AVAILABILITY OF ASSISTIVE TECHNOLOGY BY SPECIAL NEEDS USERS IN PUBLIC LIBRARIES IN SOUTH-EAST, NIGERIA.

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ABSTRACT

This study seeks to determine the availability of assistive technology by special needs users in public libraries in South-East, Nigeria. Two research questions and one null-hypothesis guided the study. A mixed method research design was adopted for the study. A census sampling technique which sampled the entire five public library headquarters in South East Nigeria (Anambra, Abia, Imo, Enugu and Ebonyi) was adopted for the study. Instrument for data collection is an observation checklist validated by three experts, and having a reliability coefficient value of 0.76. Descriptive statistics of percentage was used to answer research questions 1 & 2. The researcher and 5 research assistants observed the checklist on the five public library headquarters in South East Nigeria. The null hypothesis was tested at 0.5 level of significance; with the aid of chi-square (χ^2). The findings of the study indicated that public libraries in south-east make available more of 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 availability of assistive technology for special needs users. Based on the findings, it was recommended among others, that the findings of the study may be useful in guiding Librarians, with the intention of promoting availability of assistive technologies for special needs users in south-east, Nigeria.

Keywords: Availability, Assistive Technology, Special Needs Users, Public Libraries

Introduction

People with special needs are regarded as the physically challenged or people with disabilities or impairment. Recently, prisoners have been included as people who have special needs because of the condition they find themselves in which may affect their psychology (Emereonwu, 2023). Atabor (2015) opined that the terms, impairment, physically challenged, handicapped, disabled, and special needs persons are used interchangeably. They are people that are in a state that restricts their ability to function physically, mentally or socially. The term "Special need" can also be defined as a physical or mental condition that prohibits an individual use of the body, partially or completely in performing daily tasks (Chaputula and Mapulanga, 2017).

Those with special needs are people who are not physically fit to get access to library resources or who may not, because of their nature, use the

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conventional information resources like every other library user. People with special needs are also in need of library and information resources for various purposes. The purposes may include education, research, recreational, etc. They are seen as special users of the library. A special user or patron according to Igwela and Opara (2020) is an individual that 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 inability to do what is considered 'normal' to a non-disabled person.

The term 'special needs' in the context of library services as identified by Abdelrahman (2016) 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 has 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 the society. In most cases, they are blessed with innate abilities, talents and dexterity which need to be harnessed, encouraged and developed by meeting their information needs. By their nature, they need motivation, specialized information and special equipment to have access to their needed information. This will help to bring out their full potential and

abilities through the utilization of required information resources for self-development.

Information resources are needed to achieve the goals of special needs users. Information resources also include collections such as e-books, electronic reference titles, audio materials, video collections, periodicals and other print volumes of information-carrying resources (Ajayi and Akinniyi, 2014).

With advancement in technology, some facilities (resources) in the library have been developed to help special need users make the most use of the information they need. These facilities are called Assistive Technology or Adaptive technology (ATs). According to Goddard (2018) Assistive technology are electronic and non-electronic or mechanical solutions that enable people with special needs live independently. Assistive technology (electronic and non-electronic) available in libraries, used for accessing information resources, must be capable of supporting the occupational, personal and research activities of people with special needs.

Availability of assistive technology refers to the presence of electronic and non-electronic materials provided for special needs users in the public library. It is also the extent to which assistive technology is accessible and obtainable for special needs users. It involves the presence and availability of appropriate devices, software, and other equipment that cater for the specific needs of individuals with disabilities. For example, availability can include the provision of assistive devices such as screen readers, alternative keyboards,

or eye-tracking systems, etc. According to Ekwelem (2013), the availability of assistive technology also entails acquiring and also providing means by which special needs users could get the necessary library resources needed. Availability ensures that every person with special needs gets the document, which could satisfy his/her quest for information (Hill, 2013).

It is worthy to note that availability, equitable access and use of library resources in whatever format is critical to creating an inclusive environment in the public library. These resources to be made available are not limited to print and electronic resources but includes qualified library staff and physical facilities that aids access to information for special needs users. This is further buttressed by Maceviciute, Borg, Kuzminiene and Konrad (2014) who opined that the key determinants for the quality of library services were: electronic resources, collections of printed publications, technical facilities, library environment and human side of user service.

