7

Information Needs, Library Services and Assistive Technologies: Supportive Measures to the Visually Impaired Students in Nigeria University Libraries

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Abstract

Purpose: *This paper is designed to explore the information needs, library services and adaptive/assistive technologies as supportive measures to the visually impaired students in Nigeria university libraries.*

Design/Methodology/Approach: *An exploratory approach through extensive review of related literatures was adopted for this study. Also, conceptual framework was developed to reveal the information needs, library services and adaptive technologies that can help the visually impaired students to access information in this digital driven world in Nigeria universities.*

Findings: *This paper found out that the visually impaired students in universities have similar information needs like their fellow students that are sighted. However, they need extra information services which can be provided in libraries for them to face their academic challenges in universities. It also found out that the provision of assistive technologies at universities in Nigeria will help the visually impaired students to access information without restrictions unlike the traditional Braille systems. This aids in bridging the gap that exists between the sighted and visually impaired students in terms of access to information resources online.*

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Practical Implication: *In this digital age, the screen readers, screen magnifiers, Braille translation software's, Braille embosser, CD ROM, DVD and audio versions of different e-books are needed for the visually impaired students especially those ones with low vision to access print library materials. In addition, specialized library services such as Current Awareness Services, Selective Dissemination of Information, humanitarian and training services and user education programmes can be offered by libraries for the visually impaired students.*

Originality/Value: *The paper recommended that library should collaborate with the non governmental bodies and also form a committee headed by the government in order to take adequate care of the information needs of the visually impaired students in universities.*

Keywords: *Information needs, library services, adaptive technologies, visually impaired students, Nigeria universities.*

Paper type: *Conceptual*

Introduction

The university libraries provide information materials in varying degrees: print and online resources to support teaching, learning and research activities in accordance with the curriculum, information and research needs of the universities where they exist. They provide reading spaces, information materials, computer laboratories amongst others to all students in the universities (Lambardi, 2000). Library services in this digital driven world demand that access to information would be given to users for online information

resources at different databases. The visually impaired students are not excluded in accessing digital information in addition to the print resources in university libraries. Mason (2016) identified the groups of users in university libraries as undergraduates, graduates, physically challenged students such as the visually impaired students and external users who have different information needs. This emphasized the fact that in the university library, access is given to all the students who are duly registered irrespective of gender, physical challenges encountered and other variables.

Physically challenged persons in the universities are many with different types of disabilities. However, the visually impaired are identified to be more in number in the society and academic institutions such as universities. According to the Nigerian National Blindness and Visual Impairment Survey conducted between 2005 and 2007 by the International Centre for Eye Health, 1.3million individuals aged 40 years were estimated to have moderate visual impairment and an additional 400,000 adults were severely visually impaired while 4.5 million people who were 40 years were either visually impaired or blind. The visually impaired Students (VIS) refer to those students who are partially and totally blind (Bernadi, 2004). Azimi, Maryono and Yuana (2017:62) described visual impairment as "a limitation with regard to the inability or limited ability to receive information through the sense of sight". This shows that the visually impaired students (VIS) are the group of students in the universities that either have different degrees of sight problems that prevent them to see clearly or are completely blind. All of them need information just as every other student in the university.

The International and Nigerian Scenario

In the developed world such as France and United Kingdom, a lot have been done to assist the visually impaired students. Bernadi (2004) noted that in addition to Braille, audio and talking books, large prints and adaptive technologies, training activities for librarians and users are organized. In addition, target services such as access to specific catalogues, digital texts, digital talking books and special format inter library loan are provided for the visually impaired students. Burger (2001) further brought to limelight the remarkable inventions made for the visually impaired students to have access to information such as standardization of electronic text formats and invention of alternative access to technologies such as refreshable Braille display, text-to-text speech synthesizers, screen reading software programmes, non visual browsers etc.

However, in the developing countries such as Nigeria, Adetoro (2009) discovered that the gap between the sighted students and the visually impaired students are widening for the fact that most of them cannot access information using technology due to negligence by the government and lack of resources in institutions like universities. He further argued that the VIS do not have adequate reading materials especially when they really on braillle books; however, alternatives abound in adaptive/assistive technologies which can be expansive for them to provide individually but can be provided in libraries. Friend (2009) exposed that less than 5% of the information materials available to sighted library users are accessible to the visually impaired students.

This shows that many libraries in the developing countries like Nigeria provide more of traditional information services for the visually impaired students such as Braille, audio or talking books, large prints and in this era that is highly influenced by Information and Communication Technologies, the adaptive/assistive technologies for the visually impaired students are to be provided to enable them access more information materials. Many scholars observed that the visually impaired students are dependent on 'alternatives' in order to learn and these alternatives include Braille, large prints talking books, and assistive technologies.

