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AN ASSESSMENT OF THE AVAILABILITY AND USE OF ASSISTIVE TECHNOLOGIES TOWARDS CREATING ACCESS TO ELECTRONIC LIBRARY RESOURCES FOR STUDENTS WITH VISUAL IMPAIRMENT IN FEDERAL UNIVERSITY LAFIA, NASSARAWA STATE, NIGERIA.

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ABSTRACT
The study seeks to assess the availability and use of assistive technologies towards creating access to electronic library resources for students with visual impairment in Federal University Lafia, Nassarawa State, Nigeria. Guided by four objectives translated into four research questions, the research adopted the descriptive survey design with a total population of 19 respondents who were all included in the study as such, no sample and sampling technique was required. Two instruments were used to gather data for the study, the electronic library resources questionnaire (DEIAELR) and an electronic resources and assistive technology observation checklist (EATOC). The Findings of the study reveals that majority of the electronic resources are available, However most of the electronic resource are not accessible by the visually impaired students. Study further shows that there are few available assistive technologies that are available to aid the visually impaired students. However, the assistive technology available assist visually impaired students in accessing electronic resources. It was recommended that institutions should put effort to acquire sufficient assistive technologies to support access to electronic resources. It was also suggested that library staff be trained on the use of these assistive technologies in order to provide the adequate support to these category of users. This will promote equity and inclusiveness in access to digital resources.

BACKGROUND TO THE STUDY
Academic libraries play a central role in this educational ecosystem, serving not only as repositories of knowledge but as dynamic hubs that support learning, research, and inclusion Ashikuzzaman, (2024). Traditionally known for housing print collections, libraries have transformed into technologically driven information centers, offering access to electronic resources, digital media, and virtual services. This evolution demands that academic libraries in particular respond to the diverse and growing needs of all users by ensuring inclusive access to electronic resources. For students with visual impairment, this means going beyond availability to include accessibility, usability, and support systems that promote full participation in the academic experience. Electronic resources are virtual collections of digital materials, accessible online. These resources include e-journals, online databases, repositories, e-books, multimedia content amongst many others. These resources which are integral to modern academic research and learning now have an edge over the traditional print-based media as they are most likely to contain current information, offer advanced search capabilities, greater flexibility in storage and enable access of information without time and location constraints.

Studies have consistently shown that students with visual impairment (SWVI) face significant challenges in achieving equitable access to electronic library resources in higher institutions. One major barrier is the inaccessibility of digital platforms, many of which are not designed in compliance with Web Content Accessibility Guidelines (WCAG), making them incompatible with screen readers and other assistive technologies. As a result, SWVIs struggle to navigate online library catalogs, e-journal databases, and institutional websites often with issues such as inability for these technologies to interprete visual images, which are often developed without inclusive design principles. Assistive Technology (AT) is a necessity for enhancing the learning experience of students with vision impairment, which can impact their social, cognitive and emotional development. It is widely accepted that ATs make a positive contribution towards the social and educational lives of students with visual impairment. Utilizing assistive technologies in higher education will aid students with learning difficulties in remaining competitive with their peers, fostering social engagement, boosting self-confidence, and enhancing academic success. At a societal level, successful Assistive technology provision and allocation can reduce the need for formal and informal assistance and services.

Despite the profound nature of challenges in accessing digital resources by visually impaired students as discussed, there is a clear gap in empirical research on the state of assistive technology provisioning and digital resource accessibility for students with visual impairments in Nigerian universities particularly in Nassarawa State. While a few studies (Dodamani & Sukanya, 2019; Horsfall & Opara, 2023;) have examined assistive technologies in Indian and Nigerian contexts, very few have specifically focused on Nassarawa State universities, which differ significantly in infrastructure, policy, and resource availability. This creates a compelling need to explore the current accessibility landscape, institutional efforts, and lived experiences of students with visual impairments within this region. Therefore, this study aims at exploring the current state of accessibility of electronic resources by students with visual impairment, the study will identify the availability of electronic resources and types assistive technologies to aid in access to electronic resources, In Federal University Lafia, Nassarawa State.

