

The Creation of Particular Learning Methods for Blind Children

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Abstract - The aim of the research is to provide a disseminate view on the methods for learning for visually impaired children. The economic factors along with psycho-social aspects have impacted blind education in India. Due to the lesser number of population, not impacting much on the productivity of the state, visually impaired children suffer the consequence of social and political ignorance leading to incomplete education and illiteracy. The current research is based on thematic analysis of the information gathered from literature review. As per the research it can be concluded that the role of family, specialized teachers and schools for special education in educating blind children is crucial for their academic achievement, building good grades which would further contribute to their employment. With several innovations on learning techniques, Braille method has always been the oldest and common used. Apart from Braille the use of virtual reality method for spatial knowledge have been quite frequently used to teach blind children. It can be recommended that in order to fit into the cut-throat competition of achieving educational success for future progression, it is equally important to educate physically disabled children by making them specially-abled through several learning techniques utilizing other skills apart from visualization.

Keywords: Learning, blind children, braille, spatial knowledge, VR application, cognitive development

I. INTRODUCTION

The significance of developing learning methods for visually impaired children straightaway leads to promotion of literacy. About 10.88% are blind in rural districts of West Bengal (Evaluation of Registered Visually Disabled Individuals in a District of West Bengal, India, 2018). Determining best medium for the blind children is necessary to understand the nature of blindness and their ability to take up learning. Often the child is blind by birth or impaired vision caused by infection, cataract or glaucoma. However both way leads to one fatal consequence of not experiencing learning through sight which is countered by applying one of the most effective learning through mimetic and didactics. In order to encourage the benighted children, it is required to flourish them with opportunities by providing with new and improved techniques for learning.

There are prevalent methods that are used for blind children to read. Those methods include Braille, auditory strategies, print and dual media. For delivering special education for especiallyabled children, learning strategies have been categorized in three parts. The first step is paper strategies where the child is taught to include print, Braille

and magnification. The second step is E-text Strategies in which the child seeks auditory support that includes tracking the sound. The third strategy is auditory strategies which enhances the child's ability to be more sensitive to sound and infer the implemented learning. Unlike other privileged children, these children have to rely more on many methods for acquiring knowledge which is easily achievable by only mimetic procedure for visually abled children. It is a proven fact that proper eyesight leads to faster development of IQ which hinders the process of brain development for blind children making them a slow learner.

However, with the help of transcribed materials for Braille and provision for regular classroom consultation, it is the role of integrated learning that deals with blind children education that provides specialized techniques for training for reading, writing and auditory perceptual training. Depending on individual circumstance, learning methods vary leading to the same result of imparting education to all irrespective of physical deficiency. The aim of the research is to provide a disseminate view on the methods for learning for visually impaired children.

II. LITERATURE REVIEW

A. Critical Explanation of the Needs for Learning in Blind Children

Children with lack of eyesight have unique educational needs that are met by imbibing a team approach of the parents, professionals and the learner. For meeting these unique needs, students must be provided with specialized services, appropriate materials, books as well as special equipment and techniques for equal access of the curriculum to compete with peers in the academic institution and ultimately with society. The majority of learning occurs through vision among infants and young children.

As per Gupta, Singh & Parween (2018), the blind individual is much different from a sighted child. The approach of the family and others change towards them which intervenes their growth and would impact on their healthy bonding process. The intervention should be positive and early for meeting the psychological need of the child. For addressing the basic ideas of science and practical day to day life activities, the process of learning for blind children includes alternative models that are "synthetic", integrating scientific information regarding Earth. The factors that bring about possible misconceptions regarding worldly activities are

there hindrance to meet their needs for solving their complex requirements. Educational need of visually impaired children does not align with the bookish knowledge; rather it needs continuous guidance from specialized teachers and school administrators. Their need for seeking information via support systems which are mostly achieved by reading requires to be coming from a source of high reliability. In order to attain what they are seeking the disabled child possesses the need for explaining their visual condition to teachers and peers. According to Schipper, Lieberman & Moody (2017), the children are taught to express their visual needs and seek help graciously by meeting their need for socialization while also refusing the same politely when not needed.

B. Critical Evaluation of the Methods of Learning for Blind Children

Imparting of education to blind children is much different to that of sighted individuals. Several resources needs to be provided by the members of the community involved in their learning process. Students are instructed with the help of Expanded Core Curriculum for adapting to the environment and mode of instruction. A developmental approach in teaching of writing Braille is adopted by institutes where a blind child is taught to isolate fingers from the thumb and pressing each one separately with firmness.

