APPLICATION OF ASSISTIVE TECHNOLOGY IN THE CLASSROOM FOR STUDENTS WITH VISUAL IMPAIRMENT

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Abstract

Implementation of assistive technology in school mainly depends on awareness and competence of the teachers. The attitude of teachers towards taking initiative of imparting education and making informational material accessible for students with the help of AT decides the success and adoption of AT among students with visual impairment. The study attempts to understand the awareness and competence of teachers in using AT in teaching students with visual impairment. There exist various barriers which hinder the use of AT in classrooms viz, lack of provision of AT in schools, Inadequacy of funds with the school authorities, higher costs of the devices, lack of knowledge and know-how of operating the device and gaps in teacher training program. Descriptive survey study in special as well as inclusive schools of Delhi. The sample comprised of 35 teachers teaching students with visual impairment studying in secondary classes. Assistive technology is applied to education of students with visual impairment; however, teachers indicate the need for infrastructure and pedagogical support. Information technology is an important tool in the inclusion process and can promote independence and autonomy of students with visual impairment.

Key Terms: Assistive technology; visually impaired persons; Accessible; Inclusion

Introduction

Science has made many attempts to make life of man easy. The field of Disability has not remained untouched by the advancements of science. Technology which is helpful for persons with disabilities is now recognised as a separate field altogether which is known as “Assistive Technology”. IDEA 2004 continues to define an assistive technology device as any item, piece of equipment, or product system that is used to increase, maintain, or improve the functional capabilities of people. Assistive technology has led to independence of persons with disabilities, has helped them lead a more dignified life and has also helped in their social inclusion.

Assistive Technology is also a central part of the commonly used term ICT (Information and communication technology) which is frequently used in the field of education. Assistive technology with regards to education of visually impaired students comprises of computers/laptops installed with screen reading software, daisy players for recording of lectures and reading books, refreshable braille displays and scanners amongst others. All these devices enable a student with visual disability to explore his environment and information sources digitally thus promoting their inclusion. Inclusion ensures that the
challenging classroom environment and opportunities are befitting to their needs and they feel a sense of oneness and integrity with their classmates.

According to the principle of educational inclusion defined in the Salamanca Declaration” Visual impairment is divided into two groups with distinct characteristics and needs: individuals with low vision and individuals with blindness. Low-vision individuals have impaired visual function even after optical correction and use or are able to use their vision to perform tasks. In the educational field, students with low vision have residual vision, which enables them to read printed material with the aid of didactic resources and special equipment”. Loss of vision leads to psychological, social, economic and functional problems in an individual which leads to degeneration of quality of life and in many cases loss of self-esteem too.

AT allows individuals with visual impairment to overcome a major part of the difficulties in daily life and offers them independence and autonomy concerning information management and access to communication, just like their peers with normal vision. Many voice synthesizers and screen readers are available for purchase from companies or non-governmental organizations or are available for free use on the Internet. Assistive technology allows students with visual impairment to complete their assignments and take their examinations independently without any dependence on readers or scribes. A laptop provides a complete mechanism for them to read and write and do everything else like their sighted peers when it is supported by screen reading software like JAWS or NVDA. They are now able to access internet, websites and social networking sites which is also a major platform of social inclusion. Inclusion in a classroom is a joint responsibility of school authorities, teachers, students and parents. The teacher who has the major responsibility of transacting the curriculum across the student with visual impairment should be competent enough to manage AT resources. This is essential for efficient pedagogical relationship. Therefore, it is important to know the environment where teachers of students with visual impairment work in order to help them perform appropriately. The objective of this research was to verify the application of assistive technology, in educating blind and low-vision students from the perceptions of their teachers. It investigated into the awareness and competence of teachers regarding Assistive Technology which can be utilised in the teaching learning process.

MATERIALS AND METHODS

A descriptive survey study was carried out in special and inclusive schools of Delhi/NCR. The sample consisted of 35 teachers who taught students with visual impairment. The sample was selected according to the following criteria: (1) teachers who worked in schools attended by students with visual impairment (inclusive as well as special schools for the blind) and (2) teachers who taught the students of secondary (6th to 10th). Two self-made questionnaires were developed that contained questions related to the awareness and competence with regards to Assistive technology directed to teachers who worked with visually impaired students. The study was approved by five specialists in the field comprising of professor from IIT Delhi, working on the development of AT for persons with blindness and Director of apex govt. Institute for persons with visual disabilities to name a few.

