

REVOLUTION OF MULTI-SENSORY SCIENCE EDUCATION APPROACHES FOR STUDENTS WHO ARE BLIND

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ABSTRACT

Students who are blind or have low vision (BLV) have traditionally been under represented in the Science, Technology, Engineering, and Mathematics (STEM) professions. This under representation may be due to a lack of methodologies and access technologies available to foster hands-on science learning. This presentation will discuss multi-sensory approaches for teaching science in a hands-on way to students who are blind or visually impaired. These approaches may also be implemented with non-visually impaired students to increase student engagement in the learning process. Some of these approaches include text-to-speech laboratory instrumentation that speaks critical data points out loud to qualitative sonification outputs of Cartesian graphical representations that involves the use of a tone change to represent the slope of a line that shows a data trend. It is these technological approaches that are complimented with extra description of visual and non-ambiguous oral representations of mathematical expressions that provide scaffolding for all learners. One additional motivation for the inclusion of persons with various disabilities into the STEM workforce is their innate ability to problem solves to overcome their physical and/or cognitive limitations. It is this lifelong population of problem solvers that should be fully integrated into the STEM workforce. Educational research has shown that students learn best when they are able to engage in hands-on learning activities. My research with students with blindness or low vision has also illustrates this to be true for the majority of students with BLV.

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