According to Joybell, Krishnan & Kumar (2015), this can be done by introducing modeling with clay for young children where strength of their hands is increased. As per Gautam, Bhambal&Moghe, (2017) families and private tutors are required to educate the blind child with tactile symbols by reading tactile books which furthermore involves multisensory teaching techniques, enhancing power of their other sensory organs which if implemented correctly would serve better than a sighted individual in long run (Tiwari, Das & Sharma, 2015). The ability to speak in sign language caters to their need for communication for children at pre-language stage is equally important increasing Braille literacy. An ambience of learning with fun is one of the effective method any learning. It is important for the trainers and teachers to make Braille writing and reading interesting.

In the view of Gyawali&Moodley (2018), moving of fingers across the pages even if they have no preliminary idea should be done in a playful exploration by pretending to produce conventional Braille characters. This involves children pressing any keys before the bell rings by moving their fingers along the line until they reach the end. The educator can create a uphill and downhill pattern for the blind children where they would press the dots in a descending manner from 3 to two then one or by developing a model for a simple tactile graphic altering dots. Their attempt to write is followed by dictation of a story orally and pressing of random keys. Learning of things that are strictly visual and cannot be imitated such as color or

rainbow is imparted in their learning by using language skill. For explaining a dark and bright color high pitched tone are used while a gloomy or lighter one implies low pitched tone. Furthermore, associating those colors with material things perceived in everyday activities are adjoined for understanding the child's psychology (Bianco *et al.* 2018).

C. Discussion on the Creation of the Methods for Learning of Blind Children

Recent studies have shown that spatial audition has impacted greatly on learning capacity among blind children. In order to create a virtual impression of human perception for the blind individual's spatial audio technology had been prevalent for long for recreational purposes. It is used for creating a virtual reality primarily with the help of didactic approach involving auditory sources. As per Picinali *et al.* (2018), the process applied to blind children for constructing mental representation of their surrounding environment is navigated through spatial orientation for delivering audio information. Learning of computer and programming language is vital in the current educational and employment structure. In order to make the learning feasible, human-computer interface specifically rely on haptic stimulation through auditory learning specially customized for blind students. Interestingly, it has been observed performance of the blind children rapidly increases by learning to configure spatial environment with the help of verbal description. Due to this learning a blind child is able to measure distance between two objects faster than a sighted individual exhibiting fast chronometric responses as found in conventional others. Thus those blind children can acquire knowledge with the help of such valuable assistance providing spatial information via audio feedback in the form of ultrasonic echolocation prosthesis.

III. FINDINGS

A. Enhanced Infrastructure for Braille Education Needed in India

Braille is an effective learning tool for literacy for the blind or low sighted individuals who are unable to reach functional reading speed. In order to achieve Braille education it is important to remember that merit varies from person to person and thus cognitive ability is essential for acquiring knowledge. As per Eikospentaki *et al.* (2015), visually impaired children obtain information on their environment with the help of their cognitive abilities produced from variety of experiences. However as per Danna *et al.* (2015), lacking in vision, delays in motor, cognitive and social development. Thus a great deal of information is provided to the blind child through touch which is the core essence of learning through Braille method.

Stress had been given on learning of Braille among blind children because it enables the person to move

independently within the community which also had been focused on the Rights of Persons with Disabilities that had been implemented since 2008 over 150 countries (indexbraille.com, 2018). Braille is a difficult method of learning in India. According to Vashistha *et al.* (2015), economic condition of country is hugely responsible for upward mobility of the disabled individuals. Most of the families are unable to arrange proper Braille books for their visually impaired children which ultimately lead to illiteracy. (Refer to Fig.1).

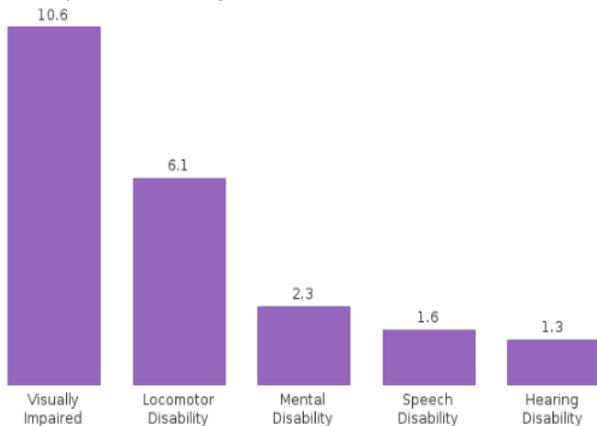


Fig. 1 Population of visually impaired children In West Bengal, India (Source: <http://www.indiaspend.com/special-reports/a-census-of-the-physically-challenged-17917>)

