

Empowerment

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Students with Disabilities in Math and Science

Students with disabilities represent an ever increasing segment of the population on college campuses today, largely due to legal, educational, ideological, and attitudinal changes stimulated by the Individuals with Disabilities Education Act (IDEA), the Americans with Disabilities Act (ADA), and Section 504 of the Rehabilitation Act.

Although historically students with disabilities were not encouraged to enter math and science fields, national efforts by organizations such as the National Science Foundation are providing increased exposure and recruitment into these fields by qualified students with disabilities. The DO-IT Program at the University of Washington is one of the most well known programs that has a track record in getting school-aged children with disabilities interested in the sciences, connecting them with professionals in the field, and providing experience in laboratory work with needed adaptations.

According to Jill Manske (2001) at the University of St. Thomas, over 30% of incoming students with disabilities in a recent college survey indicated that they planned to major in biology, physical or social sciences or pre-professional programs. In her recent article on misconceptions and faculty behaviors, Manske discusses the phenome-

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Circles of Support for People with TBI

Recently, an evaluative study was conducted to assess the impact of the “Circles of Support” approach on people with traumatic brain injury (TBI). The study followed ten people involved in this support structure for three years. A Circle of Support is a network of relationships intentionally built around the focus person (usually this person has a disability). It is a strengths-based system in that it focuses on the person’s abilities, skills, and strengths rather than on their weaknesses that may have resulted from TBI. The purpose of the Circle is to provide the necessary support to enable the focus individual to explore and achieve their dreams. The approach dovetails with the trend of the consumer movement in disability services, that is, it involves the person with a disability in the provision of services to a great extent. In doing so, this approach deviates from the medical model (the focus on the pathology) and fits into a social model where there is a focus on personal attributes and humanness. The social model of disability views people with disabilities as ordinary people coping with extraordinary circumstances.

The findings reveal that individuals with TBI involved in the Circles of Support approach had enhanced their interpersonal skills and community participation, increased their friendships, and were, in general, empowered to take control of their own lives. The assessment of the approach revealed that the Circles of Support helped them to attain some of their dreams, extend their social network, provide them with support, and help them participate in their community in a more active and reciprocal way (Rowlands, 2001). The study concludes that while the principles of Circles of Support clearly have a positive and strong impact for people with TBI, this approach has tremendous potential to benefit people with other kinds of disabilities. In conclusion, Circles of Support offers the promise of making a difference to people who are marginalized by the social structure around them. For more information, please refer to the full text journal article available: Rowlands, A. (2001). Ability or disability? Strengths-based practice in the area of traumatic brain injury. *Families in Society*. 83, (3).

Mixed Findings in Hiring Practices Research

Although research findings indicate favorable attitudes towards hiring individuals with disabilities, the level of unemployment among individuals with disabilities remains relatively high. Bell and Klein (2001) examined these inconsistencies in hiring individuals with disabilities by studying how the nature of the applicant’s disability, his or her gender, and the nature of the job influence hiring decisions. Earlier disability work-related research, which used only either paraplegia or epilepsy as disability indicators, found that individuals with physical disabilities were viewed as more desirable employees than individuals with a mental or neurological disability.

Thus, to be consistent with the Americans with Disabilities Act inclusive definition of disability, the study selected paraplegia, epilepsy, and depression as indicators of disability. These disabilities were selected because they differ in the degree to which they are visible or self-evident, and the extent to which these disabilities may be viewed as representing a lack of willpower. The researchers looked at how prevailing stereotypes of gender influence the decision of hiring applicants with disabilities. The study also examined how the nature of the job

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Linguistic Training Software has Potential for Neurological Disorders

Genetics do not necessarily determine the brain's ability; by nature the brain is dynamic and flexible with the capacity to grow and change as learning takes place. With this concept in mind, neuroscientists Michael Merzenich, previously of the University of California, and Paula Tallal of Rutgers University hypothesized that sometimes the neuroplasticity of the brain (that is, the continual ability to learn as it is stimulated by the environment) goes awry, resulting in certain developmental learning disorders.

“After 60 hours of training, progress can be objectively measured through an MRI to view the physical changes of the brain as learning takes place.”

