Festschrift in Honour of Dr. Namita B. Khot

Innovative Best Practices and Library Services in Librarianship

ग्रंथपालनातील सर्वोत्तम नाविन्यपूर्ण उपक्रम आणि ग्रंथालयीन सेवा

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Innovative Best Practices and Library Services in Librarianship

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Publisher | Printer
Rangrao A. Patil (Prashant Publications)
3, Pratap Nagar, Dynaneshwar Mandir Road,
Near Nutan Maratha College, Jalgaon 425 001.

Phone | Web | Email
0257-2235520, 2232800
www.prashantpublication.com
prashantpublication.jal@gmail.com

Edition | ISBN | Price
June 2022
978-93-89493-96-2
₹ 650/-

Cover Design | Typesetting
Prashant Publications

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Development of E-contents for Persons with Visual Impairment : A Case study of Resource Center for Inclusive Education, Shivaji University Kolhapur

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Abstract :

This paper provides information on e-content and its importance for students with disabilities. It provides information on what to consider when creating e-content for students with disabilities. The various components that need to be included in the creation of e-content are explained. Educational Institutions should prepare e-materials for the study order keeping in view the use of e-materials for students with disabilities. It has been found that the most used e-content is for visually impaired students. Researchers have suggested that e-content may be of great use to all persons with disabilities, including the visually impaired. Visual impairments change the way the students gather information and limit the opportunities to learn through observation. The ICT literacy is very essential for visually-impaired students to access educational resources and programmes such as those delivered via the internet or multimedia educational portals.

Key World – Visually Impaired, E-content, Sugamya Pustakalaya, Person With Disabilities, KIBO.

• 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

As the web allows access to a large amount of information, searching has become a daily activity for many people who now turn to the web for a diverse range of tasks (Kellar, 2006). This ease of access to information has benefited most people, but has particularly been a blessing for people

with disabilities, for example, visually impaired people, as they have access to much of the same information available to sighted people. Therefore, the web has empowered visually impaired users (Berry, 1999) and has played a significant role in combating social exclusion (Craven, 2004).

Visually impaired people usually access the web using screen-reader software that processes web pages sequentially from top to bottom and reads their content out in computer synthesized speech. This sequential access imposes numerous challenges on visually impaired users (Andronico, Buzzi, Castillo, & Leporini, 2006) Visually-impaired students need special trainings and classes to learn the skills of ICT. They need assistance from their family members, friends and teachers. Institutions can also provide sophisticated assistive technologies for visually impaired students.

More and more persons with disabilities are entering the field of higher education. But the colleges and university departments are not properly equipped to provide equal opportunities and access to them. Especially the students with visual impairment have to face hurdles in their education. The textbooks and reference books are not available in accessible formats. It is the responsibility of the university/institution to provide the textbooks in accessible format to the visually impaired students.

- **Statement of the problem:**

"Development of E-content of study Material for Persons with Visual Impairment"

- **Origin of the Research problem:**

The textbooks of Shivaji University are not available in accessible format for persons with visually impaired. The visually impaired students of the university departments and affiliated colleges have to depend on readers for their study. This gap can be filled by making the books available in accessible format. Generally these students take education in distance mode. Hence Self instructional Material (SIM) is very useful for their studies.

Development of E Contents

Importance of e-Content –

1) Wide Varity of digital Materials, which are available online & free of cost with minimum restrictions, can be used reused & modified by teachers & students for their teaching & learning.
2) As Textbook are too expansive the students are switching from textbook to digital course materials.
3) It is popular because of its flexibility of time, place & pace of learning.
4) It includes all kind of contents created & delivered through various electronic media.
5) Available in many subjects & almost all levels of education.
6) It can be shared & transmitted easily.
7) Teachers students and others get benefited by use of well designed and developed e-content.
8) It is advantageous to the educational organizations to make their programme accessible to their teachers & students on campuses.
9) Useful for open & distance learning institutions.

Assistive Technology :

The most commonly used definition is the American definition, which is

"Any item, piece of equipment or product system whether acquired commercially off the shelf, modified, or customised that is used to increase, maintain or improve functional capabilities of individuals with disabilities".

According to ALA, Assistive or Adaptive Technology (AT) are devices or computer-based accommodation that helps an individual with special needs to work around or compensate for a disability and enhancing individual ability. In simple words, Assistive technologies refer to products, devices or equipment's that are used to maintain, increase or improve the functional capabilities of people with disabilities

'People with Disabilities' means people who are blind/vision impaired, deaf/hearing impaired and people suffering from locomotor disability (i.e. disability of the bones, joints or muscles leading to substantial restriction of the movement of the limbs)

The first law of library science: "Books are for all", includes people with disabilities.

Video magnifiers, electronic readers, optical character recognition software, magnification software, speech output systems and electronic Braille devices etc. all provide a solution for a particular individual with disability and these computer related aids and equipment are commonly known as 'assistive', 'adaptive', 'access', or 'enabling' technology.

- **Role of Assistive Technology in Information Access:**

Assistive technologies play an important role in equalizing opportunities for people with disabilities in several aspects of life as this technology enables them to overcome various limitations and obstacles faced in all types of environments. Access to the information is major problem for the disabled but today ICT along with assistive technologies have helped to reduce the digital divide between sighted and the blind by providing information on their computers. The Role of Assistive Technology in Enhancing Learning is -

To empower students to become independent learners

To improve equality of access to the curriculum

To encourage students to integrate with their peers in terms of course work, project work.

To increase the student's employability

- **Main Challenges faced by Students with Disabilities in the learning Environment**

- In Writing/Typing
  1. Speed 2. Clarity
- Completing – on time Assignments, Projects, Exams, Note-taking
- Access to- Core Textbooks, Class hand-outs, Course material, Material in blackboard
- Organization Skills, Time Management, Memory, Speed, Reading, Concentration.

