The Role of Assistive Technologies in Effective Inclusive English Language Teaching for Visually Challenged Students

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Problems faced by Visually Challenged Students

Visually challenged students face many problems in receiving effective education in a general educational setup. Accessibility to the course material is one of the major impediments they face under the setup. However, there is a solution for the problem: Visually Challenged students with difficulties in accessing information in print format can use certain technologies to access the same information in the digital format. Such technologies are called assistive technologies.

Assistive Technologies

People with vision problems use technologies such as screen reading applications, text-to-speech applications, magnifiers, Braille viewers etc, to access information. Using assistive technologies, visually challenged persons can access most of the information in the computer and on the internet. In these times, when "the use (ICT) in special needs education (SNE) is very high on the political agendas of countries" (Telecentre), it is important to highlight the potential of using assistive and accessibility technologies in inclusive education, besides creating awareness among the teaching fraternity.

Government Plan

Government of India, Ministry of Human Resource Development, Department of Education (2005) in its 'Action Plan for Inclusive Education of Children and Youth with Disabilities' has mentioned its goal as

> Recognizing Education for All children as a fundamental right, to ensure the inclusion of children and youth with disabilities in all available mainstream educational settings, by providing them with a learning environment that is available, accessible, affordable and appropriate to help develop their learning and abilities

Focus of This Paper

This paper presents an overview of the available assistive and accessibility technologies to aid differently-abled (visually challenged) students in receiving effective inclusive education in general and in learning English as Second Language in particular. It analyzes the common problems faced by visually challenged students in learning English at the tertiary level (college/university), and presents solutions that are available.

Creating Awareness and Correcting Viewpoints

Creating awareness about the nature of blindness is the most important subject before moving towards analysing problems and solutions in inclusive education. All blind persons are not completely blind. Degrees of blindness vary. There are partially blind people who have some amount of vision, and there are totally blind persons who are completely blind. Among partially blind persons, some can read big print, some cannot read, but they can move around and generally distinguish objects, etc. Treating all blind students as totally blind is the biggest mistake that most people including teachers commit. Based on the degree of vision, learning by visually challenged students varies. However, assistive technologies are designed to suit the needs of all visually challenged persons.

> "Assistive technology (AT) is a generic term that includes assistive, adaptive, and rehabilitative devices for people with disabilities and includes the process used in selecting, locating, and using them", (Assistive Technology). "Accessibility [...] means building a Web [or any application] that everyone is able to access, regardless of their level of physical or mental ability" (The business case for web standards).

Accessibility Features and Devices

Assistive technologies and accessibility features include both hardware and software applications. Most of these technologies provide visually challenged people with auditory access to visual data. They also provide tactile access via brail. Assistive technologies convert text to speech, i.e., read aloud textual information available in the digital format, thereby enabling visually challenged students to access the information.

One of the commonly used assistive technologies is a screen reading software application. A screen reader is "software for the visually impaired that reads the contents of a computer screen, converting the text to speech. Screen readers are designed for specific operating systems and generally work with most applications", (screen reader). A visually challenged person can navigate through a computer, work with software applications especially text editing software, browse, and communicate through the internet. A screen reader helps a differently-abled person access the computer in the following ways: reads aloud the content of the computer screen / monitor, reads aloud continuously a text in a document such as a web page, reads aloud key strokes as characters/words or both while typing, reads aloud dialogue boxes, menus, and tool bars enabling the user to work with software applications.

There are many freeware and commercial ware screen readers available. Microsoft has the 'Narrator', Apple Inc. Mac OS X has 'VoiceOver', and Linux OS has more than one screen reader. There are also open source (free) screen readers, such as 'the Linux Screen Reader for GNOME' and 'NonVisual Desktop Access' for Windows (NVDA). "The most widely used screen readers are separate commercial products: JAWS from Freedom Scientific, Window-Eyes from GW Micro, System Access from Serotek, and ZoomText Magnifier/Reader from Ai Squared" (Theofanos).

The second type of assistive software application that visually challenged persons generally use is a small read aloud application that use text-to-speech engines. "A text-to-speech (TTS) system converts normal language text into speech; other systems render symbolic linguistic representations like phonetic transcriptions into speech" (Jonathan). Such applications are used to read lengthy text documents. Some of these applications have additional features like forward and reverse, etc.

There is another type of software application called the 'Magnifier' that, as the name suggests, magnifies the screen, and adjusts colour contrasts to help people with low vision in reading. Microsoft and other Operating systems have inbuilt screen magnifying software. Besides these, there are commercial as well as freeware magnifying applications available.

Braille viewers, screen readers, text aloud applications, and magnifiers are used by visually challenged persons to access almost all information available in the digital format.

The use of these assistive technologies may help a visually challenged student access learning materials easily and quickly alongside other students and which may render inclusive education for visually challenged students effective. The use of this technology can help overcome the learning problems that a visually challenge student face in an inclusive educational environment. "The most important problem that a visually challenged person faces is on account of having to depend on others for even simple tasks. Technology has enabled us [Visually challenged persons] to read the newspaper or a book without having to depend on others", (IT at Insight).

