A Review of Literature on Library services for visually impaired and disabled students in digital era

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Abstract:

The availability of information to the blind and visually impaired has recently improved significantly. The reason is that only a small portion of published works have been made available in the modified formats due to the sluggish and expensive manufacture of formats readable to them (such as Braille and audio). The availability of text-to-speech software, which reads aloud digital text shown on a computer screen, has substantially improved the situation with the advent of digital formats. Due to this, everyone else, even those who are blind or visually challenged, can access digital information without paying any extra fees. In this context, digital libraries on the Internet whether they contain full-text publications or secondary information sources are especially crucial. Discussions of the current digital libraries and collections will be conducted from the viewpoint of blind and visually impaired users while also taking accessibility concerns into account in terms of user interface and information-seeking behavior. The goal of the current study is to critically review, evaluate, summarize, compare, contrast, and correlate various scholarly papers and other pertinent sources of information published on library services for people with visual impairment in Higher Education, with a focus on India.

Keywords: Library services, visually impaired, digital era, digital libraries, digital formats

Introduction:

The 'information era' has officially begun as a result of the digitization of information, which has introduced a completely new concept into every aspect of human life. Academics benefit greatly from electronic resources because they make it simple to extract information with just one click. E-resources make it easier to store, organize, and retrieve information because they are more up to date and current than print resources. These

resources are now essential to academic institutions and their use has grown over time both globally and in developing nations, where it is of the utmost importance (Pelzer & Wiese, 2006). The most popular e-resources are e-books, e-journals, e-theses/dissertations, e-maps, etc.; they can be accessed using computers or mobile devices through the internet or intranet (International Federation of Library Associations and Institutions, 2012). The World Wide Web (WWW), which offers the chance to publish, affordable website ownership, simple updating, and the potential to reach a large audience, is the primary force behind the growth and development of these resources. Library services have changed from traditional information dissemination to digital knowledge transfer as a result of the development and evolution of electronic resources over the years. Before the development of e-resources, visually impaired people had to rely solely on Braille for all of their educational needs because there were only a limited number of Braille books available. The term "visually impaired" is used to describe people who are partially sighted or completely blind, according to Friend (2009). According to a report published by the World Health Organization in 2010, there are 28.5 billion visually impaired people in the world. 24.6 Crore of them have low vision, and 3.9 Crore are blind. Approximately 90% of people who are blind or visually impaired live in developing nations (IAPB, 2013). 53 lakh people in India have some form of visual impairment (Census of India, 2011). The statistics are very depressing, but the nation's disabled population can become advantageous and aid the nation in achieving its economic objectives with good educational opportunities and increased access to jobs. The federal and state governments both have a variety of welfare programs for people with disabilities. The "Persons with Disabilities Act (PWD) 1995" validates these policies and programs.

Many articles have recently discussed the technologies that would let students with disabilities take full advantage of the services offered by libraries. The proliferation of information does not, unfortunately, ensure that it is accessible. Accessibility is not the same as availability. The fact is that a library built for non-disabled users cannot be used by people with disabilities. Different disabilities come in different forms. Disability is a general term used by the World Health Organization (WHO) to refer to impairments, activity restrictions, and participation restrictions.

Significant need of library services for visually impaired students:

The majority of readers can use all of the library's resources since they can read well, however kids with vision impairments cannot read due to their blindness or low vision. They must rely on the Braille language created by Luis Braille since they find it difficult to read ordinarily. They recognize the words on Braille prints with the use of touch. The facilities necessary for individuals to use technological gadgets for reading and knowledge advancement through information distribution must thus be made available by librarians and information specialists. This would make the educational process more efficient for the underprivileged class of readers who are blind or have low vision. With the development of ICT, a large number of books and periodicals are now accessible in e-format and can be kept on a computer or other storage device for free or as part of a subscription. Students who are blind or visually handicapped can only read electronic books with the aid of screen reading

programs that include audio features. With the aid of a Braille printer, they can also print the necessary pages from electronic books, journals, or other sources and read the printed document (in Braille) for reference. For providing library services to visually challenged pupils, a "Braille Library" made up of modern computers and communication tools with a Braille printer and screen reading software is crucial. The Braille library must have audio books as well as Braille publications. Therefore, libraries should consciously work to foster reading habits among them by creating Braille libraries. "Over the past decade, an international awareness has developed, in particular among organizations of and for visually impaired people, that visually impaired people's access to reading materials remains highly restricted and reduces their life chances both in terms of employment and in leisure," it is stated in the international report on library and information services for visually impaired people that was produced by IFLA. The Government of India has developed particular provisions for the employment of the visually impaired in several industries due to the necessity of this service for the visually impaired pupils, and this service will qualify them for the benefits of government programs for their employment. However, libraries must play a significant part in enabling people to qualify by offering them unique services.