1. Specialized Software's -

Blind & Vision Impaired Students	• Jaws • Zoomtext • Kurzweil 1000	Screen Reader Magnification OCR & Reading
Students with Physical Difficulties	• Dragon • CoWriter • Read & Write Gold • Audio note taker	Voice Recognition Word Prediction Literacy Support Note Taking
Students with Specific Learning Difficulties	• Read & Write Gold • Inspiration • Dragon • Audio note taker	Literacy Support Mid Mapping Voice Recognition Note Taking
Deaf & Hard of Hearing	• Speed Test	Note Taking

Assisting persons with Blindness or Visual Impairment

- **ZoomText Xtra screen-magnification software —** this program allows patrons with low vision to access computer information by enlarging the screen display or tailoring the display to accommodate their disability.
- **JAWS screen reader —** this program enables individuals who are blind or visually impaired to access the information on a computer screen through voice output.
- **Talking Typer software —** Talking Typer, from American Printing House (APH), is a specially designed typing-teacher program for those who are blind, have low vision, or learn at a different pace. The program provides audio instruction and tutorials.
- **SAFA (Screen Access for All) -** Reader is a screen reader software for Indian languages, which can capture text from the computer and transform it into the audio form, which is then used by the visually impaired persons or person with low vision. This free software is an intellectual property of National Association for the Blind, New Delhi.
- **Kurzweil 1000** is a software, which enables a visually impaired user to gain access to both web-based, digital or scanned print materials through its OCR and text to speech features.
- **Kurzweil 3000** enables to read aloud web-based, digital or scanned print material by converting into mp3 to provide audible files to listen
- **Duxbury Braille Translating Software —** program that, like a word processor, allows users to type text, and then translate it into Braille. A Braille embosser produces hardcopy.
- **Braille embosser —** similar to a printer, an embosser will print Grade II Braille on paper, enabling patrons to create hardcopies of documents. If hard copy Braille is not available, it enables users to save documents to a USB flash drive.
- **Open Book text reader —** helps those with low or no vision. Scans printed text and verbalizes the text via synthetic speech.

Braille Embossers:

● Shruti Drishti (C-DAC) • "Shruti Drishti" is an Integrated Text-to-Speech [TTS] & Text-to-Braille [TTB] System for the Visually Impaired using the Information Extraction and Retrieval techniques. Shruti Drishti is a web page browser developed for visually impaired users is considered to provide user-friendly environment, sharing and strengthening of global knowledge by removing barriers and providing equitable access to information through speech and Braille assistive technologies. The system enables visually impaired to browse internet using minimum key combinations.

● **Assisting Persons with Hearing Impairment or Deafness**

- Dragon Dictate (convert speech to text)
- I Communicator promotes independent communication for persons who are deaf or hard-of-hearing and encourages increased literacy by "translating" English a number of ways:
- The iCommunicator translates in real-time:
- Speech to Text
- Speech/Text to Video Sign-Language
- Speech/Text to Computer Generated Voice
- Infrared Assistive Listening Device: Amplifies sound
- Induction Loop Assistive Listening Device - Removes background noise, reverberation.

● ShrutLekhan – Rajbhasha • ShrutLekhan-Rajbhasha, a Hindi speaker independent, continuous speech recognition system is a milestone in the field of Speech technology that enables a machine to

recognize human speech and provide an output in Hindi Unicode. This project has been developed by Applied AI Group, C-DAC, Pune for Department of Official Language [DOL], Ministry of Home Affairs, Government of India.

- **Assisting Persons with Physical Disabilities**
- Persons with physical disabilities may need assistance in doing some of the physical tasks that are involved in using the computer. Persons using wheelchairs or scooters will need a sturdy, safe workstation. Table height and monitor position should be adjustable.
- **Madentec Tracker -** users wear a tiny reflective dot on the forehead or glasses. A computer camera/tracker allows users to manipulate the cursor through head movement.
- **Softype -** a software utility that replaces the functionality of a standard keyboard with a full-featured, onscreen keyboard.
- Special input devices such as trackballs, joysticks, switches, touch pads, and augmented keyboards (micro keyboards or oversize keyboards with enlarged keys)
- **Assisting Persons with Cognitive Disabilities**
- e-Saadhya (Saral Anukulaney Adhyayan) is An Adaptable & Accessible e-Learning framework for the children with mild mental retardation and Autism.
- It is an ABA (Applied Behavior Analysis) based, Adaptable and Accessible e-Learning environment, which adapts to the educational needs of the children with cognitive disability.
- **Assistive Hardware Facilities Available for the People with Disabilities**

  • Scanner/Reader • Speech Synthesizer • Magnifying Glasses • Tactile Image Enhancer, Single Handed Keyboard • Prosthetic and Orthotic devices • Simple/Electric Wheel Chairs • Adaptive keyboards (e.g. Muppet Learning Keys, Power Pad, Unicorn Board, Touch Windows) • Speech-input devices (e.g. Voice Master) • Cursor-control devices (e.g. Adaptive Firmware Card, Multi-Switch Adapter Box)
- **Sugamya Pustakalaya**
- Department of empowerment of persons with disabilities, (DEPwD) launched the online library in collaboration with National Institute of Visually Handicapped (NIVH), member organisations of Daisy Forum of India, powered by TCS Access.
- **The Sugamya Pustakalaya** is the aggregator of accessible versions of books available in India. This library has been created by DAISY Forum of India to provide access to books to persons with print disabilities. It is poised to become the largest collection of books in accessible formats in India and a one-stop resource for the reading requirements of all those persons who due to blindness, weak eyesight or any other disability cannot read the standard print.
- **Book share -** the largest International online library for persons with print disabilities is also integrated into Sugamya Pustakalaya. All the titles available in Bookshare library for India can be searched and downloaded through the Sugamya Pustakalaya.
- **The Sugamya Pustakalaya** is providing books primarily in DAISY, EPUB and BRF format. The files downloaded from this online library can be read on computers, mobile phones, tablets and dedicated eBook readers. It will soon implement DAISY online protocol for providing direct download to mobile apps and compatible DAISY hardware players.
- Helen Keller Library, JNU, New Delhi

- Anna Centenary Library Braille Section
- Louis Braille Library Centre Pondicherry University
- Books in Alternate Formats
- AT Workstation
- Screen Readers • A Screen Reader is a software that uses a Synthesized Voice to read information from a computer screen • Users hit special key combinations rather than use the mouse. • Many websites are not accessible to screen readers because of unlabeled graphics or other bad design. JAWS and WINDOW EYES
- Screen Magnifiers ZOOMTEXT Screen Magnifiers make the information on the computer screen bigger so that people with low vision can see it.
- CCTV Video Magnification • Magnification to 70x • Color • Auto focus • Movable tray
- Scanning & Reading (OCR)
- Speech Recognition
- Refreshable Braille Display Braille Embosser – loud, need enclosure Duxbury Braille Translation software Braille Web Braille from NLS Easy Converter – Format Translation
- Adjustable Furniture • Chairs • Tables
- National Library Service for the Blind & Physically Handicapped •Player and USB cartridge •Size of large print book, 2 pounds •Rewind and Fast Forward buttons jump by increment •BARD Downloadable Talking Books and Web Braille (electronic Braille)
- Recording for the Blind and Dyslexic •Non-profit organization that records textbooks •Textbooks in CD format •Not compatible with NLS playback machines.
- BookShare.org • Online accessible digital library for print disabled readers. • Available free to all print disabled students in the World.
- Play Away Books • Digital audiobook that plays itself • No other gadget needed • One AAA battery • Bookmark, FFW, RWD • Skip by Chapter • Speed Control
- Learning Software •WYNN Wizard and Kurzweil 3000 •Scanning, reading, writing •Kidspiration, Inspiration, Inspire Data – Visual Organization
- Assistive Listening Devices Pocket Talker
- Accessible Meeting Rooms Loop Amplification
- Open Source and Free ATs •Read Please – Text to Speech for Learning •Screen Readers: •Non-Visual Desktop Access (NVDA)