According to Tallal, some children with language learning impairments may be unable to distinguish rapidly changing speech sound because of a deficit in the rate at which they process information. Thus, by slowing down these phoneme sounds and gradually speeding them back up when the brain has reorganized itself to be able to distinguish these sounds effectively, Merzenich and Tallal have been able to improve the language and processing skills of children with language learning impairments.

Merzenich and Tallal accomplished these improvements through the development of Fast ForWord, an interactive CD-ROM and Internet-based training program. It adjusts automatically to match the individ-

ual's competency level. By using the concept of neuroplasticity, Fast ForWord uses headphones to control the volume of the sounds, thus by increasing the volume and elongating constant sounds, the individual learns to distinguish between such consonants sounds as "ba" and "da". After the child learns to recognize those sounds, they are gradually sped up to the normal rate.

Training takes approximately an hour and a half per day, five days a week, for six to eight weeks. After 60 hours of training, progress can be objectively measured through an MRI to view the physical changes of the brain as learning takes place. A Fast ForWord 2 program is also available for perfecting skills learned in Fast ForWord, such as improving phonological awareness, sound letter correspondence, word recognition, listening comprehension, verbal fluency, and reading fluency.

Merzenich and Tallal believe this same intense auditory training that enables individuals with language learning impairments to successfully discriminate and recognize phonemes' differences can be used to help the brain overcome some neurological disorders, such as autism or schizophrenia. Although it is still too early to measure the success of this current research, Merzenich's theory is that the amygdala becomes bombarded with signals that it can't keep up with, and the proper social development is stymied. By redirecting the stalled amygdala through intensive retraining, autism and other learning impairments may be reduced, if not prevented.

For more information on Merzenich and Tallal language learning impairment research, visit www.scilearn.com.

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non of increased faculty comfort with obvious disabilities (mobility impairments, blindness) and needed accommodations, but ongoing unease with more invisible disabilities, such as learning disabilities. Some common misconceptions mentioned about students with invisible disabilities are: (1) the belief that making accommodations lowers the course standards, (2) students “use” a disability as an excuse to get an unnecessary accommodation which gives the student an unfair advantage, and (3) it is easy to get an LD diagnosis.

In actuality, providing an accommodation merely creates access to the curriculum and exams for the student, but in no way provides extra information unavailable to other students. Typically, students must provide documentation of a prior diagnosis and need for past accommodations or else undergo a thorough evaluation before accommodation notices are forwarded to professors. Providing an accommodation such as extended time, when warranted, does not (contrary to the belief of some) give a student an unfair advantage but may be an attempt to give the student a fair shot at taking an exam or learning the material. If a student has a processing difficulty that results in a reduced reading pace or a motor impairment that slows his/her writing output, then refusal to provide extended time actually deprives the student of an equal opportunity in class. Many students, rather than face stigma or doubt of a professor who seems uninformed or insensitive, may expend incredible effort and time rather than requesting accommodations that they should have.

Suggested faculty actions that promote success include:

- Having a statement on the course syllabus requesting that students share accommo-

dation requests with the professor

- Conveying to students that the professor is approachable
- Recognizing different learning styles
- Using mentors
- Checking for student comprehension
- Becoming aware of opportunities for students with disabilities
- Using campus resources to learn about accommodations
- Collaborating to create physical access in laboratory space
- Providing lab information in various formats
- Providing multiple methods of demonstrating mastery
- Facilitating internship opportunities for students with disabilities

For additional details and resources, see the full text of the article cited :

Manske, J. (2001). Students with disabilities: Unique challenges and opportunities for science and math programs. Council on Undergraduate Research Quarterly, 22, (1).

About Empowerment

Empowerment is written by the Research and Evaluation Center of the National Center for Disability Services (NCDS). The Research and Evaluation Center shares the Vision and supports the Mission of NCDS through identification of informational needs; innovative research and demonstrations; establishing, implementing, and evaluating models for best practices; and broad dissemination of information. Through collaboration with the divisions of NCDS and outside entities, the Research and Evaluation Center is committed to having a beneficial influence on NCDS programs, services, and activities; national policies, practices, and awareness; and outcomes for people with disabilities. *Empowerment* is one of the mechanisms the Cen-

Mexican-American Parent Perspectives on Augmentative and Alternative Communications

A recent study has collected information on the perspectives of Mexican-American parents of children with disabilities on the use of augmentative and alternative communication (AAC) devices. The need to identify and understand issues affecting AAC practices within the Hispanic community is important since demographic projections show that by the year 2020, the largest (460,000) non-European-American population of AAC consumers in the U.S. will be within the Hispanic community.

