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Library Services for the Visually Impaired in India
Role of Digital Library

Sukanta Halder
Library and Information Officer,
National Institute of Pharmaceutical Education and Research, Kolkata,
168, Maniktala Main Road, Kolkata
Email: lissukanta@gmail.com

Abstract

Though everyone has a right to access information, people with visual impairments have encountered barriers to using conventional library services. Initiatives have been taken in India to promote bridging gaps in inclusive access to knowledge and education. Traditional libraries with collections of Braille books and tactile resources have been supported—or even transformed by—digital libraries. Sugamya Pustakalaya and the National Digital Library of India (NDLI) are digital libraries that have changed the landscape of information access by offering many reading materials in DAISY, audio, ePub, and Braille-compatible documents. Such digital libraries help people with visual impairments pursue education, career progression, and recreational reading independently. The last decade has seen the incorporation of strategic assistive technologies such as text-to-speech engines and screen readers, which aid in accessing digital libraries. Digital libraries have enabled India to take steps towards inclusiveness and have assisted in creating an inclusive knowledge society.

Keywords: Library Services, Visually Impaired, Accessible Libraries, Digital Libraries, Sugamya Pustakalaya, NDLI

1. Introduction

In an encompassing society, having access to information and education is crucial. In India, traditional library services have typically been inadequate for catering to the visually impaired, only offering scant collections of Braille books and audio recordings. India has taken steps toward providing equality in knowledge access by gradually developing specialised library services for the visually impaired. Organisations and institutions have strived to foster more inclusive environments by providing tactile books, Braille printing, and audiobook libraries. In the past few years, the function of digital libraries has skyrocketed, with Sugamya Pustakalaya and The National Digital Library of India (NDLI) providing thousands of digitised resources that are accessible in an array of formats and user-friendly styles. Digital libraries utilise assistive technologies from screen and text readers to navigation aids, allowing the visually impaired to search, read, and interact with various content independently. Thus, digital libraries serve as more than repositories of information; they become instruments for empowering visually impaired individuals to pursue education, work, and social engagement without physical barriers—keywords: Library service, visually impaired, disabilities, digital library.

2. Literature Review

By using technology, visually impaired people in India have much easier access to information with the help of digital libraries, which, over time, removes the barriers associated with physical libraries. The availability of e-books and other resources for the visually challenged is enhanced with Sugamya Pustakalaya, an online library, illustrating the efforts being made to aid this demographic (Dodamani & Gedam, 2017). The visually impaired are assisted even further using assistive technologies, such as digital Braille systems that transform text into tactile representation (Shalini et al., 2020). However, significant issues still exist; skeletal frameworks for physically blind people have not been incorporated into the design of most digital library interfaces. Reduction in help-seeking instances while increasing user satisfaction has been linked to implementing tailored help features to assist disabled users (Xie et al., 2020). Considering the requirements of a digitally impaired population of around 62 million (Saxena et al., 2022), the Government of India has placed importance on developing digital libraries that offer equal opportunities for access. In addition, DELNET serves as a digital library that enables users to access an extensive range of information resources that can be obtained from the user's home, providing convenience and accessibility (Thakur et al., 2022). One paper investigates four libraries' current collections, services, and central issues. It presents a comparative analysis and suggests a centralised consortium model to improve collaboration and address problems (Halder, 2023). In their efforts to increase the number of developing regions, such as India, digital libraries provide the continent with unrestricted access regardless of region or infrastructure facilities available (Bhat, 2024). In addition, adaptive technologies such as screen readers and indoor jaw navigation systems must be incorporated to enhance the user experience and improve access (Purnomo & Rizki, 2024). All in all, digital libraries in India are transformative for visually impaired people and are pivotal towards achieving constant learning and inclusivity through advanced tech solutions and dedicated efforts.

3. Objectives

1. To establish learning support for visually challenged persons with computer-based reading facilities.
2. To learn about different Braille software and their services.
3. To promote learning for Braille and low vision people using Braille software.
4. To understand the challenges Braille users face when reading books and documents.
5. To identify the digital library services by the Sugamya Pustakalaya and NDLI for the person with visual impairment

4. Scope

In the context of India, the provision of library services aimed at individuals with visual impairments has undergone substantial transformation, emphasising the delivery of accessible reading materials through various formats such as Braille literature, audio books, prominent print publications, and assistive technologies including screen readers and optical character recognition (OCR) devices. The role of digital libraries is paramount, as they facilitate round-the-clock access to an extensive array of accessible resources in formats compatible with assistive technologies, thereby advancing inclusive educational practices and equitable information dissemination. Initiatives like Sugamya Pustakalaya, Bookshare India, and the National Digital Library of India have played a pivotal role in narrowing the information divide for individuals with visual impairments, empowering them with autonomy and equitable opportunities. Notwithstanding the obstacles posed by limited awareness and accessibility in rural regions, the expanding influence of digital libraries is persistently reshaping the framework of

library services, thereby promoting enhanced inclusion, educational advancement, and empowerment for visually impaired individuals throughout the nation.