The special needs users form part of the heterogeneous clientele who seek library services or information to supplement their desire for educational, social, and leisure attainment. Regrettably, due to their peculiar nature, their effectiveness to access the needed library resources seems to be greatly affected. It is worrisome too that information resources meant for this category of users most often are not accessed due to facilities (assistive technology) tend to be rarely available for them. This study therefore is focused on finding solutions to this pressing issues by ascertaining the

availability of assistive technology by special needs users in public libraries in south-East, Nigeria.

It is expected that the findings of this study would benefit people with special needs, researchers, public library staff and their management, and the state government because it will help them in identifying the assistive technology (both electronic and non-electronic) available to special needs users. Knowledge of this would help library staff and management as well as the state government in channeling funds for providing assistive technology identified as not available in the library.

Purpose of the Study
1. Ascertain the availability of electronic assistive technology to special needs users in Public libraries in South-East Nigeria.
2. Ascertain the availability of non-electronic assistive technology to special needs users in Public libraries in South-East Nigeria.

Research questions
The following research questions guided the study:
1. What is the available electronic assistive technology for special needs users in Public libraries in South-East Nigeria?
2. What is the available non-electronic assistive technology for special needs users in Public libraries in South-East Nigeria?

Research Hypothesis
1. There is no significant difference in the percentage scores of the available assistive technology for special needs users in Public

libraries in South-East Nigeria, based on the five locations.

Research Method

This study which sets to determine the availability of assistive technology by special needs users in public libraries in South-East, Nigeria adopted a mixed method research design. The population of the study was the five public library headquarters in South East Nigeria (Anambra, Abia, Imo, Enugu and Ebonyi). Using a census sampling technique, the entire 5 public libraries were used for the study. The instruments that was used for data collection is an adopted observation checklist for Special Need Users,

validated by three experts, and having a reliability coefficient values of 0.76. The researcher and 5 research assistants observed the checklist on the 5 public libraries in south-east Nigeria. Descriptive statistics of percentage was used to answer the research questions, while the null hypothesis was tested at 0.5 level of significance; with the aid of chi-square (χ^2).

Presentation of Results

Research Question 1: What is the available electronic assistive technology for special needs users in Public libraries in South-East Nigeria?

Table 1: The available electronic assistive technology for people with special needs in Public libraries in South-East Nigeria are;

S/N	Items	N	AV	N/AV	% AV	Remarks
1	Information on audio tape, CD/DVD	5	4	1	80%	Available
2	Information on the library's accessible website (audio information should also be available as text)	5	1	4	20%	Not Available
3	Screen readers Suffice e.g. JAWS	5	0	5	0%	Not Available
4	Video/DVD books with subtitles and/or sign language	5	2	3	40%	Not Available
5	Infrared Systems	5	0	5	0%	Not Available
6	Tactile online picture books	5	0	5	0%	Not Available
7	Braille Scanning software e.g. Optical Braille Recognition(OBR)	5	1	4	20%	Not Available
8	Specialized Alerting device	5	0	5	0%	Not Available
9	Electric wheelchair	5	0	5	0%	Not Available
10	Digital handrail on steps	5	0	5	0%	Not Available
11	Braille translator	5	1	4	20%	Not Available
12	Automatic door opener reachable by a person in a wheelchair	5	0	5	0%	Not Available
13	Elevator buttons reachable from a wheelchair	5	0	5	0%	Not Available
14	Well lighted elevators with buttons and signs in Braille and synthetic speech	5	0	5	0%	Not Available
15	Alarm button reachable for persons in a wheelchairs	5	1	4	20%	Not Available
16	DAISY, a digital talking book system used by many libraries for the blind.	5	1	4	20%	Not Available
17	Electronic glass doors marked to warn visually impaired persons	5	0	5	0%	Not Available
18	Magnifying glass, illuminated magnifier, electronic reader or closed-circuit television (CC)	5	1	4	20%	Not Available
19	Designated computers equipped with screen reading programs, enlargement, and synthetic speech	5	1	4	20%	Not Available
20	Hearing Aids /Cochlear implant	5	0	5	0%	Not Available
21	Technological communication aids e.g Speech test software	5	0	5	0%	Not Available

