access to information (fast search, fast transmission and exchange). Also, informing society, with the increasing use of computers and networks in many areas of human activities of daily life (such as economy, public administration, entertainment, information, etc.). More so, Komis (2004) states that the important role played by the urgent need for lifelong learning and pedagogical renewal programs in the evolution of ICT use should be stressed.

Regarding the education of students with disabilities, the focus should be on ICT/AT as a tool for integration, so that everyone has equal opportunities in learning, accessibility of ICT/AT, and training in the use of general and specialized ICT/AT as well as monitoring their effectiveness (Chaidi, Athanasios, and Karagianni, 2021). These are the factors that according to research findings ensure the success of strategic programs and initiatives which can be used just as well and with the same effectiveness in special education. The emphasis here should be

on the use of ICT that will lead to learning through different paths and according to the capabilities, needs and the way it facilitates each student.

Access to and proper use of ICT are necessary conditions to give the opportunity to all students with individualized learning opportunities and differentiated teaching by applying the universal design for learning (learning for all), (UNESCO, 2015) The learning approach is based on the different needs of students through flexible objectives, methods, materials and assessment processes tailored to the specifics and needs of individuals with learning difficulties so that all students move forward on their own, from their own starting point and with their own pace to conquer the learning activity. According to Ikwen, Olayi and Akpan (2020), information is presented in a variety of ways, while curricula, objectives, methods, materials and assessment procedures are designed to meet student diversity and be flexible in adaptation and digitization and in particular, a variety of means of representation are provided so that students can choose different ways of acquiring knowledge. Also, multiple means of expression and means of engagement are offered in order to attract the students' interest and to create motivation for them to learn, but also to give them the opportunity to choose the way of presenting and capturing their knowledge.

The accessibility of ICT/AT devices should be issues to be addressed from the outset of designing the hardware or software development, taking into account the particularities and needs of the users to whom it will be addressing. Proper use of ICT in the short and long term requires the development of materials, software and teaching materials. Accessibility of learning materials promotes inclusiveness. The use of ICT in teaching should be achieved in order to promote the participation and cooperation of all students, with and without disabilities. Learning is a social activity; therefore the role of ICT is particularly important.

The integration and use of ICT/AT in inclusive education is generally recognized in terms of their contribution to the learning process and the ability they give to all students with or without disabilities to improve their performance and skill (United Nations General Assembly, UNGA, 2013).

ICT/AT allows students to approach learning in their own way to move at their own pace. That is, they contribute to the self-regulation of learning, which includes: goal setting, learning planning strategies, ways of organizing, coding and storing the necessary information, monitoring and control of cognitive functions, time management, self-motivation, evaluation, reflection and satisfaction by the result. Self-regulation is extremely important for students with disabilities and / or special educational needs in their efforts to cope with various difficulties and to achieve independent and active learning. Therefore, ICT would be useful to be accessible to meet personal learning needs, as the student is required to be able to support and use ICT in the best way to serve their needs (EADSE, 2013).

At the classroom and school level, the integration and use of ICT can effectively support the integration of students with or without disabilities, provided it provides equal opportunities to learning, promoting cooperation in teaching and problem solving and reduces inequalities and social and digital exclusion (Lee and Templeton, 2008., Chaidi., Kefalis., Papagerasimou and Drigas, 2021)

Assistive Technology.

Assistive technology (AT) is any item, piece of equipment software programme, or production system that is used to increase the functional capabilities of people with disabilities. AT helps people with disabilities learn, communicate, or function better (www.understood.org). In other words, all the technologies used to support the disabled are called "Support Technologies".

Assistive Technology can be categorized into:

a. Assistive technology devices and

b. Assistive technology services

Assistive Technology devices refer to any product, instrument, equipment or technical system used by a person with a disability, specially manufactured or generally available, that prevents, repairs, alleviates or eliminates damage, disability or defect While Assistive Technology Service is defined as any service that helps a person with a disability to select, acquire, or use an assistive technology device.

Assistive technologies are distinguished in high and low technological construction (high / low-tech). While low-tech devices are simple, cost low and do not require training, for example keyboards walking stick for the visually impaired, High-tech devices are mainly mechanical and electrical devices, which require training, have high purchase costs an example is the computer.

