

Reviewed Study on Assistive Technologies Usage for Visually Impaired Students

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Abstract - With the right instruction and basic visual assistance, children with any degree of visual disability will learn to read text. This will encourage them to enter regular schools and integrate into society, which would support them for the rest of their lives. Despite this, many visually disabled students are enrolled in blind schools and are only taught Braille. Rapid technical advancements in the 'modern world' necessitate a rethinking of technology used for personal and educational purposes. For disabled persons, technological advancements are important. Environmental progress has resulted in more comfortable housing, safer highways, and poison-avoidance environments, both of which have resulted in a substantial reduction in youth accident and disability. The AP, as well as the device and service provision associated with these items, are all included in AT. This paper examines recent research on the usage of Assistive Technology for visually disabled students.

Index Terms - Assistive technology, Visual impairments, Blind, Visually Impaired Students, etc.

I.INTRODUCTION

One of our five senses is vision. The ability to see provides us with a wealth of information about the world around us, including people's faces and subtle expressions, what objects appear like and how tall they are, and the actual situations in which we work and walk, including approaching threats.

When an infant has a vision disability, it has to be addressed right away. This is due to the fact that very much learning takes place visually. When vision deficiency falls unnoticed, children's development of a full variety of abilities is hampered. Although visually impaired children can do almost all of the exercises and tasks that sighted children take for granted, they also need to practice how to do them in a particular manner or using different equipment or

materials. (2) If you are looking for a Touching, hearing, feeling, tasting, running, and using any vision they have would be central to their learning. In this step, the help of parents, family members, colleagues, nurses, and educators may be invaluable.

Assistive technologies are utilized to help children with disabilities navigate the general education program. Students with visual impairments are more prepared to meet the expectations of demanding conventional educational environments as they utilize assistive devices. Flax players, talking book collections, and tablets are among the most recent developments in this area, allowing the learning process for visually disabled children faster and simpler. Teachers or workers can quickly translate the class handout to Braille. They may also be scanned onto a monitor, converted to Braille using applications such as Duxbury and WinBraille, and then printed on the embosser (Sara Ring, 2008). They will operate separately and at their own speed thanks to these innovations.

AP refers to any external product (such as low vision aids, large print books, liquid level sensors, and computer software) that is specifically designed and manufactured to maintain or improve an individual's functioning and independence in order to facilitate participation in society and improve overall well-being. These items vary from basic, low-tech equipment like a walking cane to extremely advanced and complex technology, such as specialist computer hardware and software.

Assistive technology is not a golden wand that teaches visually disabled children what they need to know. To be effective, you will need the right device, preparation, and time. Students will gain care over a portion of their learning experience after this is accomplished, enhancing not just their academic success but also their self-confidence in learning and

life in general. Today, we speak of comprehensive schooling for autistic children, but visually challenged students face many challenges when it comes to utilizing these instruments. We lack the necessary facilities and qualified human resources in conventional educational institutions to effectively fund the education of such children. We lack qualified human staff, including in special educational environments, to educate these children how to operate these devices safely and efficiently.

1.1 Visually Impaired Students

The visually disabled children are as diverse and varied as any other children's category. However, a general statement applies to most children with visual impairments: an infant with visual disability usually learns the environment differently than that of a child without a visual impairment. Parents of visually impaired children can worry what impact vision impaired would have on their kid. There is no one solution for all children. Your particular visual disorder, the prevalence of some other disability, disposition and attitude and several other aspects can affect how your child responds to your particular visual deficiency.

An inclusive education classroom applies to a learning atmosphere in which all pupils, particularly those with disabilities, meet academic, physical and social needs in one holistic context. Inclusive curriculum — or integration — is being more popular in early childhood schools. In a visually impaired child who is assigned an accessible school setting, the instructor in the classroom can often inquire about the child's vision deficiency. Teachers who do not understand the different degrees of visual disability may mistakenly believe that the learning environments need not be visually stimulating, particularly in early childhood settings in which images, colour, sight words and learning centres. In environments where the bulk of pupils are based on visual indications, teachers must consider alternative methods to address their students' academic requirements for visual impairments, including vision and vision impairments. Knowing the degree of vision deficiency for children will help to identify, pick and use specialized accommodations in the instructional environment.

II. ASSISTIVE TECHNOLOGIES USAGE FOR VISUALLY IMPAIRED STUDENTS

Johnstone and al (2009) Social progress never occurs in a vacuum. Instead, progress in human thinking and technologies also stems from pressing desires and requests of parts of the society. Assistive technology is an indicator of transition caused by human desire for people with disabilities. In classrooms, assistive technologies (AT) are vehicles for promoting the access of students with disabilities to general education curricula. Assistive technologies can provide low tech equipment for the accessibility of students with visual impairments such as walking canes or high-tech academic instruments such as electronic or print magnifications and screen readers. Using AT, visually impaired students can help satisfy the demands of demanding conventional school environments. The disparity between education and evaluation is particularly important in the reading of text. In 2007, Thurlow, Johnstone, Timmons and Altman observed that students were supported in reading assignments using a broad range of loupe, screen readers, refreshing braille and other instruments. However, the 2008 follow-up report of the authors found that these instruments are sometimes not permitted for state-wide evaluations.

