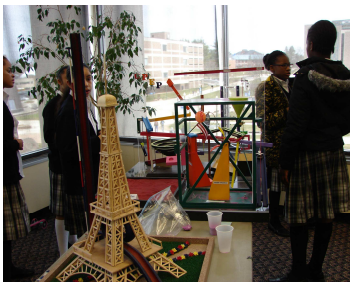




Teaching to expand opportunities for nontraditional students

Promising strategies and practices 2009

V E R T E C
Vocational Equity, Research, Training and Evaluation Center


CWEALF
CONNECTICUT WOMEN'S EDUCATION AND LEGAL FUND

Introduction

The Vocational Equity Research, Training and Evaluation Center (VERTEC) was established in 1988 to increase females' access to, and opportunities in, vocational education programs that are nontraditional for their gender. The research, technical assistance and advocacy that has been provided by VERTEC staff over the last 21 years has established a dynamic base of expertise around the issues of gender equity, and a more complex race and class analysis of gender equity issues in vocational, and increasingly, science, technology, engineering and mathematics (STEM) related education and occupational preparation.

The funding provided by the Connecticut State Department of Education through the Carl D. Perkins Act (first authorized by the federal government in 1984 and reauthorized in 1998) has allowed VERTEC the ability to investigate gendered patterns of enrollment and retention in Career and Technical (CTE) and STEM education and provide technical assistance and advocacy based on VERTEC's applied research.

The Carl D. Perkins Vocational and Technical Education Act (Perkins IV) of 2006 is the most recent iteration; it was passed into law by the 109th Congress and signed by the President on August 12, 2006. According to the U.S. Department of Education,

> The new Act will provide an increased focus on the academic achievement of career and technical education students, strengthen the connections between secondary and postsecondary education, and improve state and local accountability.

This Act, like Perkins III, requires all recipients of Perkins funds to measure and report on enrollment in, and completion of, programs leading to nontraditional training and employment. Students in districts receiving Perkins funds should receive information and training that will help them to choose a career path which reflects their talents and interests rather than gender role stereotypes and expectations.

Selected states' data (National Women's Law Center, 2005) as well as VERTEC's analyses of enrollment patterns suggest that gendered patterns persist in CTE. This publication is designed to offer faculty, staff and administrators with guidance about the general practices which are associated with increasing gender nontraditional students in CTE areas and with specific examples of classes and programs which may be used as resources to improve both the numbers of gender nontraditional students and their experiences.

Equitable resources

Title IX was passed in 1972 to help guarantee all students, male and female, equal access to the benefits of public education. The law addresses all aspects of education, from sports to admissions and resources. Schools must build on their commitment to Title IX and make sure that all CTE programs have what they need to reach all students.

Recruitment practices

In recruiting nontraditional students, intentionality and good planning are important. Unfortunately, lingering stereotypes often make the first step of signing up for a class in a nontraditional area difficult. Strategies which are effective are those that understand and consider the target audience, provide information in a way in which it can be heard, and are made to be a priority.

Develop a plan among counselors and CTE teachers to increase awareness of the skills needed to succeed in the classroom, and help teachers and counselors to identify nontraditional students who possess, or have the potential to develop, those skills.

Create an inviting environment (clean, safe and well-lit!) so that students will feel welcome in your CTE area. Make certain that the space isn't overtly masculine or feminine.

Create or leverage relationships with middle school teachers and arrange to bring rising eighth grade girls up to your classes for a day of activities; OR arrange

a day in which you or your female students guest teach at your feeder middle school.

Recruit girls in groups or encourage your female students to invite one of their friends along to the class and plan special activities for the group; or hold a career day for girls or boys where they can speak with role models in nontraditional careers.

Use a highly visible school bulletin board to post information about CTE education and career pathways – include salary expectations and social or community linkages/impacts.

Work with staff in other departments to create interdisciplinary materials and joint projects – this can help to cross-recruit students into areas they may not have previously considered.

And…

N E T W O R K ! N E T W O R K ! N E T W O R K !
Know your school counselors and make sure they know everything they need to know about your programs. School counselors need to know the breadth of the content and the applicability of the skill set students will develop in order to properly counsel students into your classes. Invite them to attend one of your classes or a department meeting or, as a department, write descriptive and succinct synopses of your course offerings that go beyond what's in the student course offering handbook.

Retention Practices

Create an inclusive classroom environment, where everyone feels as though they can contribute and take appropriate learning risks. Make it clear to students by your words and deeds that behavior that is based upon stereotypes is unwelcome and that sexual harassment is never acceptable.

Contextualize the content! The Connecticut Technology Education Standards include expectations that students will understand both the human impact of technology and the creativity necessary for innovation. Use your classroom to explore the relationship between technology and society, culture and ethics, as well as the improvements and enhancements to life – this can place technology in a context that students can relate to their own lives and can see influencing the lives of others.

