October 2013

LIBRARY SERVICES TO DISABLED STUDENTS IN THE DIGITAL ERA: CHALLENGES FOR OUTCOME ASSESSMENT

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CHALLENGES FOR OUTCOME ASSESSMENT

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ABSTRACT

The purpose of this study was to explore the use of electronic resources by disabled library users in south-east Nigeria. A survey method using interview style data collection method was deemed appropriate than administering a questionnaire. The interview was done by colleagues in the studied universities. All of the disabled student users were requested to participate in the study. Using interview style method, 194 disabled library users made up of 101 visually impaired and 93 mobility challenged provided the data. Findings showed that the only electronic resources available to visually impaired library users are taped books and online public access catalogue (OPAC). It was also found that all the listed items for the mobility challenged were not available in any of the studied universities. For the visually impaired, the findings favoured all the listed items except "Tactile Graphic" as been relevant to their use of electronic resources. The respondents perceived among others that libraries were established to serve only non-disabled users and that there is inadequate knowledge of the needs of those who do not or cannot use the library. Findings also reveals that cost of buying and equipping electronic resources for disabled students, most electronic resources are designed for normal users were mentioned as constraints. Analysis showed that people living with disabilities should be included in the system design that will facilitate universal accessibility and usability among others. Recommendations were also made.

INTRODUCTION

Libraries are service organizations which give services without discrimination to their numerous users, including disabled people. In recent years, the information superhighway, the Internet, has become a global gateway for information dissemination with the ability to share worldwide collections of information. Digital libraries have become significant channels for information dissemination by individuals or groups that select, organize and catalogue large numbers of documents (King et al, 2003). Similarly, the use of information technology is creating new challenges in research, instruction, and organization.

As more people with disabilities attend higher institutions, it is incumbent upon library management to provide the same level of service to them as is provided to users without disabilities. No doubt this group of people is making growing use of libraries and requires

enhanced assistance in their search for data-based materials. With the new technologies available in libraries, users are now being provided with unprecedented access to communication and information all over the world. A crucial requirement for libraries is that the information they preserve and deliver in many formats must be made available to all including disabled users. The United Nations Organization (UNO) recognizes this need when it states that,

> "To enable persons with disabilities to live independently and participate fully in all aspects of life, states parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communication, including information and communication technologies and systems, and to other facilities and services open or provided to the public, both in urban and rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:
>
> a. Builders, roads, transportation and other indoor and outdoor facilities, including schools, housings, medical facilities and work places;
>
> b. Information, communications and other services including electronic services and emergency services." (UNO, 2006).

In recent times, a good number of articles have discussed technologies that would enable students with disabilities take full advantage of library services. However, the sad truth is that the proliferation of information does not guarantee its accessibility. Availability does not equate to accessibility. The truth is that people with disability cannot use a library that has been designed for non disabled users.

There are various types of disabilities. The World Health Organization (WHO) defined disability as an umbrella term covering impairments, activity limitations and participation restrictions. In this study, we will be focusing only on visual impairments and mobility challenges.

STATEMENT OF PROBLEM

The ideal library in our contemporary world can be described as a facility where every member of the community is offered the full benefits of the latest information in both print and digital formats.

However, Nigerian University Libraries have been criticized on the grounds that people with disabilities are not provided for by the libraries. Internet use remains beyond the reach of many disabled library users as they are physically and psychologically unfit to do so. Librarians are not helping issues as any help rendered to disabled users is considered as an act of sympathy rather than as a necessary requirement which libraries must provide.

Infrastructure is another problem in most libraries in Nigerian Universities. There is hardly any provision of ramps or any electronic devices that assist wheelchair users to gain entry into the library. For the visually-impaired users, large monitors using large fonts, is one way to improve visibility but they are hardly available in our University libraries.

Cost is also a factor in the low use of ICT by disabled users. The cost per minute of internet use is higher in Africa than elsewhere. In Sweden, the annual cost of internet use for 20 hours is 0.12 percent of GDP per capita, whereas in Nigeria, it is 55.13 percent. Clearly, for most Africans, economic accessibility or affordability limits physical accessibility. (Ya'u, 2004)

The web has evolved rapidly in recent years, providing the public with access to vas t stores of information. However, not everybody is enjoying this. The web creates two potential difficulties for visually impaired persons. First, hypertext web documents are non linear, allowing users to link quickly to other pages that may have a completely different design and layout. This may cause confusion for those who cannot easily follow visual cues. Second, the web now revolves around video, multimedia real – time collaboration, and interactive documents, all of which are heavily visually based. (Chiang et al, 2005)

An important research issue in this connection pertains to services university libraries are rendering to disabled users in the digital era. Specifically, the study set out to answer the following research questions:

1. What are the electronic resources available in your library for disabled users?

2. How relevant are the electronic resources to the needs of disabled users?
3. What is the frequency of the use of electronic resources by users?
4. What are the constraints to use of electronic resources by disabled users?
5. What are the strategies for improving the usage of electronic resources by disabled users?