5. Methodology

First, all information about the Braille library or institution should be collected. Then, the software used in different libraries or institutions and their services should be identified. Then, analyse all the documents, compare all the information with each other, and find the proper use and utilisation of this software. It also evaluated how effective this software was for Braille users, then found the barriers and challenges they faced and concluded them with proper results. Then, we made some points we worked on and explained and evaluated each point with proper reasons that may help us understand our research on Braille users and software.

6. Barriers that Braille users may face

All over the world, people with visual impairments have to face difficulties as they seek to assert their position in a modern, complex, and competitive world dominated by non-disabled individuals. They may face three types of barriers, as follows:

6.1. Physical barrier:

The major problem for a low-vision person is mobility. Due to low vision or blindness, users cannot use the proper services of a library. There are some barriers, as follows:

- Vision helps to find things easily, but the absence of vision immediately creates hazards, especially in unfamiliar surroundings. Because of this, many blind people feel isolated; they are less inclined to leave their homes than others, as they cannot see what is around them.
- Low-vision or blind users cannot move easily from one place to another. In that case, they need support from the library staff, but some of the staff behave rudely with that type of user. In that case, the user may be unable to use the service, creating a barrier.
- Due to low vision or blindness, users cannot find the proper information in the library and do not use the standard library and its services, which may create a physical barrier.
- A child user learns words by hearing them and relating them to visible, tangible objects. Without this visual frame of reference, a child may have little concept of what words mean, and his /her understanding of the physical world may be distorted. That creates barriers for blind or low-vision child users.

6.2. Communication barrier:

Communication is important for people who are blind because they communicate orally or physically. Sometimes, library staff may overlook the blind person and their voice because of their blindness, which may create a communication barrier.

6.3. Architectural barrier:

The library needs a proper sense for building planning for Braille or low vision users because proper planning helps users use the library's services. Sometimes, different libraries overlook the fact that planning for Braille users may suffer. There are some barriers as follows:

- Proper light is not available for low-vision users.
- Appropriate signage should be there both inside and outside the library.
- Some multiple-floor libraries may not have lifts for users.

- Sometimes, audio signals near the entrance may not be implemented, but it is required to indicate various parts of the library building.
- Sometimes, the library may forget to place handrails on walkways, ramps, and staircases. That helps maintain balance when the Braille user is walking.
- Always clear obstacles from the path because obstacles may physically affect Braille users.

These barriers may be faced by low-vision users when they use library services. As a library professional, I always encourage the Braille users not to overlook them and to support them in using the library services and developing reading habits.

7. Software and services for the Braille person

Different types of software are helpful for the Braille person in the library as follows:

- **JAWS pro talking software:** This type of software is made after converting the regular PC into a talking PC that helps the blind person to operate the computer freely or independently. Also, internet access is available to search for information.
- **Kurzweil 1000 OCR reading software:** It combines a scanner and a PC. This software allows the blind user to read any printed books or materials from the library.
- **Magic magnification software PRO**: It helps to enlarge the screen from 2X to 16X. It is basically for low-vision students to view the monitor screen, adjust the size according to their needs, and use different support tools to read the enlarged documents.
- **Talking Typing Teacher Pro** was mainly prepared for low vision and blind users with complete practice/guidance lessons for developing typing speed and improving keyboarding skills.
- **Braille scanning software – OBR (optical Braille recognition):** OBR is a window software program that allows blind users to read single or double-slide Braille documents on an A4 scanner. It scans Braille documents, analyses all dot pattern documents, and translates them into standard readable text on a computer screen.
- **Prisma magnification device for low vision:** It is a compact full-colour electronic magnification device and a low vision device for low vision users. Prisma is connected to a standard TV for its display, so users can take it anywhere.
- **Zoom-Ex instant text reader**: It is a small, efficient device that uses new-generation motion sensor technology in combination with its proprietary Zoom office software for instant scanning and reading of text. Just put the text under the camera and start reading and listening instantly.
- **Index basic D Braille Embosser:** It is a low-cost, high-speed, double-sided tractor feed continuous sheet with new-generation Braille embosser technology. It produces two pages, i.e., front and back, at the same time**.** So, it may use tractor feed paper, which can be spiral-bound using plastic wire.
- **Freedom Scientific's SARA:** SARA means Scanning and Reading Appliances. It scans documents (like books, mail, newspapers, and magazines) and then reads them clearly. It may use advanced optical character recognition technology.