The Information Needs of the visually impaired persons in Nigerian Universities

Information is vital to human beings irrespective of their status, gender, religion, disability amongst others. It is useful for decision making, enlightenment, solving problems, national development, self improvement and development; information can be facts, data or idea or even the assemblage of data for communication and also addressing, influencing or eliciting response for development (Edoka, 2000 &Echezona, 2005).

Information needs boarder on the desire to access the needed information for sustaining life in all angles. Moore (2000) found out that the visually impaired students have the same information needs like those that are not visually impaired. This information needs include the need to read books, newspapers, magazines, journal etc. like every other person (Kavanagh and Skold, 2005).They need information on the core texts books recommended for them in their different fields of study in the universities, current affairs and daily happenings/new, health information etc. Royini (2017) noted that they also need information just like able bodied individuals need in finan ce and income, government, travel, consumer, recreation information in addition to listening to talking books. Moreover, the visually impaired students need

information concerning their present state of disability and as well how to move forward in life. Moore (2000) found out that the visually impaired students need information that will help them to make useful choices in life matters; they need information to support their learning activities, leisure including the rights and entitlements as citizens and more importantly issues and cu rrent trends concerning their challenges. Precisely, this information needs include: information about their condition, aids, available equipment and services for them and also self – help groups especially in the university libraries. These indicate thatvisually impaired students have information needs just like the sighted persons in order to meet up with the demands of their academic pursuit. All these will help to meet the information needs of the visually impaired students in the universities to foster their education and other information needs they have.

Library Servicesfor the visually impaired Students

Libraries services are broad in order to reach the information needs of their users especially people with specific needs such as the visually impaired students. Basically, library services include: acquisition of information materials, processing them (cataloguing and classification), information dissemination (circulation of information materials at proper places for users to utilize including Current Awareness Services, Selective Dissemination of Information, and display of information materials amongst others. Current Awareness Services is necessary especially on arrival of new materials while Selective Dissemination of Information is needful based on information need profile of the visually impaired students. These services can help the visually impaired students in carrying out their researches.

Libraries provide services to the visually impaired persons in specialized ways. These include: provision of adequate information materials for the blind both traditional materials such as Braille books, large prints and talking books and provision of adequate reading spaces. Apart from information services, humanitarian services can be offered to the visually impaired students to assist and encourage them use the library. These services include caring for their specific needs such as bringing them to the library to read and sending them back to their hostels after reading, provision portable water for them to drink as they read in libraries and provision of adequate conveniences for them in libraries.

Some library services are peculiar to the visually impaired students in the university libraries. Abdelrahman (2016) pointed out some vital library services for the visually impaired students in the universities as user education and training programmes on computer skills and Braille; browsing the internet, lending and borrowing services, copying of cassettes and disks. These library services aim at helping the visually impaired students to access information for their academics, research and personal developments.

There are some ICT based services which libraries can provide for the visually impaired students. Bhardwaj (2018) revealed them as: screen reader compliant web OPAC, instant chat, remote access to e-resources, single sign – in, online book requisition, document delivery services, retrieval of materials from databases, Braille print out of e-books, mobile app services and ICT training. Other online library services identified for them are literature search, bibliography compilation, newspaper clippings and reference services. ICT and online library services are trendy at present and these services are meant to be provided to visually impaired students in the universities for them to be able to cope with the challenges associated with learning and research in universities especially in this digital driven world.

Adaptive/ Assistive Technologies for the visually impaired Students

Assistive Technology (AT) “is an item that allows disabled people to complete tasks that they should not be able to do because of their disability” (Buchler et.al. 2015 as cited in Daroni, Gunarhadi, and Legowo 2018:5). Wong and Cohen also cited in Daroni, Gunarhadi, and Legowo 2018:5) define AT as “any commercially acquired or manufactured goods or equipment used to enhance or maintain the functional capacity of persons with disabilities. This shows that AT can be defined as anything that can help the visually impaired students to enhance their studies especially the ICT or electronic facilities. The importance of AT to the visually impaired students were highlighted by Daroni, Gunarhadi and Legowo (2018) as helping the VIS to learn difficult ideas and concepts by broadening their understanding.Burger (2001) pointed out that interesting and novel ways of learning using digital techniques created alternative measures for the visually impaired persons to access written and computerized information.