22	Technical support for computers (on-site, if possible)	5	3	2	60%	Available
23	Computer assisted real-time Captioning/ Close captioned decoder	5	2	3	40%	Not Available
24	Adaptive keyboards or keyboard overlays for users with motor impairments	5	0	5	0%	Not Available
25	Visible and audible fire alarm indicator	5	3	2	60%	Available
26	Captioning Television	5	3	2	60%	Available
27	Hearing loop system/ induction loop	5	0	5	0%	Not Available

The result in the Table 1 indicated that only 4 out of the 27 identified items were rated above 50% which means that librarians and special needs users accepted these items (1, 22, 25 & 26) as available electronic assistive technology for special needs users in public libraries in South-East Nigeria. The Other 23 items were rated below 50% as not available. Meanwhile, 14 items (3, 5, 6, 8, 9, 10, 12, 13, 14, 17, 20, 21, 24, and 27) among the 23 items that were rated not available recorded zero percent (0%). This means that all the respondents from the five public libraries in the south-east noted that these electronic assistive technologies rated 0% are not present/provided in their libraries.

Research Question 2: What is the available non-electronic assistive technology for special needs users in Public libraries in South-East Nigeria?

Table 2: The available non-electronic assistive technology for special needs users in Public libraries in South-East Nigeria are:

S/N	Items	N	AV	N/AV	% AV	Remarks
1	Chairs with sturdy armrests	5	3	2	60%	Available
2	Stairs and steps marked with a contrasting color	5	3	2	60%	Available
3	Braille books	5	3	2	60%	Available
4	Sign language books	5	4	1	80%	Available
5	Boldly printed information on the library's accessible website	5	2	3	40%	Not Available
6	Large print books	5	4	1	80%	Available
7	Unobstructed aisles between bookcases	5	4	1	80%	Available
8	Clear and easy-to-read signs with pictograms	5	4	1	80%	Available
9	Washbasin, mirror at the appropriate height	5	3	2	60%	Available
10	Clear and easy to read signposting	5	3	2	60%	Available
11	Visual alarms	5	3	2	60%	Available
12	Wall Maps	5	3	2	60%	Available
13	Clear signs with pictogram indicating the location of the toilets	5	3	2	60%	Available
14	Reading and computer tables of varying heights throughout the library	5	4	1	80%	Available
15	Adjustable desk for the physically challenged	5	3	2	60%	Available
16	Entrance door wide enough to allow a wheelchair to enter	5	5	0	100%	Available
17	Pictogram signs leading to elevators	5	1	4	20%	Not Available
18	Sufficient space in front of the door to allow a wheelchair to turn around	5	5	0	100%	Available
19	Tactile maps Markers	5	1	4	20%	Not Available
20	Parking close to the library entrance	5	5	0	100%	Available
21	Manual wheelchairs	5	1	4	20%	Not Available
22	A non-slip and not too steep ramp with railings next to the stairs	5	3	2	60%	Available
23	Canes or walkers	5	1	4	20%	Not Available
24	Handrails and grab bars	5	3	2	60%	Available

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25	Wide aisles and clear pathway	5	4	1	80%	Available
26	Shelves reachable from a wheelchair	5	1	4	20%	Not Available
27	Railings at both sides of ramp	5	3	2	60%	Available
28	Unobstructed and well lighted access paths to the entrance	5	4	1	80%	Available
29	Smooth and non-slip surface at the entrance	5	5	0	100%	Available
30	Toilet with handles and flushing lever reachable for persons in wheelchairs	5	3	2	60%	Available
31	Staff trained to assist patrons in case of emergency	5	3	2	60%	Available

The result in the Table 2 indicated that among the 31 identified items, only 6 items were rated below 50% which means that librarians and special needs users rejected these items (5, 17, 19, 21, 23 & 26) as not available non-electronic assistive technology for special needs users in public libraries in South-East Nigeria. The Other 25 items were rated above 50% as available. Meanwhile, 4 items among the 25 items that were rated available recorded one-hundred percent (100%).

Hypothesis: There is no significant difference in the percentage scores of the available assistive technology for special needs users in Public libraries in South-East Nigeria, based on the five locations.