STATEMENT OF THE PROBLEM

Globally, it has been estimated that 90% of visually impaired students reported difficulties accessing electronic academic resources such as e-books, e-journals and Online Public Access Catalogue, inability to read learning materials (especially materials with graphical images and video clips). In Nigeria, only about 15% of university libraries are equipped with assistive technologies such as screen readers, Braille displays, or accessible navigation tools, making it difficult for students with visual impairments to access critical educational content in electronic formats (Horsfall & Opara, 2023). Preliminary investigations and interactions with students with visual impairments in selected universities, Particularly Federal University Lafia, reveal that many of them experience significant challenges in accessing electronic library resources, leading to reduced academic performance and exclusion from scholarly engagement.

Several factors contribute to these accessibility barriers. These include a lack of assistive technologies such as screen readers, magnifiers, and other tools as well as poor internet infrastructure, inaccessible website designs, and inadequate training on the use of available technologies. Despite the introduction of some Assistive technology innovations in Federal University Lafia, such as screen readers and Braille-compatible resources, this issue of lack of access to electronic library resources continues to increase. The need for this study, therefore, lies in the growing demand for accessibility of these resources by the visually impaired. Therefore, the broader question the research hopes to answer is to identify the extent to which electronic library resources in Federal University Lafia, Nassarawa State are accessible to students with visual impairment, and what interventions are required to promote access.?

OBJECTIVES OF THE STUDY

1. determine the availability of electronic resources in Federal University Lafia
2. determine the extent of accessibility of electronic resources for students with visual impairment in Federal University Lafia .
3. identify the availability of assistive technologies that can aid access to electronic library resources in Federal University Lafia .
4. find out the extent to which available assistive technologies assist in access to library resources

RESEARCH QUESTIONS

The following research question will be answered in the study:

1. what are the available electronic resources in Federal University Lafia .
2. what is the extent of accessibility of the electronic resources by students with visual impairment in Federal University Lafia ?
3. what are the available assistive technologies that can aid access to electronic library resources by visually impaired students?
4. To what extent do available assistive technologies assist in access to electronic library resources for the visually impaired students.

SIGNIFICANCE OF THE STUDY

The study will be significant to Students with visual impairment, it will help these category of students to understand the nature and availability of electronic resources within their university libraries, as well as the assistive technologies designed to enhance their access. By identifying and evaluating the existing support systems, this study will empower visually impaired students to be able to navigate digital library platforms with greater ease and confidence. Study will also benefit Library management and staff, findings from the study can guide decision-making on the procurement and deployment of assistive technologies in various formats, such as screen readers, Braille displays, magnifiers, and audio devices in libraries across. To future researchers, this study will serve as a valuable foundational resource. It will contribute empirical data and practical insights to the nature of assistive technologies and how it can used to enhance learning in higher institutions.

THEORETICAL/CONCEPTUAL FRAMEWORK

This study will be guided by the Social Model of Disability which was propounded by Meyer in 1976. The Social model of disability**,** makes a clear distinction between impairment and disability, emphasizing that disability is not caused by an individual's physical, mental, or sensory condition, but rather by the barriers and exclusion imposed by societal structures and attitudes. The model calls for changes in societal structures, policies, and attitudes to remove these barriers, promoting inclusion and equity through accessible environments, provision of assistive technologies, and challenging discriminatory stereotypes. Furthermore, the model empowers individuals by shifting the focus from their impairments to societal responsibility, advocating for their right to full participation in all aspects of life.

LITERATURE REVIEW

In Nigeria, the integration of Information and Communication Technologies (ICTs) in academic libraries has significantly enhanced access to scholarly materials through digital libraries and databases. However, this shift has not been entirely inclusive. Students with visual impairments often face barriers related to the inaccessibility of electronic library platforms, lack of assistive technologies, and inadequate training in using digital tools (Onyegbule & Oduagwu, 2020). Assistive Technology (AT) as defined by World Health Organization WHO (2020) are devices, software, or equipment that helps individuals with disabilities, impairments, or special needs to perform functions that might otherwise be difficult or impossible for them to accomplish. The available AT hardware,

software and devices is extensive and ranges from software to hardware educational technologies, examples (tactile screens, braille printers, loop systems or audio induction loops, hand-held magnifiers, text-to-speech devices, daisy-player devices, braille typewriters, notetakers, refreshable braille display, MagniLink magnifier, touch tablet, tactile-image enhancer, screen reader, screen magnification software, text-to-speech software.), and conventional technology (such as, tablet, laptop, personal computer, scanner, smartphone, audio recorder, microphones, headset/headphones, social networking applications, smartphone apps, and PDF readers, amongst many others). In Nigeria, Approximately 24 million Nigerians are grappling with varying degrees of visual impairments (Nigeria Health Online, 2023). Among adults aged 40 and above, an estimated 4.25million are living with moderate to severe visual impairments or blindness (This Day Live, 2024). As reported by Nwachukwu and Eke (2022), many visually impaired users struggle with navigating complex library systems, inconsistent accessibility standards, and lack of user-friendly digital platforms.

