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LOOKING AT INCLUSION IN NEP 2020…..SETTING APART WITH TECHNOLOGY

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Abstract:

The young, the old, the rich, the poor everyone is obsessed with technology, and it is not easy to visualize any individual engaging in society without adequate skills to handle these gadgets. Still, many visually impaired people believe that computers are now 'out of reach'. For a visually impaired student-Technology can be the great equalizer in a classroom. The teacher may find it difficult to deal with the needs of such a student but "assistive technology" (devices and software to assist students with disabilities) can often help teacher educators personalize lessons and skills enhancement in a visually impaired student. These days young are drawn to computers and other gadgets, so using them in the classroom makes perfect sense.

A large number of children are many times not benefitted from the traditional education program, the reason being their disability which hampers their ability to participate in the regular classroom setup. These students can be helped with assistive technology (AT).

Assistive technology is designed to provide additional accessibility to individuals who have physical or cognitive difficulties, impairments, and disabilities. Assistive technology in various forms can help children with special needs.

This paper provides an overview that NEP 2020 is more concerned with Inclusion at all fronts specially of children with special needs. What provisions can be made using the various assistive technology devices and role of AT in promoting higher education. These tools can help them work around their challenges while playing to their strengths. This helps them become more successful, productive students. At the same time, their confidence and independence can grow. The policy focuses of avoid segregation at any front. Teachers if given adequate training for using technology in the classrooms specifically for students with visual impairment can be of immense benefit to them. Through this study we can look into the resources which the teachers can use for their students with visual impairment.

Key words*-*Information and Communication Technology, Assistive Technology, NEP 2020

Introduction

Citizens of a country can enjoy high quality of life where education plays the role of an engine. There is enhancement of Economic competitiveness, social awareness and it also enables an individual to make rational decisions in life.UNESCO's education report for the 21st century states that higher education is one of the most important factors in the economic development of any country. The overall development of any

nation depends on the number of persons who undergo higher education. This holds true for person with visual impairment as most of them can perform at par in many fields. ICT has become a very important tool. It stands for Information and Communication Technologies and is defined as a 'Diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information These technologies include broadcasting technology i.e Radio and Television, Internet, Computer etc. It is changing the processes of teaching and learning by adding elements of vitality to learning environment.

Education is the stepping stone for every human to build a successful life and career and this applies to everyone including people with disabilities.

NEP 2020 also mentions about the same -no segregation. Inclusion of children with disabilities in all front. This can be done if they are provided with the same kind of technology as their other peers.

Let's look back a while, people who can't have access to print used to rely on audio cassettes or human readers. So there was a rapid dependency on support worker / volunteer or someone in family. In fact, almost till early 2000, several generous people used to be very busy in either reading books to students with disabilities at their school or home or recording audio tapes for people with disabilities. But today, in the era of globalisation, it's indeed difficult to get someone to read or even spend some time to volunteer for people with disabilities and at the same time, especially, for higher education, the volumes of study materials keep increasing and most of them are not readily available in accessible format. This is where technology would come in to support!

"For most people technology makes things easier, for persons with disabilities (differently abled learners) technology makes things possible" (Radabaugh,1988as cited in Ribeiro and Moreiro,2010).The statement sparks a realisation about the importance of using technology for making things achievable for the ones with special needs. ICT is proving very effective in teaching to the visually impaired students despite the diverse classroom creates various challenges for teachers who may not have known the same diversity themselves as students. The teachers must balance the requirements of high achievers while meeting the needs of diverse students within their classroom. In today's classrooms technology-based education is for all, not only for those who have an access but for those who are visually impaired. Current studies have shown that many assistive technologies such as software application and other tools are available in aiding Dyslexia's student in reading.

Some teachers might feel ill-equipped to deal with the diverse needs of visually impaired students. They should realize that they have access to more options than earlier as many new software and hardware tools are available. Technology can equip teachers to address students' needs in a number of ways. It can be through content input, learning activities, and opportunities to express comprehension. Students come to the class with a inclination for using it effortlessly, technology can become an mediator that bridges the relationship between teacher and student, allowing the teacher to meet a student in a familiar domain.