Libraries such as university libraries as information resource centre for all categories of students including the visually impaired are influenced greatly with ICT facilities. Royini (2017) recommended for libraries to install different software’s in order to meet the varying information needs of the visually impaired students. These are JAWS for windows, window-Eyes’ screen-reading programme with portable application, ZoomText magnifier and reader, ZoomText keyboard, Dragon Naturally Speaking (a speech to text engine for dictating into windows) and Text Aloud (a text to

speech software). Eskay and Chima (2013) insist that voice recognition software irrespective of the brand allows the visually impaired students to input data into the computer by voice. Hasselbriry and Glaser (2000) as cited in Daroni et. al. (2018) found out that the Optical Character Recognition (OCR) can scan and read printed texts thereby helping the VIS to read on their own. However, the scanned texts could be read with the help of the Descriptive Video Services (DVS) which is also known as screen reader through computers. Screen reader as a software reads out documents content to the hearing of the user.

In addition, Burger (2001) identified the need for assistive/ adaptive technologies for the visually impaired persons/students in university libraries as:

- Adaptive visual presentation (the need for magnifying of documents and improved reading comforts.
- Braille presentations (refreshable Braille display or embossed).
- Audio presentations (speech and auditory media).
- Technologies (hardware's and software's such as magnification software, screen reader software, Braille display, speech synthesizer etc.).

Furthermore, Azimi, Maryono and Yuana (2017) conducted a research which aims at developing the English for Disability (EFORD) application on Android-based learning English media for the visually impaired students and found out that EFORD is very needful for grammar and speaking English contents for VIS. Abdelrahman (2016) classified the assistive technologies for the visually impaired students as:

- Computer technologies - These comprises of screen readers for the blind, screen magnifiers for the low vision computer users.
- Tactile tools – They include Braille books, large printed materials for those that are not totally blind, Braille translation software and Braille embosser. The Braille translation software converts print materials in electronic format into Braille while the Braille embosser produces materials in Braille format.
- Auditory tools – These are talking books and talking newspapers. These comprises of audio versions of books in diverse forms such as cassettes, CD-ROM, DVD and e-books.

The assistive technologies equipment and softwares are important for the visually impaired students in the universities. Bhardwaj (2018) noted the assistive equipments as: Screen magnifiers, Braille printer, scanners (zoom, flatbed, over head, hand-held, LEX cam), calculator, digital voice recorder, speech synthesis, video magnifiers, Braille typewriter, keyboard overlay among others. The assistive softwares he identified are talk and zoom, talk back, open book, Hindi OCR, Magic Pro, Talking typing, Vaachak, JAWS Screen Reader, AMIS, OBI DAISY, Reading Easy+, Magnification, Kurzwell, SAFA Reader etc.

Challenges encountered in supporting the visually impaired persons in the university libraries

Universities as citadel of learning, admit students into various programs from diverse background and health conditions. In the same vein, libraries attached to these universities as repositories and facilitators of knowledge ought to be able to offer services to these users in formats that befit their ability or disability. Notwithstanding the format used to effectively render these services, challenges abound especially with the visually impaired more than their counterparts that are able bodied. These challenges include the fact that this class of people somehow in the past, were by misconception, considered inept as both their mental and physical ability to either cope with university education or use a university library was not tried nor tested even though, library for the physically challenged was dated as far back as in the 1900's but, as rehabilitation centers or schools for a specified disability (Iroeze, Umunnakwe, &Eze, 2017). No wonder the architectural designs of most university libraries do not in any way reflect the inclusion of their sections ab initio because if, from the beginning included in the building plan, their sections, facilities, unproblematic movement within the library, befitting chairs, reading carrels and shelves that will suit their disability as well as special librarians and library assistants will be mapped out at the basement for these distinctive clientele (Echezona, Osadebe, &Asogwa, 2011). Their inclusion in academic institution is a recent phenomenon. Today, their names appear officially in admission lists and this has caused university libraries, to start setting up their sections as an add-on or as an addendum at the ground floor of the library. However compared to the situation few decades earlier, has gradually improved and promises to get better in the years to come.

Lack of orientation or training for the newly admitted visually impaired students to acquaint and familiarize them with the library, and it's environ is a major challenge for the librarian. This can be in the form of guided tours to the library because some of them may not have used university libraries apart from school and public libraries /before losing their sight. So, they are even less

likely to use a more highly structured library after becoming blind unless their interest is awakened. In addition, many librarians are not trained in the needs of patrons who are visually challenged especially as regards the use of the adaptive technologies. For a possible good service delivery to this group, a skilled, devoted, sensitive, humane and not thick-skinned librarians as well as non librarian is of great value to this group.