Empirical studies by Okeke and Asiegbu (2024) on Perceived Adequacy of Assistive Technology by Special Needs Users in Public Libraries in South-East, Nigeria. A descriptive survey research design was adopted for the study and a census sampling technique which sampled the entire population of 449 respondents in the five public library headquarters South East Nigeria (Anambra, Abia, Imo, Enugu and Ebonyi) was used. The findings of the study indicated that public libraries in south-east are perceived to be adequate more on non-electronic assistive technologies than electronic assistive technologies. Furthermore, public libraries in Anambra, Abia and Imo states seems to be better-off with regards to adequacy of assistive technology for special needs users. Based on the findings, it was recommended that ministry of education, should work in promoting adequacy of assistive technologies for special needs users in south-east, Nigeria.

Similarly, Vitalis and Moses (2024) investigated the availability and accessibility of Assistive technology for persons with special needs in Universities of Calabar and Uyo. Descriptive survey design was adopted for the study. In University of Calabar, 13 persons with special needs and University of Uyo, had 7 persons are with special needs that brought the total to 20. The findings among others uncovered that assistive technology are inadequate and there was poor accessibility of the available assistive technology. It was recommended among others that assistive technology should be made available and accessible to persons with special needs in order to have quality education.

RESEARCH DESIGN

The research design that was adopted for this study is the descriptive survey research design, Descriptive survey design provides valid useful approaches to data collection that allow for effective generalization of research results and can allow the use of instruments such as questionnaire, interview and observation check list can be used for data collection.

Population

The population of this study includes all 19 students with visual impairment in Federal University Lafia.

Sample and sampling Technique

The sample for this study consists of the entire population of 19 students with visual impairment. The decision to include the entire population, rather than selecting a subset, is informed by the relatively small size of the group. In survey research, utilizing the whole population will enhance the reliability of the results and support broader generalization of the findings. Since the entire population will be included in the study, no sampling technique will be required.

INSTRUMENTS FOR DATA COLLECTION

Two instruments were used for data collection. They are the Digital equity and inclusive access to electronic library resources questionnaire (DEIAELR) and an electronic resources and assistive technology observation checklist (EATOC). The DEIAELR was prepared on a four point modified likert scale of Strongly agreed (SA)=4, Agree (A)=3,Disagree (D)=2, Strongly Disagree (SD)=1. The participants were instructed to select one of the options as it best describes their opinion. The instrument was be scored in a reverse way when the items are negative. For the structured observation checklist: Each observed item was assigned a binary (Available and Not available) and will be scored 1and 0 respectively. That is, 1 = Available, 0 = Not Available.

Validity and Reliability

The two instruments were subjected to content validity by three experts. One from Library and Information Science of the Department of Social Science Education, One from Research Measurement Evaluation unit, Department of Special Education and one from Department of Educational Foundations, all from the Faculty of Education, Federal University Lafia.. The experts were given the instruments, Aim and Objectives of the study and research questions The Kendall Coeefficient Concordance was used to estimate the agreement of the experts. The result indicate a validity index of 0.73. The results revealed a kaiser-Meyer Karo measure of sampling adequacy of 0.77 and 0.79 for the DEIAERQ and EATOC respectively indicating suitability of the instrument for factor analysis. Bartlefft test of Sphericity was also significant at p=0.00 since the p-value were less than 0.05 level of significance <.0.05

RESULTS

Research question one

What are the available electronic resources in the Federal University Lafia

Table 2

S/N	Electronic Resources	Available	Not Available
1	E-books	✓	☐
2	Online Journals	✓	☐
3	Databases (example., EBSCOhost)	✓	☐
4	Institutional Repository	✓	☐
5	Open educational resources (OER)	✓	☐
6	OPAC / Online Catalogue	✓	☐
7	Electronic Newspapers	✓	☐
8	Electronic Theses & Dissertations (ETDs)	✓	☐
9	Online courses	✓	☐
10	Audio / Video Learning Materials	✓	☐

Source: Field data November 2025.

