Adaptive Technologies for Library and Information Services for Physically Challenged in Special Education Schools of Kaduna State.

By

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Abstract

This study is an assessment of the use of adaptive technologies in library and information services for physically challenged in special education schools of Kaduna state. The researcher used survey research design for the study; the population for the study comprises library staff and students (physically challenged) of Kaduna state special education school (KASSES), Demonstration school for deaf children Kawo - Kaduna and Hope for the blind school Wusasa - Zaria. Simple random sampling technique was used to select the sample for the study. Questionnaire and observation were adopted as instrument for data collection. Descriptive statistics technique was used to analyze the data and supported by tables and figures to aid clarity and understanding. The findings shows that computer, hearing aids and tape recorders are the most available, suitable and mostly utilized in all special education schools in north western states of Nigeria. This was indicated by high response recorded for computers (50%). Suggestions were offered on how to generally improve use of adaptive technologies for library and information services in special education school libraries of Kaduna State. The study concludes that qualified and dedicated service librarians should be posted to work in special education school libraries of Kaduna State. The study recommends that the state ministry of education should find ways of enhancing the use of adaptive technology in these special education schools because; these are genuine demand from adaptive technology users of the library.

Introduction

The concepts adaptive, accessible, enabling and assistive (technologies) all culminate into describing the equipment and software packages that would enable the people with physical challenge, (with special stress on people with impairment) to have well developed skills that would accord them access to the internet. The problem(s) the physically challenged children of school age have whether they are already in school or yet to be enrolled in schools in very steep (straight) and wide disparity the society has deliberately imposed on them. This creates a permanent impression that children that are physically challenged cannot excel in life. This stigma has been supported with the inclusion principle that has been denied them in the society and relegated them to total exclusion in all activities that have to do with decent ways of survival. The only decent way of survival is to accord every physically challenged child access to quality education which exposes every child with equal opportunity to all devices and use of technology as the fastest means of communication.

Persons with disabilities are found in any society on the globe. The possibility of educating them looks more of mirage than reality. Obani (2004) asserts that some cultures view people with disabilities and handicaps as having been cursed. Physical disability has a substantial long-term adverse effect on one's ability to carry out normal day to day activities. Both the causes and the consequences of physical disability vary throughout the world, according to UNESCO (1998), those variations are the result of different socio-economic circumstances and of the different provisions that states make for the well-being of their citizens.

Library service deliveries for the physically challenged should enable them have access to the equipment and resources that best suit their needs. Bopp and Smith (2001) stated that libraries should provide visually impaired users with an Optical Character Recognition (OCR) System which scans printed text and yields speech output, Braille output. The library needs to collect information about hearing impairment, caption films and videos and also train staff to communicate with sign language. Appropriate technologies should be used to provide access to spoken information for persons with auditory impairments or comprehension difficulties. Maina (2009) affirmed that, in order to create an

efficient and effective library programme for the physically challenged, library staff must recognize that some physically challenged have no control over their behavior and must be ready to give individual attention so as to understand their strongest communication mode.

Libraries and information centers around the world have developed specialized information services to meet the library and information needs of their visually impaired clientele. Babalola and Haliso (2011) identified these to include:

(i). Braille books- Braille is a system of reading and writing whereby raised dots are used to represent letters which are read by touch. Braille books are appropriate for users who have both visual and hearing impairment.
(ii). Talking books- these are audio versions of books that could be recorded on cassettes, CD-ROM, DVD and on the internet as e-books. Talking books are preferred by the majority of the visually impaired.
(iii). Talking newspapers- audio recordings of news articles in the dailies.
(iv). Large printed materials- these are documents printed in large fonts for use by partially sighted users.