Table 3: Chi-square (χ^2) output of significant difference in the percentage scores of the available assistive technology for special needs users in Public libraries in South-East Nigeria, based on the five locations

Variable	Status	Number Expected	Number Observed	Calculated Value (χ^2)	Critical Value (χ^2)	**Decision**
Available Assistive	Anambra	58	29			
Technology for Special	Abia	58	27			
Needs Users in Public	Ebonyi	58	34	131.5	6.179	Significant
Libraries in South-East	Enugu	58	33			
Nigeria	Imo	58	25			

S- Significant @ ∞ 0,05

As shown in Table 3, the calculated (χ^2) value of 131.5 is greater than the critical (table) value of (χ^2) (6.179). The null hypothesis is therefore rejected while the alternative hypothesis stands, which means: There is significant difference in the percentage scores of the available assistive technology for special needs users in Public libraries in South-East Nigeria, based on the five locations.

Summary of Findings
1. The available electronic assistive technologies for special needs users in public libraries in south-east include; Information on audio tape, CD/DVD, Technical support for computers (on-site, if possible), Visible and audible fire alarm indicator and Captioning Television.

2. The available non-electronic assistive technologies for special needs users in public libraries in south-east with 100% rating include; Entrance door wide enough to allow a wheelchair to enter, Sufficient

space in front of the door to allow a wheelchair to turn around, Parking close to the library entrance, and Smooth and non-slip surface at the entrance

3. The null hypothesis on Available (electronic and non-electronic) Assistive Technology was significant.

Discussions of Findings

Available electronic assistive technology for special needs users in Public libraries in South-East Nigeria

The findings from research question one shows that; only 4 out of the 27 identified items were rated above 50% which means that librarians and special needs users accepted these items (1, 22, 25 & 26) as available electronic assistive technology for special needs users in public libraries in South-East Nigeria. These available electronic assistive technologies include; Information on audio tape, CD/DVD, Technical support for computers (on-site, if possible), Visible and audible fire alarm indicator and Captioning Television. This is in contrast with the findings of Khetarpal (2014) that innovative technologies include screen magnifier, voice recognition software, Braille translation software, closed-circuit television (CCTV), and Braille embosser scanners. Although there are different assistive technologies provided to different libraries according to the idea and knowledge of the librarians which are tantamount to cost and accessibility.

The Other 23 items were rated below 50% as not available. Meanwhile, 14 items (3, 5, 6, 8, 9, 10, 12, 13, 14, 17, 20, 21, 24, 27) among the 23 items that were rated not available recorded zero percent (0%). This means that all the respondents from the five public libraries in the south-east noted that these electronic assistive technologies rated 0% are not present/provided in their libraries. These Technologies includes; Screen readers Suffice e.g. JAWS, Infrared Systems, Tactile online picture books, Specialized Alerting device, Electric wheelchair, Digital handrail on steps, Automatic door opener reachable by a person in a wheelchair, Elevator buttons reachable from a wheelchair, Well lighted elevators with buttons and signs in Braille and synthetic speech, Electronic glass doors marked to warn visually impaired persons, Hearing Aids/Cochlear implant, Technological communication aids e.g Speech test software, Adaptive keyboards or keyboard overlays for users with motor impairments, Hearing loop system/ induction loop. This is a clear fact that some of these technologies are not provided in the library for special needs users. Moreover, while libraries have a plethora of both physical and digital information resources and services, some of their most valuable assets are not provided specifically for people with special needs (Hill, 2013).

Available non-electronic assistive technology for special needs users in Public libraries in South-East Nigeria

The finding of research question two shows that; among the 31 identified

items, only 6 items were rated below 50% which means that librarians and special needs users rejected these items (5, 17, 19, 21, 23 & 26) as not available non-electronic assistive technology for special needs users in public libraries in South-East Nigeria. These not available non-electronic assistive technologies include; Boldly printed information on the library's accessible website, Pictogram signs leading to elevator, Tactile maps Markers, Manual wheelchairs, Canes or walkers and Shelves reachable from a wheelchair. The Other 25 items were rated above 50% as available. Meanwhile, 4 items among the 25 items that were rated available recorded one-hundred percent (100%). Kumar (2013), affirmed the position above when they argue that libraries and information centers around the world have developed specialized information services to meet the library and information needs of their visually impaired clientele. They identified these to include, Braille books, talking books, talking newspaper, large printed materials. To buttress this further, in their study, Echezona, Osadebe and Asogwa (2011) identified the following assistive technology for the physically challenged; *Handrails, Elevators, Ramps/moving ramps, Extra-large doorways, Automatic doors and Short shelve.* With the above result, it is glaring to say that non-electronic assistive technologies are more available in the libraries compared to electronic assistive technologies.