The results of the analysis from table 2 reveal the available electronic resources in the University library. From the results the following electronic resources are available in the library. They are electronic books, (e-books) electronic journals, Databases (examples JSTOR, EBSCOHOST), Institutional repository, Open Educational resources (OER), OPAC/ online catalogue, Electronic newspapers, electronic theses & Dissertations (ETDS), Online courses, Audio/ video learning materials. The results indicates that all of the electronic resources are available.

Research question two

what is the extent of accessibility of the electronic resources by students with visual impairment in Federal University Lafia

Table 3

Source: Field data November 2025.

The results of the analysis from table 3 reveals the extent of accessibility of electronic resources by

S/N	Statement	N	SA	A	D	SD	$\overline{X}$	SD	REMARK
1	I can access the e-resources whenever I visit the library 1	19	1(5.3%)	0(0%)	2(10.5%)	16(84.5%)	1.3	0.73	Rejected
2	The e-resources are compatible with my assistive technology	19	1(5.3%)	0(0%)	3(15.8%)	15(78.9%)	1.3	0.75	Rejected
3	Navigating through e-resource is easy and user-friendly	19	4(21.1%)	1(5.3%)	11(57.9%)	3(15.8%)	2.3	1	Rejected
4	Library staff provide support to help me access e-resources	19	10(52.6%)	0(0%)	8(42.1%)	1(5.3%)	3	1.1	Rejected
5	e-resources are available in accessible formats example audio, braile	19	0.(0%)	0(0%)	12(63.2%)	7(36.8%)	1.6	0.49	Rejected
6	I receive regular orientation on how to use electronic resources	19	0(0%)	0.(0%)	3(15.8%)	16(84.2%)	1.2	0.37	Rejected
7	I can access the e-resources from home or mobile device	19	0(0%)	0(0%)	12(63.2%)	7(36.8%)	1.6	0.5	Rejected
8	There are assistive technology that help access the e-resources	19	17(89.5%)	0(0%)	2(10.5%)	0(0%)	3.8	0.63	Accepted
Total		**19**	**18.1**	**0.12**	**6.63**	**8.13**	**2**	**0.69**	

students with visual impairment. From the results 18.1 % of the respondents strongly agree that electronic resources are accessible for use by students with visual impairment, 0.12 agreed, 6.63% disagree with the idea that electronic resources are accessible while 8.13% strongly disagree that electronic resources are accessible for use by students with visual impairment. The results indicate that most of the respondents disagree that electronic resources are accessible for use by students with visual impairment. The mean of 2.01 is less than the criteria mean of 2.5. This implies that electronic resources are not accessible for students with visual impairment.

Research question three

What are the available assistive technologies that can aid access to electronic library resources by visually impaired students?

Table 4

S/N	Electronic Resources	Available	Not Available
	Screen Readers (example JAWS, NVDA)		✓
2	Screen Magnifiers	✓	
3	Braille displays		✓
4	Audio books/talking books	✓	
5	Refreshable braille keyboards		✓
6	Speech to text software		✓
7	Daisy players		✓
8	Accessible OPAC term	✓	
9	Adaptive lightening and reading aid		✓
10	Tactile graphics or embossed materials		✓

Source: Field data November 2025.

The result of the analysis from table 4 above indicates that items 2.4 and 8 are available. This implies that screen magnifiers audio books/talking books, and accessible OPAC terminals are available for use by students with visual impairment to use in the library. While items 1, 3, 5 6, 7, 9 and 10 are not available. This implies that screen readers (JAWS, NVDA) Braile displays, refreshable braille, keyboards, speech to text software and daisy players are not available for use by students with visual impairment. The results indicates that most of the assistive technology are not available in the libraries for use by students with visual impairment.