Assisted technology caters to the need of covering the broad range of content in a shorter duration of time instead of taking the curriculum at a slower rate it also assists them to keep pace with their peers. For example, a dyslexic student might normally have difficulty while reading content from the book but he could benefit from reading the text while listening to an audio recording through headset. The teachers can reduce the need

for review and remediation after the initial instruction by providing audio, visual, or concept-mapping when a new concept is being introduced. The pressures of classroom management needs can also be lessened as a result of using technology to differentiate instructions. Classrooms enhanced by technology provide support and structure to students who need scaffolding and enrichment.

Taking notes in higher education becomes a challenge. It's often an issue that how people with disabilities could take down the notes in the class room. If it's in the primary school environment, it would be easy to take down the notes in Braille and that would also be helpful to improve the spellings in English. But when it comes to the higher education, it would be helpful to benefit from the use of technologies.

There is a simplest and easy technique to get access to the printed material. One can use any ordinary scanner to scan the book and by default, when a page is scanned, it will become an image file. Then, user takes the help of Optical Recognition Software like ABBY fine reader, to extract the text from the image and read using the screen reader such as Non-Visual Desktop Access (NVDA) such as using a laptop / net book so that student can store more data and easy to edit at a later date. One important tip is to ensure students carry ear phones so that screen reader is not audible to rest of the class. Other portable solution is to use smart phone that has QWERTY key pad. Also, one can use gadgets like PlexTalk Player to record notes on fly. Tactile Diagrams are of great help to teach concepts to students with vision impairment particularly, when it comes subjects like Geography, Computer Science, General Science or any content that requires the use of diagrams in class room Digital Accessible Information System (DAISY) is an international standard develop, maintains and promoted by DAISY Consortium. The DAISY is ultimate solution to see printed material in accessible formats once the digital book is developed using DAISY standards, same can be produced in any accessible format, such as Braille, Large print, MP3 and so on.

This study is about three visually challenged students doing graduation from a regular college of University of Delhi. Essentially public access environments such as schools, libraries and employers should offer the complete range of access technology needs for all types of visual impairments and to therefore meet their legal accessibility obligations under the Indian **'Persons With Disabilities Act, 1995' and Rights of Persons with Disabilities Act, 2016**

 Technology can be priceless for people with visual impairments (range of conditions which affect clarity of vision and visual field), both as a tool for learning and communication and for providing visual stimulation. *Students with disabilities cannot use the same technology that usual students use but b*y using a computer with appropriate software and hardware the visually impaired user can be given access to standard resources. The advances in computers for the visually impaired and blind are mind-boggling. "Talking" computers and terminals are meeting the demands of blind and visually impaired individuals in record numbers.

After some research/new developments worldwide and considering the progress at NAB (National Association for Blind, Delhi) some techniques were incorporated to make them use assisted technology. They are mentioned below-

Role of Assistive Technology for visually impaired students

Getting the Environment Right

An appropriate working environment was provided in the computer lab and the classroom for the visually

challenged students. Correct lighting and a good working position made it easier for them to use the remaining vision effectively. Provision was made to provide glare free lighting for reading with the bigger font, the monitor height was set according to their need. All teachers tried to make them seat in the front row of the class. It was particularly important for this situation as all three were hesitant to express their requirements initially. This way they could record the lecture on the phone or the voice recorder. Later, when they became familiar with the keyboard of the computer he could type important points also.

Customizing a Computer

As a teacher we understood the nature of their visual impairments, before customizing the computer preference of all three visually challenged students was taken into consideration. At home and in the computer lab we provided him with larger screen monitor (screen size 17-21 inches) which made it easier to see. The standard computer and software was configured to suit their needs. These settings were saved so that they take effect each time the computer and particular program is used. Settings for text sizes, magnification software (Zoom Text Xtra, <u>MAGic Screen Magnification</u>) fonts, contrasts, brightness and colours were used to alter the appearance of the screen and to increase its legibility. (Apple Macintosh and PCs using Windows have built into their system a range of adaptations to help users with visual problems).