- **Interdisciplinary relevance**

Information and communication technology (ICT) provides many opportunities for social inclusions (Johnson, L. & Moxon, E.1998) The ICT offers great benefits to people with disabilities and enables them to participate equally in the social, cultural and economic developments. The ICT can enable them to improve their quality of life and to live in much the same way as those who are not disabled (Arrigo, M. 2005). They can accomplish tasks that would be impossible to do without ICT. However, the prospective promised with the ICT often has not the reality for most people with disabilities. They had been kept away from the mainstream society, denominating them as disabled (Arrigo, M. 2005). At present, the term disabled is no more prevalent; instead of it has been using words like differently-abled or visually-impaired. It is important to recognize that visually-impaired may have counterbalancing strengths in other areas. With the widespread use of the internet and increased reliance on e-resources, the internet has become a prominent channel of online communication and

e-resources. However, the internet has created a digital divide between those who have access and those who do not have access to the internet.

Although the internet access is increasing across the world, many visually-impaired have no access to the internet. Therefore, the internet could become a barrier for the visually-impaired increasing the information gap by missing out on all the advantages available through the internet (Arrigo, M. 2005). Internet will enable visually-impaired students to access more e-resources and work dependently than what they could do via traditional methods (Saowapakpongchai, K. & Prougestaporn, P, 2012). They can access the internet as long as the interfaces, resources and services on the internet are designed appropriately.

- **Review of Research and Development in the subject.**

1. **Liesbeth De Paepe (2014)** in this paper entitled as "E-Content development for languages: success factors and pitfalls" discussed the problems of all the factors that need to creating e-content for different languages. As well as how many difficulties are come in developing e-content and how one component completed. E-content is very useful because it is a package that uses authentic information about a subject. Which makes the students understand the main thought of the subject. It also helps the teachers explain the content in the classroom. E-content helps students to see and understand a lecture over and over again. Researchers have suggested that language issues can sometimes arise when creating e-components in different languages. While creating e-content, there is the use of modern technology such as audio, video, communication method.
2. **Prabakaran, B. and Saravanakumar, A. R. (2021)** in this article entitled "The Influence of e-Content on Academic Performance and Retention Ability in Learning Mathematics among High School Students - Solomon Four Equivalent Group of Experimental Design" the researcher has studied the use of this container for teaching in secondary school in the field of education and its effect on the students. To study how effective it is, the researcher divided a total of 80 students of the 9th class into four groups and obtained information using questionnaires that students live in Tamil Nadu. Based on this information, it is found that the use of e-content not only for mathematics subjects but also other subjects and ideas help the students to understand the subject better. The use of e-content helps students to understand the subject and also enhances their comprehension skills. The researchers concluded, that the audio, video, communication method used in creating the e-content that helps the children to focused in the classroom and also helps the subject teachers to explain the subject. E-content plays the role of an assistant to the teacher.

- **Significance of the study**

Shivaji University is well known university in the State of Maharashtra. This university offers courses in distance learning mode also. In distance learning mode there are many courses like BA, B com, M A, M Com, MBA etc. University provides material of these courses to the students who are admitted for these courses and are not the disabled students. But university is not providing study material or textbooks of these courses available in accessible format for persons with visually impairment. The visually impaired students of the university departments and affiliated colleges have to depend on readers for their study. This gap can be filled by making the books available in accessible format. Generally, these students take education in distance mode. Hence Self-instructional Material (SIM) is very useful for their studies. But this material is available in only print format. So purpose

of this research is to convert these SIM in accessible format through DAISY (Digitally Accessible Information System) software. It is internationally accepted software for an accessible format. The textbooks of Distance Education of university syllabus should be converted to this format.

- **Objectives of the study**

1) To study the assistive technology available for the visual impaired students.
2) To convert the textbooks of compulsory and optional subjects of B.A. I, B.A. II, and B A III in to DAISY format.
3) To make accessible converted books on the website of Shivaji University

- **Research Methodology**

For this project researcher has used case study method of research.

A case study is an in-depth study of one person, group, or event. In a case study, nearly every aspect of the subject's life and history is analysed to seek patterns and causes of behaviour. Case studies can be used in a variety of fields including psychology, medicine, education, anthropology, political science, and social work.

The hope is that learning gained from studying one case can be generalized to many others. Unfortunately, case studies tend to be highly subjective and it is sometimes difficult to generalize results to a larger population.

Researchers may choose to perform a case study if they are interested in exploring a unique or recently discovered phenomenon. The insights gained from such research can then help the researchers develop additional ideas and study questions that might then be explored in future studies.

Researcher has used explanatory case study method for this research. Research has searched and studied many devices to convert study material in accessible form on internet like Kurzweil 1000, Duxbury Braille Translating Software, Braille embosser etc. Finally, researcher has decided to use Kibo device, which is from Sugamya Pustakalaya. DAISY Forum of India (Sugamya Pustakalaya). DAISY Forum of India is a consortium of Not for Profit organizations from India who are involved in production and distribution of books and reading material in accessible formats for persons who cannot read normal print due to visual, cognitive or physical disabilities. The DAISY forum of India envisions a world where people with print disabilities have equal access to information and knowledge without delay or additional expense in their own language.

- **Practical Research Procedure Used For this study:**

Before starting actual process of research one computer savvy person was hired and trained to convert the textbooks of Shivaji university syllabus in to DAISY format. These books are to be made available to the visually impaired students through RCIE and website of the university. Following table shows the number of books in print form.

Sr. No.	Course	No of Compulsory Papers with available SIM in Print	No of Optional Papers with available SIM in Print
1	B.A.I	07	11
2	B.A.II	14	31
3	B.A.III	02	30

Year wise Plan of work and targets to achieve. :

1. In the first year computer savvy persons will be hired and trained to convert the textbooks of Shivaji university syllabus in to DAISY format. The textbooks of At least Compulsory

subjects of B.A.-I, B.A.-II and B.A.-III will be made available in accessible format.