Research question four
What extent do available assistive technology assist visually impaired students in accessing electronic library resources

Table 5
Extent to which available assistive technology assists visually impaired students in accessing electronic library resources

S/N	Statement	N	SA	A	D	SD	$\bar{X}$	SD	REMARK
1	The available assistive technology in the library enables visually impaired students to access electronic resources	19	17(89.5%)	0(0%)	2(10.5%)	0(0%)	3.68	0.95	Rejected
2	I can easily operate the assistive technologies provided in the University library	19	17(89.5%)	0(0%)	0(0%)	2(10.5%)	3.68	0.94	Rejected
3	The assistive technology are regularly maintained to ensure functionality	19	17(89.5%)	0(0%)	1(5.3%)	1(5.3%)	3.74	0.81	Rejected
4	Library staff are knowledgeable in assisting visually impaired students	19	17(89.5%)	0(0%)	1(5.3%)	1(5.1%)	3.74	0.81	Rejected
5	The assistive technology meet my needs for accessing electronic resources	19	6(31.6%)	11(57.9%)	0(0%)	2(10.5%)	3.1	0.88	Rejected
Total		**19**	**14.8**	**11.58**	**4.22**	**6.28**	**3.59**	**0.89**	

Source: Field data November 2025.

The results of the analysis from table 5 reveals that 77.92% of the respondents strongly agreed that available assistive technology assist visually impaired students to access electronic library resources, 11.58 agreed, 4.22% disagreed while 6.28 strongly disagree with the mean of 3.59 and standard deviation of .89. The results indicates that the available assistive technology assist visually impaired students to access the electronic library. Hence the provision of assistive technology which will give visually impaired students access to electronic resources in the library.

SUMMARY OF FINDINGS

Based on the results of the analysis, the following are the major findings:

1. Available electronic resource include electronic books, (e-books) electronic journals, Databases (examples JSTOR, EBSCOHOST), Institutional repository , Open Educational resources (OER), OPAC/ online catalogue, Electronic newspapers, electronic theses & Dissertations (ETDS), Online courses, Audio/ video learning materials. The results indicates that most of the electronic resources are available.
2. Most of the electronic resource are not accessible
3. There are few available assistive technologies that are available to aid the visually impaired students.
4. The assistive technology available assist visually impaired students in accessing electronic resources

CONCLUSION AND RECOMMENDATIONS

Findings from this study demonstrate a growing recognition of the importance of electronic library resources and accessible platforms to enhance learning. However, students with visual impairments still face considerable barriers in accessing and utilizing these resources due to few available assistive technologies, it is therefore recommended that institutions should acquire sufficient assistive technologies to support access to electronic resources. It is also worthy of worth that library staff be trained on the use of these assistive technologies in order to provide the adequate support to these category of users. This will promote equity and inclusiveness in access to digital resources.

REFERENCES

Ashikuzzaman, M. (2024). Role of libraries to ensure equitable access to information resources for all.*Library & Information Science Education Network*

Dodamani, A. M., & Dodamani, S. M. (2019). Provision of assistive technology for students with visual impairment in university libraries in India. *DESIDOC Journal of Library & Information Technology, 39*(3), 104–108

Horsfall, M. N., & Opara, V. C. (2023). Availability of information resources for visually impaired students in university libraries in Nigeria: A tool for inclusive university education. *International Journal of Knowledge Content Development & Technology, 13*(4), 39–49.

Meyer, D., Rose, D. H., & Gordon, D. (1998). Universal design for learning: Theory and practice. *CAST Professional Publishing*.

Nwanchukwo, U., Eze, N., & Obi, F. (2021). Barriers to digital education in Nigeria: Insights for inclusion and equity. *African Journal of Educational Policy, 15*(1), 78–92.

Okeke, F &Asiegbu, E (2024) Perceived Adequacy of Assistive Technology by Special Needs Users in Public Libraries in South-East, Nigeria. (2024). *UNIZIK Journal of Educational Management and Policy, 6*(4), 79-88.

Onyegbule, O., &Oduagwu, E. A. (2020). *Accessibility of electronic library resources to students with visual impairment in Nigerian universities*. Journal of Library Services and Technologies, *7*(1), 25-34.

This Day Live. (2024, November 30). Estimated 4.2 Million People Over 40 Living With Severe Visual Impairments In Nigeria, Says Igo Weli.

Vitalis ,U. E and Moses, M. E (2024) Availability and Accessibility of Assistive Technology to persons with Special Needs in Universities in South-south, Nigeria. *Knowledge Review. 33*(2*)*

Wamala, R., & Katumba, A. (2020). Provision and utilization of assistive technologies in university libraries in Uganda. In M. Khosrow-Pour (Ed.), Advanced methodologies and technologies in library science, information management, and scholarly inquiry (pp. 573–586). IGI Global. https://doi.org/10.1007/978-3-030-43687-2_37

World Health Organization. (2020). World report on disability. WHO Press