



**Assistive Technologies and Special Needs Users in Libraries: Investigating American  
University of Nigeria**

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**Abstract**

*The study examined Assistive technologies and special needs users in libraries: investigating American University of Nigeria. The study was guided by four objectives. The study adopted a descriptive survey design. The population of the consisted of all library staff of American University of Nigeria. Total enumeration sampling was used to select 7 librarians. A questionnaire was used as the method of data collection and the data was collected online using Google Forms. The data was analysed using descriptive statistics of frequency, percentage, and mean. The findings of the study revealed inadequate availability of assistive technologies in the library studied, low level of utilization of assistive technologies in the library studied. Further, assistive technologies were used only for access to information and readers services and the challenges in the provision and utilization of assistive technologies in AUN library were inadequate power supply, skills by users in using the technologies, inadequate skills by librarians in the use the technologies, inadequate fund for purchase of the technologies and maintenance, inadequate support by librarians to users and availability of assistive technologies. The study recommended that the library should provide enough assistive technologies in the library for inclusion of persons with special needs in the use of the library, library staff should assist persons with special needs to enable them to effectively make use of the available assistive technologies and awareness programs should be put in place by the library to educate users that assistive technologies can be used for different purpose.*

**Keywords:** *Assistive technologies, special needs users, academic library and American University of Nigeria*

## Introduction

Information in the life of an entity fosters influence; as such, it is important to the success of every aspiring individual, and it cannot be undervalued. Timely and credible information determines, to a very large extent, one's success and future development. Every person, regardless of status, race, gender, age, and physical challenge, deserves the right to access information for decision making and the creation of knowledge (Omah, Solomon, & Kente, 2023). Academic Libraries play a crucial role in providing an atmosphere that enables people to acquire knowledge, information, and education. According to Omah, Solomon, and Kente (2023), academic libraries are vital service institutions, and they provide their users with different kinds of resources beneficial to them and satisfy their information needs. Besides, users are of different types with different requirements and needs for information, and the academic libraries have to meet all of their obligations to achieve user satisfaction goals.

Special needs users are the ones cannot conventionally access information in the same manner their unimpaired colleagues do, due to partial to total inability to see and observe information; partial to total inability to process oral information as a result of hard of hearing and deafness; and the weakness, pain, limitations of muscular control such as involuntary movements, lack of coordination, limitations of sensation, joint problems or missing limbs as a result of loss of muscular endurance, the paralysis and amputations (Dominic, Joshua, & Eyitayo, 2020). The advent of the electronic age and breakthroughs in modern technologies have brought an array of Assistive technologies for special needs to use to search and get information in the library for effective service delivery.

Assistive technologies are technologies that are specifically created, developed, and adapted or modified in a specific way to help people with special needs overcome challenges, enhance their functional independence, and be able to carry out tasks independently (Vincent, Okeowo, & Ariyo, 2024). Assistive technologies impact the ability of special needs users to perform basic life functions such as hearing, seeing, and mobility, and enhance their functional performance to complete tasks that seem difficult or impossible for them. Assistive technologies are available as hardware, software, and web-based resources, and can be computer hardware or software or an electronic device, including alternative formats of information (Alberta, Philip & Duffour, 2020). Assistive technologies (ATs) are the physical and digital technologies specifically created, developed, or modified to facilitate information access by users the special needs.

University libraries serve as a positive learning environment for all users in the academic community, fulfilling their mandate of supporting the teaching, learning, and research activities of students, staff, and other library users in the academic community. It serves different groups of users: those without special needs and those with special needs, such as the physically challenged, and those with different impairments. It is the duty of the library to ensure that all users with special needs are served just like those without special needs as stated by the second law of library “every reader, His or Her book” (Loan, 2019) in other words, every library user should have access to the needed information.