2. In the second year the remaining optional subjects' textbooks from the syllabus of Distance Education will be converted and made available to the students.

According to the above plan, the researcher started her work using the Kibo device.

Kibo Xs Process

- **Kibo XS Access Device**

The Kibo Access Device helps you do the following three things.

1.. The Kibo Access Device helps you do the following three things

2. The device can translate any of your documents in more than 100 languages

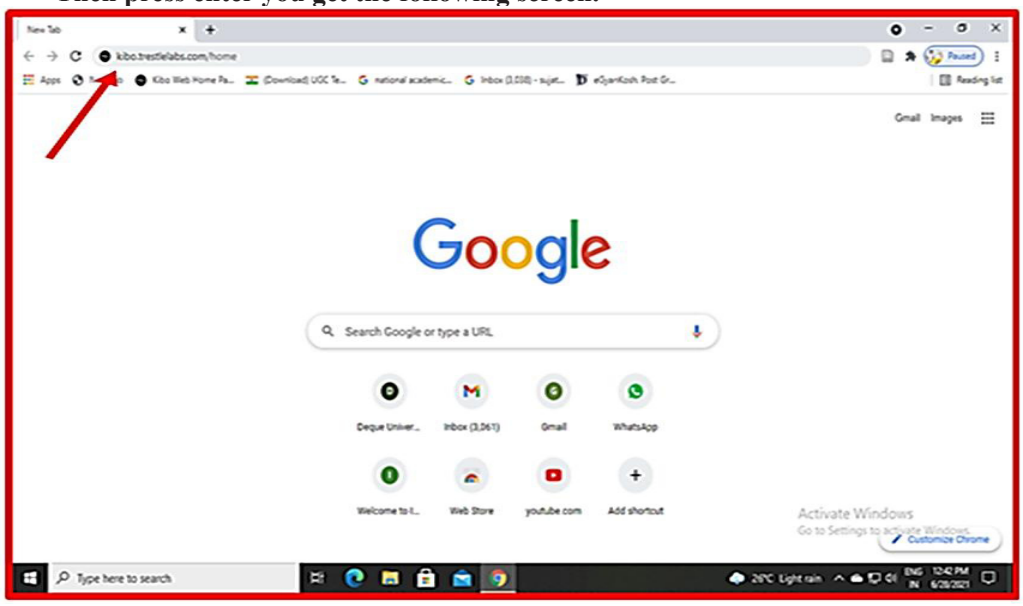
3. With Kibo Access Device, you can download any of your Translated / Original Documents in editable Unicode format. Like .doc, .docx, .txt, .zip.

The 11 languages that XS device translates are Hindi, Punjabi, Gujarati, Bengali, Marathi, Telugu, Kannada, Tamil, Malayalam, Sanskrit, and English.

- Weight this device weighs less than 400g. This is a portable device. This device can be taken anywhere, anytime.
- A button is given to the side to open the camera on Kibo XS device. After pressing that button, the Kibo XS device automatically unfolds. It is formed in the shape of a table lamp. Camera and Light are provided on it. So that your document looks very clear.

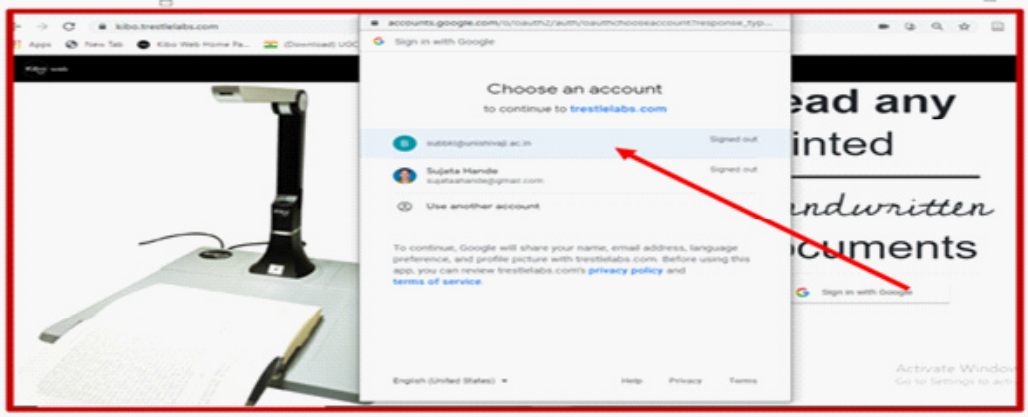
- **To read a page scanned from a Kibo device on a computer**

- If you want to read the whole page, press Caps Lock + Down Arrow.
- If you want to read page by line page, just press Down Arrow.
- **Steps after connecting to Kibo Access Device computer: Internet Connection is Required.**
- Open Google Chrome Browser.
- Browse https://kibo.trestlelabs.com
- **Then press enter you get the following screen.**

