

USE OF ASSISTIVE TECHNOLOGIES IN LIBRARIES BY PERSONS WITH SPECIAL NEEDS: A CATALYST FOR ACCESS TO QUALITY EDUCATION



MUSA, A.A. Ph.D¹

*Bayero University, Kano-Nigeria
P.M.B BUK 3011
maauyo.lis@buk.edu.ng*

AUWALU, D.Y.²

*Bayero University, Kano-Nigeria P.M.B BUK 3011
dansalegwale@gmail.com*

&

HASSAN, M.³

*Department of Special Education
School of Adult, Non-formal and Special Education
Federal College of Education-Technical, Bichi
P.M.B BUK 3011
sesgwale@gmail.com*



ABSTRACT

Assistive technology is viewed as a generic term used to describe assistive, adaptive and rehabilitative devices aimed at assisting people with special needs or expanding human functions or capabilities. This paper highlights the librarians' contribution on strengthening the use of Assistive Technologies to cater for the information needs of special needs library users with varying degrees of inabilities. The paper reviewed literature on the need for and significance of integrating assistive technologies for the attainment of Equal Access to Quality Information among library users especially people with exceptionalities. Information needed to actualize this paper was gathered from secondary sources of data which were obtained from textbooks, journal articles, conference papers and online sources. The content analysis was employed since the paper is a desk paper. This involves reading meaning into materials consulted for purpose of achieving a reliable conclusion. The paper also highlights the experiences derived by other developing countries from the integration of Assistive Technologies. Among other things, several strategies of library application of Assistive Technologies such as Braille embossers, Braille translation software, Tape Recorder, Talking calculator, screen magnifiers, Scan and read camera (pearl), and Voice note taker among others were briefly discussed. The paper concludes that engaging library users with special needs through the application of assistive technologies represents initiative that helps to build new opportunities for achieving a sustainable development goal especially in Nigeria, a country of Africa.

Keywords: *Assistive Technologies, Equal Access, Quality Education, Special needs library-users, Nigeria*

Introduction

Assistive Technology is an equipment that helps people with impairment do things more quickly, easily and / or independently. (Burgstahler 2016). However, observation and literature indicates that Nigerian libraries are faced with a serious shortage of assistive technologies to meet the unique informational needs of users with visual impairments. Some libraries lack appropriate and adequate sections and trained staff to handle technologies like Braille, audio and large print, as well as accessible assistive devices and technology. Some library staff are not taught the skills required to meet the information needs of blind and partially sighted users. Hence, the rate of access to library resources among users with visual impairments tends to be much less than for non-exceptional library users. Thus, for effective equal access to quality education among students with special needs, it became imperative to strengthened the Use of Assistive Technologies in Libraries so as to serve as a catalyst for Equal Access to Quality Education among Students with Special Needs particularly in Nigeria.

Library Requirements for Students with special needs

According to Fufure and Abbe (2020) special needs refer to those unique programmes, services, practices and materials whose provisions are fundamental to functional effectiveness of the exceptional individuals in the society. They are the requirement for adequate participation of exceptional persons in the mainstream of the society.

Unegbu (2006) viewed special people as those with significant sensory deficits or unusual high intellectual abilities that are not properly addressed in the regular programme. Kanu (2008) remarked that people with special needs are those generally referred to as exceptional persons, and they comprise children, youth and adults with one form of disability or learning difficulty or the other. These persons require special attention, special services, and other areas that could make life more meaningful.

Library users who are visually impaired have unique educational needs that sighted user do not require. Many of these library users need the assistance of facilities (aids) that facilitate access to information sources during their search. These types of students also require competencies which consist of:

- Compensatory academic skills, including communication modes; social interaction skills, recreation and leisure, use of technology, orientation and mobility.
- Independent living skills, career education and visual efficiency training.

Nevertheless, structuring facilities for people with visual impairment in an educational environment create an atmosphere that is safe, fair and respectful (Munro 2016).

All people with visual impairments are entitled to the independence and efficiency afforded by technology, including assistive technology facilities. Appropriate assistive technology enables such people to access information and to complete tasks efficiently, thereby enabling them to achieve the highest level of independence possible.