Though Braille a difficult learning process but not for the young blind ones. It is a code system of connecting of dots that represents letters of the alphabet that is to be perceived by touching with fingers. The aim of reading and writing both can be achieved by it. The dots represent alphabets, numbers and punctuation marks which are arranged in the Braille cell consisting of six dots. In the opinion of Bedny, Richardson & Saxe (2015), currently there are three methods of writing Braille.

The Braille machine which is not much available in countries like India that already has high rate of illiteracy is often compared to a typewriter with only keyboard to six keys and a spacebar which can be pushed separately or altogether by the thumb. The simultaneously pushing of the keys produces six dots that are raised on the paper forming a Braille cell. Braille as computers or personal note takers can be used as technology for blind or children with low vision which is frequent in India because of poor economic background and insufficient nutrition (Drossos *et al.* 2015).

B. Learning through Auditory Virtual Reality for Acquiring Spatial Knowledge for Blind Children in India

Spatial audio technology which is as old as Braille method for learning is used within VR (virtual reality) application both for studying human perception as well as for recreational purpose. The use of spatial audio in India has currently exceeded pre-existing sources of auditory localization. It is used as a tool for investigating cognitive

functions among blind children which is undoubtedly the most important factor for receiving education. This particular learning helps the young one in two ways(Refer to Fig. 2).

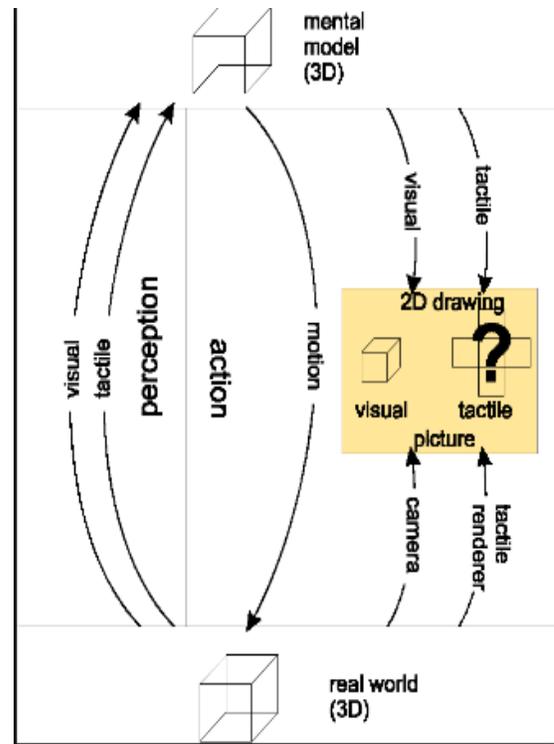


Fig. 2 Application of VR application in learning for blind children (Source: <https://www.semanticscholar.org/paper/TDraw%3A-A-Computer-Based-Tactile-Drawing-Tool-for-Kurze/b6781ae55cfe72ea45753c79261f9039efa5246f>)

The first one is by constructing mental spatial maps for navigating different environments and the second one focuses on the central auditory system by listening to the operation of acoustic events. According to Picinaliet *al.* (2014), with the help of these acoustic events the child is able to infer a mental representation of his present place. Along with Braille, spatial knowledge also contributes in developing specific routing algorithms among the blind learners making them no less than a sighted academic achiever. Various games have been created considering learning of blind children through VR applications, thus making it easier for young learners to access education (Balan, Moldoveanu & Moldoveanu, 2015).

IV. CONCLUSION

Henceforth, it can be concluded that in order to eradicate illiteracy focusing only on the naturally privileged group is not enough. The blind children who equally hold constitutional rights for better living should not witness social exclusion by being deprived of education that they rightfully deserve. For fitting into current academic structure the discussed methods for learning of the blind is ought to be incorporated by state’s legislative policies that

would provide encouragement for the families and the children to actively participate in stereotypical tasks that are available to sighted individuals. By focusing on learning through Braille and VR application, the individual's cognitive development is heightened with his intellectual ability and thus banishing the myth of blinds being burden of a nation.

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