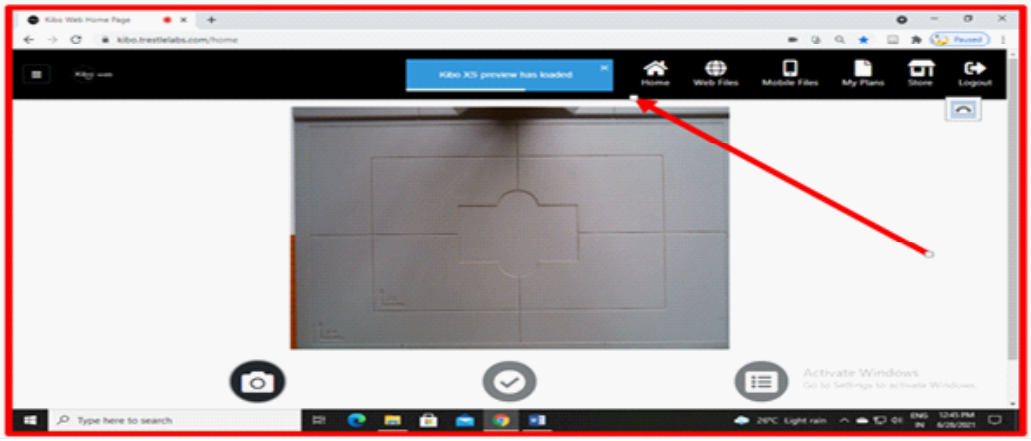


- **Click on Sign in with Google. Step -1**

- **Click on Sign in with Google. Step -2**

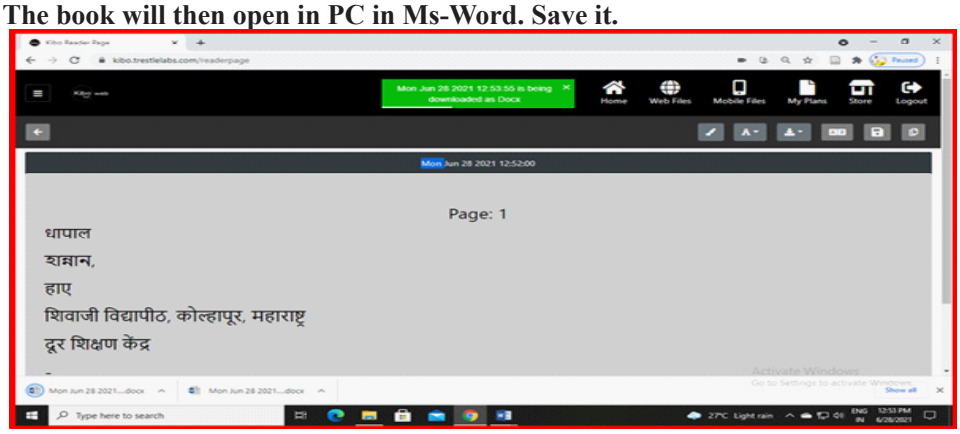


- **Kibo XS device is active. Then press F5 to refresh. Kibo Xs Preview has loaded. Now we can read the document placed on Kibo base**



Then download the book in Docx format from the Download option

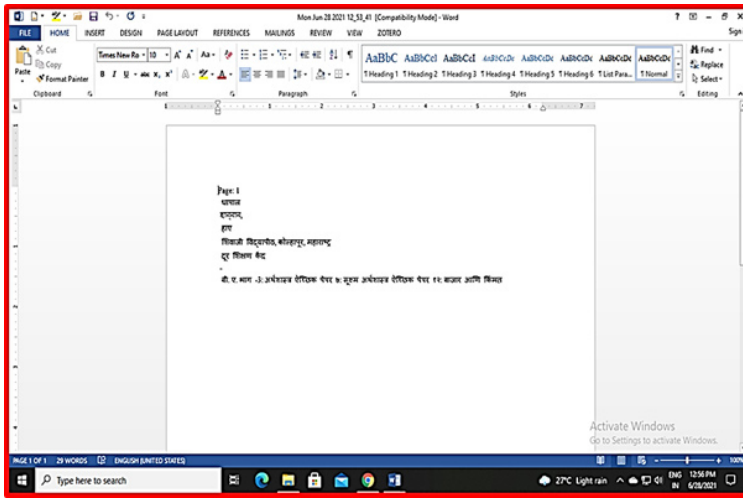
The book will then open in PC in Ms-Word. Save it.



a) But the book is not scanned as it is in print format and there are some errors in it. So it needs to be edited. Like Font Name, Font Size, Alignment etc.

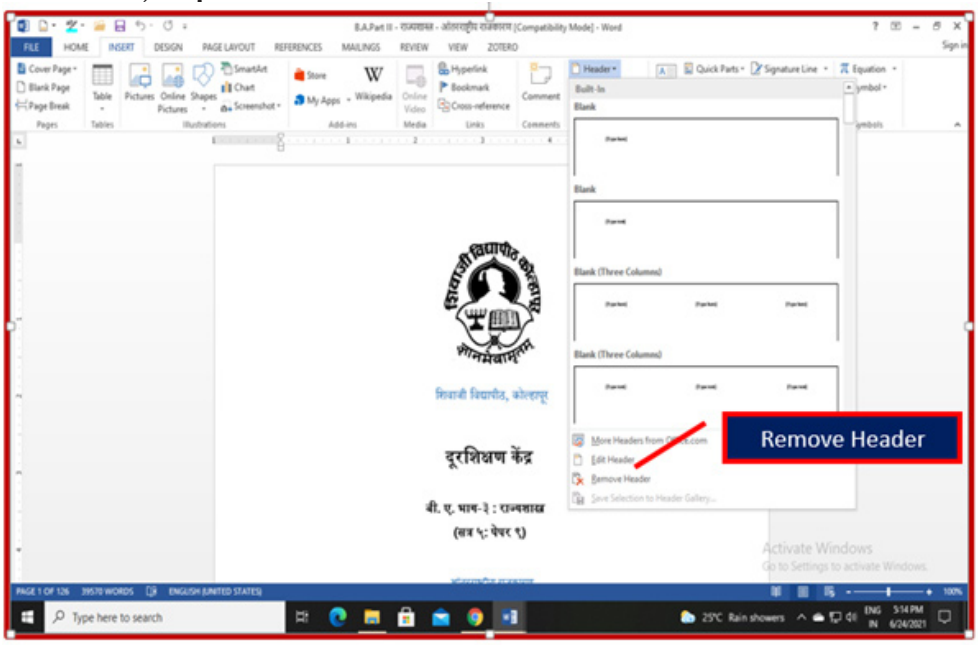
b) The graphs in the book have to be scanned on the scanner and added to it.

c) It is necessary to give a description below each graph.



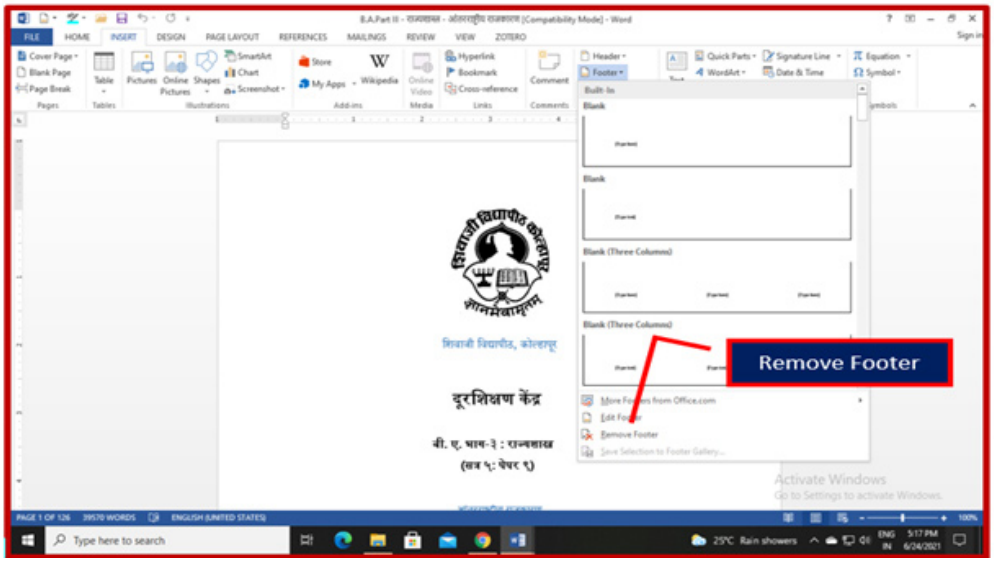
Book Accessible Process :

i) Remove Header and Footer of the entire book. (Insert-Remove Header, Remove Footer) Step - 1