The research article states that in order to meet the primary objective of the AAC intervention process, “to seek strategies that facilitate communication between partners,” an understanding of “human-made

...Mexican-American families prefer speech or sign language over assistive technology.

systems of ‘meaning’ that exist within cultural communities,” is needed. The literature also points out that in order for assessments and interventions to be effective, they should be made within the context of the consumer’s culture and language. For this reason, practitioners need to become knowledgeable about the culture of the individuals they serve. The article proposes a couple of ways of achieving this. It discusses

the value of informal conversations with members from that community and observing individuals communicating in environments where typical interaction occurs as two simple strategies to learn about the consumer’s culture.

The study focused on the Mexican-American community in southern California. The investigators spent some time prior to conducting the focus groups learning about the Mexican-American community. Literature reviews helped to identify critical cultural issues that might pertain to AAC interventions. A family advisory panel was also used to review probe questions and read the transcripts. The research approach followed four phases: (1) preparation and training of moderator and interpreter, (2) data collection, (3) content analysis, and (4) interpretation of findings.

Seven individuals participated in the focus groups. There was one father and six mothers, sisters, or other female family members. The average age was forty. Education levels varied and all individuals belonged to Mexican-American and Spanish-speaking families. The participants represented the families of four children, ages 9 and 10 years, three boys and one girl. Two of the children used Alpha Talkers, and the four children knew sign language and had communication boards.

All the information collected was transcribed into English, and the investigators read the transcripts and identified major themes that emerged from the parents’ comments. The final themes were presented to members of the Mexican-American community who did not participate in the study for

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Mexican American Parent Perspectives on Augmentative and Alternative Communication

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“stakeholder review.” The investigators then selected quotations that best summarized the themes. Seven general themes were identified from the content analysis.

Nonverbal Communication: All participants discussed the “special sense” their children had about people. Family members emphasized the children’s ability to understand how strangers perceived them. Comments such as, “He knows when other people don’t like him,” and, “Even though they cannot communicate effectively, they can instinctively sense who is going to accept them or give them attention and who might care about them,” were made by family members to explain what was meant by a special sense.

Aided Techniques Outside the Home: Six out of seven participants felt that, although not really needed at home since they could understand their children, the devices were very useful and valuable outside the home. At home, the communication preference was sign language, with a heavy insistence on speech. Overall there was a positive feeling towards aided techniques. Two explanations that were given for why Mexican-American families prefer speech or sign language over assistive technology were: (1) responsibility associated with having costly equipment at home, and (2) the fact that devices are programmed in English, but the language used at home was Spanish.

Respect for Professionals: Attitudes towards professionals were very positive. All seven participants expressed gratitude to the moderator and the speech language pathologists (SLPs) for their interest in helping their

children. Investigators discussed the dilemma that too much respect for professionals may arise. A participant talked about not wanting to be an imposition on the therapist and stated “I was basically concerned because I wanted to be considerate ... I felt that I might, you know, just be asking too much.” This position might interfere with the outcomes of service delivery by limiting the role of the parent in the decision-making process, since the parent may not want to intrude on the professional’s time and decisions.

Focus on the Human Condition: Five of the seven participants referred to the difficulty of having a child with a disability. Comments reflect the emotions felt by the mothers immediately after the birth of the child. Families emphasized their commitment to caring for their family member with the disability which investigators felt “nurtured and advocated dependence on the family.” This issue brought to attention the need for professionals to prepare for the differences in expectations that families from cultural communities different than their own bring to the therapy process.

Shared Responsibility: From the responses, it became clear that family members were extensively involved and that there were many examples of professionals and families working together. One participant shared how all the family took sign language lessons to communicate with the child with the disability. Another participant discussed the collaboration that exists between him/her and the therapist, “[the therapist] will work on colors with the communication board, and I will work on colors at home. These findings are in agreement with the literature that describes the family as the most valued institution in the Hispanic

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culture. For this reason, it is practical that professionals choose therapy strategies that encourage family involvement.