The age of technology explosion has provided a large number of devices, from simple and low technology to complex and high technology, from the list of which we are called to choose taking into account those that best serve the individual needs and skills of the individual that they will support. Examples of assistive devices/software for persons with special needs are as follows:

Mobility (Devices -Software), environmental control devices, Braille printers, CCTV magnifiers, Gaze detectors (-eye tracking) Hand / foot switches -pneumatic switches screen magnifiers, The hand / foot switch, tactile machine,

Benefits of ICT/AT to persons with disability

The gains of ICT/AT for persons with special needs cannot be over emphasized. The following are said benefits that enhance their learning and daily activities

- ICT is useful in improving a person's quality of life by enhancing effectiveness of teaching, developing life skills; complementing learning in special needs education, and exploring other related issues.
- ICT enables students with learning needs to gain access to the curriculum and support learning, and also provide a platform for teachers of students with disabilities to promote their students' skills.
- ICT can be compared to a magic stick that can help students with disabilities to get ahead through capacity building and empowerment, subsequently combating poverty among special needs persons within their communities, if appropriately planned, utilized and effectively coordinated.
- ICT is heralded as enabling PwDs to participate fully and to enhance the social and economic life of their communities. Combined with proper methodologies, it can offer individuals the capacity to compensate for physical or functional limitations.
- ICT is a significant means of bridging the gap in the of choice of career and learning opportunities for students with special needs.
- ICT offers the old and young alike an opportunity to overcome social barriers to interaction and communication that can be caused by the lack of provision for impairments or lifelong limiting illness.
- ICT has also been identified as playing a significant role in offering severely disabled people an increased degree of independence in their everyday lives.
- ICT provides persons with disabilities with an improved quality of life and offers them opportunity of accessing knowledge by adapting digital media to the nature of their disabilities.

Challenges of using ICT/AT

Integrating ICT into teaching and learning is a complex process and one that may encounter a number of difficulties. These difficulties are known as challenges. A challenge is defined as any condition that makes it difficult to make progress or to achieve an objective. According to Ghavifekr, Kunjappan, Ramasamy, and Anthony (2014). The following are some of the perceived challenges that have been identified regarding the use of ICT/AT tools in classroom

- i) **Limited accessibility and network connection:** the non-availability of the hardware and software or other ICT materials within the school would make teachers and persons with disabilities (PwDs) not to have access to ICT and AT materials. Sometimes the barriers could be due to insufficient unit of computers, insufficient numbers of copies of software, and lack of immediate Internet access. Having no access to the Internet during the school day and lack of hardware are barriers that hamper technology integration in schools
- ii) **Lack of or limited technical support:** Without a good technical support in the classroom, challenges will be encountered even with presence of ICT materials. PwDs will not be able to utilize effectively available ICT/AT materials in the absence of technical assistance. These technical barriers could include waiting for websites to open, failing to connect to the Internet, printers not printing, malfunctioning computers or any assistive technology. The lack of technical support may cause persons with disabilities to be discouraged from using ICT materials each time there is a breakdown
- iii) **Lack of effective training:** One of the barriers to the use of ICT in teaching was the lack of training. There are not enough training opportunities for teachers and PwDs in using ICTs in a classroom environment. The lack of training is a problem that can affect the implementing of new technologies in the education of persons with disabilities. One of the barriers to the use of ICT in teaching was the lack of training.
- iv) **Limited time:** Several recent studies indicate that many teachers have competence and confidence in using computers in the classroom, but they still make little use of technologies because they lack the time. Many of the new assistive technologies require a lot of time and patience in order to operate them.
- v) **Lack of teachers' competency:** Many of the teachers that teach PwDs lack the knowledge and skills to make use of the assistive technologies that will help to reduce the difficulties persons with disabilities may encounter due to their disabilities. The lack of technological competence becomes a barrier in the use of ICT/AT materials for PwDs.

Conclusion

Information and communications technology and assistive technology offer new opportunities for everyone, but these opportunities are specifically more significant for PwDs, who use assistive technology to enhance their learning and for their daily activities to a higher extent than people in general. Today's assistive technology, which is adapted to everyone's abilities, means that disabled persons are able to participate in all aspects of social life on more equal terms with people without disability than ever before. It is vital that people are able to benefit on an equal basis from the rapid development of ICT, to enable them to partake in an inclusive and barrier-free information society. The utilization of assistive technology has turned persons with special needs from passive receivers to active participants.

One of the opportunities for bridging the gap in the classroom learning is through the use of ICT and AT. Information communication technology and assistive technology for the development of disabled persons involve adopting appropriate techniques to obtain maximum benefit. In addition, the use of assistive technology (AT) can increase disabled persons' capabilities and independence both in and out of school settings.

Recommendation

- 1 It is important for Nigeria to initiate great efforts to integrate the use of ICT and AT in her educational system as a basis for ensuring equal participation of all Nigerians including those with special educational need.
- 2 Effort should be made by the Nigeria government to address issues affecting the accessibility of ICT/AT facilities. The facilities should be made available for use by both teachers and PwDs for an improved learning and social integration.
- 3 Both teachers and persons with special needs should be sent on training to acquire the knowledge and skills on how to operate the available ICT/AT.
- 4 Government should employ support staff that are competent in the technical operation of ICT/AT facilities in order to encourage its usage.

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