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Information and Communication Technology for Students with Special Needs: Challenges and Prospects

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This paper examined the challenges and prospects of Information and Communication Technology (ICT) for students with special needs. The paper highlighted the definition of ICT and its different forms. It also highlights the benefits of ICT to students with special needs. More so, the paper highlights the challenges confronting the use of Information and Communication Technology (ICT) for students with special needs in Nigeria. This paper also examined the prospects for effective use of ICT in meeting the needs of students with special needs in the classroom. Recommendations were made on how to achieve the effective use of ICT to meet the unique learning needs of students with special needs in Nigeria.

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INTRODUCTION

The importance of Information and Communication technology (ICT) and Assistive Technology in the education of the persons with disabilities cannot be overemphasized. The various devices of ICT used by the sighted should also be adapted to suit those with the different categories of special needs such visual impairment, hearing impairment, learning disabilities, intellectual disabilities, multiple impairments (eg.deaf/blind), speech and language impairment, gifted and talented etc. However, it is no longer the technology which restricts people's access to information and communication but our ability or inability to take advantage of it (Michael, 2002). This means that adequate exposure to such assistive technology would help students with special benefit maximally from classroom instruction, enable them to compete with their peers and also equip them to be able to face challenges of work life in the large society after school. Students with special needs are learners who have physical/sensory impairments, behavioural as well as intellectual impairments. These impairments usually pose learning difficulties to the learner which can be adequately managed using assistive devices. As enumerated by Byant D, Bryant B. and Raskind (1998), ICT provides opportunities for students with special needs to participate fully through promoting access to communication, learning and leisure regardless of the disability. Mores, ICT provides tools that deliver suitably challenging opportunities for all students if used creatively by the teacher (changing the way lessons are delivered). Students with special needs have unique learning needs that can only be accommodated (meeting

the unique needs) through effective use of ICT.

However, regular and continuous assessment of students with special needs is required to ensure that ICT tools or devices provide are suitable and appropriate. Training and support are inevitable for students with special needs as well as their teachers for effective use of these devices. To provide equal opportunities for students with special needs just like students without special needs, there is therefore a need to take advantage of this evolving digital trend.

ICT AND SPECIAL NEEDS EDUCATION

The term ICT is generally accepted to mean technologies that allow people and organizations to take advantage of the digital world. It is sometimes used synonymously with Assistive Technology (AT). However, ICT is used to represent a broader, more comprehensive list of all components related to computer and digital technologies than AT (Ferguson and Pratt, 2017). Students with special needs usually have unique learning needs due to their physical and sensory disabilities, learning difficulties and also those with emotional and behavioral difficulties. According to United Nations Educational Scientific and Cultural Organization (UNESCO) asserts that the keyways in which ICT can support educational opportunities for students with special needs are as follows: a) Identifying preliminary level of personal development (experiences and skills) that is to say the starting point of a student. b) Assisting in personal development by shaping new skill or updating existing ones. c) Improving access to information d) Over-coming geographical or social isolation via communication support and networks and also improving the image/perception of an area by enhancing motivation and awareness regarding the ICT benefits in special needs education. According to Lindstrom, Granlund and Hemmingsson (2012), students with special needs should be placed on an individual plan that would be beneficial to each student and focus on the aim of ICT usage. In addition, there is need to examine students' needs in terms of computer-based devices and also ensure students digital skills are fully utilized.

FORMS OF INFORMATION AND COMMUNICATION TECHNOLOGY

The various ICT devices available can be adapted to suit the unique learning needs students with different disabilities including physical/sensory disabilities, visual and hearing impairment. These devices can be used separately or in combination with other products, computers and other information and communication devices. According to Dikusar (2018), some categories of special needs don't allow students to use handwritten test