### **Statement of Problem**

Globally, assistive technologies play a crucial role in promoting inclusivity for special needs users in libraries. Libraries serve as essential hubs for education, research, and personal development, yet many individuals with disabilities face significant barriers in accessing information resources (Musa, Auwalu, & Hassan, 2021). The incorporation of assistive technologies such as screen readers, braille displays, and adaptive software has been identified as a fundamental approach to ensuring equitable access to library services. However, despite advancements in digital accessibility and inclusive library services worldwide, challenges persist, particularly in developing nations, where infrastructural, financial, and policy-related constraints hinder the adoption of assistive technologies (Musa et al, 2021).

In Nigeria, the need for assistive technologies in libraries is even more pressing. As of 2020, approximately 25 million Nigerians were estimated to be living with one form of disability or more (Uduu, 2020). This statistic shows the significant proportion of individuals who face exclusion due to physical, sensory, or cognitive impairments. The exclusion of persons with disabilities from mainstream educational and social services, including libraries, limits their ability to acquire knowledge, engage in lifelong learning, and contribute meaningfully to society. The special needs users form part of the heterogeneous clientele who seek library services to fulfill their educational, social, and leisure needs. However, their ability to access library resources effectively is often hindered by inadequate assistive technologies (Abubakar & Adebayo, 2021).

Many libraries in Nigeria, including academic institutions, have inadequate facilities such as braille books, text-to-speech software, and mobility aids, making it difficult for visually

impaired, hearing-impaired, and physically challenged users to utilize library services optimally, as supported by a study by Igwela and Opara (2020). The American University of Nigeria (AUN) library, being a leading academic institution in Nigeria, has a responsibility to provide inclusive services that cater to the diverse needs of its users. Further, it appears there is no empirical evidence on the extent to which AUN's library has integrated assistive technologies and the challenges faced in their implementation. Thus, this study seeks to examine Assistive technologies and special needs users in libraries: investigating the American University of Nigeria

### **Objectives of the Study**

The major objective of the study is to examine Assistive technologies and special needs users in libraries: investigating the American University of Nigeria. The specific objectives of the study are:

1. To ascertain the available assistive technology for special needs users at the American University of Nigeria
2. To determine the level of utilization of assistive technologies for special needs users at the American University of Nigeria
3. Find out the purpose for which assistive technologies are used by special needs users at the American University of Nigeria
4. Find out the challenges faced in the provision of assistive technologies for special needs users at the American University of Nigeria

### **Questions of the Study**

The following questions guided the study

1. What are the available assistive technologies for special needs users at the American University of Nigeria?
2. What is the level of utilization of assistive technologies for special needs users at the American University of Nigeria?
3. What is the purpose of the use of assistive technologies for special needs users at the American University of Nigeria?
4. What are the challenges faced in the provision and utilization of assistive technologies for special needs users at the American University of Nigeria?

## Literature Review

**Concept of Special needs:** Special needs or users are people who are not physically fit to get access to library resources or who may not, because of their nature, use the conventional information resources like every other library user. A special user or patron, according to Igwela and Opara (2020), is an individual who cannot make use of information resources in the library without adaptive equipment (augmented or assisting equipment or resources). It is also a situation where there is an inability to do what is considered normal for a non-disabled person. The term special needs in the context of library services, as identified by Abdelrahman (2016), cited in Okeke and Emmasiegbu (2024), is connected to the needs of people who cannot make use of conventional libraries, library materials, and services. They need assistance to navigate through the information materials available in libraries and new technologies in libraries, which have increased access to communication and information globally. They are regarded as special because library services are provided to them with special materials, activities, equipment, and care. This group of people needs specialized information in order to effectively manage their lives and survive in society.

**Assistive technology:** According to Goddard (2018), Assistive technology is electronic and non-electronic or mechanical solutions that enable people with special needs to live independently. The American Library Association defines Assistive Technology as computer-based technology used to make it compatible with a specific type of person, such as persons with disabilities, and enhance their potential. In simple words, assistive advances involve gadgets, items, etc., that are utilized to upgrade or improve the practical capacities of differently-abled people. UNESCO (2006) defines Assistive Technology as a term that refers to the availability of assistive and adaptive devices to assist people with disabilities and equipment products that improve, enhance, and maintain the functional abilities of persons with disabilities. Sanaman & Kumar (2014), it is a device or a computer-based accommodation that helps an individual with special needs to work around or compensate for a disability and enhance individual ability. Lastly, Coleman (2011) defined Assistive Technology as anything that helps a student with a disability to perform a task that he or she otherwise would not be able to perform or to increase the efficiency with which the task is performed.

