Assistive Technology for Physically Challenged Members of the Library

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Abstract
Paper deals with various assistive technologies available for physically challenged students. Attempt is made to highlight to what extent the physically challenged library users are familiar with the technology used for accessing and reading. Various hardware and software made available for reading in the research libraries and university libraries are explained here. Paper also deals with the extent of orientation and training required for making use of these tools/equipment effectively.

Key Words: Assistive Technology; Library Users, Physically Challenged

Various Assistive Technology is being used to access and read information resources made available in the libraries, especially for people with disabilities. The intervention of modern technology/information technology for self-reliance of the disabled is gaining importance. The appropriate use of gadgets and software packages for accessing and reading electronic sources of information or the information resources available on the web is known as assistive technology. In other words, any product that is used to increase or monitor functional capacities of individuals with disabilities. Here, assistive technology consists of hardware, software and services that facilitate members with disabilities to achieve greater independence.

Assistive Technology is a boon for physically challenged and is said to be helpful for people with a variety of cognitive/learning, print, and physical abilities and disabilities, be it in the home, classroom, workplace and/or community. Assistive Technology is enabling all individuals, of all ages, including those with disabilities, to be more Independent, Self-Confident, Productive and exhibit better performance in daily life, education and employment.

Assistive Technology can be anything low-tech or high-tech, modified or adapted, which is used to help an individual perform some task of daily living. The term Assistive Technology encompasses such a broad range including devices (computer/laptop, tablets, iPads, AAC devices), software (text to speech, voice recognition, magnification, screen reading), Chrome Apps & Extensions, adaptive keyboards and adapted writing tools and so much more.

Objectives:
1. To know the various hardware and software used by physically challenged students to access, read and generate print and electronic forms of information resources.
2. To study the extent of use of the assistive technology by the library members.
3. To understand the training needs of the user community.

The authors have adopted interview and observation method to gather data pertaining to the use of assistive technology by the physically challenged students studying in the institutions of Mysore City during the year 2013-14 and 2014-15.
The following tools have been used to access, read and record information.

1. Foot Pedal Mouse
2. Head-stick mouse
3. 5-finger typing tutorial
4. Voice recognition commands- software
5. FM Technology based hearing aid.
6. Any other equipment- see website of Freedom Scientific

**Foot Pedal Mouse** is used by the students who have lost the upper limbs or the upper limbs are immovable. Here, the students can move the computer cursor with the help of his foot placed on a large mouse. In the absence of hands or if the hands are immovable on account of various reasons, the user can operate the mouse using his foot.

**Head-stick Mouse:** In case the students find it difficult to use his or her hands or fingers, one can operate the keys with the help of head-stick operation on the specially designed square keyboard. The student can also operate the cursor with the movement of elbow on the specially designed touch pad.

**5-Finger Typing Tutorial:** When the student has lost his or her upper arm, the computer can be operated with the help of single arm/hand. He or she can type the text using single hand – 5-Finger Typing Tutorial. Training for a short duration is needed to efficiently operate single hand 5-finger typing.

**Sticky Keys** - a method of typing where modifier keys, such as Shift, Control, Command, and Alt/Option, will "stick" down and apply to the next keystroke, so that only one key needs to be pressed at a time. This is extremely useful for people who have motor impairments that make it difficult to press combinations of keys.

**Slow Keys** - a keyboard feature that prevents keystrokes from registering until a key has been held down for a certain period of time. This is extremely useful for people with motor impairments that make it difficult to target keys accurately or that cause unpredictable motion.

**Voice Recognition Commands:** can also be used when the students have lost both the hands or the arms/hands are immovable on account of various reasons. Students, whose arms are immovable on account of accidents, can rely upon voice recognition commands to operate the computers. Speech recognition is assistive software that allows people to control a computer by talking to it. Instead of using a keyboard and a mouse to control the computer, a student speaks instructions into a microphone that is connected to a computer. When the student talks into the microphone, the student can perform two functions. First, he/she can instruct the computer to perform commands such as opening a document, saving documents, deleting, and more. Secondly, the student can write text into a document such as Microsoft Word just by speaking into the microphone. With the help of eye movement students can also operate the computers.

**FM Technology** based Speech Recognition Tool: Freedom Scientific, USA has also come out with tools for hearing impaired. Those who cannot hear properly on account of partial deafness can rely upon the instrument of Freedom Scientific for hearing aid. The aid will help in
comprehending the speech/voice from a long distance. This will help the students while attending special lectures and group discussions. The tool also helps in listening audio and video lectures stored in the libraries in the form of DVD and Audio Cassette.

Freedom Scientific develops the highest quality video magnifiers, braille displays, screen magnification software, notetaker and screen reader. For over 20 years, the products have provided access to print and computers for people with blindness, low vision, and learning disabilities.

**Portable Note Takers: The blind students and students with partial blindness** would like to be able to take notes in a classroom, lecture hall, or while student is on the move, a note taker may be an ideal device for visually impaired. These small, portable devices enable you to type in and read back notes using a built in refreshable Braille display or speech output. They may also include other useful functions, like an address book, telephone dialer, diary, calculator or alarm clock. There are the models available with different keyboards. Some can be connected to a computer to save notes that have been taken. The most advanced units have the full functionality of a laptop computer. Refreshable Braille display board enables visually challenged students to read text instantaneously and edit before the same is forwarded to the others.

Mysore University Library, JSS Polytechnic for Differently Abled, All India Institute of Speech and Hearing and some of the Schools in Mumbai have acquired some of the useful assistive technology for helping the differently abled people, especially the physically challenged.

1. The students at All India Institute of Speech and Hearing were using the aid for listening to the lectures and discussions.
2. Voice recognition commands were used by students to operate the computer systems in some of the research institutions in Bangalore.
3. Operation of curser with the help of the movement of elbow and head is very rare phenomena.
4. 5-Finger Typing Tutorial is found quite useful to the physically challenged students who have lost one arm or on account of some reason ifone of the armsis immovable. Students studying in some of the schools in Mumbai are making use of this typing tutorial. The same is used by the physically challenged students in the USA.
5. The students when introduced to the assistive technology have to constantly use and become proficient and familiar in handling the tools of physically challenged.

Assistive technology is found really helpful for the students to improve their functional ability while handling computers and reading in the classroom. With the advancement of new technology, students with physical disabilities now have the opportunity to participate and be educated in the regular education set up.

**References:**