that is an integral part of traditional education. Therefore, using human speech recognition and synthetizing can avoid the necessity to use paper and pen during lessons especially for students with visual impairment due to vision loss. According to Lidstrom & Hemmingson, (2014), due to the diversity of students with special needs, there are variety of custom-made digital solutions designed according to the requirements of a particular group of students. Similarly, students with visual can use screen reader applications such as JAWS along with specially designed braille keyboards to use the computer. ICT tools and devices that can be used for students with learning disabilities enables them manage some learning difficulties such as spelling, frustration in reading and writing, increases self-worth and promotes self-esteem. Due to the fact that students with learning disabilities may have dyslexia, limited literacy and numeracy skills, ICT can be a great motivator that will enable students with learning disabilities acquire skills in reading, spelling and also mathematical skills. ICT tools for students with physical disabilities include communication aids, computer access devices and switches, software for alternative input options, talking word processors, wooden puzzles, etc. ICT tools and devices for students with visual impairment uses large clear font, adjust colours that can enable them get speech feedback for students with low vision and total blindness. These tools include screen magnifiers, screen readers, electronic braille, closed circuit television, voice recognition software, braille embossers. Talking calculators and refreshable braille displays etc. ICT tools for students with hearing impairment include word processors, concept keyboard, word list, clipart to illustrate writing, spell checkers and grammar checkers, etc. ICT tools for students with physical impairment include wheelchairs, adapted car seats, hand held GPS units, touch screens (Lindstrom, Granlund & Hemmingsson 2012).

Moreso, other ICT tools and devices include Closed Circuit Television (CCTV), Optical Character Scanner (OCR), Braille Embosser, Modified Cassette Recorder, Fusser, Electronic note-taker, adapted paper (raises surfaces, highlighted lines etc.), large monitors with increased font for ease of electronic text reading) E-book readers (provides text to speech with adjustable font size e.g. Amazon kindle, tablet, iPad etc.), concept keyboards, Text to Speech (TTS), wands, joysticks amongst others. Screen magnifiers can be attached to desktop computers desktop monitors, laptops and televisions. Text to speck and Speech to text software such as JAWS are programmes that convert text to speech(voice). Computer programs such as the Kurzwell Too converts text on the computer or from scanned pages to speech. In addition, electronic telescope (a system that allows the user to view enlarged images. It is a handheld visible video telescope which looks like a small camcorder. These devices, aids and tools promotes effective

instruction, facilitates reading, writing, memory listening, mathematical organization, building access (environment, educational), physical mobility as well as social interaction amongst others.

BENEFITS INFORMATION AND COMMUNICATION TECHNOLOGY FOR STUDENTS WITH SPECIAL NEEDS

The benefits of ICT for students with various special needs cannot be overemphasized. Students with intellectual, hearing or reading disabilities, impaired sight, dyslexia and other forms of special needs are now able to benefit maximally form ICT tools and devices by improving communication and language development, writing, enhance texts, symbols and pictures, access whole words, aid expression, recognize and organize ideas, enable students follow educational courses via digital and audio libraries (students can connect from home and read or hear the relevant books, without having to go to the local university or library), accessing their materials in various formats and well as resources via the internet. The following are benefits of ICT to students with special needs:

a.   ICT is aimed at stimulating more active classroom participation amongst students with special needs
b.   ICT enables disabled students to gain access to the curriculum and support learning and provides a platform for disabled trainers to promote their skills.
c.   Provides learners with special needs the opportunity to learn at their own pace. Provides feedback (encouragement of praise) and provides motivation to students with special needs at all level of education (Obakhume, 2008).
d.   Support student with special needs in developing their problem-solving skills.
e.   ICT helps to support students to access the whole curriculum through the provision of a wide range of software that can help specific difficulties in learning
f.   It helps provide a medium for differentiated activities/instruction.
g.   ICT can enhance pupils with special needs to practice skills, perform drills and assignment in an enjoyable way.
h.   ICT tools can make tasks more manageable, interesting, motivating as well as provide satisfying outcomes.

Similarly, according to Dikusar (2018) ICT provides greater flexibility for instructors, allows increasing the independence of students and freeing him/her from the constant need for direct teacher involvement. Moreso, it improved academic achievement of students with special needs. Several research studies (Noo-Ul-Amin, 2016; Lindstrom & Hemmingsson 2014; Brodin & Lindstrand, 2003; Brant D. Bryant B. & Raskind, 1998) have proven that ICT was beneficial to students with special needs in the areas of spelling, writing and communication.