Result of the null hypothesis.
Based on the result of the null hypothesis tested using Chi-Square (χ^2), it was rejected (not accepted)

haven obtained calculated (χ^2) values (131.3) greater than the critical (χ^2) values (6.179). This shows that; Ho- "There is significant difference in the percentage ratings of the available assistive technology for special needs users in Public libraries in South-East Nigeria, based on the five locations". This may be as a result of the fact that some of the state public libraries seems to have more assistive technologies for special needs users than other state. This is observed from the response of the returned instruments distributed for this study. Anambra, Abia and Imo states public libraries recorded more of the items/technologies as available compared to Enugu and Ebonyi states public libraries. The results of the hypotheses are in-line with the thoughts of many researchers who are of the view that variables like; discipline, location and ownership may not affect the provision of library resources (technologies). That is why Authors like Samaila, Chukwuemeka and Babatunde (2020) indicated that factors such as awareness and skills are the determining factors that may influence librarians' decision to provide assistive technologies in Public Libraries in South-East, Nigeria.

Conclusion
From the results obtained from the analyzed data, the researcher concluded that public libraries in south-east make available more of non-electronic assistive technologies than electronic assistive technology. Furthermore, public libraries in Anambra, Abia and Imo states seem to be better-off with regards to

availability of assistive technology for special needs users.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The findings of the study may be useful in guiding Librarians, with the intention of promoting availability of assistive technologies for special needs users in south-east, Nigeria.

2. In order to create a working environment that encourages librarians effectiveness, the Government in charge of providing funds should be up to their task in equipping the library to standard.

REFERENCES

Abdelrahman, O. H. (2016). Use of library technology and services by the visually impaired and the blind in the University of Khartoum, Sudan. DESIDOC Journal of Library and Information Technology, 36(2), 93 -97.

Atabor, C. A. (2015). Information needs and use of library resources by special needs students in selected government schools in Kaduna State and Federal Capital Territory, Abuja, Nigeria. Chinese Librarianship: An International Electronic Journal, 40, 47-55. URL: http://www.iclc.us/cliej/cl40ata bor.pdf on 12th August,2023.

Chaputula, A. H., & Mapulanga, P. (2017). Provision of library services to people with disabilities in Malawi. South African Journal of Libraries and Information Science, 82(2), 1–10. Retrieved from: https://doi.org/10.7553/82-2-1619 on 8th September,2023.

Echezona, R .I, Osadebe, N & Asogwa, B.E. (2011). Library services to the physically challenged: nature, challenges and strategies Journal of Applied Information Science and Technology, 5(1), 14-18.

Ekwelem, V. O. (2013). Library services to disabled students in the digital era: challenges for outcome assessment. Library Philosophy and Practice, Paper 970 http://digitalcommons.unl.edu/l ibphilprac/970. On 3rd November,2023.

Emereonwu, O. M., & Echedom, A. U. (2023). Availability of Information Resources and Services in Prison Libraries in Anambra State, Nigeria. African Journal of Educational Management, Teaching and Entrepreneurship Studies, 9(3), 44-53. Retrieved from: https://ajemates.org/index.php/ ajemates/article/view/299 on 2nd November,2023

Hill H (2013) Disability and accessibility in the library and information science literature: A content analysis. Library and Information Science Research 35(2):137–142.

Igwela, J. N. B. & Opara, V.C. (2020). Provision of library resources and services to the hearing impaired in special school libraries in South-South, Nigeria. Information, Society and Justice, Volume 4 No. 2, December 2011: pp 5-18 ISSN 1756-1078

Khetarpal, A. (2008). Library services for people with disabilities in Greece. Library Review, 57(2), 138 – 148. http://dx.doi.org/10.1108/0024 2530810854017 On 30th November,2023.

Kumar S. P. (2013). Assistive technology competencies: Need, outlook, and prospects (with reference to special educators for children with visual impairment). European Academic Research, 1(8).

Maceviciute, E., Borg, M., Kuzminiene, R., and Konrad, K. (2014). The Acquisition of e-books in the libraries of the Swedish higher education Institutions. Information Research, 19(2). Retrieved from: www.information.net/ir/19-2/paper620html.