

ROLE OF DIGITAL LEARNING FOR EFFECTIVE EDUCATION OF STUDENTS WITH DISABILITIES IN NIGERIA

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Abstract

The role of digital learning in the education of the students with disabilities cannot be overemphasized. The various devices of digital learning used by the sighted should also be adapted to suit those with the different categories of special needs such as visual impairment, hearing impairment, hearing disabilities, intellectual disabilities, multiple impairments, speech and language impairment, gifted and talented among others. These impairments usually pose learning difficulties to the learners which can be adequately managed using digital devices. The paper now titled: role of digital learning for effective education of students with disabilities in Nigeria; have discusses, digital learning policy framework in Nigeria, digital and special needs education, forms of digital technology, National Information Technology Development Agency (NITDA) ICT policies, role of digital learning tools for students with special needs, challenges confronting the effective use of digital learning tools for students with special needs in Nigeria, prospects for the effective use of digital devices in meeting the needs of students with special needs in the classroom, and the way forward to the challenges confronting the use of digital learning devices respectively. Conclusion was drawn extensively therefore, for effective use of digital learning devices to be provided in all the assistive special need schools to improve their digital learning.

Keyword: Digital learning, Effective Education, Students with Disabilities, Challenges and Way forward and Role.

Introduction

Digital learning has become a new paradigm and a new philosophy in library services as well as educational sector with a mission to serve as a development platform for present day society based on knowledge. According to Olaniyi (2006) in Torruam (2012), digital learning is all about learning that occurs with the computer. In our contemporary world, the learning through the aid of a computer simply means digital or online knowledge acquisition through the internet or offline through CD-Rom etc. In other worlds, it is the use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. Dikusar (2018) define digital learning as the use of internet and e-learning technologies to create experiences that educate the learners in various sectors of learning. Digital has the potential to revolutionized the way we learn (Torruam, 2012).

An advances in digital learning have really revolutionized the way we learn in many ways; for instance, increasing access to post-secondary learning, improving the availability of educational resources and facilitating meaningful interaction among learners. Harnessing the power of digital learning (ICT) has become a critical strategy among institutions eager to offer an affordable, efficient and flexible learning environment for rapidly growing and diverse communities of learners. Many scholars have viewed digital education as alternative, sometimes inferior, education for people with limited access to traditional education or those who do not committed to deep learning (Rich, 2008).

In essence, the importance of digital learning 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 in Gomwalk & Abdulkareem, 2018). 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 digital devices.

As enumerated by Byant, Bryant and Raskind (1998), digital learning provides opportunities for students with special needs to participate fully through promoting access to communication, learning and leisure regardless of the disability. Digital learning 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 digital devices.

However, regular and continuous assessment of students with special needs is required to ensure that digital learning tools or devices provided 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.

Today, technology enhanced learning, including distance and online instruction, is recognised as a viable tool necessary for preparing citizens to participate in the technologically driven global environment. A multidisciplinary approach to digital learning pedagogical research recognizes the value of technology enhanced teaching and learning as critical in the mist of diverse strategies. Its centrality in the global marketplace has been enhanced by a new culture shared by many educators. A culture diametrically opposed to elitist views of education as a privilege. A culture rooted in the belief that a more open education system enables increased contribution to the global marketplace of ideas in the world of students with disabilities (SWDs). This new culture empowers SWDs (Students with Disabilities) of the world to share knowledge globally where diverse voices are often underrepresented. The culture has been exemplified by an open movement, with diverse champions from remote village classrooms to ivory towers. Therefore, this paper particularly dwells on the role of digital learning for effective education of students with disabilities in Nigeria.

Digital Learning Policy Framework in Nigeria

For a very long time successive governments in Nigeria have consistently formulated Policies which were directed towards ensuring that there are equal and adequate educational opportunities at all levels.