How the blind and visually impaired read: assistive technologies:

Access to information for the blind and visually impaired has significantly changed because to computers and assistive technology. A screen reader (software) or speech synthesizer (external hardware unit) that reads aloud text displayed on the screen are examples of assistive technology. The blind and visually handicapped can utilize a Braille display in place of a screen. The alphabets that are utilized differ between the screen reader and the Braille display (Braille and common). Additionally, one must keep in mind that the Braille display only shows one line of text at a time rather than captioning the entire page. This significantly affects how blind users behave while seeking for information repeatedly. Another piece of hardware that enables Braille printing for the blind is the Braille embosser. An excellent solution appears to be software that automatically reads printed pages while doing optical character processing on the text on the paper placed on the scanner. There is also screen magnification software for people who are blind. Three important categories of workstations that have been modified for the blind and visually impaired are: 1) a completely closed system, which consists of one integrated hardware unit with all required components (such as a scanner, keyboard, and computer); 2) a semi-open system, which separates PC components rather than integrating them into one hardware unit; and 3) an open system, which is a typical PC with software for the blind (Internet support for a blind Internet user). The cost of various pieces of equipment is mostly a drawback. Minor languages that lack or have poor-quality text-to-speech technologies are another issue. The development of the Croatian language is in progress (Internet support for a blind Internet user).

Accessible Web sites:

Access to content on the World Wide Web is frequently restricted for people with impairments who use assistive technologies. Poor Web design was one of the main issues with Internet access, according to studies (Williamson, Schauder, Bow 2000). Access to online information might sometimes be more important for people with disabilities who can only use certain digital forms due to their inability to print (Why Web accessibility). Accessible design is required by law in the European Union, the United States, and Australia; it may be illegal to put material on a website that is inaccessible to some users (Policies relating to Web accessibility). The Web Content Accessibility Standards 1.0 (1999) and the accompanying Techniques (Techniques for Web Content Accessibility Guidelines 1.0 2000) were created by the W3C's Web Accessibility Initiative and offer comprehensive guidelines for creating accessible Web pages. Pages featuring photos and other non-textual features (such as scripts, applets, and plug-ins) without alternate text are difficult for blind and visually impaired people to use, especially if images are used as links (as are in image maps). For instance, the 'NULL' alternative text attribute for bullet points should be used so that the screen reader will go over it. When visuals are used without alternative text, the user does not know if they are relevant or not (Craven 2001a). Additionally, since blind people cannot use a mouse, one must avoid using features that can only be operated by a mouse. Links should generally include title properties; phrases like "click here" should not be utilized. If frames are used, each frame needs to have a title and name. Only the title attribute is recommended in the guidelines, although some screen readers only read the name attribute (Christensen 2001). Non-described tables, poor color contrast, and poorly chosen colors for users who are color blind are other prevalent issues. Although there are automated technologies for validating compliance with the Guidelines, manual verification is still necessary. The Web Accessibility Initiative of W3C provides a list and descriptions of many tools for evaluation and correction. Examples include Bobby from the CAST (Centre for Applied Special Technology) and A-Prompt from the SNOW (Special Needs Opportunity Window) project at the University of Toronto. To verify the underlying HTML for flaws in the code, one can use utilize the W3C's HTML validator (W3C HTML Validation Service). Additionally, one should personally test the website to check if any issues arise when visuals are not loaded, when frames, scripts, and style sheets are disabled, and to see whether mouse-free browsing is possible. One should also try altering the text size in various browsers (Internet Explorer, Netscape Navigator, Opera), as well as setting them to disregard colors, font sizes, and style, for those who are visually challenged. A disabled individual should also be allowed to browse the website. Using a text-based browser like Lynx, a screen reader, or an alternative browser (like Braille Surf) can help identify issues with images that lack an alternative text counterpart, perplexing navigational schemes, reliance on Javascript to provide navigational information, complex frame usage without adequate support, or navigation for no-frames browsing (Sloan 2002).