Libraries are also taking advantage of advances in ICTs to increase information access for the visually impaired. A broad range of ICTs otherwise called adaptive or assistive technologies are now available to provide access to information in electronic databases and on the internet, giving blind users equal opportunity as the sighted. These innovative technologies include:
(i)Screen magnifier- this is software that allows text or graphics on computer screen to be magnified up to sixteen times the original.
(ii)Screen reader: a software that reads out the content of a document to the reader.
(iii)Voice recognition software: this allows the user to input data into the computer by voice. Atinmo (2000) observed that only three out of the 36 state libraries in the federation have library and information services to the blind. In Nigeria, library and information services to the visually impaired are largely undertaken by Non-Governmental Organizations (NGOs). Government intervention, on the other hand, is very minimal and focuses more on establishment of special education schools where teachers of physically handicapped children are trained rather than provision of library materials for

the visually impaired. (Atinmo 2000). The NGOs are highly committed to the education and empowerment of the visually impaired students. They produce textbooks in Braille and sell them to blind secondary school students at cost price of the printed copies.

Statement of the Problem
The physically challenged children in Kaduna States of Nigeria (mostly children with impairments) do not have equal access to quality education as children with no impairment. Such children with impairment are ignored, rejected and segregated in the society, thereby exposing them to hard manners of survival (begging for alms in order to survive). The adaptive technologies that are supposed to facilitate learning in schools are either not available, or inadequate or inaccessible to the physically challenged children. Kotso (2011), noted that "Library services for the physically challenged must enable them have access to equipment such as Braille, Braille embosser, tape recorders, learning aid, Kuzweil reader; talking books and service of sign language. All these adaptive technologies are lacking in libraries meant to be used by the physically challenged children. This study is going to assess the problem from the perspective of use of these adaptive technologies in the schools under study.

Research Objectives
The objectives of the study are:
1. To identify the adaptive technologies available for provision of library and information services in special education schools of Kaduna states Nigeria.
2. To identify the extent adaptive technologies are utilized for the provision of library and information services to the physically challenged in special education schools of Kaduna states, Nigeria.

Literature Review
Special Education deals with the education of the disabled who may have visual impairment, hearing impairment, physical and health impairment, mental retardation, emotionally disturbed, speech impairment, learning disabled or multiple impairments. Disability defines persons with impairments (blind or visually impaired, deaf or hard of hearing), learning disabilities, motor functioning problems, or neurological impairments Bosick et al, (2008).

Adaptive technologies are hardware, software and devices, which help people with disabilities and special needs to overcome the challenges of communication and learning. Adaptive technology is the use of hardware and software to assist individuals who have difficulty accessing information systems using conventional methods, increasingly referred to as "enabling technologies" or "adaptive technology" (Hogg and Sullivan, 2005).

The disabled can acquire education in the integrated/mainstream schools or through special schools. Yuen and Westwood (2001) quipped that the terms integration and mainstream are virtually synonyms, referring to the placement of a student with a disability or difficulty into ordinary school environment and regular curriculum. The students usually receive some additional support to help them do the required work in the classroom (Mittler, 1995). Integration in the mainstream enables students with disabilities to benefit from the stimulation of mixing with relatively more able students thus they have the opportunity to observe higher models of social academic behavior (Elkins, 1998; Knight, 1999). The levels in applying the adaptive technology application depends on whether the item is to be used personally, developmentally or as instructionally necessary (Judd-Wall, 1999) personally refers to adaptive technology as devices that are used by an individual student such as a pair of color blind glasses to enable learners to effectively interact with their environment.

Adaptive technology is a term used to describe a variety of software and hardware that disabled people use to help them with everyday life, gain access to information and study. Adaptive technology is technology used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible (Gelbwasser, 2006). Omotayo (1997) assert that people with limited hand function may use a keyboard with large keys or a special mouse to operate a computer, people who are blind may use software that reads text on the screen in a computer-generated voice, people with low vision may use software that enlarges screen content, people who are deaf may use a TTY (text telephone), or people with speech impairments may use a device that speaks out loud as they enter text via a keyboard. There is an infinite number of type and quality of adaptive devices to choose from. They include Braille embosser and its software, CCTV magnifiers,

book scanners, alerting and alarming devices (ALDs), and talking books.