As far back as 1977, Government began searching for alternative models to the traditional conventional system, which was rather restricted and limited in scope. In response to the need for a more elastic and accessible model of education, Government opted for a semblance of digital learning educational system. Thus, it can be said that the foundation of digital learning educational system in Nigeria was laid through the National Policy on Education of 1977, subsequently revised in 1981.

The current National Policy on Education (NPE) recognizes the place of digital or e-learning educational system in achieving lifelong education and affirms that lifelong education shall be the basis of the nation's education policy. It went further to state that at any stage of the educational process after junior secondary education, an individual shall be able to choose between continuing full-time studies, combining work with study, or embarking on full time employment without excluding the prospect of resuming studies later. This envisaged the development of e-learning educational programs in the country. The NPE defined digital learning educational system as the mode of learning in which learners are removed in time and space from the teacher. It uses a variety of media and technologies to provide and/or improve access to good quality education for large number of learners wherever they may be.

According to the NPE, the goals of digital learning educational system are to:

- Provide access to quality education and equity in educational opportunities for those who otherwise would have been denied.
- Meet special needs of employers by mounting special certificate courses for their employees at their work place.
- Encourage internationalization especially of tertiary education curricula.
- Ameliorate the effect of internal and external brain drain in tertiary institutions by utilizing experts as teachers regardless of their locations or places of work.

Digital and Special Needs Education

The term digital as persee is generally accepted to mean technologies that allow people and organizations to take advantage in the global world. It is sometimes used synonymously with Assistive Technology (AT). However, digital is used to represent a comprehensive list of the components related to computer and technological devices 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 digital learning can support educational opportunities for students with special needs are as follows:

- Identifying preliminary level of personal development (experiences and skills) that is to say the starting point of a student.
- Assisting in personal development by shaping new skill or updating existing ones.
- Improving access to information
- 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 digital learning 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 digital learning 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.

National Information Technology Development Agency (NITDA) Digital Learning Policies

Nigeria started implementing its digital learning policy in April 2001 after the Federal Executive Council approved it by establishing the National Information Technology Development Agency (NITDA), the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realise the specifics of the country's vision of, "making Nigeria an IT capable country in Africa and a key player in the information society by the year 2005 through using IT as an engine for sustainable development and global competitiveness" (Torruam, 2012). This vision is yet to be fulfilled. Outlined below are some of the objectives of Nigeria's digital learning policy:

- To ensure that ICT resources are readily available to promote efficient national development
- To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the Information Age.
- To empower Nigerians to participate in software and ICT development
- To encourage local production and manufacture of ICT components in a competitive manner
- To establish and develop ICT infrastructure and maximize its use nationwide
- To empower the youth with ICT skills and prepare them for global competitiveness
- To integrate ICT into the mainstream of education and training
- To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life.
- To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector.
- To encourage government and private sector joint venture collaboration
- To develop human capital with emphasis on creating and supporting a knowledge-based society.
- To build a mass pool of ICT literate manpower using the NYSC, NDE, and other platforms as a train-the-trainer scheme for capacity-building.

Forms of Digital Technology

The various digital learning devices available can be adapted to suit the unique learning needs of 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 Dikumar (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 synthesizing 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. Digital learning tools and devices that can be used by 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, digital learning can be a great motivator that will enable students with learning disabilities acquire skills in reading, spelling and also mathematical skills. E-learning or digital learning 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.

- Digital learning 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.
- Digital learning tools for students with hearing impairment include word processors, concept keyboard, word list, clipart to illustrate writing, spell checkers and grammar checkers, etc.
- Digital learning tools for students with physical impairment include wheelchairs, adapted car seats, hand held GPS units, touch screens (Lindstrom, Granlund & Hemmingsson 2012).

Moreso, other e-learning tools and devices include Closed Circuit Television (CCTV), Optical Character Scanner (OCR), Braille Embosser, Modified Cassette Recorder, Fuser, 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 Kurzweil 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.

Roles of Digital Learning

The roles of digital learning 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 digital or e-learning or 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. However, the following are the roles of digital leanring to students with special needs:

- Stimulating more active classroom participation amongst students with special needs
- Enables disabled students to gain access to the curriculum and support learning and provides a platform for disabled trainers to promote their skills.