Higher Education and People with Disabilities:

The development of an individual's personality is significantly influenced by their higher education. The person is able to expand his knowledge and skill, communicate himself freely in both written and spoken words, comprehend philosophical ideas and theories clearly, and gain a better understanding of the world and the society he lives in. According to a study, "college graduates have longer life spans, better access to health care, better dietary and health practices, greater economic stability and security, more prestigious employment and greater job satisfaction, less dependence on government assistance, greater knowledge of government, greater community service and leadership, more volunteer work, more self-confidence, and less criminal activity and incarceration than high school graduates" (Heather Allen 2007). The advantages of higher education for those with impairments are the same as those for those without disabilities. It increases their likelihood of finding employment, which will enable them to live honorably. Only 1.2% of the 3.6 lakh young people who are disabled, according to a report that appeared in The Hindu on August 16, 2004, have access to higher education. According to a survey report posted online in 2007, there were only 1,635 students with impairments enrolled in Indian universities (Sharma, Arvind 2012). These reports offer a view of the general state of the nation even if they were based on surveys with a narrow focus. The Asia Region's higher education institutions were the subject of a status survey by the International Council for Education of People with Visual Impairment (ICEVIA). There were barely 1200 students with visual impairment pursuing higher education at various universities in India, according this survey, which was released in 2006 (ICEVI, 2006). There is no reliable data in one place about the total number of pupils with vision impairments enrolled. To determine the precise number of individuals with vision impairment pursuing higher education in India, a study must be conducted. It will assist the decision-makers in understanding the situation and developing strategies to deal with the issue.

Challenges faced by the People with Disabilities in Higher Education:

According to Jameel, Syed Salma (2011)'s research study, there hasn't been much progress made in India in the area of higher education for those with disabilities. According to the study, barriers to higher education for students with disabilities in India included physical facilities on campuses, attitudes of faculty and staff toward students with disabilities, accessibility to public transportation, and a lack of student support. Similar issues with accessibility that people with disabilities encounter in the nation's higher education institutions were also reported by Borland and James (1999). To encourage and accommodate students with visual impairments in higher education, educational institutions must build new infrastructure facilities and support services and enhance those that already exist.

Government Schemes for the People with Disabilities in Higher Education:

Many programs have been put in place by governments in the past and present for the benefit of those with disabilities to encourage them to pursue higher education. These programs have, in part, assisted those with visual impairment in pursuing their dream of attending a university. To increase the number of people pursuing higher education in the nation, awareness of these programs must be raised among those with disabilities. The University Grants Commission (UGC) launched Higher Education for Persons with Special Needs (HEPSN) in 2005 as a significant program to advance the cause of the disabled in higher education. Under this program, the UGC offers financial support to universities and colleges so they can build the infrastructure facilities people with visual impairments will need. The primary goal of the program is to improve the learning environments for students with disabilities at higher education institutions, such as universities. The broad categories of assistance provided by this program include raising awareness of the abilities of people with disabilities, building facilities to increase accessibility, buying equipment to enhance learning, etc (UGC, 2012). The ICEVI report from 2006 notes that despite their desire to pursue higher education, the majority of people with visual impairment in the Asia Region are unable to enroll in higher education due to financial and other obstacles. The report makes the following recommendations to address the issue of effectively educating people with disabilities in the Asia Region. Books in Braille and other reading materials must be made available. To cover the costs associated with higher education, including reader services, teaching and learning materials, transportation, etc., financial assistance must be provided. provision of auxiliary aids and services (Hardware and Software) Public education campaigns should be a part of any efforts to promote higher education because it is crucial to instilling in administrators a belief that "persons with visual impairment can pursue higher education."

Information needs of the people with visual Impairment:

Williams, Billinda (1996) contends that for education reform to be successful, teachers must become more attuned to the needs of disadvantaged students and provide them with all the resources they need, including a good library. His study, Closing the achievement gap: A vision for changing beliefs and practices.

Williamson, Schauder, and Bow (2000) looked into how those who are visually impaired seek out information. Their study concentrated specifically on how visually impaired people use the Internet. The study, which brought up a number of concerns about how people with visual impairments use technology, highlighted the urgent need to give them equitable access to information resources. Access to information, according to Todaro (2005), is one of the most crucial human rights because it enables a person to grow personally and actively participate in a democratic society while exercising all of his or her rights and responsibilities. Without a doubt, knowledge is the most valuable resource, and having free access to it will increase one's power and knowledge. In the case of those with disabilities, it is especially true. In her essay, Alicia Julie Todaro (2005) recommends that the library also purchase books in electronic and braille formats to help those who are blind. The author also suggests that people with visual impairments should have access to the library catalog. In their article from 2011, Zia,

Muhammad Waseem and Farhat, Fatima look at the digital information requirements of the visually impaired students enrolled at the University of Karachi. They also examined the amenities and services offered at the University of Karachi's Internet access points. The study makes a few recommendations for how the university can better accommodate visually impaired students' needs for digital information. The study discovered that there wasn't enough staff at the university to help visually impaired students find the needed information.

