Developing Computer Assisted Cartesian Plane to Enhance Graph Skills of Students with Visual Impairment

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Recommendation

1. This study proved that Assistive technology can be a level player and a great equalizer for students with visual impairment. Hence students with visual impairment need to acquire a plethora of technical skills that will provide alternatives for collecting and communicating information. The study recommends that the teacher training curriculum for students with visual impairment may be designed with the instruction in the application of Assistive technology, information on its availability, and maintenance.
2. The newly developed Computer Assisted Cartesian Plane has the design that would be useful for any child in the inclusive classroom. Hence the study recommends that any researcher developing assistive technology for educational purposes may give importance and adopt the universal design principles so that a single aid/ device can be used by the whole classroom and thus minimize discrimination of disabled and non-disabled in the inclusive school set up.
3. Many research studies indicate that Assistive technology is boon to persons with disabilities giving promising means to accommodate barriers to independence. But it is adverse that such devices are underutilized by persons with disabilities and the main reason is lack of knowledge and skill among educational personnel. Hence this study recommends the educators and related stakeholders to be well oriented on the benefit of assistive technology and encourage students with disabilities to use the same which would be an equalizer in mainstream education.
4. The Government of India may give financial assistance to improve any prototype developed and make it available as a product to educate students with different categories of disability on par with their non-disabled counterparts. The cost of the devices is also a barrier and the government may address the issue of cost and availability.

Conclusion

Vision enables access to information helping the development of mathematical concepts. Many basic mathematical concepts that describe visual phenomena are taught orally to students with visual impairment. Students with visual impairment face more challenges to understand and grasp directional and spatial concepts. Consequently, the students with visual impairment get fewer experiences of how mathematical concepts are used in daily life

communication than sighted children. There is a general opinion that students with visual impairment cannot graph, and cannot do geometric construction. The reason for such attitude is that curricular graphs and geometric materials are visual in nature and hence they face considerable challenges in reading them. Despite many legal provision nationally and internationally that learning materials are to be accessible, many mathematics textbooks which have visual images for important content is not transcribed in either Braille format or digital format of the texts. Technology offers new opportunities and accessibility for students with visual impairment by complementing the use of tactile devices. The present study aimed to develop a digitally enhanced learning tool to perform graphs with reference to Cartesian Plane. The study results evidenced that the newly developed technology- based tool is making the learning process more encompassing, more participatory, and more collaborative. Thus the study stands as a testimony that students with visual impairment not only learn graphs but they can draw graphs independently when the right tools are provided.

This study is a small but significant contribution in teaching mathematics to students with visual impairment!