

Round Table Discussion on Latino Students with Disabilities and Science Learning

Summary by Kristin Cobos

Latino students with disabilities face many challenges in science learning. There is a desperate need for research in this area to identify ways to make scientific education available to the multitudes of students with disabilities. Many of these students have a talent for the sciences, but have neither the necessary support nor the adequate outlets for their talent. Research is needed to shed light on ways to overcome the numerous challenges which face these students, as well as the institutions, teachers, and parents who guide them. Statistical information concerning these students is scarce; long-held stereotypes need to be overcome; access to science learning activities, investigation, and materials need to be provided; and interdisciplinary collaborative efforts need to be cultivated. The analysis and prioritization of these needs is the task at hand for experts in the fields of education, science, and technology, so that children and adolescents who show enthusiasm for the sciences can exercise their gifts and contribute positively to the sciences.

Scientific research provides the foundation for improvements to science learning, particularly as it relates to students with disabilities. Little demographic information about minority individuals with disabilities in scientific endeavors is currently available. According to Dr. Nicolas Linares, Director of the FILIUS Institute, 1% of minority groups are going into the sciences. By applying this statistic to those with disabilities, the percentage drastically decreases.

To begin, a collaborative effort is necessary on the part of experts in education, science, technology, and other fields. Researchers, educators, engineers, amongst others, must join together and provide an in-depth assessment of current research and review what areas still need to be explored. Next, basic statistical information about scientific learning and its relation to disabilities in general must be gathered. Statistics concerning the ability and potential of students with disabilities in relation to science learning are widely needed, as are statistics of the employment rates of these students in scientific fields.

This information must also be reviewed as it applies to Puerto Rico specifically, in order to understand the situation that the island is facing vis-à-vis the larger world. Evidence needs to be gathered regarding the learning potential of Puerto Rican students and employment of Puerto Ricans with disabilities, both in and outside Puerto Rico.

Though little information is currently available about Puerto Rico, some small-scale studies have been done. In 2005, one such study from UPR Mayagüez investigated the potential of students with disabilities in scientific learning. The study found that students with disabilities had better retention and better grades than mainstream students. The implications of this study showed it is not a matter of the students' ability to learn, but getting them access to learning opportunities and confidence to take advantage of them. Challenges within schools and other educational institutions are numerous, but it is even more difficult for people with disabilities to find gainful employment once they have graduated. Unemployment rates are appalling and further documentation needs to be done in this area.

Part of the challenge that faces individuals with disabilities in science learning is the current misconception of what "science" actually entails and how it can be applied to today's world. Society on the whole, believes that science is restricted to the gathering of sensory data. However, this notion is only partially correct. Science also involves a method of reasoning. Students with disabilities are extremely capable of this type of reasoning and of becoming scientific researchers. Many elementary and secondary teachers have had cases of students who excelled in science skills, but who had been told by parents, teachers, and society that they could not succeed in a scientific field.

Science learning for individuals with disabilities must begin at home. Parental involvement and support are crucial to the success of a child with disabilities and to the development of that child's particular skills. If a child shows talent in the area of science, parents need to cultivate this talent, instead of telling a child that they are incapable, which is the common view held by society at large.

Unfortunately, parental support is not enough. Educational institutions also need to undergo profound changes where students with disabilities are concerned. Awareness of existing stereotypes and negative attitudes must be raised and changes to curriculum

must be then be incorporated. Teamwork, among teachers, students and administrators is necessary if these changes are to take place.

Special education teachers need to work hand-in-hand with the regular teachers. Regular teachers often times do not know what to do with special needs children. They need to be guided in using the classroom materials that exist and making curricular adaptations for students with disabilities. However, this is not knowledge that comes to a teacher automatically. The problem is due, in part, to a lack of adequate training in teacher certification programs. Regular teachers are required to take few classes on children with disabilities in their teacher-training programs and there is an overall lack of classes being offered by universities. As a result, mainstream teachers do not learn how to adapt the materials available and students with disabilities get ignored.

Another area in need of attention is science learning curricula and materials, which remain underdeveloped. The instruction curriculum should be based on modules of learning, which take a special needs student through the stages of scientific learning. In order to develop such a curriculum, classroom educators need to work more closely with researchers to develop materials that are in-depth and progressive.

While theorists and the classroom practitioners should develop a stronger rapport, educational institutions must take responsibility for providing adequate science learning opportunities for students. There are some tangible steps that can be taken to improve the state of science learning for those with disabilities. Schools can integrate special needs children with mainstream children in mentoring programs. Mentoring can overcome obstacles, such as stereotyping and negative attitudes, thereby increasing awareness and understanding through the cultivation of positive relationships between regular students and students with disabilities. These relationships, in turn, will dispel many of the fears that keep these children apart. Mainstream students will face their fears of the unknown, while children with disabilities will develop and “I can do it” attitude. It is a win-win situation.

Teachers have many inspiring personal stories of children, both regular and those with disabilities, who blossomed as a result of mentoring. One special needs teacher told of a blind student who wanted to be a mechanic. This particular student excelled in physics. His talent was so great that after a while, he began to substitute for the teacher

and helped the seeing students with their equations. It was the blind student who began to mentor the mainstream students in science.

Another step that can be taken by educational institutions to improve science learning for children with disabilities is to host science fairs. Students with disabilities should be encouraged to start participating in science fairs from an early age. Direct participation in science-based projects and activities would allow these students access to hands-on learning. Likewise, students from regular science classes should be encouraged to do science projects involving assisted technology, technology which is geared toward people who have disabilities. Educators are concerned over the decline of the laboratory experience in schools. Science fairs will also allow students, both regular and those with disabilities, to experience the laboratory; an experience is necessary for the development of young scientists.

The issue of improving science learning for Latino students with disabilities is a complex one. Presently, there is a serious lack of research. Investigation is necessary, so that parents, teachers, and educational institutions can be informed of the best way to address the needs of these students in the schools. Society is unaware of challenges faced by children and adolescents with disabilities. What contributes to the complexity of this issue is that, often times, the intentions of parents and teachers are good: parents want the best for their children; teachers want the best for their students. Unfortunately, it is the manifestation of these good intentions which have adverse effects, leaving students with disabilities behind where science learning is concerned. However there is hope. There are concrete steps which can be put into motion, but collaborative effort is necessary to undertake this task. Parents, educators, researchers, and society as a whole must champion the cause of these individuals with disabilities, so that they can use their talents and become scientists making positive contributions to the world.