Libraries are often in the unique position of being a community's sole source of important information. They have a responsibility to collect and provide information to their physically challenged clientele also, Aston (2009) posit that all library and information services available to other persons should be made available to the physically challenge individuals in a manner which does not stress the individual. Information should be in a format that the physically challenged can use and one readily acceptable to such individual.

Different types of disability require different types of specialized services such as library and information services. Lere (2009) categorized services to be provided by libraries for the physically challenged in general into four main areas:
a. Physical access to buildings, service counters, workstations, reading rooms, and shelves where possible. This can include providing:

i. Entrances with suitable, clear openings or automatic doors (preferred door with 900mm);

ii. Ramps outside and within the building; in case of stairs: no open treads handrail on both sides; ideally: elevators;

iii. Barrier-free hallways (on floor mats or furniture ;)

iv. Color contrast in carpets and on walls (also to function as warnings near stairs and doorways);

v. Effective lighting;

vi. Accessible table, computer stations and public service desks (table height and width, turning spaces, ergonomic chairs, lighting);

vii. Accessible public areas such as toilets and public telephone;

viii.   Shelving: should ideally fall within 750-200mm from floor level;

ix.   Signage: plain typeface (sans serif such as Helvetica, universe or Arial) on signs and website;

b. Intellectual access to the content of information carriers, including the availability of alternative format materials, adapted workstation and special software. Access can be facilitated on a wide variety of levels, requiring both technical and solutions. Alternative format materials including Braille, Large print audio-cassettes and digital files are part of the solution

c. Training for library staff members in helping physically disabled. All staff regardless of where in the library they work should be sensitive to and have a basic knowledge of different forms of impairment.

d. Virtual access to library services for those not able to visit the actual building. People who are prevented from getting to a library because of disability should not be denied access to any of the library services.

Methodology
The research method adopted for this research is survey method. The researcher adopted this method to elicit responses from physically challenged students and staff of three special education schools in Kaduna States of Nigeria. The populations comprise library staff and students (physically challenged) in three special schools of Kaduna State. Simple random sampling technique was used to select the sample for the study. Questionnaire and observation were adopted as instrument for data collection. Descriptive statistics technique was used to analyze the data and supported by tables and figures to aid clarity and understanding.

Analysis and interpretation
This section tried to find out the types of library services available in the three Special Education Schools under study. To achieve this, a list of library services was provided for the respondents to tick as many as available. The opinion of the respondents on the availability of the library services in their special school libraries are presented in table 1.

Table 1 Types of Library and Information Services available in the Special Education Schools

S/No	Information Services Available In Special Education Schools Kaduna State.	Special Education Schools		
		Kaduna State Special Educ. School	Demo Sch For Deaf Children Kawo-Kd	Hope For The Blind Wusasa Zaria
1	Computers ICT	✓	✓	✓
2	Braille services	✓	x	✓
3	Sign lang. services	✓	✓	x
4	Lending services	✓	x	✓
5	Reader services	✓	✓	✓
6	Reference services	✓	✓	✓
7	Audio materials	✓	x	✓
8	Optical services	✓	x	✓

✓ **= Available X = Not available   Source: fieldwork 2015**

Table 1 showed that all the special schools under study provide reader and reference services. The three schools have functional computers. The

responses from library staff indicated that most Special Schools provide sign language services, Braille services depending on the kind of special

school. Special Educational School (KASSES) Kaduna provides both sign language services and Braille Services. The two schools have both Hearing impaired and visual impaired students. The Blind schools have services like Braille, Audio Material services and Optical Services that are commonly provided for the Blind Students. This supports Rubin (2002) assertion that library information services are geared towards the nature of physically challenged.