An important way to create relevance and resonance with a lesson is to teach in a manner that includes a discussion of how the projects connect to the students' lives. Emphasizing the contribution of individuals from the different communities that are represented in the classroom is an important method of creating a classroom that values diverse perspectives and, in fact, seeks them out.

Create opportunities for teamwork and collaboration and stress that technical/technology-related work is all about problem-solving. While students often have the perception that engineers and other technical professionals are middle-aged men wearing eyeglasses and sporting pocket protectors, this is not the reality. The technology and engineering workforce is changing, and professionals work in diverse teams on real-world issues. People skills are important to develop for any career, and especially for those in which communication is so important.

Provide role models that look like the students you're teaching. Research suggests that professionals who are the same gender or have the same racial or ethnic background as your students into your classroom allows them to see themselves in future careers. Connect with organizations which provide outreach to students, such as the Society of Women Engineers, Aspira or the Association of Latino Professionals in Finance and Accounting. All have at least one chapter in Connecticut; and can help you to be strategic about recruiting speakers for your class.

Mix up your instructional style. A combination of teaching techniques, including discussion and hands-on instruction, can appeal to all students by involving them in their own learning. According to research, students often learn best when they are constructing their own knowledge; accordingly, become a coach and allow students to appreciate the process of learning. The answer is important; but not exclusively so. Whether you're teaching students about building a hydraulic arm or programming a robot to respond to a cell phone command, stress to students that it's important to know how and why something works as much as that it does. Especially for girls, who may not have had the opportunity or encouragement to tinker with the tools of technology, experimentation and taking positive and appropriate risks is essential.

Inspire self-confidence and self-efficacy. This is particularly important to students that may not see themselves as having a career in a nontraditional area. Help girls to feel comfortable in their own developing skills and welcome in your classroom. By giving them encouragement for what they have done right, asking them to draw on their own knowledge to help solve the problem (i.e. treating them like experts), allowing them to re-work or re-do the project, and grading on many levels of work (not just the final product), you can bolster student confidence and create less chance for "nonsuccess".

Think about gender dynamics as they relate to boys. It is difficult for a boy interested in a traditionally female career, such as nursing or child development, to enroll and persist. Stereotypes are powerful deterrents to males entering these careers; provide a counterpoint to the messages society sends to young males.

Creating a Pathway

Talk to your female students about another class they might take within the department; introduce them to the instructor (if it is not you!). Information on enrollment practices indicate that the pipeline is leaking when it comes to nontraditional students in Career and Technical Education clusters. While some girls might enroll in a class in a nontraditional area (for example, Woodworking) few continue to the next course or to an associated area (for example, Manufacturing or Construction). Prepare students to continue on both in terms of their skills and their confidence by assisting them in making connections.

Link class lessons and skill sets to careers. Suggest to students that if they enjoy a project on which they're working that they may also enjoy further education or a career in an area in which they will refine both their interests and skills. This is especially important for students who do not have family or community role models in nontraditional areas.

Invite the world into your classroom. Intentionally bringing professionals in nontraditional careers into your classroom to talk to students is an effective way to create and enhance student's awareness of the many ways in which they can use their interests and skills. Explore a wide variety of careers that incorporate technology and technical skills within your curriculum. With boys who may not have considered nursing or other allied health careers, male professionals can be effective advocates for a nontraditional career path.

Discuss the human, environmental, cultural, social impact of careers in the nontraditional areas. While the economics of nontraditional careers may be a prime motivator for some students, others attach importance to the non-monetary satisfaction of knowing that their work will add to the betterment of their communities and society at large. Research suggests that this is true of girls and people from cultures where family and community are highly valued.

Internet usage and social networking sites – public spaces and private dangers? Or are the facts about girls' victimization being used as a danger signal to constrain girl's internet usage?

In one of a series of articles by researchers in the area of digital media, Cassell and Cramer's article, "High Tech or High Risk: Moral Panics about Girls Online," raises important questions about our reactions to the panic created by a small (and decreasing number of) incidents of victimizations of young women on the internet.

According to the authors, the media ascribes to young women "roles of naiveté, innocence or delinquency" when, in fact, they "turn out to be active and informed consumers and producers of mediated conversations and texts." Analysis of data from the Youth Internet Safety Survey (YISS) suggests that while there has been increased exposure to material of a sexual nature (obscene spam), stranger solicitations to meet youth offline has decreased over the past five years.

Putting these facts into a historical, sociological and feminist perspective, Cassell and Cramer discuss women's relationship to communication technology such as the telegraph and telephone and society's wish to protect women's virtue by restricting their mobility. They suggest that public panic has been effectively used to constrain women and girls. As in Victorian times and public scrutiny of women and the telegraph, modern young women are sometimes prohibited from developing self-confidence and skills with respect to the internet. According to the authors, society may be endangered by "girls leaving their traditional domestic space and exploring the boundaries of their identities that may pose the greatest risk to the social order." The exaggeration of danger may also hide how the internet may mediate identity formation and creation of non-family social groups which are important developmental tasks of adolescence.