Suzana Rabello and others (2014) Qualitative research consisting of observation in the resource room and an instructional intervention. The sample community consisted of six schoolchildren aged 12 to 14 years visually disabled. Participants were examined, ATDs consisting of optical and non-optical instruments recommended and computer-based guidance was given. Participants were evaluated depending on the width of the eye/object, the font size and duration for reading a computer screen and written document. The eye disorders involved opacities in the cornea, retinoblastoma, retinopathy, aniridia and congenital cataracts. Far visual acuity ranged between 20/200 and 20/800 and close visual acuity between 0.8 and 6 m. "Telescopes, spherical lenses and lens lenses were recommended. 'Three out of five people with low vision will minimize text size on a screen monitor following intervention, with most participants (83.3%) reducing their read time at the second observation session. Both participants with a poor vision were able to interpret text written in smaller font sizes with regard to the handwritten text and decreased reading time in the second observation session. The research concluded that after reading the skills using ATDs, the

learners were able to execute their activities in the school fairly with their classmates.

Valerie S. Morash and Yue-Ting Siu (2014) This article introduces an instrument which measures the technical support skills of visual disability teachers and their identification with an assistive technology group of practice. Teacher deficiencies in aid technologies detrimental impacts on pupils who are disabled physically by stunting the growth of assistive technology, which eventually leads to lower post-secondary education and job results. Identification of a practice group the principles of assistive technology will complement the technical skills of visually impaired teachers. The results indicate that the study has accurately tested supporting technology skills and affiliation with a classroom group that values technology in this instructor study. The use of this instrument will enable an independent assessment of assistive technological skills of pre- and post-training teachers. Estimated problems showed predicted trends of questions. There were just two irregular sample queries (infit 1.33). Internal efficiency (Cronbach's Alpha 0.80) was excellent for assistive technology skills and adequate (Cronbach's Alpha 0.70) for the identifying group. Establishing a consistent instrument that tests both structures would help research on how one applies to the other and how professional learning may be designed to further support teachers' usage of supporting technologies.

Derrick W. Smith and M. Kelly Stacy (2014) This synthesis examines the literature on aid technology in education for people with visual disability from September 2009 to May 2013 and reproduces a previous analysis by Kelly and Smith (2011). In August 2009 we found and studied 141 papers in the English peer reviewed journals to recognise improvements in categories, methods and rigor of study. Just 2 of the 141 papers followed the criteria set by the What Works Claringhouse for science study. Although only two experiments meet expectations for community study, the amount of written papers, including a range of qualitative and single-subject research studies, increased the consistency of the research. A brief overview of noteworthy studies as well as alternative solutions are given to encourage progress into assistive technologies for students with visual impairments with a view to advancing stricter and more stringent requirements.

Archana Kumari and Ankita Bhatt (2015) In the current research, evidence and data were gathered from Dehradun, a 'National Institute for Visually Disabled Children,' an apex organisation. The research is completely qualitative and no quantitative knowledge has been gathered. A focus group dialogue was carried out with the researchers' participatory observation to gather students' information about how new technology supports them in academia. The researchers guided and monitored the conversation using an open questionnaire. Besides this, some material has also been gathered through conversation in the National Institute for Visually Disabled with administrative personnel, faculties, documents, registers and case profiles. After analyzing the collected statistics, the number of visually impaired higher education students has been found to be still poor but has grown in recent years. It may be attributed to the high availability and usability of technology for children with visual impairments and particularly in academics. Technologies have often been seen not only to aid visually disabled pupils, but also to be accepted and valued by the faculty in their teaching. However, certain socio-psychological factors also obstruct the use of assistive technology.

Wong Meng Ee and Cohen Libby G. (2015) This research outlines the perception of AT usage by teachers of visually impaired students in Singapore. AT knowledge is insufficient and its usage by instructors of visually impaired students is contradictory. AT must be used as an additional method for training, not as a separate instrument and a Braille rival. These differences may be overcome by strengthening instructor pre-service, in-service and training courses. There was a clear acknowledgement that AT provides students with visual impairments with easier access to learning and better quality of life. At the same time, there have been signs of substantial differences in AT awareness and ability disconnection among teachers. The usage and instruction of AT was a notable characteristic of an instructor champion. Other focus areas include braille and AT education, whether AT is to be learned as a curriculum or inclusion topic and whether the incorporation of AT is not taken into account. The results further point to budget constraints and inadequacies of pre-service and professional growth.