Odigie and Okube (2021) assessed the availability and roles of assistive technologies in libraries of Kogi State. Quantitative research methodology and survey design were adopted,

and an online questionnaire was structured with Google Forms and administered to the Kogi State Library WhatsApp group and individual emails. The study found that emphasis was placed on certain assistive technologies, like Computers and LCD projectors, while majority of the assistive technologies were not present at the institutions. The study further found that the provision of equal opportunity and the rendering of library service to users with the use of these technologies were some of the roles of assistive technology.

Okeke and Emmasiegbu (2024) determined the availability of assistive technology by special needs users in public libraries in South-East, Nigeria. A mixed-methods research design was adopted for the study. A census sampling technique, which sampled the entire five public library headquarters in Southeast Nigeria (Anambra, Abia, Imo, Enugu, and Ebonyi), was adopted for the study. The findings of the study indicated that public libraries in the south-east make available more non-electronic assistive technologies than electronic assistive technologies. Furthermore, public libraries in Anambra, Abia, and Imo states seem to be better off with regards to the availability of assistive technology for special needs users.

Alabi and Okiki (2023) investigated the assistive technology preference of students with visual disabilities and the approach academic libraries should adopt in procuring assistive technologies. The study adopted a quantitative research method, with a survey as the research design. Using the total enumeration method, an online questionnaire was used to obtain information from 151 students who voluntarily agreed to partake in the survey. The study found that COBRA, ZoomText, Supernova, and Dragon Naturally Speaking are the most preferred assistive technologies (software). Handheld scanners and braille keyboards are the most preferred assistive technologies in the hardware category by visually challenged students.

Obim and Akpokurerie (2022) explored the utilization of assistive technology for effective school library service delivery to students with disabilities in Nigeria. The study revealed that there is inadequate availability of assistive technologies for effective school library service delivery to students with disabilities in Nigeria. Also, the extent of utilization of assistive technologies for effective school library service delivery was very low, except for braille technology and Hearing Aids. The major challenges associated with the utilization of assistive technology for effective school library service delivery to students with disabilities in Nigeria are inadequate support from the government, inadequate assistive technology in

the school libraries, ranked together with inadequate funding of the school libraries, and unstable electric power supply.

Isiaku, Abdullahi and Nweke (2021) found out that effective utilization of assistive technologies is constraint by many challenges, the major of which are inadequate availability of assistive technologies, inadequate trained instructors to teach students with disabilities how to utilize assistive technologies, inadequate planning and collaboration time for instructors, inadequate technical assistance from the vendor or manufacturers, lack of cooperation between the school and the family of students with disabilities, inadequate ICT specialist to teach students with learning disabilities, and limited flexibility in training options for students with disabilities.