Cassell, Justine and Meg Cramer, "High Tech or High Risk: Moral Panics about Girls Online." *Digital Youth, Innovation and the Unexpected.* Edited by Tara McPherson. The John D. and Catherine T.

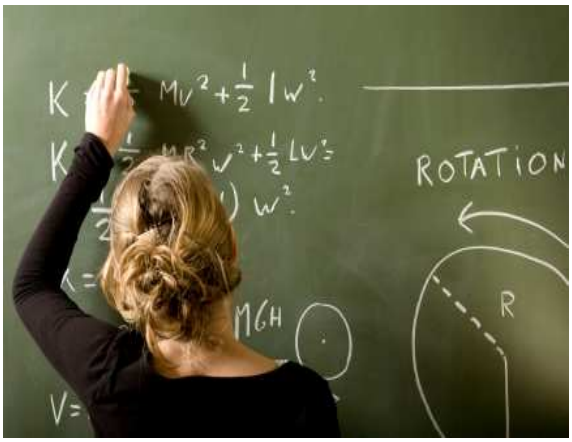
MacArthur Foundation Series on Digital Media and Learning.
Cambridge, MA: The MIT Press, 2008. pp 53-76.

What's New in the Literature and the News

Although the popular stereotype is that boys are innately better at math than girls, research indicates that cultural rather than biological factors are responsible for gender differences in math achievement.

Are girls' brains wired differently than those of boys – wired in a way that impedes mathematics achievement? Research psychologists from the University of Wisconsin-Madison explored the differences in math ability by gender by looking at studies done in cultures with various degrees of gender equality and analyzing statistics about the mathematics performance of girls and boys in the general population, among the mathematically gifted and among participants in the International Mathematics Olympiad.

Hyde and Mertz have found that girls currently perform as well as boys on all standardized math tests at all grade levels in the United States. Additionally, they indicate that in those countries in which there is greater gender equality, the gender gap in mathematics is smaller. The authors recommend nurturing the talents of the truly mathematically gifted, and more broadly promoting the math abilities needed in all STEM fields, from technicians to scientists.



Hyde, Janet and Janet Mertz, Gender, Culture and Mathematics Performance.
Proceedings of the National Academy of Sciences, Volume 106, No. 22. June 2, 2009. pp. 8801-7.

What's New in the Literature and the News

A national nursing shortage has made it more important than ever that men become nurses. Stereotypes still persist which may make it more difficult to recruit men into the profession; one nursing instructor would like nursing schools to do more.

While nursing schools have taken steps to counteract the persistence of the stereotype of nursing as a solely female occupation, there is still a gender gap in the enrollment and retention of male nursing students. Williams interviews Chad O'Lynn, a nursing instructor and researcher, who authored a book on the barriers that hinder male nursing students. O'Lynn suggests a number of recruitment and retention strategies -- marketing that uses ungendered pronouns and experiences, instituting male-to-male mentoring programs, addressing unique patient challenges that could affect male nurses (such as ob/gyn rotations or physical touch issues), attending to differences in communication patterns in some males, and providing support to males to minimize isolation.

Debra Williams, Recruiting Men into Nursing School. *MinorityNurse,* Winter 2006. www.minoritynurse.com/men-nursing/recruiting-men-nursing-school

What's New in the Literature and the News

Parents' (especially fathers') stereotypic views about girls and math and science have an effect on their daughter's later math achievement and career choices.

Researchers, using data from a longitudinal study of children and parents that spanned 14 years (1987-2000), analyzed how parents' stereotypes about gender and math affect daughters' and sons' math achievement and interests. Pamela Davis-Kean and her colleagues found that parents supported boys' math and science interests to a greater degree than they did daughters', even to purchasing more math and science-related toys for boys than girls. Additionally, parents were likely to spend more time with their sons than daughters on math and science activities. Gender stereotyping of math activities was found to be related to children's interest in math – girls whose fathers held gender stereotypes were less likely to be interested in math, whereas, for boys, a father's belief in math as a male domain was related to an increase in math interest.

"How Dads Influence Their Daughters' Interest in Math" *ScienceDaily.* Online. June 25, 2007. www.sciencedaily.com/releases/2007/06/070624143002.htm

What's New in the Literature and the News

Self-confidence and outcome expectations play a significant role in predicting girls' career interests.

According to results from a University of Wisconsin-Milwaukee study, perception more than reality affects girls' education and career choices. Nadya Fouad, one of the authors of a three-year study funded by the National Science Foundation, identified supports and barriers that influence girls' educational choices. Self-efficacy is an important factor in girl's trajectories, as are parental support and engaging teachers. Researchers found support for an empirical model that identified the importance of self-confidence and outcome expectations. Fouad suggest that the supports and barriers may also be specific to development stages and subject matter – what works in second grade may fall flat in seventh and a support that works well for science is not necessarily what might work well in math.

"Tracking the Reasons Many Girls Avoid Science and Math" *ScienceDaily*. September 8, 2008.
www.sciencedaily.com/releases/2008/09/080905153807.htm