Performance of Simple Tasks: Interesting responses were obtained when the participants were asked to describe their children. Most parents (four out of seven) answered by describing their child's personal grooming skills. For older children, parents reported their acquired household skills, such as washing dishes and sewing. In contrast, the author's personal experiences show that most European American parents would state their child's hobbies, interests or communication abilities when asked this same question. A summary of ethnographic studies of first-generation Mexican families found that children are often encouraged to participate in household tasks when their parents believe the children are ready. Such findings can be relevant to professionals when they are trying to develop therapy strategies.

Devices and Training: Two other areas discussed were: (1) the need for devices in Spanish, and (2) more training for the families about how to operate the devices. This second issue is complicated by the language difference since the equipment's instructions and programming are in English.

For more information, please see the full text journal:

Heur, M. B., Parette, Jr., H. P., & Saenz, T. I. (2001). Conversations with Mexican Americans regarding children with disabilities and augmentative and alternative communication. Communication Disorders Quarterly, 22 (4), 197-206.

Mixed Findings in Hiring Practices Research

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(supervisory or non-supervisory), influenced the potential employer's attitude towards the applicant's competence in fulfilling the general requirements of the job.

Bell and Klein found that individuals with disabilities were rated more favorably than individuals without disabilities. According to the researchers, these results suggested that potential employers might have rated job applicants with disabilities more favorably because it is socially desirable, or it is the "norm to be kind." This norm suggests that individuals with disabilities should never be given negative feedback and should always receive higher appraisals than those without disabilities. The study also found no real difference between hiring females with disabilities and hiring males with disabilities.

The study pinpoints some areas that need addressing when hiring more individuals with disabilities. Previous research found that increasing distractions or time pressure reveal ethnic or gender stereotypes. Therefore, a similar design can be used to examine disability stereotyping in order to provide new insights into the best ways to assess how individuals responsible for making the hiring decisions perceive individuals with disabilities. According to Bell and Klein, such research will be useful in designing better organizational practices that facilitate the hiring of individuals with disabilities.

For more information, please see the full text journal:

Bell, B. S., & Klein, K. J. (2001). Effects of disability, gender, and job level on ratings of job applicants. Rehabilitation Psychology, 46 (3), 229-246.

Enhancing the Movie Going Experiences of People with Disabilities

The Media Access Group at WGBH, Boston's public broadcasting station, has developed and is marketing two technologies that make it possible for theaters to provide captions and descriptive narration for movies so that individuals with sensory disabilities can enjoy their movie going experience. These two systems make up what is known as Motion Picture Access, or MoPix.

The **Rear Window Captioning System** is a low-tech device that allows hearing impaired and deaf individuals to enjoy the movie going experience. The Rear Window device consists of a tinted square of Plexiglass that is attached to a bendable arm that fits inside the cup holder. This panel reflects the captions, from a digital text display that is mounted in the rear of the theater, so that these appear superimposed on the movie screen.

The Rear Window system allows an individual to read the movie's lines from any seat in the theater. The costs associated with setting up this system in a theater are very reasonable. It costs about \$2,000 to caption a movie and around \$5,000 for the rear display and Plexiglass sets. As an additional benefit,

once a movie is captioned, the captions can be reused when the film is released on home video and DVD.

Descriptive Video Service or DVS allows blind or visually impaired individuals to hear a narration of the movie on a headset. The descriptive narration is provided via infrared or FM listening systems and doesn't disturb others in the audience. The description provides information about key visual elements, such as settings and scene changes, to provide the full movie experience to people with visual impairments. The CD-ROM that includes the caption and descriptive narration sends the captions to the text display in the rear of the theater and the descriptive narration to the infrared or FM emitter.

Rear Window and DVS first debuted in 1997 as part of a regular feature film in a movie theater. MoPix is currently available at General Cinema, Loews Cineplex, Gulf States, and IMAX Theaters in or near Los Angeles, Chicago, Seattle, Atlanta, New York City, Baltimore, Philadelphia, Boston, and Milwaukee.

For more information on the Motion Picture Access Project and movies currently playing, visit their site at: www.mopix.org.

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