## **Methodology**

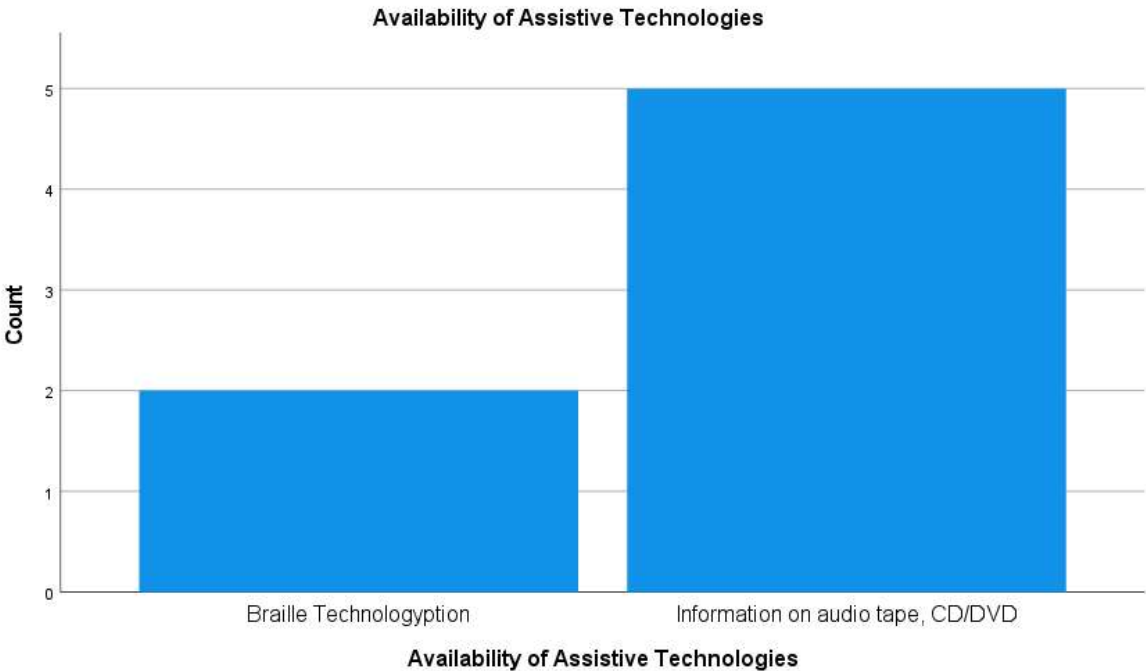
**Research design:** The study made use of a descriptive survey. According to (Creswell & Creswell, 2017), descriptive research design is a type of research project that aims to obtain information to systematically describe an object, situation, or population. It helps to answer questions about what, when, where, and how about a research problem, rather than why. The design will help the researcher to collect data and examine Assistive technologies and special needs users in libraries at the American University of Nigeria.

**Population of the Study:** A population is a cornerstone in research methodology, encapsulating a collective of individuals who exhibit shared characteristics within a defined geographic or institutional domain (Casteel & Bridier, 2021). The population of the study consisted of all librarians in the American University of Nigeria library. The population of the study consisted of 7 librarians. Sampling is the process of choosing a sample of a population from an individual or a large group for a certain type of research objective (Makwana, Engineer, Dabhi, & Chudasama, 2023). Total enumeration technique used by the study.

**Instrumentation:** The study used a questionnaire as the instrument for data collection. The instrument was titled “Assistive Technology and Special Needs Questionnaire” (ATSNQ). The questionnaire will be divided into section five sections.

**Method of Data analysis:** The data collected was analyzed using descriptive statistics of percentages, frequencies, and mean via Statistical Package for Social Sciences (SPSS). The mean of 3.0 was used as the benchmark for decision making.

**Data Presentation and Discussion of Results**



**Figure 1: Availability of Assistive Technologies**

The findings revealed that Braille technology and information on audio tape and CD/DVD were the only assistive technologies in the AUN library. The findings agreed with Odigie and Okube (2021), who assessed the availability and roles of assistive technologies in libraries of Kogi State. The study found that emphasis was placed on certain assistive technologies, like Computers and LCD projectors, while the majority of the assistive technologies were not present at the institutions. Similarly, Obim and Akpokurerie (2022) explored the utilization of assistive technology for effective school library service delivery to students with disabilities in Nigeria. The study revealed inadequate availability of assistive technologies for effective school library service delivery to students with disabilities in Nigeria.

