

Statement STEM CSW Ivonne Mosquera February 23, 2011

The why and how women and girls with disabilities are crucial to helping the US maintain a competitive edge in today's global economy By Ivonne Mosquera-Schmidt February 23, 2011

Women and girls with disabilities are a crucial component of the US maintaining a competitive advantage in our global economy. In today's market, individuals with disabilities remain an untapped source of talent with over 65% of individuals with disabilities unemployed. Yet, innovation, creativity, and determination are core strengths of individuals with disabilities; these traits have been continuously developed and strengthened on a daily basis by these individuals in order to live life. Problem solving skills, adaptability, and team work, are additional skills that individuals with disabilities possess. This is exemplified by the extraordinary effort that is expended on arranging for transportation, learning, obtaining and working with adaptive technology, figuring out how to gain access to buildings, services, and education – to name a few areas.

Aren't these the abilities and characteristics that lead to developing new technologies, new medical treatments, and advancements in science? Aren't these the characteristics that if cultivated, supported and developed can begin to change the state of poverty in our country and across the world? If these women and girls with disabilities have these skills, why not employ them to move our economy forward? The United States leads the world in promoting democracy, human rights, and establishing and upholding the rights of people with disabilities. The next step then is to bring in the individuals with these talents for the benefit of our society, for the benefit of our country, and in doing so establish an unparalleled competitive edge in today's global economy.

To establish, and maintain a competitive edge in our economy, more opportunities in STEM-related fields that are challenging and rewarding need to be created for women and girls with disabilities. Successful programs should offer opportunities to learn about STEM, access to Mentors, and having strong role models. Furthermore, the environment in which each of these programs is to operate should be a safe one in which like-minded individuals can share experiences and learn from each other, while building self-esteem and learning about self-advocacy.

Currently, there are programs striving to afford women and girls with disabilities exposure to STEM including:

- 1) SCI-VIS Makes Space Camp Accessible to Students with Visual Impairments
- 2) Entry Point! Opens Doors and Launches Women into STEM Education Programs and Careers
- 3) Techgirlz Uses Hands-On STEM Activities to Engage Young Girls Who Are Deaf or Hard-of-Hearing
- 4) MIND Alliance: Helping Minority Students with Disabilities Succeed in STEM
- 5) DO-IT and Access STEM Improve Transitions to STEM Education and Careers

Research and tracking of students with disabilities at the University of Washington, continues to show that programs like DO-IT increase the participants' perceptions of career options, particularly for girls. Additionally, between 2002 and 2007, There was a 14% increase in undergraduate degrees and a 120% increase in graduate degrees in STEM for students with disabilities, compared to 7% and 6% for others. Similarly, STEM majors increased 89% for undergraduate and 82% for undergraduate students with disabilities, compared to 16% and 7% respectively for others.

References:

Radio Series Highlights Women With Disabilities In Science www.disabled-world.com/communication/broadcasts/6543378.php

The American Association For The Advancement Of Science www.aaas.org

Entry Point

[Http://Ehrweb.www.aaas.org/entrypoint/](http://Ehrweb.www.aaas.org/entrypoint/)

DO-IT

<http://www.washington.edu/doi/Stem/tracking.html>

Perhaps the greatest impact of DO-IT on the number of STEM degrees earned by students with disabilities is a result of the overall positive impact DO-IT participation has on college graduation; the total number of STEM degrees is likely larger than what it would be otherwise because of the increased size of the pool of college graduates with disabilities as a result of DO-IT interventions. Data should be analyzed in light of the fact that DO-IT recruits students with disabilities into its activities who are NOT necessarily initially interested in STEM; as noted in results of other studies documented in the "Summary of Earlier Research Results Regarding DO-IT Interventions" section of this report, data suggests that DO-IT interventions increase participants' overall perception of career options, particularly for girls, and the interest in STEM of those not initially interested in STEM.

Comparison of STEM and non-STEM-Oriented Participants A recent study (Burgstahler & Chang, in press) compared the perceived benefits of program participation of participants with interests/strengths and/or career goals in science, technology, engineering, and mathematics (STEM group) and those without (non-STEM group) Highlights of the results are summarized below, organized by research question.