- 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.
 - Support student with special needs in developing their problem-solving skills.
 - 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
 - It helps provide a medium for differentiated activities/instruction.
 - Enhance pupils with special needs to practice skills, perform drills and assignment in an enjoyable way.
 - Make tasks manageable, interesting, motivating as well as provide satisfying outcomes.
- Similarly, according to Dikusat (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.

Challenges Confronting the Effective use of Digital Learning Tools for Students with Special Needs in Nigeria

Despite the fact that digital learning 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 in Gomwalk & Abdulkareem, 2017). There is minimal awareness by stakeholders on the immense benefits of digital technology 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 not trained to use digital 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 digital learning 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 e-learning 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 digital devices. Several digital 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, nongovernmental organizations 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 digital tools in teaching and learning for students with special needs as compared to other groups of students without special needs in Nigeria.

Some hurdles militating against the effective use of the digital learning tools in Nigeria, by Torruam (2012) are:

- Lack of qualified teachers to teach digital technological skills in schools: The demand for ICT learning has been tremendous and the number of teachers who are trained to teach ICT cannot meet the demand. There are more students willing to be taught computing skills than there are teacher to transfer the skills.
- Lack of computers: Computers are still very expensive and despite spirited efforts by the government agencies, NGO, corporate organizations and individuals to donate computers to as many schools as possible, there still remain a big percentage of the schools unable to purchase computers for use by their pupils.
- Lack of electricity: Many schools are still not yet connected to electricity; Nigeria being a developing country, the government has not been able to connect all parts of the country to the national electricity grid. Consequently those schools that fall under such areas are left handicapped and may not be able to offer computer studies.
- Cost to purchase: In a country with high rate of inflation, majority of the individuals and schools cannot afford to buy a computer and consider it as a luxury item, more expensive than a TV.

Prospects for the Effective use of Digital Devices Meeting the needs of Students with Special Needs in the Classroom

Digital devices 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 digital devices is a valuable and effective tool for effective instruction in teaching and learning.

Brodin and Lindstrand (2013) 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 digital devices is adopted is teaching students with special needs at all levels if education.

Therefore, policies in special needs education should recognize the potentials for ICT to offer new opportunities, increase awareness as well as enhance effective use of digital devices in schools that accommodate students with special needs. According to Noo-UI-Amin (2006) in Dikusar (2018), learning approaches using contemporary digital tools provide many opportunities that favour the curriculum and promote competency and performance. Therefore, digital learning have an important role in changing and modernizing educational systems and also teaching and/or learning strategies for students with special needs.

Way Forward

The application of digital learning for education of students with disabilities in Nigeria cannot be far from the following especially in consideration of the onset proposal for redesigning the minimum standard for Nigerian schools. This can be however, redeems as follows:

- The adoption of effective use of digital devices 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 digital 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 digital 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 digital devices to various categories of persons with special needs, make appropriate adaptations, make useful suggestions and recommendation on best digital devices to parents, provide maintenance services as well as adapting instructional strategies that will promote effective learning.
- Efforts should be made by Ministry of Education (at Federal and State levels) to post teachers skilled in ICTs to each school to impart digital learning skills to the students. Also the Federal Ministry of Mines and Power should work towards stabilizing electricity supply in Nigeria, and all schools should be made beneficiaries of ICT projects.
- The accreditation teams of the National University Commission (NUC) as well as the National Commission for Colleges of Education (NCCE) and the National Board for Technical Education (NBTE) should revise the syllabus of the Nigerian Universities, Colleges and polytechnics respectively to include virtual courses that will be internet based through a well established Learning Management System (LMS) tools such as Moodle and Blackboard.
- Government should provide special need schools with adequate information-technology facilities.

Conclusion

The education of students with special needs should be given the opportunity to maximally benefit from teaching and learning instructions. The use of digital learning 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. Digital learning 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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