University Libraries and people with visual impairment:

With their extensive collections and range of information services, university libraries play a significant and influencing role in the higher education system. The library and its books are the main sources of knowledge and information for students in the higher education system regarding the subject they are studying. In light of this, universities all over the nation have been shelling out crores of rupees to buy the books, journals, and other reading materials that are needed by their faculty and students. Due to their limited vision, people with visual impairment do occasionally have difficulty accessing information found in books and journals. Libraries also have some restrictions, such as the inability to purchase all the books in Braille due to their scarcity. But thanks to technology, those who have trouble seeing can now read all the books and journals in the library without anyone's help. The use of computers and other reading devices, along with assistive technology (hardware and software), has made it possible for people to access the library's collection of documents.

According to a study done in 2009 by Roy, Protap Chandra, and Bandyopadhyay, Ratna, academic library services in India are subpar. Regarding the building's accessibility, the creation of a computer lab, the holding of training sessions for those with visual impairments, etc., the researchers made some good suggestions for adoption by university libraries. The study mainly relied on data that was made available on university websites, and attempts by the researchers to cross-check the data with universities were not mentioned. Several well-known academic libraries in Delhi were surveyed by Singh, K.P., and Moirangthem, Easther (2010) regarding their accessibility features and infrastructure. According to the study, the majority of Delhi's academic libraries are not accessible to those with visual impairments, so new and improved facilities are required. Priya Pillai (2012) investigated the organizations in India that offer library and information services to those who are blind. The study also looked at copyright laws and disability laws for people with visual impairment in the United States, the United Kingdom, and India. The study also considered the wants and requirements of visually impaired library patrons and made recommendations for ways to enhance the facilities. A general understanding of the state of library services for those with visual impairment in India was provided by the study, despite its narrow scope. Numerous information resources in a variety of formats are available in libraries. These tangible and digital resources ought to be accessible to people with vision impairment as a human right. Only when all of the library's resources are readily available to those with visual impairments can the concept of an inclusive library becomes a reality (Barrier Break Technologies, 2013).

Use of Assistive Technology in University Libraries:

Through a usability study of the Talking Book Center, Bell, Ruda, and Peters (2003) were able to pinpoint the shortcomings of the assistive technology devices used to provide information services to people with disabilities. The researchers recommended some device improvements based on the study's findings, such as the need for DTBs to have larger, better-spaced control buttons and a need for variable-speed playback that doesn't distort the sound. These suggestions will be very helpful in creating new, better iterations of the devices for those with visual impairment. In order for universities to promote inclusive education, it is crucial, according to Koganuramath, Muttayya, and Choukimath, Puttaraj (2009), to establish a Learning Resource Center for People with Visual Impairment with Assistive Technology. They go on to say that such a facility would make it possible for students who have vision impairments to access all of the library's information. The study's scope was constrained and solely based on the authors' personal experiences at the Tata Institute of Social Sciences. According to Kharamin, Farideh, and Siamian, Hasan (2011), who conducted a survey to evaluate the public library services in Iran for those who are blind or visually impaired, users of the public libraries who are blind or visually impaired were not satisfied with the services, with the exception of the availability of some Braille books. The study exposed the negative aspects of Iran's public library system but did not make recommendations for how to make things better. In their article from 2014, Mohamed Haneef K. and Syamili, C. highlighted the use and significance of assistive technology in the lives of those with visual impairment. According to the study, compared to the developed countries in the world, such devices and facilities were not sufficiently accessible to people with visual impairment in developing countries. In 2014, Manorama Tripathi and Archana Shukla conducted research on the use of assistive technology in academic libraries in India, the UK, the US, and Canada. By visiting their websites, the researchers gathered data about the use of assistive technology in academic libraries in the aforementioned nations. According to the study, a few academic libraries in the aforementioned nations, including India, have been partially using technology to offer library services. According to their research, the academic libraries should have computer labs equipped with the necessary assistive technology (hardware and software) to offer library services to those who are blind or visually impaired. The study also emphasized the Copyright Act's provisions and amendments regarding reproduction and sharing of information from copyrighted books with people who have visual impairments.

Conclusion:

The review of the published and reported literature shows that, despite numerous studies being conducted at national and international levels to learn more about library services for people with visual impairments, no specific effort is made to understand the information needs of students with visual impairments in higher education and the provision of Assistive Technology made in university libraries to enable students with visual impairment to access information. To learn more about the state of library services for those with visual impairment in higher education, more research needs to be done on the topic. Today, databases and e-resources are the primary sources of information used by libraries and their patrons. Therefore, it is imperative that these

resources, as well as other materials, be made available to users who are blind (Power & LeBeau, 2009). The main challenges faced by AMU's visually impaired students are the issue of compatibility with screen readers and a lack of support. They are aware of e-resources and use them for a variety of purposes, including keeping up with current events and writing assignments. To remove these obstacles, libraries must purchase accessible resources and give staff the necessary training to ensure that any issues are eliminated. When there is a focus on timely resource delivery, there won't be any disability.

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