LITERATURE REVIEW

Research into the library services for disabled users in the era of digitization and their potential for promoting educational development has a brief history, due very largely to their relative infancy.

CONCEPT OF DISABILITIES

The disabled are the people who have physical, visual, mental or hearing impairment. The impairment has a substantial and long term adverse effect on the ability to perform normal day-to-day activities, that border on their survival within the society. The Oxford Illustrated Dictionary (1991) describes disabled as anything, or want that prevents one's doing something especially legal disqualification, physical incapacity caused by injury or disease. According to section 504 of 1973 American Rehabilitation Act, refers to a person who has a physical or mental disability impairment that "substantially limits" one or more major life activities, has a record of such impairment or is regarded as having such an impairment. Section 504 states that "No otherwise qualified individual with a disability … shall solely by reason of her or his disability be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any programme or activity receiving Federal financial assistance". (Cited by Hermon and Calvert 2006, p. 3).

Disability can cover a range of impairments including physical, sensory and cognitive, all of which can have an impact on a person's ability to interact with computer technology (Keller, Braithwaite, Owens and Smith,2001). Rousting (1998) also has a different approach to the determination of disability. He asserts that a person is disabled to the extent that he/she is prevented from full participation in society by constructed barriers. He gives an example with the lack of wheel chair access as a barrier that prevents a wheel chair user from enjoying a concert. As rightly pointed out by Vanderheiden (1994), the number of people living with disability is quite enormous. According to him, approximately 18 to 20% of a typical population is disabled,

and as we age, our chances of acquiring some form of functional limitation increases dramatically.

BENEFITS OF ICT TO EDUCATIONAL DEVELOPMENT

The incorporation of ICT into educational institutions has affected educational institution functioning at multiple levels; new configurations of learning spaces and timetables have been created; innovative teaching approaches have been devised; autonomous and active learning processes using the technology have been adopted. (Tubin et al, 2003) Chikering and Gamson (1991) state that good practice in undergraduate education using ICT Results in:

a) Encouraging student – faculty contact;
b) Encouraging co-operation among students;
c) Encouraging active learning;
d) Giving prompt feedback;
e) Emphasizing time on task;
f) Communicating high expectations;
g) Respecting diverse talents and ways of learning;

However, research also indicates that such benefits may occur using traditional methods. The internet offers rich and efficient scaffolding for educators to address them. (Rither & Lemke, 2000)

The internet can be used as a supplement to traditional instructional methods. To complement a lecture, instructors may ask students to find specified websites to gain more in-depth knowledge about a particular topic. An instructor may also ask students to search the internet for information on services offered in a particular location. (Usun, 2003)

There is no question about the urgent need to incorporate ICTs in education on a massive scale since this is the swiftest, most economical and largest scale method for narrowing the digital divide between and within countries. (funredes/org/mistica/castellano/ciberotea/tematica/esp-doc = olist2.html)

The question therefore is, where do people will disabilities fall in within this scenario? Specifically, where does the disabled Nigerian library user fit in? What facilities have our libraries put in place to enable the disabled user become a full participant in this rich ICT world?

RIGHTS OF PERSONS WITH DISABILITIES

The UNO convention on the rights of persons with disabilities, article 2, noted that "discrimination on the basis of disability" means any distinction, exclusion or restriction on the basis of disability which has the purpose of impairing or nullifying the recognition, enjoyment or exercise on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field. It includes any forms of discrimination, denial, of reasonable accommodation.

Title II of the Americans with Disabilities Act (1990) prohibits state and local government from discriminating on the basis of disability. To be in compliance with these statutory laws, institution of higher education have expressed a commitment to providing reasonable work place accomadations for employees and applicants for positions who have disabilities. The office of Cicil Rights (OCR) of US Department of Education, ensures the enforcement of these regulations and full implementations of section 504 and Title II of the act. Accordingly, institutions of higher education must provide students with disabilityes with "auxiliary aids". In that case, libraries and some of their significant and basic materials must be made accessible to students with disabilities. The library's basic index of holdings (Whether formatted online or on index cards) must be accessible.

The university libraries are very aware of the extra difficulties of access and use which disabled users can face. Thus, the American Library Association's (1995) Code of ethics guides reference librarians to provide unbiased responses to all requests by users. The present researcher is not aware of such code of ethics by the Nigerian Library Association. Similarly, the Nigerian National Assembly is yet to pass the rights of people living with disabilities Act.

The Australia Disability Discrimination Act provides an additional incentive for designing software that is accessible for everyone to use, including those with disabilities. This was highlighted in a recent court case in Australia which upheld a blind man's right to access the content on the Olympic website QC 2000 cited in Kelles, Braithewaite, Owens and Smith, 2001)

Notwithstanding this strategic rationale, Douglas and McGarty (2001) argue that it is likely that in the virtual environment, subjective bias will be similar to the pre-civil rights era and that greater inequality will arise.