Silman Fatoş, Yaratın Hüseyin and Karanfiller Tolgay (2017) This thesis would explore how technologies

used by the Turkish Blind Association in Cyprus helped educate and manage visually disabled people. Qualitative data collection and interpretation testing methods were utilized. This thesis is a case study that seeks to study how the technologies employed in the association made it easier for visually disabled people to read and administratively. The research also showed that the study members were inspired by technology and could effectively interact with each other and individuals outside their organisation. However, technology equipment such as automatic high-speed book scanners and manufactured Braille books is missing, which will enhance the standard of life of members of the organization.

Sultan Turki Bin Tuwaym and Ann Bassett Berry (2018) Assistive Technology (AT) is an integral aspect of their training curriculum for students with visual impairments (VI). AT enables students to acquire expertise, participate and work separately in the learning world. Despite its mandate as part of the Individualized Education Program (IEP), study has shown that rural schools use less AT devices relative to urban schools. The degree of AT usage is substantially dictated by the level and experience of the instructor with AT. In this article the writers present an AT resource that they have developed to provide current, useful guidance to teachers and parents for VI students on AT. Resource details: (a) application/devices teachers can learn about, (b) kind of VI for which application/device is most helpful; (c) main features; (d) cost; (e) additional knowledge sources; (f) product guides and analysis assessing the AT; and (g) supplementing organizations.

The Sureh of Singh Senjam (2019) The achievement of schooling of visually challenged students is highly dependent on the usage of AT. Children with vision disability may still develop different abilities if appropriately guided. The classification of AT for the curriculum of visually impaired students helps to think about what AT would help particular students do. The study established a basic definition based on the task and the meaning to be performed.

N Kawai and Ediyanto (2019) The aim of this study is to demonstrate that students with VI will learn science well if a thorough literary analysis provides the appropriate learning support method. The following measures are included in this comprehensive study of literature: collection of papers, interpretation of experiments and categorisation of publications. A total

of seventeen research publications from 2009-2018 on the subject of science learning for VI students separated into how VI students study and educate and learn science for VI students. This documentation has been compiled via the ERIC archive and the Google Scholar website. Based on these literature reviews, VI students will study science well provided there is a good tool to help them learn. If teachers should use the best learning model and are assisted with good services like orientation and movement, kinesthetic and tactile learning, auditory education and accommodation, and assistive technologies, students with the VI can well be able to learn about science.

A systematic study of various papers written in the field of navigation strategies for people with visual impairments is conducted by Bineeth Kuriakose, Raju Shrestha and Frode Eika Sandnes (2020). Unlike other research articles, this review discusses big technologies focused on various infrastructure, whether indoor and/or outdoor conditions. “The analysis showed that the proposed navigation systems miss certain key features that are very necessary for autonomous navigation for the target users.” There may also be cases in which humanitarian situations must still be taken into account when designing the navigation scheme. In the potential design of navigation systems for persons with blind or visually disabled individuals, a series of guidelines are also issued on the basis of these results.

Paul D Nisbet (2020) examines the usability of automated Question Papers by UK agencies for externally evaluated large stakeholders. It poses the issue that question papers from five out of six companies are not sufficiently available to visually impaired applicants who use screen reader technology and therefore raises wider issues of how disadvantages can be exacerbated rather than dealt with, particularly in high-income countries with a firm commitment to equity. This paper provides original and exclusive evidence from a study of the Qualified Visually Impaired Teachers in relation to technology and techniques utilized by 325 students with visual disabilities and found that up to 16% of these students are utilizing screen reading resources in school. Therefore, these applicants can be disadvantaged in exams since the technologies they use to obtain learning services cannot be used effectively in accessing tests. The essay ends with guidelines for regulators and evaluation suppliers.

III. CONCLUSION

The equipment used by visually disabled persons was adequate, and it aided the teaching and learning processes in the organization, according to this evaluation report. The visually disabled can engage more effectively and utilize a variety of electronic aids in their classes, such as audio charts, iPads, cubes, and trays. For their everyday lives, students with visual disabilities need a variety of assistive devices. These assistive technology aids in enhancing mobility and increasing success in repetitive tasks. There are assistive devices used for everyday tasks. The significance of the teacher's position in promoting access to learning by AT is highlighted by an inquiry into the usage of AT among teachers of students with visual impairments. AT cannot be dismissed as a personal or self-improvement project. Rather, in response to the increasingly changing learning environment, it is important to involve teachers, especially teachers of students with special needs, in ongoing training. It should be a core vision, adopted by the framework for special education teacher preparation and advancement.

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