How does the STEM group compare with non-STEM group with respect to gender, disability type, major areas of postsecondary study, and primary motivations for going to college and gaining employment?

- Gender: Significantly more male respondents identified themselves as having STEM interests, strengths, and/or career goals than did female respondents.
- Disability type: Although respondents with mobility impairments were as likely as respondents with other types of disabilities to report interests/strengths in STEM fields, fewer reported a career goal in STEM fields.
- Postsecondary studies: Participants in the STEM group were more likely to study in STEM-related areas than those in the non-STEM group. Interestingly, there was a higher percentage (although not statistically significant) of students in the non-STEM group who majored in STEM fields (26%) as compared to the percentage of those in the STEM group who majored in non-STEM fields (13%).
- Primary motivation to attend college: Academic interest and love of learning/challenges was cited by more members of the STEM group, while job/career preparation was identified as a primary motivator for more of those in the non-STEM group.
- Primary motivation to seek employment: Financial security was selected by significantly more of the STEM group and pursuit of independent living was selected by significantly more of the non-STEM group. Potential mediators may be gender and disability type.

How does the STEM group compare with non-STEM group with respect to perceived changes in skills building during the course of DO-IT participations?

- Social skills: More non-STEM group participants reported improving their social skills than did their STEM group members. Specifically, no significant group difference was detected at Phases I and II except for at Phase III where the non-STEM group reported higher level of social skills than the STEM group.

- Self-advocacy skills: Non-STEM group participants consistently reported higher levels of self-advocacy skills than did STEM group members over the three phases, but both groups experienced significant improvements at a similar rate between phases.

How does the STEM group compare with non-STEM group with respect to perceived value and impact of DO-IT activities and participations

- Summer Study: Both groups placed the same high value on DO-IT activities.
- Year-round computer and Internet activities: Access to adaptive technology and access to information and resources on the Internet received significantly higher ratings from the STEM group.
- Greatest overall impact: The groups valued DO-IT in individual psychosocial development and readiness for college and career pursuits at the same levels.

Comparisons by Gender

A recent study (Burgstahler & Chang, 2007) compared the perceived benefits of program participation of girls and boys. Highlights of the results are summarized below, organized by research question.

How do the male compare with female participants with respect to STEM strength/career goals, disability type, major areas of postsecondary study, and primary motivations for going to college and gaining employment?

- STEM strength and future career goals: Significantly more males than females identified themselves as having STEM interests, strengths, and/or career goals.
- Disability type: No gender difference in disability type was found despite a slightly higher percentage of mobility impairments among the female participants.
- Primary motivations to attend college: Male and female participants did not differ in their reported motivations for going to college. The most common reason was career preparation, followed by academic interest/love of learning and commitment to family and friends.
- Primary motivations to seek employment: The most common reasons were independent living and financial security including incentive plans employment would offer, however, having financial security was significantly more important to male participants (60%) and achieving independent living was significantly more important to female participants (57%).

How do male compare with female participants with respect to perceived changes in themselves during the course of DO-IT participations?

- Perceived career options: Career options perceived by both genders increased significantly between phases, however female participant perceptions of career options changed more, suggesting greater changes in female participants during DO-IT participation.

How do the male compare with female participants with respect to perceived value and impact of DO-IT activities and participations?

- Summer Study: Both male and female participants highly valued DO-IT activities offered at Summer Study and no gender differences were detected.
- Year-round computer and Internet activities: Both groups highly valued computer and Internet activities, but no gender differences were detected.
- Greatest overall impact: Approximately similar percentages of male and female participants agreed that the greatest influence of DO-IT was in either individual psychosocial development or readiness for college and career pursuits.

In a follow-up (Burgstahler & Doyle, 2005) to the e-mentoring study (Burgstahler & Cronheim, 2001), researchers explored communication differences between males and females. True to gender stereotypes, males were more preoccupied with the Internet and other technology and females with personal issues. This result suggests that technology is still a male bastion and that finding ways to encourage females to develop skills and positive self-concepts in the area of information technology (IT) is of critical importance if we are to increase their participation in IT fields.