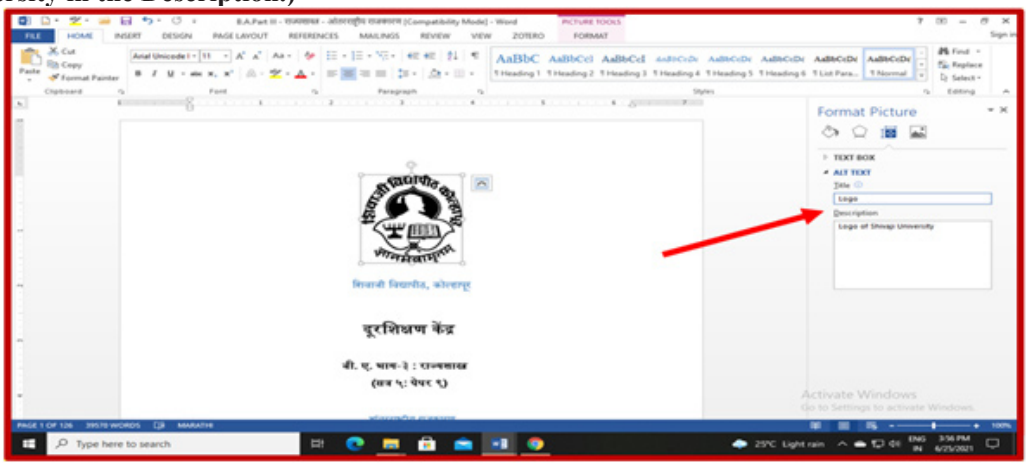
Book Accessible Process :

i) Remove Header and Footer of the entire book. (Insert-Remove Header, Remove Footer) Step - 2



ii) Giving description for Shivaji University logo.

(Right click on the logo - Format Picture-Alt text- Give the logo in the Title and Shivaji University in the Description.)

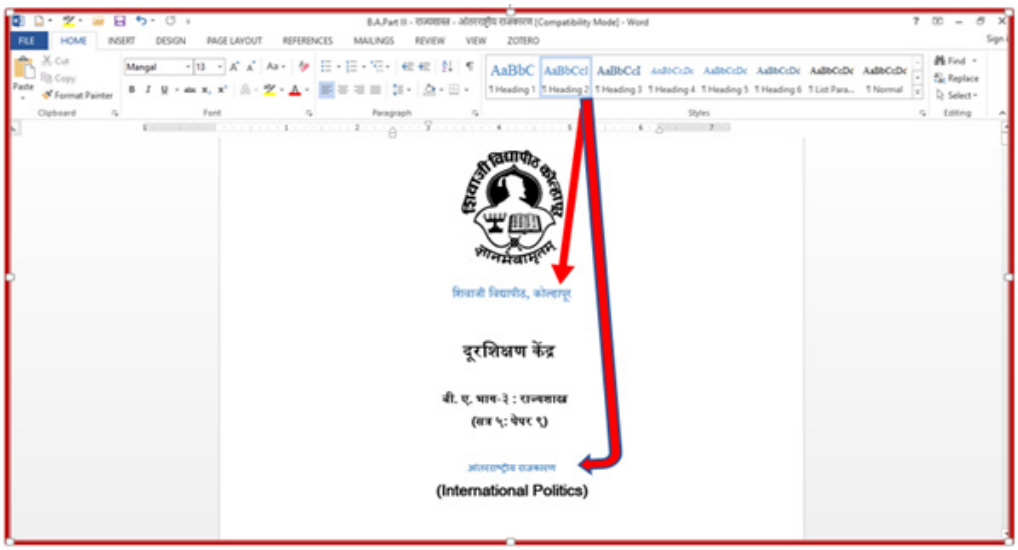


(This is so that screen readers will have something to read to the person, in the place of the image)

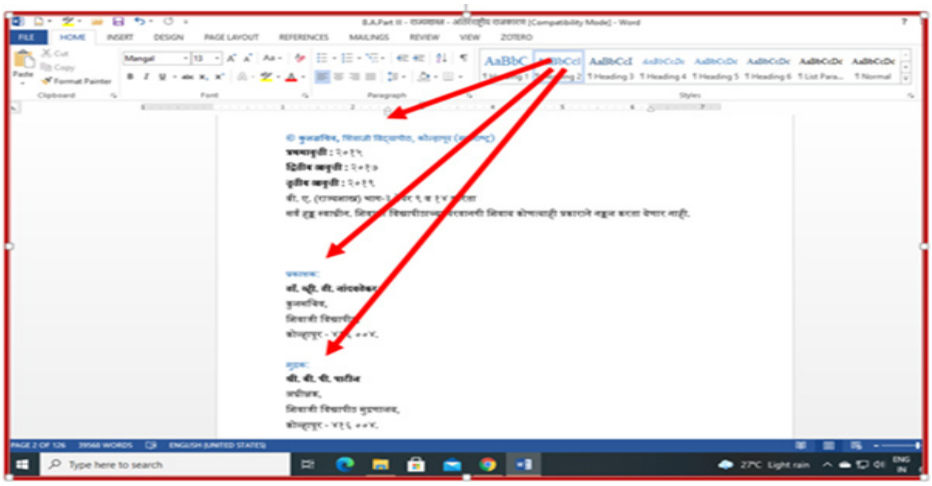
(Word has 9 heading styles, heading one through nine that you can use to indicate the structure of the document.