Suitability of Adaptive Technologies in provision of Library and Information Services.
This is aimed at determining the suitability of adaptive technologies provision of library and information services to the physically challenged in North –Western States of Nigeria. The analysis indicates that 25% of the respondents agreed that adaptive technologies are very suitable in provision of library and information services. 23% indicates that, adaptive technologies are suitable. 15% were undecided on the suitability of adaptive technologies in their schools, 24% of the respondents see adaptive technologies not suitable and indeed the researcher observed lack of technical know-how on use of some of these adaptive technologies in the special schools. It could therefore be said that adaptive technologies are suitable but not utilized. This is seen in suitability of Braille, reader services, computer services etc.

Extent to which Respondents utilize Adaptive Technologies in School Libraries
The researcher tried to find out the extent to which respondents utilize adaptive technologies in school libraries under study.

The analysis
Indicates that almost all respondents utilized the adaptive technologies available in their school libraries. This is a true reflection of their response on perception of the suitability of adaptive technologies in their schools Utilization of adaptive technologies is high according to the need of the respondents. The extent of utilization as observed by the researcher could not be equally applied for all adaptive technologies available in each school due to lack of

expertise to operate such technologies like the Braille embosser.

Findings
From the study, the following were the findings;
1. Computers, hearing aids and tape recorders are the most available adaptive technologies in special education schools studied**.**

2. The available adaptive technologies in these special education schools studied are not well utilized.

Conclusion
The growth of the human society depends almost entirely on the contribution of its members. It is therefore clear that there is average availability of adaptive technologies in the special schools studied. However, among the three special education schools studied, the adaptive technologies available in these schools are not well utilized. It is also enough to conclude that these Special Education Schools in Kaduna states should be well equipped with functional adaptive technologies with software for proper utilization by the physically challenged pupils to enhance learning. The absence of functional adaptive technologies in Special Education Schools of Kaduna states maybe a hindrance to learning process if left un-checked. After all, almost all physically challenged children can be trained to live productive lives.

Recommendations
1. Braille embosser and its software (Desk Bury), Kuzweil reader software, CCTV magnifiers, book scanners and its software, alerting and alarming devices (ALDs), talking books to be provided in all Special Education Schools libraries.
2. Qualified and dedicated service librarians should be posted to work in Special Education Schools libraries.

References
Abiola O.A. (2007), Procedures in Educational Research. Hannijam publications p.80

Adams, J.S.K & Okyere, B.A. (2003).Introduction to special education: An African perspective. Legion-Accra Ghana: Adwinsa publication Ltd.

Ashton, T. (2002). The assistive technology assessment: An instrument for team use. JSETCJournal, 17(1) 1-5.

Atinmo, M.A. (2000). "Including the Excluded: The Challenges of Library and Information Services for visually handicapped readers in Nigeria in the new millennium."Paper presented at the International Special Education Congress, Manchester, UK, July 2000.

Babbie, A (2000) Survey Method. Belmont California; wadsworth

Babalola, Y. T., and Y. Haliso.(2011). "Library and Information Services to the Visually Impaired-The Role of Academic Libraries."Canadian Social Science 7(1): 140-147. **7**

Barbara T. M. (2010): Twenty Years of Assistive Technologies; Celebrating 20 Years of American with Disabilities Act, retrieved on 16/10/2012 at: http://americanlibrariesmagazine.org/features/09142010/twenty-years-assistive-technologies

Bodleian Library (2012) Assistive Technology, retrieve on 17/10/2012 at: http://www.bodleian.ox.ac.uk/services/disability/resources/assistive_technology

Bopp and Smith (2001) Reference and Information Services.An Introduction. Libraries unlimited, 3rd edition, Colorado

Bosick, N., Starcher, K., Kelly, K., &Hapke, N. (2008).Accessibility and universal design. In Commonwealth of Learning (COL, Ed.), Education for a digital world: Advice, guidelines, and Effective practice from around the globe (pp. 143 – 180). Vancouver, Canada: Commonwealth of Learning. http://www.colfinder.net/materials/Education_for_a_Digital_ World/Education_for_a_Digital_World_complete.pdf

British Educational Technology Agency BECTA, (2003). What the research says about ICT supporting special education. London: Author.