THE IMPACT OF ICT ON LIBRARY SERVICES FOR THE DISABLED

More Recently, Preece (1994) noted that,

> "The technology to overcome difficulties in using conventional equipment exists in various forms and levels of complexity. Examples include electrophysiological and photoelectric devices that can sense and track the movements of the user. Eye-typers have been developed for people with severe motor impairments."

Leong and Higgins (2002) opined that such devices benefit users whose hands are disabled or otherwise occupied. With computers becoming commonplace in libraries, libraries should research on installing such devices. With the development of sophisticated assistive technology devices such as screen readers, totally blind people are now able to search the internet and retrieve Online Public Access Catalog (OPAC). The National Library of Korea's initiative for web-based services to the visually impaired has raised awareness of information needs for the disabled in mainstream libraries, and many libraries have digitalized library materials and made them accessible to wider audiences, through websites. Consequently, visually impaired users are able to gain access to electronic resources. (Lee, 2007)

The most vital benefit of the electronic information resources is access for anyone to anything from anywhere at any time. There is no doubt that the use of computers and the internet has already had a remarkable impact on disabled users. This brings us to the issue of accessibility. The impetus for addressing the issue of accessibility becomes increasingly urgent when we consider the proliferation of information systems (including the web) in our everyday life. Increasingly, we are encouraged and often expected to use technology for obtaining information on banking, recreation, government services, education and shopping services. (Eu, 2000)

Definitely, the issue of universal accessibility is a difficult one. One might expect a good deal of direction on the issue of designing systems to accommodate a diverse range of users including disabled users. Indeed, quit a few studies have been published in this area. The Universal Design Research Project (1998) writes:

> "In a survey of twenty-two technology based companies, it was found that there were many barriers to the implementation of universal design. These included fear of cost in re-tooling and re-training and fear of slowing down time to market. Other barriers identified were lack of interest including the belief that universal design was simply designing for disability and therefore not a target market. Organizational structures that make changes to design methods difficult were also identified as a barrier."

As rightly pointed out by Keller, Braithwaite, Owens and Smith, "including people with disabilities in the system design and development process facilitates the creation of universally accessible and usable products. If technology is to respond to a diverse range of needs, inclusion of people who have a disability needs to be more than a token gesture. Such inclusion needs to ensure wide representation of potential users". In addition, Gibson (2005) noted that when designing a web site, online public access catalogue system or other web based material, it is important to give attention to accessibility issues and to ensure that all can use it, including people who use screen readers or who do not use a mouse.

The rapid and pervasive integration of new technology in our lives and libraries in particular has generated increased interest in their potential role in helping disabled users make effective use of the library. However, some technology may be of great disadvantage to disabled people. Unfortunately for many people who have a disability, exclusion is the outcome of the design, as many software designers are unaware of accessibility issues. Such exclusionary practices can be regarded as discriminatory. (Keller, Braithwaite, Owens and Smith, 2001)

Writing on ways of accommodating people with disabilities, Cantor (1996) proposes the ADAPTABLE approach in planning accessible libraries. According to him, the A-D-A-P-T-A-B-L-E acronym represents eight workplace accommodation strategies, namely:

- Assistive devices
- Alternate formats
- Personal support
- Transportation services
- Adapted furniture
- Building modifications
- Low-tech devices
- Environmental adaptations

Throughout the university library, considerable effort should be put into the design and development of technological learning environment for disabled users and it is important that they are used effectively.

Sue Samson's (2011) study on the best practice for serving students with disabilities was aimed at establishing a set of best practices that reflect the spirit of the 1990 Americans with Disabilities Act (ADA) and comply with the new 2010 Department of Justice regulations. At each of eight academic libraries in four Rocky Mountain States, the librarian most directly responsible for library services to students with disabilities was interviewed. She found that self - reporting students with disabilities were the largest minority group at three campuses and the second largest minority group at another three campuses. Five libraries based their services primarily on reaction to complains and three libraries incorporated more elements of universal access. No consistent or common approach or set of best practices in providing services to students with disabilities existed across the eight participating libraries. In a related study, a similar study was done by Cater (2004) and he identified three areas where academic librarians can concentrate efforts to better meet the needs of disabled students. They include bibliography instruction, web page design, and staff training. He suggested that all students can benefit from increased sensitivity and understanding of different learning styles, improved quality services to conduct research independently and easier access to information.

GOALS AND METHODOLOGY OF THE RESEARCH

The researcher mounted a Disability Accessibility Needs Project (DANP) in which all the Federal and State owned Universities in the South-East geographical area of Nigeria were surveyed. The study attempted to discover whether the university libraries in south East Nigeria were satisfying the various information requirements of disabled students in the digital era. All the nine federal and state universities in the South East were used for the study.

The focus group interview technique was used as a research tool to elicit information from the respondents. Due to their present physiological conditions, an interview - style data collection method was deemed more appropriate than administering a questionnaire. Some of the reasons for choosing an interview – style data collection method were that (a) the respondent might not be able to present their thoughts and feelings in a manner they would have liked. And (b), they would have problems indicating their responses on paper.