RESULTS
47.1% teachers felt that AT helps children with visual impairment to become independent in reading and writing whereas 35% did not recognise the need of AT in education. 5.9% of the teachers believed that AT has no major role in education of students with visual impairment. More than 40% teachers contended that AT does not help in better adjustment of the students in a classroom. 45% teachers agreed that they use AT in classroom whereas 20% teachers have never made use of AT for transaction of the curriculum. Only 55% teachers teaching students with visual impairment believed that AT improves the functional capabilities of children. Only 32% teachers were aware of the fact that separate assistive devices exist for the blind and low vision. More than 35% of teachers had little or no information about refreshable braille displays and audio recorders like daisy players. Only 40% of teachers were aware that how refreshable Braille Display functions and how it can be utilised for the education of students with visual impairment. The results showed that most teachers (60.5%) did not use assistive technology with visually impaired students. The reasons were not having AT component included in the teacher training course program (70.4%), the fact that the school administration did not make AT available for teachers and students (24.1%), the fact that students with visual impairment did not know how to use the computer, and the belief that the disability did not allow the individual to use the computer (20.4%). Concerning the importance of using assistive technology resources in educating students with visual impairment, 84.2% of the teachers declared that the resources were very important to enhance reading and writing skills as well as to communicate with the world on an equal basis (95.8%). In addition, they made information available and the content of the teaching material more attractive than the traditional resources (93.7%), improving the students’ quality of life, facilitating the learning process (91.7%), and allowing them to rewrite and correct texts (87.5%) with autonomy and privacy (66.7%).

**DISCUSSION**

Teachers play a fundamental role in the task of promoting students’ well-being and in creating conditions for learning. They can also contribute to students’ health by guiding them in the use of resources that enhance their residual vision and preserve their visual function. Access to assistive technology provides independence to students with visual impairment by enhancing their communication, mobility, and environment control. In many cases, use of technology is the only way people with communication difficulties can connect to the external world. In this study, the results concerning the importance of information technology in the learning process of students with visual impairment suggest that the teachers in this sample are not aware of the variety of AT that exists and the importance of using assistive technology in education activities. This shows an alarming situation. It is necessary for a teacher to be familiar with and know-how to use the technology and only then can inclusion be facilitated in the classroom and the students could participate most in the teaching learning activity. Utilisation of AT in schools can promote the inclusion of students with visual impairment, facilitate school tasks and social interaction in the school environment. The use of assistive technology enables students with visual impairment to better adjust to regular learning processes and academic domains. It gives these students access to the same information source their peers use. With a computer, a low-vision or blind student is able to communicate with other schools by databases, stores, libraries, etc.. New work opportunities can be considered, and the Internet, as well as its multiple possibilities, can be explored by using specific programs for students with visual impairment.

Despite all these considerations, 60-70% of the teachers stated they did not use assistive technology. There are many barriers to the use of assistive technology in schools, such as uneven allocation of equipment and poor access to computer resources. Students with special needs and underprivileged social groups lack access to assistive technology. It is important to create opportunities that
maximize the students’ potential, especially students with special needs. The process of introducing information technology in schools requires that all teachers invest in the development of their abilities, so that their educational activities can benefit from technology tools. The success of using information technology for educational purposes depends on a collaborative effort between the school and the teachers, requiring planning that considers the needs and conditions of the school so that issues such as equipment maintenance and material supplies do not become an obstacle. The use of assistive technology contributes to the use of residual vision and to the preservation of visual function. It is an important tool in the inclusion process. It allows health and education professionals to develop combined actions and to promote knowledge sharing and quality of life for visually impaired students. Assistive technology is applied to education of students with visual impairment; however, teachers indicate the need for infrastructure and pedagogical support. The study was limited to secondary school teachers of Delhi. It is recommended that there is a need of collaborative effort on the part of school authorities, teachers, students, parents and legislation so that there is awareness of the limitations to be overcome and planning of actions that allow the use of assistive technology in educating visually impaired students.

References