You should use heading one for titles and then heading two, three so on for sub titles or section headings)

iii) Heading style 1 for Shivaji University, Kolhapur and Book Title

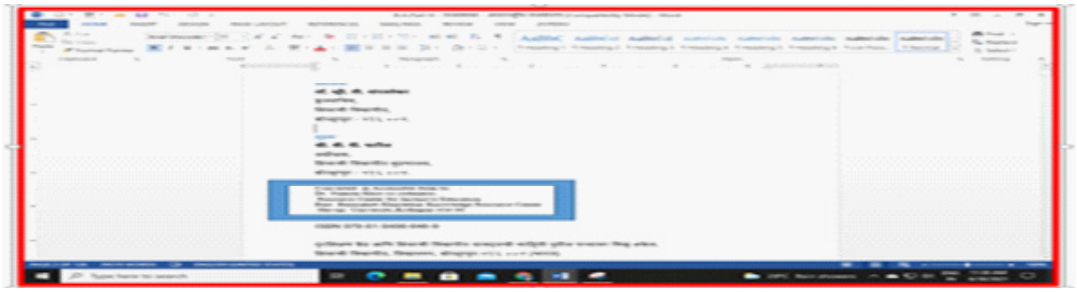


iv) Heading Style 2 for @ Registrar, Shivaji University, Kolhapur, Publisher, and Printer - Using Heading style 2 for section heading.

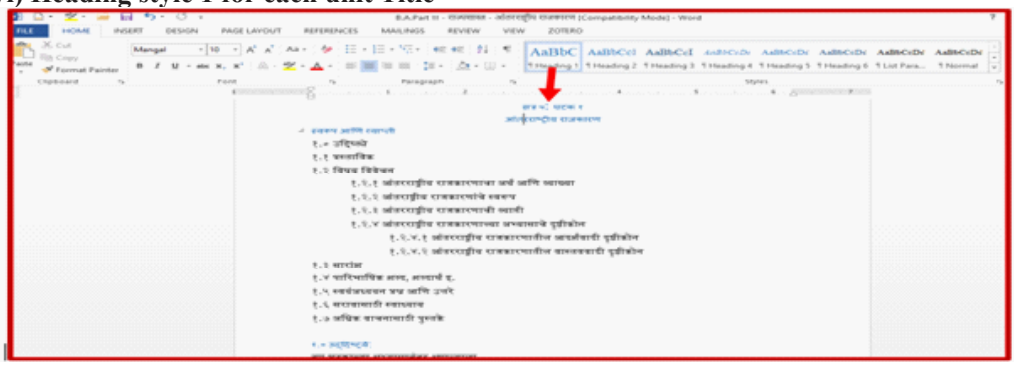


v) After the printer and above the ISBN to name the converted authority person.

- **Converted In Accessible form by**
  Dr. Namita Khot (Co-ordinator)
  Resource Center for Inclusive Education
  Barr, Balasaheb khardekar knowledge resource center, Shivaji University 416 004

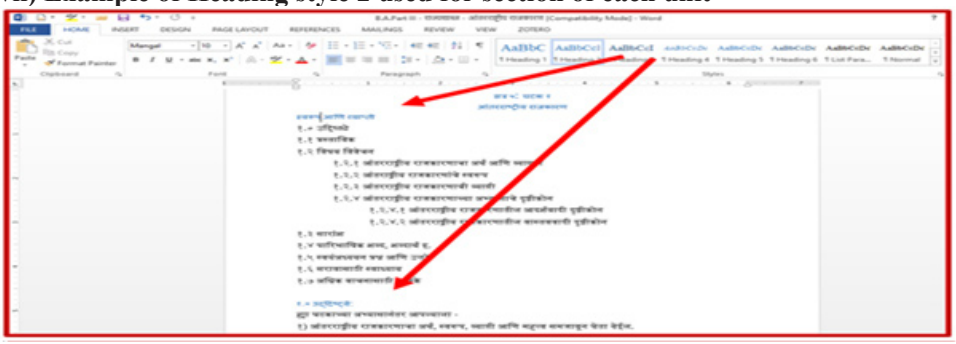


vi) Heading style 1 for each unit Title

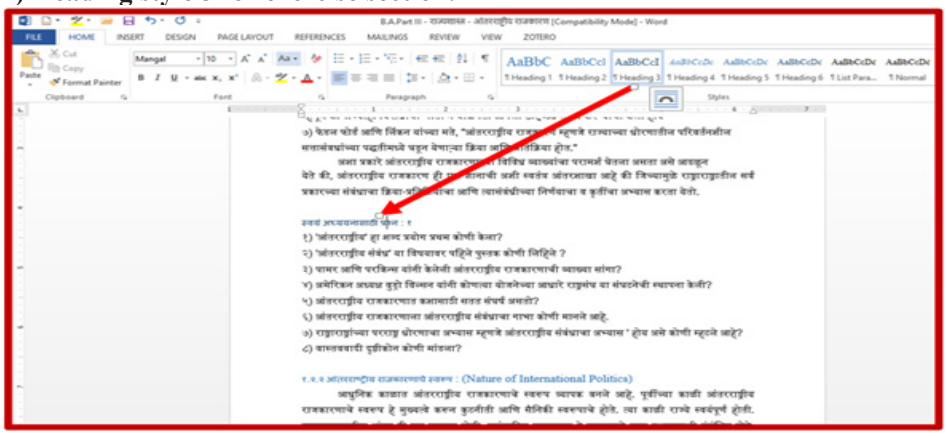


Heading style 2 used for Index, Advisory Committee, Author, Editor, Introduction, Student Suggestions etc.

vii) Example of Heading style 2 used for section of each unit



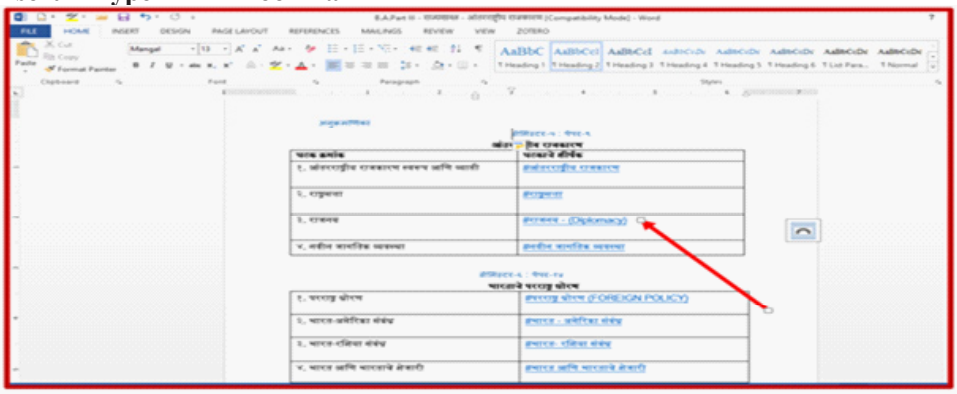
x) Heading style 3 for exercise section.



xi) Finally create the index.

- Create a table with Row and Column of Index.
- Create a link for each unit in the index. So that blind students can go to that unit in a very simple way.
- Create a table with Row and Colom of Index.