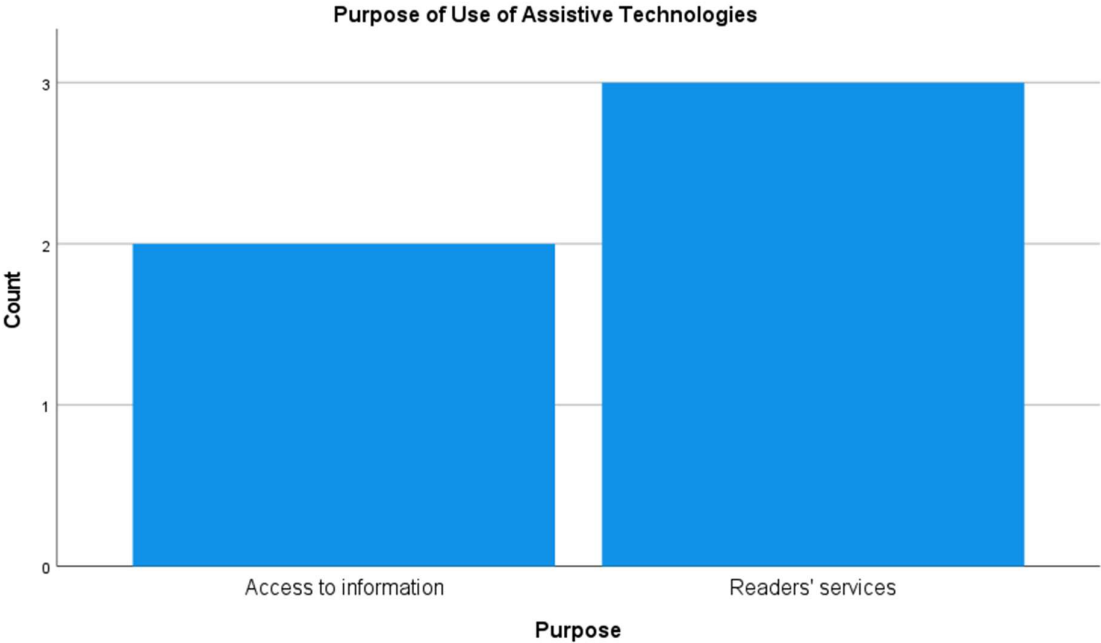


**Table 1: Level of utilization of assistive technologies**

| Items                                                                                        | HU       | MU       | LU       | NU       | MEAN |
|----------------------------------------------------------------------------------------------|----------|----------|----------|----------|------|
| Braille Technology                                                                           | 2(28.6%) | 2(28.6%) |          | 2(28.6%) | 2.57 |
| Talking Dictionary                                                                           | 2(28.6%) | 0        | 3(42.9%) | 2(28.6%) | 2.29 |
| Hearing Aid                                                                                  | 4(57.2%) | 0        | 1(14.3%) | 2(28.6%) | 2.57 |
| Magnifying glass, illuminated magnifier, electronic reader or closed-circuit television (CC) | 4(57.2%) | 0        | 1(14.3%) | 2(28.6%) | 2.29 |
| Screen Reading Software                                                                      | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.29 |
| Math Talk                                                                                    | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.00 |
| Text-to-Speech technology                                                                    | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.29 |
| Video Magnifiers                                                                             | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.00 |
| Proofreading software                                                                        | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.71 |
| Information on audio tape, CD/DVD                                                            | 0        | 3(42.9%) | 4(57.2%) | 0        | 2.43 |
| Tactile online picture books                                                                 | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.00 |
| Electronic glass doors marked to warn visually impaired persons                              | 0        | 0        | 5(71.4%) | 2(28.6%) | 1.71 |
| Specialized Alerting device                                                                  | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 2.00 |
| Math simulation                                                                              | 0        | 4(57.1%) | 1(14.3%) | 2(28.6%) | 2.29 |
| Writing Frame                                                                                | 2(28.6%) | 2(28.6%) | 1(14.3%) | 2(28.6%) | 2.57 |
| Signalling Device                                                                            | 0        | 4(57.1%) | 1(14.3%) | 2(28.6%) | 2.29 |
| Adapted Chairs and Tables                                                                    | 2(28.6%) | 2(28.6%) | 1(14.3%) | 2(28.6%) | 2.57 |
| Grand mean                                                                                   |          |          |          |          | 2.28 |

The findings shows the grand mean of 2.28 implying that he Braille Technology, Talking Dictionary, Hearing Aid, Magnifying glass, illuminated magnifier, electronic reader or closed-circuit television (CC), Screen Reading Software, Math Talk, Text-to-Speech technology, Video Magnifiers, Proofreading software, Information on audio tape, CD/DVD, Tactile online picture books, Electronic glass doors marked to warn visually impaired persons, Specialized Alerting device, Math simulation, Writing Frame, Signalling Device and Adapted Chairs and Tables were underutilized in the library. The findings corroborated that of Obim and Akpokurerie (2022) explored the utilization of assistive technology for effective

school library service delivery to students with disabilities in Nigeria. The study revealed that there is inadequate availability of assistive technologies for effective school library service delivery to students with disabilities in Nigeria. Also, the extent of utilization of assistive technologies for effective school library service delivery was very low, except for braille technology and Hearing Aids.