Inclusive Program and Accessibility Features

The most common problem that a visually challenged student has is the problem in accessing learning materials under the inclusive education system. Usually, the learning materials provided are in the print format, and conventionally, under the special education environment, these learning materials would be provided to visually challenged students in Braille format. But, the use of Braille in an inclusive educational environment can create problems because, firstly the teacher and fellow students do not know brail, and secondly converting learning materials to Braille is comparatively expensive and time consuming. But, converting these learning materials to digital format, which in many cases are already available, is very easy and cheap. Both the teacher and fellow students can also access these learning materials in the digital format.

Writing Problems

The next problem a visually challenged student face is in writing. Visually challenged students in special education schools, usually perform their writing using brail. But, using Braille to write in an inclusive educational environment poses problems for the same reason that Braille is inaccessible to regular teachers. Use of assistive technologies removes this problem as well, as a visually challenged student can type out his/her writing assignments using keyboard accessible applications as they guide the student by calling out aloud the key strokes as the student types out. A teacher or a fellow student can read such typed materials. This will enable a visually challenged student to participate and perform in regular classroom activities.

The Teacher's Role

Solving the problems of accessing information and expressing ideas with assistive technologies and helping differently-abled students use them will not provide inclusive education effective. "There [is] the need to develop more programmes including Training of Trainers and Teacher Educator Programmes to impart training to more numbers of persons with disability", (IT at Insight). It involves changing the attitude of teachers and trainers towards differently-abled students, and creating awareness about the needs of the differently-abled students in learning and the ways and means to address those needs.

Problems at the Tertiary Level of Learning English

Learning English at the tertiary level poses fewer challenges to a visually challenged student when compared to that of the primary and the secondary level. The student already possesses a certain level of competence in using English and is to some extent familiar with the aspects of the language, unlike "A [totally] blind child [who] has never seen print, or advertisements, nor do they necessarily understand that stories come from a system of letters and words" (Rao). The major challenge that the student faces is the lack of accessibility to learning materials viz. Text books and work books. S/he would not find any difficulty in following the teacher when the teacher adapts the lecture method. S/he would find it difficult to follow the teacher only when the teacher uses the black board for illustrations especially in teaching grammar. The student would even find a task based learning/teaching activity comfortable. But, s/he would have problems when the teacher supplies hand outs (instructional/practice materials) along with the task. The student would be able to actively participate in group activities and involve himself/herself in community learning activities. S/he would face problems only when the teacher insists that the record of such activities be produced in the written form.

Classroom Accommodations

Allowing a visually challenged student to use assistive technologies in the classroom would remove most of the challenges that the student faces in learning English. The student would be able to convert the learning materials that are in the printed form into the digital form very easily using OCR technology. Once converted the student would be able to access the materials. The student would be able to type out the required reports all by himself/herself using text editing applications which s/he could also use to make notes during a lecture.

Attitudinal Changes Needed

Teaching English as second language at the tertiary level to a visually challenged student involves only a few considerations on the part of the teacher. There should be a change in the teacher's attitude towards a differently-abled student. Treating a visually challenged student on par with other students along with providing the student a conducive atmosphere to learn would go a long way in making inclusive education effective. The student needs motivation and not exemption. S/he needs assistance and not sympathy. S/he needs inclusion and not special treatment. Elsie Rao, TAER Teacher of the Year for 2002, and a teacher of visually challenged students says in her essay, "I try to empower them with a sense of confidence and self-esteem which is critical for all. It is especially hard to do if the people around them do too much for them." A better understanding of the needs of a differently-abled student on the part of the teacher is essential in delivering effective inclusive education.

Some Specific Strategies

Making small changes in the teaching style will take care of most needs of a visually challenged student in a language class. For instance, if the teacher reads out aloud as s/he writes on the black board, it enables a visually challenged student to follow the lecture. Providing an elaborate introduction and clear instructions before asking the students to perform task such as watching an audio-visual material will help a visually challenged student not only follow but take part in the task. In case of video-only materials or while displaying some visual aid, providing a narration or an oral description by a fellow student or by the teacher himself/herself will enable a visually challenged student to access that material.

Choice of Methodology

There is no specific limitation or advantage in terms of adapting a particular methodology or approach in an inclusive classroom. Under the traditional Grammar Translation method, both the teacher and the student will not find any difficulty, as it is primarily text oriented. But, when it comes to the Audio-lingual method', the student will find it difficult to do tasks that demand listening to lessons and answering questions simultaneously.

In both the Communicative Language Teaching approach and the community learning approach, the teacher should see to that the student has a clear idea about the roles s/he is assigned and that any visual stimulus, if used, is clearly described to the student. In short, allowing visually challenged students to use assistive technologies in a classroom and understanding the needs of a visually challenged student will enable the higher education system to provide effective inclusive education. In the words of Chok Seng,

> "The approaches towards teaching English to blind students are the same. When a blind student is out in the sighted world studying side by side with sighted students he or she is usually able to adapt to his or her environment. All the teacher needs to do is talk to the blind student and ask him or her whether there is any special requirement."

Teachers' Mastery of Hardware and Software

English language teaching, as it is moving towards utilizing technology (by way of Computer assisted Language Learning/Teaching and Computer Mediated Communication) in delivering the necessary language and communication skills to the students effectively, it facilitates a visually challenged student to have more access to a language course in comparison to other courses. In this scenario, it becomes inevitable that a language teacher is aware of and be competent in using all the technologies that are used in language teaching. And along with this, if an English teacher has a better understanding and awareness about the needs of a visually challenged student, s/he can deliver an effective inclusive English language course in its true sense.

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