The original intention was to collect the data online. However, given the low response rate the researcher might get, it was felt that an interview – style data collection method might elicit a better response rate, and this was indeed the case. The response rate for this survey was 90 percent.

Data Analysis

The data from the respondents were analyzed using percentage tabulation.

LIMITATIONS

The sample was limited to disabled students library users in federal and state universities in south-east Nigeria. Therefore, findings cannot be generalized to the entire population of disabled students in Nigeria, even though it would not be out of place to speculate that the situations might be similar nation-wide.

Selection of Subjects

Due to the number of disabled users (visual impairments and mobility challenge), the researcher decided to involve all the identified disabled users. This was to ensure that

information elicited from the respondents would be variable for the study. The researcher sampled all the 9 Federal and State Universities in the zone (See table 1).

Table 1: Distribution of Disabled Students (Visually Impaired and Mobility Challenged) in Universities in South-East, Nigeria

S/N	University	Visual Impaired	Mobility Challenged
1	University of Nigeria Nsukka	35	13
2	Imo State University Owerri	2	23
3	Abia State University Uturu	6	6
4	Ebonyi State University Abakiliki	7	6
5	Nnamdi Azikiwe University	30	13
6	Michael Opara University of Agriculture Umudike	4	6
7	Federal University of Technology Owerri	10	8
8	Anambra State University Uli	6	10
9	Enugu State University of Technology Enugu	13	14
	TOTAL	**113**	**103**

Sources: Various Academic Planning Units of the Studied Universities

A total sample of 216 respondents was used for the study as indicated in table 2.

Table 2: Samples for the study

Items	**Sub – total**
Visually Impaired	113
Mobility Challenged	103
Grand Total	**216**

Response Rate

The interview- style of data collection was done with the help of some colleagues in the studied universities. First their phone numbers and e – mail addresses were identified from a list of those that attended the 2009 annual conference of the Nigerian Library Association. Contacts were made and some agreed to help the researcher with the interview, hence the instruments were sent to them via email and the results of the interviews were collated and sent to the researcher via courier.

One hundred and ninety-four respondents representing 90% of the respondent were interviewed. Twenty-two (10%) of the total respondents were not interviewed and therefore were not used for the analysis. The reason was that these 22 identified respondents did not make themselves available as scheduled (see table 3).

Table 3: University – Wise Response Rate

S/N	**University**	**Visually Impaired**	**Number Used**	**Mobility Challenged**	**Number Used**
1	University of Nigeria Nsukka	35	34	13	11
2	Imo State University (Evan Enwerem University)	2	2	23	22
3	Abia State University	6	4	10	9

4	Ebonyi State University	7	5	6	5
5	Michael Opara University of Agriculture Umudike	4	3	6	6
6	Federal University of Technology; Owerri	10	8	8	8
7	Anambra State University Uli	6	6	10	8
8	Nnamdi Azikiwe University Awka	30	28	13	12
9	Enugu State University of Technology Enugu (ESUT)	13	11	14	12
	TOTAL	**113**	**101**	**103**	**93**

Table 3 indicates that a total of 101 (one hundred and one) visually impaired and 93 (ninety-three) mobility challenged respondents respectively were used for the study.

CHARACTERISTICS OF THE RESPONDENTS

From the sample of 216 physically-challenged students, 186, or 86, percent were male and 30, or 14 percent, were female. University of Nigeria, Nsukka and Nnamdi Azikiwe University Awka have 30 and 26 of male visually, impaired students respectively, while in the female category the same Universities have 5 and 4 respectively of female disabled students. These two University's have the largest number of female visually impaired students.

In the mobility- challenged category ESUT has also the largest number of male mobility challenged students (13), followed by University of Nigeria, Nsukka (12)

TABLE 4: DISTRIBUTION OF THE RESPONDENTS BY SEX

UNIVERSITY	VIISUALLY IMPAIRED	MALE	FEMALE	MOBILITY CHALLENGED	MALE	FEMALE
1. Abia State University Uturu	6	5	1	6	6	0
2. Anambra State University Of Technology Uli	6	4	2	10	8	2
3. Ebonyi State University Abakaliki	7	6	1	6	5	1
4. Enugu State University Of Technology, Enugu	13	11	2	15	13	2
5. Federal University Of Technology Owerri	10	9	1	9	7	2
6. Imo State University Owerri	2	2	0	23	21	2
7. Michael Okpara University Umudike	4	3	1	6	6	0
8. Nnamdi Azikwe University Awka	30	26	4	15	12	3

9. University of Nigeria	35	30	5	13	12	1
TOTAL	113	96	17	103	88	13

RESULTS

AVAILABILITY OF ELECTRONIC RESORCES

Visually impaired respondents were asked to identify electronic resources available in their library ,by indicating, “available” or “Not available” For the visually impairmedt in this sample the available electronic resources in their libraries are taped books (22 or 23%) and online public access catalog(OPAC) (35 or 24%). Other resources such as large print, screen reader etc are not available as reflected in table 5 and fig. 1.