Among the different purpose Reader’s services, References service, Lending services, Optical services, Braille services and Access to information. Only access to information and readers services was identified as the purpose for use of assistive technology in AUN library.

**Figure 2: Purpose of use of assistive technologies**

**Table 2: Challenges faced in the provision and utilization of assistive technologies**

| Challenges                                                  | SA       | A        | UD       | DA       | SD       | Mean |
|-------------------------------------------------------------|----------|----------|----------|----------|----------|------|
| Inadequate power supply                                     | 2(28.6%) | 4(57.1%) | 0        | 0        | 1(14.3%) | 4.14 |
| Inadequate skills by users in using the technologies        | 0        | 3(42.9%) | 2(28.6%) | 2(28.6%) | 0        | 3.14 |
| Inadequate skills by librarians in the use the technologies | 2(28.6%) | 2(28.6%) | 2(28.6%) | 0        | 0        | 3.86 |

|                                                       |          |          |          |          |   |      |
|-------------------------------------------------------|----------|----------|----------|----------|---|------|
| Inadequate funds for the purchase of the technologies | 3(42.9%) | 4(57.1%) | 0        | 0        | 0 | 4.43 |
| Lack of maintenance                                   | 2(28.6%) | 2(28.6%) | 3(42.9%) | 0        | 0 | 3.86 |
| Inadequate support by librarians to users             | 0        | 2(28.6%) | 3(42.9%) | 2(28.6%) | 0 | 3.00 |
| Lack of availability of assistive technologies        | 2(28.6%) | 2(28.6%) | 3(42.9%) | 0        | 0 | 3.86 |
| Grand mean                                            |          |          |          |          |   | 3.75 |

The findings showed a grand mean of 3.75 implying that all the following are the challenges in the provision and utilization of assistive technologies in AUN library; inadequate of power supply, inadequate skills by users in using the technologies, inadequate skills by librarians in the use the technologies, inadequate fund for purchase of the technologies, lack of maintenance, inadequate support by librarians to users and inadequate availability of assistive technologies. The findings agreed with Isiaku, Abdullahi and Nweke (2021) found out that effective utilization of assistive technologies is constraint by inadequate availability of assistive technologies, inadequate trained instructors to teach students with disabilities how to utilize assistive technologies, inadequate planning and collaboration time for instructors, inadequate technical assistance from the vendor or manufacturers, lack of cooperation between the school and the family of students with disabilities, inadequate ICT specialist to teach students with learning disabilities, and limited flexibility in training options for students with disabilities.

### Summary of findings

The findings of the study are:

1. Inadequate availability of assistive technologies in the library studied
2. Low level of utilization of assistive technologies in the library studied
3. Assistive technologies were used only for access to information and readers' services
4. The challenges in the provision and utilization of assistive technologies in the AUN library were inadequate power supply, skills by users in using the technologies, skills by librarians in using the technologies, funding for the purchase of the technologies, maintenance, support by librarians to users, and availability of assistive technologies

## **Conclusion and Recommendations**

The study established that gross unavailability of assistive technologies in the library. This implies that people with special needs are not given consideration in the use of library and information services. Based on the findings, the study recommends the following:

1. The library should provide enough assistive technologies for the library for inclusion of persons with special needs in the use of the library.
2. Library staff should assist persons with special needs to enable them to effectively make use of the available assistive technologies.
3. Awareness programs should be put in place by the library to educate users that assistive technologies can be used for different purposes.
4. Training should be given to library staff as well as users on the use of assistive technologies. Also, adequate funds should be made available for the purchase of assistive technologies by the university administration.

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