British Educational Technology Agency BECTA; (2001).Visual impairment and ICT. Milburn Hill Road, Science Park, Conventary. Retrieved from March 7, 2006, from http://.www.aten.scps.k.12.fl.us/.URL:http://wwwbectaorg.uk.

Elkins, J. (1998). The school context.In A. Ashman & E. J. Elkins (Eds.). Educating students with special needs (pp. 67-101). Sydney: Prentice-Hall. Gelbwasser, S. (2006) "Adaptive Technology: Not Just for People with Disabilities". http://webjunction.org/do/DisplayContent?id= 12114 .Accessed February 22, 2012

.. Hogg, M., Minihan, J., & Sullivan, J. (2005).Adaptive, assistive and instructional technology for literary Instruction.Retrieved December 4th, 2005 from http://. Webhostbrid gew .edu/ kobush/strategies.

Izu, R. O., &Atolagbe, S. A. (2003).Sourcing for local materials for educating the blind. Journal of Science and Technology in Special Education, 2, 57 – 63.

Judd-wall, J. (1999). Necessary categorizations (on line).Retrieved from February 10, 2002.At http://.www.aten.scps.k.12.fl.us/.

Jule.L.,& Earl. R. W. (2008) (Eds), Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications (pp. 6228-6235). Chesapeake, VA: AACE. http://www.editlib.org/p/29245

Kerlinger, F. and Lee (2000).Foundation of behavioral research. 4th ed. Ontario: Wadsworth /Thomson learning. pp 599-620

Kotso J.A. (2011). Library and information resources and service provision to physically challenged in Plateau State Special Education Institutions.A thesis of the Department of Library and Information Science; A.B.U. Zaria..

Kumbo, L. and Tronp M. (2006). "InfoSkills: a holistic approach to on-line user education". The electronic library, 20(1), 29-34. 4

Maina A. K. C. (2009) Problems And Solutions Faced By Visually And Physically Challenged Persons In Accessing Library Services And Lecture Halls retrieved on 12/03/2013 at http://www.etvh.org/conf2009/workshop.htm the blind and physically challenged in University of Nigeria, Nsukka Library. P. 626-629.

Mittler, P. (1995). Education for all or for some? International principles and practices. Australasian Journal of Special Education, 19(2), 5-15.New Zealand Ministry of Education (2010). What is special education? http://www.wikipedia.org/wikibooks.

Obani T.O. (2004). Handicap, Disability and Special Education. What parents and teachers wants to know.

Omotayo, B. O. (1997). Redeeming the image of federal university libraries: The federal Government/World Bank intervention. Nigerian Libraries 37 (1 & 2): 42-51.

Osuala, E.C. (2001) Introduction to research methodology 3rd (ed); Onitsha, Africana-first publisher limited. Pp. 154

UNESCO (1998). "World education report: teachers and teaching in a changing world", Retrieved April 18, 2010, from www.unesco.org/education/educprog/Iwf/doc/IAI.html

United Nations (1993) Standard Rules on the Equalization of opportunities for persons with Disabilities. Retrieved fromhttp://www.un.org/document/ga/res/48/48 r096.htmon 22/03/2012. W3C World Wide Web consortium (2013) Web Accessibility Initiative: retrieved on 12/4/2013 at: http://www.w3.org/WAI/

Waston, S. (2009). What is special education? Available: http://www.about.com Yuen, M., & Westwood, P. (2001).Integrating students with special needs in Hong Kong secondary schools. Teachers' attitudes and their possible relationship to guidance training. Retrieved on February 6, 2004 from http://www.internationalsped.com/documents/westwood7.doc