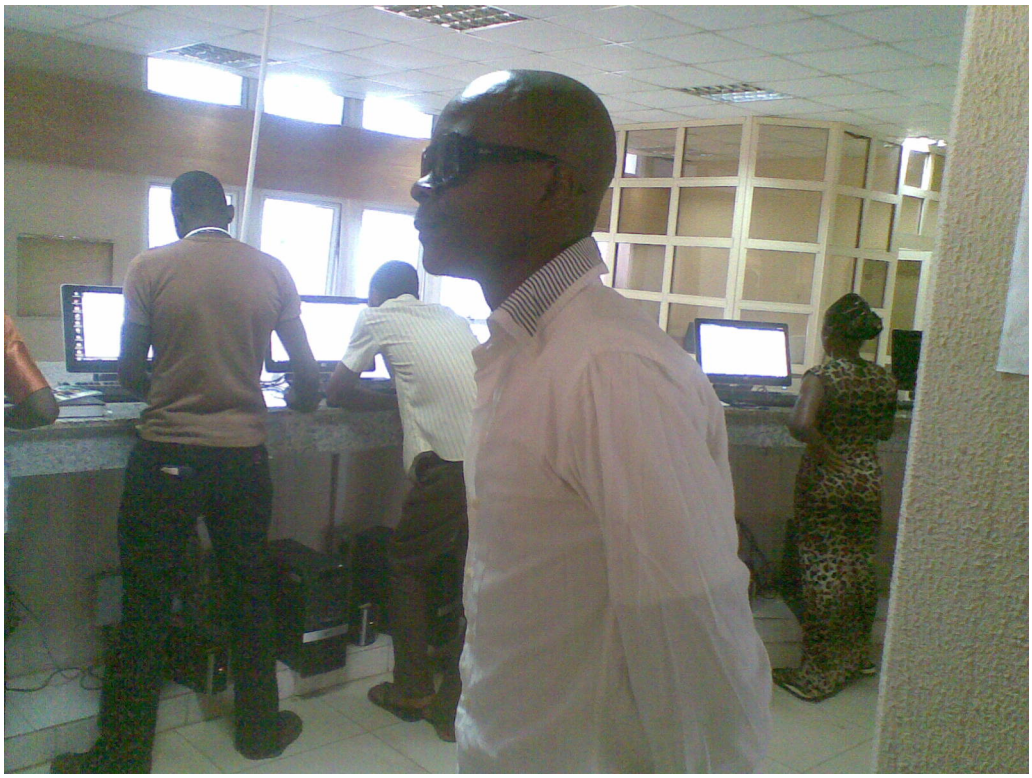

FIG. 1 A Visually Impaired Student At The Nnamdi Azikiwe Library, University Of Nigeria, Nsukka Willing To Participate In Electronic Information Search But Was Placed In Disadvantaged Position Due To Lack Of Facilities.

For the mobility challenged as reflected in table 5B and fig. 2 and 3, the participants indicated that all the listed items are not available in their libraries.

FIG.2 A wheelchair disabled student at the entrance of Nnamdi Azikiwe Library, University of Nigeria, Nsukka cannot enter the library because there is no ramp or special lift with disabled friendly feature to assist him.

FIG.3. A Wheelchair disabled student of Nnamdi Azikiwe Library, University of Nigeria, Nsukka moping at other users because there are no facilities for him to use the computer.

Key: AV – Available, NAV – Not available

Table 5A, Availability of electronic resources (Visually Impaired)

Item	**AV**	**%**	**NAV**	**%**
Screen reader	0	0	101	100
Electronic text.	0	0	101	100
Large print	0	0	101	100
Taped books	23	23	78	77
Tactile graphics	0	0	101	100

Online public access catalog	35	35	66	65
Larger Screen video with tele-text and sub-title facility	0	0	101	100
Screen enlargement software	0	0	101	100
. Speech synthesizer with speech output	0	0	101	100
Text enhancement software	0	0	101	100

Table 5B, Availability of electronic resources (mobility challenged)

Rank	AV	%	NAV	%
A table and keyboard tray that is adjustable.	0	0	93	100
Special fitted lift to move the person inside.	0	0	93	100
Photoelectric devices that can sense and track the movement of the user.	0	0	93	100
Lift for wheelchairs to all the floor	0	0	93	100
Automatic-opening external doors and internal doors between the foyer and access gates	0	0	93	100
Lift with several disabled friendly features such as additional buttons positioned for someone in a wheelchair.	0	0	93	100
Digital hand rail on steps.	0	0	93	100

Key: SR- Strongly relevant, R- Relevant, SNR- Strongly not relevant, NR- Not Relevant

Table 6A, Relevance of electronic Resources (Visually Impaired)

Items	SR	%	R	%	SNR	%	NR	%
Screen reader	24	24	61	60	9	9	7	7
Electronic text.	31	31	49	49	14	14	7	7