Another major challenge is the issue of copyright laws which is the legal right, which gives the creator of an original work, the sole right to determine how the work will be used by others. These laws in the country have limited scope and the exemption varies on what and how libraries should convert them into accessible audio or electronic formats unlike some countries in the developed world like USA, UK and Korea among others that have an elaborate copyright exemption in a diversified form for the disabled (The center for internet & society 2015)

In another vein, lack of assistive/adaptive technologies for accessing the web which will help to support learning and studying of the visually impaired on their own like other students is a major challenge. Bernardi (2004) noted that one major challenge of using Adaptive Technology by the visually challenged persons is lack of accessibility. In addition, the high cost of assistive/adaptive technology is also another challenge the visually impaired students are facing (Adetoro, 2009). They come from different backgrounds and not all of them can afford the cost of these assistive technologies to carry out their assignments and met up with their information needs as well. As such, most of the visually-impaired students are dependent on volunteers or helpers to read printed material for them even in examinations that are ICT based, that requires the use of computers to write them.

Lastly, lack or inadequate provision of the "almighty" funds or is a torn in the flesh for library management in meeting up with the requirements of the special needs. Money the bible said answers everything, if adequately provided will be used to build and equip the university libraries with facilities or state of the art technologies for the visually impaired (Ejike&Amaoge 2015).

Ways of supporting the visually impaired persons in the university libraries.

The visually impaired students can be supported through library services and adaptive technologies in order to reach their information needs. Rayini (2007) pointed out ways through which library and information services could be enhanced for the benefits of the visually impaired. This include but not limited to setting up a care taker committee that will spearhead the visually impaired by the government or its agencies, conducting needs assessment by the group in collaboration with libraries to promote/provide library services to the visually impaired persons, liaising with specialized agencies in order to provide adequate information resources to the VIS through cooperation and networking, provision of online resources for them and as well as conducting training and awareness programmes. In addition, Eskay and Chima (2013) pointed out ways of improving library services for the visually impaired students in Nigeria. These include: funding of libraries; reviewing policies that guides the implementation of the funds periodically; training and retraining of librarians, producing talking books; investing in assistive technologies and networking.

Setting up a care taker committee that will look into the affairs of the visually impaired students by the government is vital. The constitution of this committee must be government representatives and members drawn from different institutions such as universities including librarians as custodians of information materials. They mission and vision revolve around taking care of the visually impaired students at institutions in terms of provisions of traditional and assistive technologies required for them to access information in the universities.

Conducting needs assessment is vital so that the specific needs of the visually impaired students will be identified. Cuiccio and Husby-Slater (2018) define needs assessment as "a systematic examination of the gap that exists between the current and desired state of an organization and the factors that can be attributed to this gap". The essence of conducting needs assessment for the visually impaired students is to identify, understand and prioritize their needs for improved performance. This will help the government and its agencies, the librarians and order stake holders to identify the information needs peculiar to the visually impaired students in their universities in the view of providing the identified information needs.

The library should provide assistive/adaptive technologies for the visually impaired students. The international or donor agencies including the Non Governmental Organizations (NGO's) should be contacted by library heads for intervention and help in case of lack of fund. The university libraries should also provide information materials suitable for the visually impaired students. This will help to bridge the gap between the haves and have nots. Hence the visually challenged students come from different economic backgrounds and many may not afford them due to their high costs.

Conducting training and awareness programmes are apt. Training is the process of learning the skills one needs in order to carry out a particular job or activity (Cambridge English Dictionary, 2019). The librarians are to be trained for them to know the different types of assistive technologies available for the visually impaired students and also how each one can be useful for the visually impaired students. Most importantly, the visually impaired students should be trained on how to exploit the library resources within their disposal for their academic work. Finally, the librarians and every other library staff need to be trained in order to handle the visually impaired students well.

Conclusion

University libraries as information resource centers provide information services to users irrespective of their disability. Therefore, the visually impaired students should not be marginalized in accessing library resources and services which abound in this digital era. The assistive technologies if properly provided in the university libraries will help the visually impaired students to access right materials in accordance with the information needs they have satisfactorily. In light of the study, the following recommendations were made:

1. Libraries buildings should be designed and re-designed in order to accommodate the visually impaired students in the universities and also provide adequate facilities to suit them.
2. Orientations should be conducted for the new intakes that are visually impaired and they should be exposed to the available library resources and how to use them for their academic work and not necessarily taking them round the library.
3. The developing countries like Nigeria should key in to what the developed countries are doing in terms of copyright laws. The visually impaired persons are authorized to convert books into accessible audio and electronic formats in countries like USA, UK and Korea.
4. The assistive technologies and software's should be provided to the visually impaired students in the libraries and other technologies that can read out texts for them.
5. Provision of adequate funds is necessary in order to reach the information needs of the visually impaired students in universities.

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