CHALLENGES CONFRONTING THE EFFECTIVE USE ICTFOR STUDENTS WITH SPECIAL NEEDS IN NIGERIA

Despite the fact that ICT can benefit the persons with disability, only a small percentage of curriculum materials are currently available in alternative formats accessible to those with special needs (Worth, 2001). There is minimal awareness by stakeholders on the immerse benefits of ICT in teaching and learning for students with special needs in Nigeria. A study demonstrated that teachers were less willing to accept the technology if they believed that its use would require them to alter their teaching style (Dorman, 1998). Moreso, special teachers are no trained to use ICT devices and find it difficult to make available adaptations in improving teaching and learning for students with special needs in the classroom. In addition, the cost of ICT devices is a major challenge affecting the availability and effective use of ICT in teaching and learning in Nigeria. These devices are expensive and not easily available and accessible by parents, teachers and students with special needs. Moreso, funding is not readily available for schools to purchase, manage and maintain existing ICT devices in a developing country like Nigeria. In addition, the absence of consistent and adequate power supply in Nigeria is also another major challenge affecting the effective use of ICT devices. Several ICT devices require electricity for their effective usage and main channel for use and when this is not available or adequate it affects the use and maintenance of such devices.

Michael (2002) observed that it is important to create more awareness on ICT among the students with special needs, their parents, special education teachers, school administrators in special and inclusive schools, curriculum developers, the government, non-governmental orgarnizations as well as other stakeholders in the education of students with special needs. This is necessary because special teachers and other stakeholders lack knowledge about ICT training and is not engaged in special efforts in acquiring ICT skills.

Similarly, according to Williams, Jamali and Nicholas (2006), there has been a surprising lack of research into the usability of the various applications in ICT. Similarly, there is lack of attention on the application and usability of ICT in teaching and learning for students with special needs as compared to other groups of students without special needs in Nigeria.

PROSPECTS FOR THE EFFECTIVE USE ICT IN MEETING THE NEEDS OF STUDENTS WITH SPECIAL NEEDS IN THE CLASSROOM

ICT can contribute significantly to the teaching and learning of students with special needs irrespective of their unique learning needs. It is essential in providing students with special needs with the ability to perform specific tasks that would otherwise be impossible for them to perform. Several studies have shown that ICT is a valuable and effective tool for effective instruction in teaching and learning. Brodin and Lindstrand (2003) in a study revealed that there is a great need of education in ICT field and the lack of time, training and financial resources affects its effective usage. Stakeholders in special needs education are expected to understand the potential of ICT in supporting learners with special needs and also explore ways to provide adequate training in the effective use of ICT devices. More awareness on ICT among the students with special needs, their parents, special education teachers, curriculum planners and school administrators to ensure that the use of ICT devices is adopted is teaching students with special needs at all levels if education. Policies in special needs education should recognize the potentials for ICT to offer new opportunities, increase awareness as well as enhance effective use of ICT devices in schools that accommodate students with special needs. According to Noo-Ul-Amin (2006), learning approaches using contemporary ICTs provide many opportunities that favour the curriculum and promote competency and performance. Therefore, ICTs have an important role in changing and modernizing educational systems and also teaching and/or learning strategies for students with special needs.

RECOMMENDATIOS AND A WAY FORWARD

The following recommendations are therefore proffered;

- The adoption of effective use of ICT for students with special needs should be encouraged at all levels of education.
- There is need to carry out in-depth research studies on the use and application of ICT devices for various categories of students with special needs.
- Government should train every special education specialist in computer applications and teacher-training institutions should make computer literacy a compulsory requirement for special teachers in the regular schools.
- Adequate funds should be provided and made available for proper procurement and maintenance of already existing ICT devices
- The government, school administration, NGOs,

professionals in special needs education as well as other stakeholders are expected to collaborate

and work as a team to identify the various areas of needs of different categories of persons with special needs and also select technologies that will be appropriate and beneficial to them.
- Special education teachers should be adequately trained to understand the use and applicability of ICT devices to various categories of persons with special needs, make appropriate adaptations, make useful suggestions and recommendation on best ICT devices to parents, provide maintenance services as well as adapting instructional strategies that will promote effective learning.

CONCLUSION

The education of students with special needs should be given the opportunity to maximally benefit from teaching and learning instructions. The use of ICT is designed to establish equal access to learning opportunities and to support those with special learning problems. With the daily and continuous expansion of ICT in Nigeria, there is need to make these devices accessible to students with special needs. ICT will foster enhanced teaching and learning experiences as well as improving the general academic performance of students with special needs in Nigeria.

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