Large print	71	70	20	20	8	8	2	2
Tape books.	83	82	18	18	0	0	0	0
Tactile graphics.	3	3	79	78	15	15	4	4
Online public access catalog.	86	85	12	12	2	2	1	0.9
Large screen video with teletext and sub-title facility	91	90	10	10	0	0	0	0
Screen enlargement software	70	69	30	30	1	0.9	0	0
Speech synthesizer with speech output.	93	92	8	8	0	0	0	0
Text enhancement software.	74	73	20	20	5	5	2	2

Table 6B, RELEVANCE TO MOBILITY CHALLENGED

A table and keyboard tray that is adjustable	76	81	16	17	1	1	0	0
Special fitted lift to move the person inside	81	87	10	11	3	3	0	0
Photoelectric devices that can sense and track the movement of the users	81	87	10	11	3	3	0	0
Lift for wheelchairs to all the floors.	90	97	3	3	0	3	0	0
Automatic – opening external doors and internal doors between the foyer and access gates.	91	98	2	2	0	2	0	0
Lift with several disabled friendly features such as additional button position for someone in a wheelchair	92	99	1	1	0	1	0	0
Digital hand rail on steps.	89	96	2	2	0	2	0	0

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Respondents were asked to rate the relevance of the electronic resources available in the library, selections using “strongly relevant” or “Not irrelevant,” findings, displayed in table showed that items such as large screen video with teletext and sub-title facility, speech synthesizer with speech output and taped books are selected as more strongly relevant than

others even though many of the resources were viewed as relevant. The least relevant items were the electronic text and tactile graphics.

Again the findings show that "the automatic –opening external doors and between the foyer and access" gates and "lift with several disabled friendly features such as additional buttons positioned for someone in a wheelchair" were voted as very relevant to the mobility challenged library users.

Perceptions on Libraries and Library Services.

Respondents were asked to rate their discernment of libraries and library services by choosing from 5 itemized services identified by the researchers from discussions with the respondents. The respondents were asked to rate the itemized services using "strongly agreed," "agree", "strongly disagree", "and disagree". Table 7, shows that a majority of the respondents are of the opinion that libraries were essentially established to suit normal users and that there is inadequate knowledge of the need of those who do not or cannot use the library. As reflected in table 7, the findings also show that "special furniture designed to accommodate mobility challenged users" were perceived by the respondents as (strongly disagreed) and (85%) and absolutely essential disagreed(15%)

Key : SA- Strongly Agree, A- Agree, SD- Strongly Disagree, D- Disagree

Table 7, PERCEPTIONS ON LIBRARIES AND LIBRARY SERVICES

ITEMS	SA	%	A	%	SD	%	D	%
Libraries were established to service only non-physically challenged users.	110	57	65	34	13	7	6	3
There are reading machines at libraries to translate printed documents to speech or cassette.	0	0	9	5	171	90	14	7
Well- trained library staff are always willing to offer helps at any point in time	0	0	3	2	176	8	15	8
Special furniture designed to accommodate mobility challenged users.	0	0	0	0	79	41	14	7
There is inadequate knowledge of the needs of those who do not or cannot use the library.	169	87	20	10	5	3	0	0

Resources Constraints.

Respondents were asked to identify the obstacles they faced when using the library by choosing from six obstacles identifies by the researches from discussions with respondents and others. Respondents were allowed to indicate "strongly agree","agree","strongly disagree"," disagreed". Table 8, shows that the most common constraints faced by disabled student users in terms of using electronic resources was cost of buying and equipping electronic resources (93%), followed by "most university libraries are still unaware of the needs of the of disabled student users (91%) followed by" most electronic resources are designed for normal users"(73%). The finding also showed that the respondents did view the high development cost and the small market in assistive technology as a constraint (70%).

Table 8, RESOURCES CONSTRAINTS

Items	**SA**	**%**	**A**	**%**	**SD**	**%**	**D**	**%**
Cost of buying and equipping electronic resources for disabled users	181	93	10	5	3	2	0	0
Most electronic resources are designed for normal users.	141	23	16	8	37	19	0	0
Non-passage of disability discrimination act by the federal government	35	18	126	64	31	16	2	1
Due to high development cost and a small market in assistive technology, few industries show little interest in development of the technology.	136	70	31	16	15	8	12	6
Most university libraries are still unaware of needs of the disabled.	176	91	15	8	3	8	0	0
Library staff provides services to the disabled from sympathies rather than as their equal rights and would only consider serving them after serving normal users.	112	58	36	19	33	17	13	6

Resource Strategies.

Respondents were asked to identify the strategies that may improve library usage by disabled students ticking strongly agree, agree, strongly disagree and disagree, as displayed in table.9, Findings showed that majority of the respondents (97%) believed that web- based library service should be introduced to the disabled users. Further analysis showed that 181(93%) of the respondents agreed that the national assembly should enact library act in order to force libraries to have provisions for the disabled users. A total of 189(97%) thought that the disabled users should be given unsolicited assistance by the library staff.