Use of Assistive Technologies by persons with Visual Impairment

Assistive technologies as defined by Maor, Currier and Drewry (2014) is a generic term used to describe assistive, adaptive, and rehabilitative devices for people with varying degrees of disability. They are aimed at assisting or expanding human functions or capabilities. These technologies range in complexity from sophisticated computerized communication systems and software programmes to a simple mobile phone and mobility.

Assistive technologies comprise a wide range of machines and equipment such as braille writing equipment/machines for example braille embosser, braille translation software, screen reader, screen magnifier, supernova reader magnifier software as well as tape recorder, smart view close circuit television, voice recognition software, among others (Maor, Currier & Drewry, 2014).

According to Faruk and Abdullahi, (2017) library information resources for visually impaired students are slightly different from those of the normal vision or unimpaired students. These include braille or embossed resources for legally blind students, enlarged characters or text publications for partially sighted, sound or audio recorded publication for both text to speech software, twin vision resources for partially sighted and other electronics, internet and assistive technology devices among others. Kin, Michael, and Mei (2011) pointed out that the physical strain involved for persons with visually impairment when having to input information, can be overcome by using speech recognition software.

Twin vision or dual language resources are resources that contain brailled materials and text with pictures in the same publication which enable users to sense and comprehend (Faruk & Abdullahi, 2017).

Audio output can be equipped so that it is converted to braille as well. Reading braille at the computer involves repetitive physical actions; having written material converted to auditory output conserves the individual's energy for learning new material (Kin, Michael, & Mei, 2011). Talking voice or sound recorded resource are the audio version of publications recorded on cassette, CD ROMs and even on the internet on e-resources (Faruk & Abdullahi, 2017).

Use of Assistive Technologies by persons with hearing impairments

Hearing impairment is an umbrella term which refers to a condition whereby the organ of hearing of an individual is disabled to the extent that it either makes difficult or precludes the understanding speech sound the ear with or without amplification for ordinary purposes of life (Babudoh, 2008). It is necessary to equip this group of people with the technique of enhancing their reading ability and sustaining their interest in reading (Babudoh, 2017). Therefore, for Patrons with Hearing Impairment ASGCLA (2019) reported that many computer users who have hearing impairments will not have problems using computer as Microsoft and Apple install programs that overcome some of the challenges presented by audio prompts. These include

- Sound Sentry program which enables user who cannot hear the embedded warning chimes of Microsoft products to see them as flashes.
- Instant Messaging—this mainstream technology allows staff and patrons who cannot hear to “talk” with one another.

Use of Assistive Technologies by persons with physical disabilities

Physical impairment refers to medical or traumatic sign of damage or or disfigurement to a specific vital human organ e. legs, hands, toes, fingers, etc. required for effective daily functions. A physical impairments lead to incapacitation or difficulty of use of movement or bodily maneuver for daily life function. Such special needs intervention are required at home, community, and training or educational setting to enable individuals with physical impairments to overcome their disabilities and handicaps (Ozaji, Unachukwu & Kolo, 2016).

According to ASGCLA (2019) Persons with physical disabilities may need assistance in doing some tasks that are involved in using the library facilities. Persons using wheelchairs or scooters will need a sturdy, safe workstation.

When using library computers, table height and monitor position should be adjustable. Other items that increase computer usability and safety among learners with physical disabilities include:

1. Special input devices such as trackballs, joysticks, switches, touch pads, and augmented keyboards e.g oversized keyboards with enlarged keys).
2. Madentec Tracker—users wear a tiny reflective dot on the forehead or glasses. A computer camera/tracker allows users to manipulate the cursor through head movement.
3. Softype—a software utility that replaces the functionality of a standard keyboard with a full-featured, onscreen keyboard (ASGCLA, 2019).

Users with physical disabilities according to ASGCLA (2019) may need assistance in doing some tasks that are involved in using the computer. Persons using wheelchairs or scooters will need a sturdy, safe workstation. In library section of such users, tables and monitor positions should be adjustable. Such special assistance include provision of special materials and equipment like hearing aids, and mobility aids (Fufure & Abbe, 2020). Without providing these unique needs, Fufure and Abbe viewed that exceptional persons will find it extremely difficult if not impossible to perform at a level commensurate with their abilities.