Insert – Hyperlink – Bookmark



- **Completion of the Book Accessible Process.**

With the help of above process researcher has converted the print books of prescribed syllabus of B.A. I, B.A. III, MBA, and M.A.

- **Findings –**

1. After completing this project, it was seen that many assistive technologies are available for visually impaired like JAWS, NVDA, Magic Screen reader software, Zoomtech, Kruzwell 1000 for Visually Impaired Students.
2. Assistive technologies are available for physically disabled student like Dragon – Voice Recognition, CoWriter – Word Prediction, Read & Write Gold – Literacy Support etc.
3. Assistive technologies for Specific learning difficulties like Inspiration – Mind Mapping and Audio note taker are available.
4. For deaf and hard of hearing disabled students speed text – Notetaking Technology is available.
5. It is found that while converting the textbook of distance education curriculum we have to follow the systematic procedure using KIBO device.
6. It is found that some courses of BAII curriculum is changed and therefore new books are not available in hard or softcopy.
7. It is found that there are some technical difficulties for uploading of Zip format files of converted curriculum.
8. It is found that there is huge demand for these converted accessible books uploaded on the Website of Shivaji University.
9. It is found that visually impaired students of distance education are in need of such accessible books for their studies and they were eagerly waiting for these books.
10. Students who have used those converted books are very much satisfied for while using these books.

- **Suggestion –**

1. It is suggested that this work of converting books of distance education curriculum should be continued for life time because curriculum may change after every three years. So, these Visually Impaired students should get their books in accessible form. It should be continuing process.
2. B.A. I, II, III, M .A. (Economics) and MBA I (Sem. II) these books are converted in accessible form. But the books of remaining courses of distance education should also be converted in accessible form.
3. There should be separate unit in the Resource Center for Inclusive Education or Distance Education which will take responsibility of converting in accessible form.
4. All the distance learning institutions should convert their curriculum books into accessible format for visually impaired students.

- **Conclusion -**

Shivaji University is well known university in the State of Maharashtra. This university offers courses in distance learning mode also. In distance learning mode there are many courses like BA, B com, M A, M Com, MBA etc. University provides material of these courses to the students who are admitted for these courses and are not the disabled students. But university is not providing study material or textbooks of these courses available in accessible format for persons with visually

impairment. The visually impaired students of the university departments and affiliated colleges have to depend on readers for their study.

This gap is now filled by making the books available in accessible format. Generally, these students take education in distance mode. Hence Self-instructional Material (SIM) is very useful for their studies. But this material is available in only print format. So purpose of this research is now fulfilled by converting these SIM in accessible format through DAISY (Digitally Accessible Information System) software and KIBO device. It is internationally accepted software for an accessible format. All the textbooks of Distance Education of university syllabus should be converted to this format in future and this should be continuous process for life time. Shivaji University authorities and distance education director should take care of this life time work for the benefits for visually impaired students. Then it will be social contribution for the betterment of visual impaired stakeholders.

- **Reference:**

1. Andronico, P., Buzzi, M., Castillo, C., & Leporini, B. (2006). Improving search engine interfaces for blind users: A case study. Universal Access in the Information Society, 5 (1), 23–40.
2. Arrigo, M. (2005) E-learning accessibility for blind students. Italian National Research Council– Institute for Educational Technology–Via Ugo la, Palermo, 2005.
3. Awasthi, S. K. (2019) Children with Physical Deformities. New Delhi: Global Publications.
4. Berry, J. (1999). Apart or a part? Access to the Internet by visually impaired and blind people, with particular emphasis on assistive enabling technology and user perceptions. Information Technology and Disabilities, 6(3), 1–16
5. Craven, J., & Brophy, P. (2003). Non-visual access to the digital library: The use of digital library interfaces by blind and visually impaired people (Library and Information Commission Research Report 145). Manchester: Centre for Research in Library and Information Management. http://www.cerlim.ac.uk/pubs/index.php
6. Dalal, A. K. (2018) Disability, Rehabilitation and social Work: The Indian Scenario. New Delhi: Rawat Publications.
7. Geol, S. K. (2013) Children with Special Needs. Jaipur: Aavishkar Publishers Distributors.
8. Geol, S. K. (2015) Inclusive Education for Special Children. Jaipur: Pointer Publishers
9. Geol, S. K. (2015) Teaching Children with Learning disabilities. Jaipur: Aavishkar Publishers Distributors.
10. Gupta, D. K. (2019) Inclusive Education for Special Children. New Delhi: Omega Publications.
11. Haneefa M. K. and Syamili C. (2014) Use of Information and Communication Technology by Visually-impaired Students: A Study in University of Calicut, Kerala. DESIDOC Journal of Library & Information Technology, Vol. 34, No. 4, July 2014, pp. 342-348 DOI: 10.14429/djlit.34.6586 - 2014, DESIDOC.
12. Johnson, L. & Moxon, E. (1998) In whose service? Technology, care and disabled people: The case for a disability politics perspective. Disability & Society, 1998, 13(2), 241-58.

13. Karna, G. N. (2019) Curriculum Development on Disability Studies. New Delhi: Discovery Publishing House PVT.LTD.
14. Kellar, M., Watters, C., & Shepherd, M. (2006). A goal-based classification of web information tasks. In Proceedings of the Annual Meeting of the American Society for Information Science and Technology (pp. 1–22). Medford, NJ: Information Toda
15. 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 metropolitan university.
16. lee, Young people Sook (2001) integrating people with disabilities into mainstream library.
17. Menon, L. (2019) Status of Disability in India. New Delhi: Kanishka Publishers, Distributors.
18. Prasad, S. B. (2015) Special education. Jaipur: Pointer Publishers.
19. Saowapakpongchai, K. & Prougestaporn, P (2012). Web accessibility model for visually-impaired students on e-learning in higher education. Inter. J. Comp., Internet Manag, 2012, 20(1), 34-42.
20. Singh, J. P. & Dash, M. K. (2019) Disability development in India. New Delhi: Kanishka Publishers, Distributors.
21. Taneja, C. B. (2019) Importance and Need for Special education. Jaipur: ABD Publishers.
22. Vojtech Regec, Milan Regec, (2014) Digital Barriers for Students with Visual Impairments at Universities in the Slovak Republic. 3-5 February 2014- Istanbul, Turkey Proceedings of INTCESS14- International Conference on Education and Social Sciences Proceedings.
23. https://www.verywellmind.com/how-to-write-a-psychology-case-study-2795722 accessed on 18th July 2021.
24. http://www.unishivaji.ac.in/distedu/Course-Material-(SIM) accessed on 18th July 2021.

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