Table 9, RESOURCE STRATEGIES

Web based library services should be introduced to the disabled users.	SA	%	A	%	SD	%	D	%
The national assembly should enact library Act in order to force libraries to have provision for the disabled.	181	93	13	7	0	0	0	0
The library should raise awareness of the library services, the information needs and the rights of people living with disabilities.	31	16	161	83	7	4	5	3
Awareness can be raised by in-house training, seminars, workshops, publications and promotional materials.	35	18	159	82	0	0	0	0
The library administrators can organize training programmes for librarians and other library staff which will include areas of difficulties facing disabled users	51	26	104	54	31	16	7	4
The disabled should be given unsolicited assistance by the library staff.	189	97	5	3	0	0	0	0
People with disabilities should be included in the system design that will facilitate universal accessibility and usability.	173	89	15	7	4	2	2	1

DISCUSSION

The result of the study showed that there is nothing on the ground for disabled student to participate fully in the ongoing technology exploits. It was found that the only electronic resources available are taped books and online public access catalog (OPAC) and these have not been fully put to use. The study also indicated that all the items for the mobility challenged were not available in any of the studied samples, suggesting that, in general terms, that mobility challenged users are not benefiting from the new technology (see fig. 2 and 3).

The result is in line with the opinion of WHO (2002) when it noted that adolescents with a physical disability often experience many restrictions in daily life, such as in self care, mobility and communication activities. This has in many ways hindered their full participation in academic activities. Lathouwers, Moor and Didden (2003) argued that technology such as internet provides opportunities to communicate with the outside world, in spite of impairments, thereby expanding the world of disabled people.

On the issues of the relevance of the listed electronic resources the respondents (visually impaired) favored all the items except tactile graphics, while mobility- challenged users indicated that all the listed items are relevant to their use of electronic resources (see table 6, 12-17). Keller, Braithwaite, Owens and Smith (2001) have suggested that if technology is to respond to a diverse range of needs, inclusion of people who have disabilities needs to be more than a token gesture. Such inclusion is needed to ensure wide representation of potential users.

Furthermore, results showed that the respondents perceived libraries in their current physical designs as having been established to serve only non-physically challenged users and that there is inadequate knowledge of the need of those who do not or cannot use the library. Marshall (1991) pointed out that library education has focused mainly on the philosophic, organization and routines of the profession and with people who use libraries as they are. Furthermore, Dequin (1983) argues that librarians need not have extensive medical knowledge but should be familiar with the basic characteristics of the primary handicapping conditions. Understanding how a particular disability may affect a patron's use of library materials and services may help a staff member respond appropriately. The study revealed that the respondents seem to agree that the following constitute obstacles to electronic resources use by disabled students;. (a) cost of buying and equipping electronic resources for disabled users(93%.) (b) most electronic resources are designed for normal users (72%), due to high development cost, few industries show little interest for development of the technology (70%),(e) most university library are still unaware of needs of disabled users .(90%) and (d) library staff provide services to the disabled users from sympathy rather than as their equal right. Non-passage of disability discrimination act by the federal government was not perceived as a great obstacle, as only 18% of the respondents strongly agreed. 93% of the respondents agreed that the National Assembly should enact a library Act that will compel libraries to make adequate provisions for the needs of disabled users; a further 97% of the respondents agreed that the disabled should be given

compulsory and unsolicited assistance by library staff.89% of the respondents supported the view that the needs of the disabled should be included in the system that will facilitate universal accessibility and usability (89%).

CONCLUSION

The uneven availability of new information technology among the disabled compared to non- disabled and non-disabled student users has highlighted a digital divide that separates students who are able to access electronic resources from those who have no opportunity to do so. Empirical evidence on disabled users in south east Nigeria has demonstrated that despite the rapid innovations in communication technology which have drastically transformed services in the libraries. Some people mostly the disabled are at a severe disadvantage in accessing electronic resources. The division has the potential to enlarge the existing educational gap between the disabled and non-disabled students.

Vanderheiden (1998) in Keller, Bralthwaite,Owens and Smith (2001) wrote that ensuring that information system are accessible and usable for a range of users, including those with disabilities, is not an easy task and requires co-operation between a number of stakeholders. Operating system provision, application software developers, hardware developers, assistive technology providers and website developers all have a responsibility to contribution to the pursuit of accessible information systems, particularly for the disabled.

RECOMMENDATION

In the light of the findings, the discussion, and limitation of this study, the following recommendations are made:

a. Based on the findings of the study, it is very clear that disabled students are not benefiting from the ongoing technological revolution. The library authority and the university management should ensure that the benefits of the new technology should not bypass disabled students.

b. The departments of Electronic Engineering should be commissioned to design various softwares which would enable disabled users to access the internet and other available technology with little or no difficulty.

c. The existing library facilities should be redesigned and modified with new technologies so as to enable mobility- challenged users to effectively and efficiently use library resources.

d. Library staff and librarians should be oriented to ensure that no one is discriminated against in terms of provision of access to all library resources.

e. Each library should establish a committee headed by a senior academic librarian to ensure that disabled users are not discriminated against.

f. Universal accessibility should be made an integral component of the overall service development plan.

g. The library management should endeavour to bridge the gap between the information needs of non-disabled users and disabled users.