Mastering the Keyboard

The first most important effort was to make the visually impaired students master keyboarding, windows concepts and controls, mouse speed, video and navigation settings, how to turn 'sticky keys' on and off, how to use 'Autocorrect' and 'predictive text' which was a useful function and helped in cutting down writing time. For this purpose *Tactile Locators* were used-Tactile stickers or double sided tape was intentionally placed on the keyboard to identify important keys and assist positioning for touch typing. Later, dots were placed directly on keys with a liquid substance that hardened after application. Within days they were able to memorize the placement of all keys on the keyboard which made the task simpler. The visually challenged students learnt to touch type and now they could chat with people via email or Skype. Similarly keyboard equivalents for mouse commands, their assistive technology, and the concepts needed to understand the software to be used prior to accomplishing the same tasks as their peers were explained to all three.

Using Speech with the Computer

Speech output systems can be used to read screen text to computer users who are blind or ones with low vision. Special software programs (called screen readers) "read" computer screens, and speech synthesizers "speak" the text. The availability of earphones for individuals using speech output systems can reduce the distractions for others nearby. Early learning software using speech and sound alongside bright pictures can motivate visually impaired children to explore and interact with their surroundings. The speech support was added to standard software to give additional help and access to visually challenged students

Out of the many reading software available for the visually impaired we preferred using JAWS (Job Access with Speech) the popularity and easy adaptability of this program with high school and college students made us also get it. JAWS worked as a speech synthesizer to assist our student, he used computers for his work,

and recreation. Some of the features of JAWS include:

- Audible and visible menus
- Dual cursor design
- Built-in auto-speak keys
- Speech pad that allows single-handed operation
- Many voice configurations

The most recent version of JAWS allowed our users to read virtually every page on the Internet with one simple keystroke. Microsoft narrator, a free screen reader from Microsoft was used for sometime.

Kurzweil 1000 is a screen reading tool which was tried by visually impaired students. It works on a personal computer in conjunction with a scanner to convert the printed word into speech. It allows the student to edit scanned documents. Typed text is spoken aloud as the student types. Kurzweil can even speak a highlighted section of text before the student cuts, copies or pastes. This software enables the blind student to use keyboard short cuts to read toolbars and document content.

Braille Input and Output Devices

In addition to standard computer equipment there is a range of special electronic equipment designed to be used by people with a visual impairment, out of these some were identified by the peers and the teachers for visually impaired students which could be used by them at some point .Refreshable Braille displays allow line-by-line translation of screen text into Braille on a display area where vertical pins move into Braille configurations as screen text is scanned. Braille displays can be read quickly by those with advanced Braille skills, are good for detailed editing (e.g., programming, final editing of papers), and do not disrupt others in work areas because they are quiet. Braille printers provide "hard copy" output for blind users. The Braille translation software (example-Duxbury) converts written text to Braille.

Scanners with optical character recognition can read printed material and store it electronically on computers, where it can be read using speech synthesis or printed using Braille translation software and Braille printers. Such systems provide independent access to the text of printed documentation to students who are blind.

Closed-Circuit Televisions (CCTVs)

A closed circuit television (CCTV) also enabled them to read printed materials from books. A camera and television screen was used to create an enlarged image of printed text. It can also enhance contrast by placing white letters over a black background. It provided enlargement for paper based text and was invaluable to the students when they wished to read hand-outs or use books without the need for enlargement by photocopying. The use of CCTVs is often essential for visually impaired library users as it allows them to scan text and select relevant sections, which they may wish to enlarge by photocopying later. This allows much more independent research and saves expense of photocopying.

Conclusion

Finding the correct equipment and software was imperative for visually impaired as it involved considering their visual needs, what they wanted to do with technology and their ability to operate the equipment. Advice was obtained from the NAB (National Association for Blind) and similar organisations, the makers of

equipment and software, peers and teachers of the visually impaired. It was easier to start by using readily available equipment, for example, by changing the text size in a word processor. The teacher created a good working environment, especially in the classroom where the student was unaware of his needs or reluctant to mention them. All three students with visual impairment could read books, type the notes in the class and submit his projects/assignments independently, surf the web and chat on Skype and social networking sites (facebook).Assistive technology indeed moved us together on the road to success.

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