Assistive technologies and Library

Library as defined by Lawal and Yahaya (2020) is an institution responsible for the acquisition and technical processing of all information resources irrespective of their nature. On the other hand, Assistive technology as defined by ASGCLA (2019) is a term that describes electronic solutions that enable people with disabilities to live independently. According to Ferreira et al. (2017) Assistive technologies are applied in activities that require human performance, such as basic tasks of self-care and even professional, social, cultural, sports, and leisure activities.

The role of assistive technology facilities in educational programmes meets the needs of library users with the onslaught of e-mail, telecommunications, CD-ROM and the Internet. The availability of assertive technology has grown exponentially. Devices such as braille displays, braille printers, braille note takers and speech synthesizers facilitate blind users to avail themselves and to manipulate information otherwise only available to sighted persons (D'Andrea&Barnicle, 1997).

Faruk and Abdullahi (2017) remarked that brailled resources refer to publications in a system of writing whereby *raised dots* are used to represent letters or text and which are read by touching or grasp.

With the aid of these technologies library users experiencing blindness can hear computer-screen text, users with visual impairments can enlarge text, in order to enable independent reading. People who have difficulty manipulating a computer mouse can enter data, and those who cannot physically hear a computer prompt can view prompts.

There is also computer software that helps people with learning differences to see and hear the information displayed on the screen.

ASGCLA (2019) remarked that in an ideal world, all budgets would allow library professionals to provide electronic access for patrons of all abilities. In reality, library professionals should develop plans that allow for the purchase of essential tools that will help most people. It is also necessary to ensure that the staff is aware of available tools and that they are properly trained to use them.

World Health Organization and UNICEF (2015) brought the following as examples of assistive technologies that can help children attain their information rights among others:

- Protective headgear can ensure the physical well-being of children with epilepsy and enable them to participate in activities important for social well-being
- A pressure relief cushion in a wheelchair can protect a child with paralysis from pressure sores and associated fatal infections.
- A communication board can support a child with speech difficulties to express herself.
- A screen reader can make it possible for a child who cannot see to access information on the web

Ferreira, Sampaio, Sampaio, Gutierrez, and Almeida (2017) highlighted that assistive technology is an interdisciplinary area of knowledge, which offers products, resources, methods, strategies, practices and services that promote the functionality of people with disabilities, impairments, or reduced mobility, aiming at their autonomy, independence, quality of life and social inclusion. Its development and deployment can be considered an attempt to neutralize the barriers caused by disability. Assistive technology is related to the quality of life of people with disabilities as it facilitates

and enables the performance of activities, promoting autonomy and independence, and thus creating individual and social positive effects.

Access to the same things that other people have is a right that cannot be taken from people with disabilities, even if the mode of organizing the activities is modified (Ferreira et al., 2017). This is because, they are those whose learning difficulties or disabilities compel them to require additional help in order to achieve their full educational potentials within the curriculum.

In addition, Ferreira et al. (2017) remarked that People with hearing or visual disabilities can participate in conferences with videos and spoken lectures. Braille, LIBRAS (Brazilian Sign Language), audio description, closed-captions, the DAISY system for books, and other adjustments of information are available, but used rarely (by television stations, book publishing houses, telephone companies, and conferences).

Challenges Associated with the Use of Assistive Technologies in Libraries by persons with Special Needs

1. Lack of cooperation from other staff in dealing with special needs people
2. Lack of proper funding to procure equipment and train library staff in special needs library services
3. Negative attitude of members of public towards special needs persons
4. Non-availability or inadequacy of specialists to handle special needs library users effectively

Way Forward

The paper recommends the following:

- Provision of adequate funds for library resources by the federal government.
- The government should re-assess and maintain enhanced qualitative assistive technologies and formulate standard policy for the establishment of special needs section in every library.
- Provision of adequate library facilities to cater for the needs of learners with special needs e.g Braille embossers, Braille translation software, Tape Recorder, Talking calculator, screen magnifiers, Scan and read camera (pearl), and Voice note taker

- Organizing regular workshops and seminars by librarians, special education teachers and information specialists that will serve as educational forum where special needs people irrespective of disabilities can listen to information on deposited in their libraries among others.