7.2. Services for Braille users

Some services may be provided to the Braille users as follows:

- Provide different types of software for reading and listening to library books and documents, and guide them on using different library software.
- Provide Computer Training to the Braille users for Independent Access to Computers.
- To help with the independent reading of textbooks and using different library services.
- Braille software helps to convert normal PCs into Talking PCs.
- It may help to scan the documents and books for reading purposes.
- Braille software helps to convert standard text to Braille notation for Braille users.

8. Needs and importance of Braille software

- Every person has the right to pursue education and learning, but sometimes, it is difficult for blind and low-vision people; in that case, Braille software needs to involve a particular organisation and library for sharing knowledge and providing services.
- Braille software increases the readability percentage of Braille users.
- One important thing is that Braille software has been updated occasionally to increase the quality of services for visually impaired people.
- A proper library professional is needed to handle the Braille software.

8.1. Benefits

- Easy and helpful learning for the Braille user.
- Emphasising time on task.
- Promote Braille software for the library.
- Positive attitude of the library staff towards visually impaired persons.
- Increase communication skills between the disabled person and library professionals.

8.2. Demerits

- Implication cost is high.
- Lack of cooperation between staff and users.
- Modification of Braille software is complicated.
- Breakdown of Braille software due to high overload.

9. Challenge to Library Professionals for integration:

Two significant factors encourage discrimination by librarians against people with disabilities being admitted into mainstream library services. First is the current library professionals' uncritical acceptance of the market-driven management style and commercialisation of information in libraries. The other is poorly prepared library professionals who have limited knowledge and experience of disabilities and disabled people.

10. Role of Sugamya Pustakalaya for Persons with Visual Impairment:

Launched in August 2016, Sugamya Pustakalaya is India's most extensive online library for people with visual impairments, print disabilities, or other difficulties associated with reading. It is maintained by the Department of Empowerment of Persons with Disabilities (DEPwD) and operated by the Daisy Forum of India (DFI), which provides reading material in DAISY, ePub, Braille, audio, and other accessible formats.

10.1. Role and Impact:

- ✓ Access to Knowledge: It fills a void by providing competitive and academic resources like books, fiction, and non-fiction literature for the visually challenged.
- ✓ Promoting Education: Students and professionals can sustain education, encouraging enrollment in leading education and employment.
- ✓ Inclusive Learning: The library promotes inclusivity by offering content in multiple Indian languages.
- ✓ Convenience: Users can download or request books from any location, thus increasing autonomy and decreasing dependence on physical libraries.

10.2. Statistical Data (2016-2025):

- ✓ 2016: Library initiated with ~2,500 books.
- ✓ 2018: 20,000 accessible books and 10,000 registered users milestone surpassed.
- ✓ 2020: 35,000 and counting books accessible, user registrations at 22,000.
- ✓ 2022: Library collection surpassed 52,000 books, and the user base is over 40,000.
- ✓ 2024: Estimated 70,000 documents and books.

11. Role of NDLI for Visually Challenged Individuals

The platform offers numerous digitally accessible resources for users at different learning levels. Especially for the visually impaired, accessible study materials are available in audio formats, text-to-speech systems, and Braille. NDLI was established in 2016 when IIT Kharagpur received sponsorship from the Ministry of Education and has become an essential tool in maintaining the equity gap concerning students with visual challenges, ensuring equal access to knowledge, education, and research.

❖ **Important Contributions:**

- ✓ Providing students with differing needs and disabilities access to various academic materials, including books, articles, theses, and multimedia resources, enhances inclusivity.
- ✓ Accessibility features like contrast settings, text size adjustment, and audio outputs allow visually impaired users to adjust their reading experiences, enhancing customised learning.
- ✓ Specialised textbooks and relevant reference materials are accessible for students preparing for competitive exams or higher education.

❖ **Statistical Data (2016–2025):**

- ✓ 2016: The pilot was launched with 1.5 million resources and basic accessibility features.
- ✓ 2018: ~5 million documents available; accessibility modules upgraded.

- ✓ 2020: ~30 million resources; special COVID-19 accessible education drive.
- ✓ 2022: Over 50 million resources; integration of audio lectures

12. Conclusion

There has been a positive change to the library services available to people with visual impairment in India. There is a shift towards inclusive digital platforms instead of the previously available physical resources. Braille textbooks and audiobooks, although helpful, were not enough to provide full accessibility. Establishing digital libraries such as Sugamya Pustakalaya and the National Digital Library of India has significantly expanded opportunities, as these libraries provide accessible content, both professionally and recreationally. With technology such as text-to-speech, screen readers, and adaptable formats, digital libraries can now support visually impaired people to independently and equitably obtain information. This is a helpful step towards an inclusive knowledge society, as these individuals can now receive education and employment with dignity and self-reliance. There is still much work to be done; improving and building on the existing digital resources strengthens the cause so that it helps ensure no individual gets excluded from the quest to access information.

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