REFERENCES

AMERICAN Library Association (1995) American Library Association code of ethics of the American Library Association. Retrieved 14, Feb.2011 from http:// login. oarescience.org\whalecorawww.sciencedirect.com.

Cantor, A (1996). The ADAPTABLE approach: A practical guide to planning accessible libraries. *Library Hi Tech*, 14, 41-45.

Chickering, aw and Z .F Gamson (1991) Applying the seven principles for Good practice in undergraduate education. New Directions for teaching and learning, San fransisco, jossey-Bass, 47, 63-69.

Clemmer, Joel and Smith, David (1992) "Trends and Issues" in libraries for the future: planning Building that work, Ron G martin, ed Chicago: American library Association.

Dequin, H.C (1983) Librarians serving disabled children and young people. Littleton co: libraries unlimited.

Douglas K.M and Mcgarty, C (2001) Identifiably and self-presentation: Computer-Mediated, Brittesn *Journal of social psychology* 40:391-416.

EU (2000) Europe 2002: An information society for all(2000) European union.http://www.europa.euint/comm./informationsociety/Europe/society/Europe/actionplan/index-en.htm.

Keller ,S,Brairhwaite R,Owens S, Smith K (2001) Towards Universal accessibility: including users with a disability in the design process. Acis 2001 proceedings paper 51.

Kenniston,Kenneth(2003) The four digital divides: introduction. Delhi: Sage publishers.

King N,Hoi-Yan Ma,Zaphiris , Petrie H, and Hamiiton F(2003) An incremental usability and accessibility, evaluation framework for digital libraries. In Peter Brophy, Shelagh fisher, jenny Craven (Eds) Libraries without walls 5: The distributed delivery of library and information services. Proceedings of an international conference held on 19-23 sept. 2003, organized by the center for research in library and information management (CERIM), Manchestes metropolition university.

lee,Young people Sook(2001) integrating people with disabilities into mainstream library services .(http://www.ifla.org/iv/lfla 73 / index.htm retrieved 21/1/1011

Marshall .M.C (1991) Managing library provision for handicapped children. London: mansell.

Morgan, Greg (2003) A word in your ear: library services for print disabled readers in the digital age, *Electronic library* vol. 21 No 3,234-239,

NUO (2006) convention on the rights of persons of disabilities (http://ww.un.org/disabilities/conventional/conventionfull.shtml.20-1-2001.

Omotayo, B.O (2010) Access, use, and Attitudes of Academics toward Electronic journals: A case study of Obafemi Awolowo university, ile-ife *library philosophy and practice*.

The oxford illustrated Dictionary (1999) coulson, J, Hutchinson L, carr, C. T, Eagle C (eds)(1999)

QC,T.H.W.C(2000)MagurireVSOCOG2.URL, Retrieved on 20 March,2011 from http://www.gumanrights.grv.aul/disability-right/maguire-v- SOCOG2.htm.

Rehabilitation Act (1973) Rehabilitation Act (1973) 29 U.S.C.A.

Rither, M.N Lemke, Karen (2000) Addressing the "seven principle for good practice in undergraduate Education" with internet-Enhanced Education. *Journal of geography in higher education,* 24(1) 100-108

Roulstone, A (1998) Enabling technology: disabled people, work and new technology, Buckingham, Open University.

Shllobe, Gbaje,E (2007)Provision of online information services in Nigerian Academic libraries .*Nigerian libraries* 40:1-14

Tubin, D, mioduser D,nachmias, forkosh-Baruchi A(2003) Domains and levels of pedagogical innovation in schools using Israel. *Education and information technologist* 8:2,127-145

UniversalDesignResearchProject(1998)available http://www.trace.wisc.sun.com/tech/access Retrieved 21-1-2011

Usun, S. (2003) educational uses of internet in the world and turkey: a comparative Review Turkish online *Journal of distance Education*. Vol.4 N0 3, 1-13.

Vanderheiden, G (1994) Application software design Guidelines: increasing the Accessibility of Application software to people with Disabilities and older users available at http://trace.wisc.edu/docs/software-guidelines/toc.htm.Retrieved 21-4-2011

Vocational Rehabilitation Branch-ILO (1999) proceedings of the international symposium on job retention and rectum to work strategies for disabled workers. Geneva: international Labour office.

Wall, Patrick .S and Sarver, lee (2003) Disabled student access in an era of technology available at http://academic.research.microsoft.com/paper/10412367

WHO, 2002 WHO-FIC Collaborating centre (2002) international classification of functioning, the Netherlands: Bohn strafleu van Logum.

Ya'u, Y Z (2004) The New imperialist Africa in the Global Electronic village. *Review of African political economy* no 99: 11-29.