Conclusion

If qualitative information access is to be sustained in Nigeria, people with exceptionalities need to be constantly carried along, informed and be equipped with information resources around them. This can be facilitated by strengthening the provision of assistive technologies in our libraries where every type of users can access or have the information needed to develop themselves for future.

Libraries have made enormous contribution in the area of research, providing useful information, complementing education, improving self-development, complementing teaching and learning process, supporting health service delivery, facilitating policy formation, etc.

For Nigerian libraries to thrive in this era, they must make conscious effort to incorporate assistive technologies into all their operations and their staff should be trained in line with detect of new technologies to transform themselves in the rudiment of quality information provision for all category of users.

References

- ASGCLA (2019). Assistive Technology: Overview. Retrieved Sunday, February 16, 2020 from: <https://www.asgcladirect.org/resources/assistive-technology/>
- Babudoh, G.B (2017). How to promote lifelong learning for students with congenital and profound hearing impairment. In Sunday I. Elemukan and Aundu E. Ugo [ed.] Sustainable Development for Millenium Accessibility for Persons with Special Needs in Nigeria. Ibadan: Glory-Land Publishing Company.
- Babudoh, G.B (2017). Rudiments of Auditory. Jos: Departments of Special Education and Rehabilitation Sciences, University of Jos.
- D'Andrea & Barnicle, (1997). Compensatory Skills - Texas School for the Blind and ... Retrieved from https://www.tsbvi.edu/attachments/1170_Lohmeir.doc.*
- Faruk, B.L & Abdullahi, A.S (2017). Availability of Library and Information Resources and Services to Students with Visual Impairment in Special*

- Education Secondary Schools in North Western Nigeria. Bayero Journal of Education in Africa, 6(1) 81-94*
- Ferreira, R. S. Sampaio, P. Y. S, Sampaio, R.A. C, Gutierrez, G. L. & Almeida, M. A. B. (2017). Assistive technology and its relationship to quality of life of people with disabilities. *Rev Ter Ocup Univ São Paulo*. 2017 Jan.-Apr.;28(1):54-62.
- Fufure, H.G., and Abba, L. (2020). Children with Special Needs and Regular Classroom Work: Issues and Challenges. *Huda-Huda: A Multi-Disciplinary Journal of Languages*, Vol. 12 No. 2 July, 2020.
- Kanu, S. A. (2008). Special Needs Education in Perspective. In A. Olabisi (ed) *Child Care and Special Needs Education in Nigeria*. Jos: Cente for Learning Disabilities and Audiology.
- Berry, K. (n.d) Assistive Technology for Visual Impairments or Blindness. Oklahoma Able Tech (video). Retrieved from: www.okabletech.okstate.edu
- Lawal, H. & Yahaya, A.D. (2020). Perception, Access and Use of Electronic Databases among Undergraduate Students-Users of Umaru Musa Yar'adua University Library, Katsina State, Nigeria. *International Journal of Applied Technologies in Library and Information Management* 6 (1) 04 - 33 – 42
- Maor,D., Currier, J., & Drewry, R. (2014). The Effectiveness of Assistive Technologies for Children with Special Needs: A review of Research Based Studies. In *technology and Students' Special Needs: New Opportunities and Future Generations*. New Delhi: Routledge
- Ozaji, E.D, Unachukwu, G.C., & Kolo, I. A. (2016). *Modern Trends and Practices in Special Education*. Lagos: Foremost Education Service Ltd.
- Burgstahler, S. (2016). Working Together: People with Disabilities and Computer Technology. Retrieved from <http://www.washington.edu/doi/working-together-people-disabilities-and-computer-technolog>
- Unegbu, J.J. (2006). Service Provision for Special Needs Children. In E.d Ozaji, 1.0 Ezra N.E Ezeani and M. Abednego (eds). *Contemporary Issues in Special Needs Education*. Jos: Deka Publishers.
- Vosniadou, S. Ioannides, C., Dimitrakopoulou, A. & Papademetriou, E. (2001). Designing learning Environments to promote conceptual change in science, learning and instruction,11 381-419 retrieved from <https://books.google.com.ng/books>
- World Health Organization & UNICEF (2015). *Assistive Technology for Children with Disabilities: Creating Opportunities for Education, Inclusion and Participation*. A discussion paper