

Spring/Summer 2000

Thirteen technology education instructors attended the first annual *World of Technology* Summer Institute that provided professional development for current and potential *World of Technology* instructors on June 20th and 21st at the Waterbury Sheraton.

The *World of Technology* is a high school technology education course that emphasizes learning technological skills, exploring careers in math, science, and technology and making connections between the classroom and the world of work. The course strives to provide girls with a level playing field to pursue technology courses and careers. The intent is to give girls an opportunity to build these skills, while developing a critical mass of female students who enroll in and support one another in technology education.

Thirteen educators gave up two days of their much-needed summer vacation to participate in trainings and workshops on topics such as; project-based learning, differences in learning styles between the genders and girls in math, science and technology, as well as, a session on how to market the *World of Technology* course to students, guidance counselors and parents. Rich Gagliardi from Bristol Public Schools, who piloted this program 6 years-ago in Manchester High School, Don Schaer from Waterbury Public Schools, who has installed the program in all three of the Waterbury high schools and Greg Kane, the consultant for Technology Education for the State Department of Education, were all in attendance to show their support of the project and promote its expansion across the state.

The success of this conference highlights individuals taking a proactive approach to ensuring gender equity and to challenging barriers that prevent females from entering both technology education courses and nontraditional occupations. With such a strong display of commitment on the part of educators, administrators and the state for gender-equity in technology education and for the *World of Technology* project, this program will undoubtedly have effects within the walls of high schools and beyond.

For more information about the World of Technology project, contact Krystin

Inside:

- ◆Connecting the Dots
- ◆The Effects of Natural Light on Student Performance
- ◆How Much Does Gender Count?
- ◆Good Classroom Practices
- ◆Internet Resources
- ◆Tips on Getting Girls Interested in Technology
- ◆Career Education Activities for Technology Classes

Connecting the Dots

Unemployment is at a 30-year low and demand for employees with technical skills is escalating. Employers worry that the pool of qualified workers is drying up. One projection of near-term worker needs by Richard Judy of the Hudson Institute suggests that 60 percent of future jobs will require training that only 20 percent of present workers possess. According to the Bureau of Labor Statistics, the fastest growing occupations through 2008 are projected to

The Effects of Natural Light on Student Performance

Researchers who studied the effects of classroom lighting on student achievement concluded that students learn faster in classrooms with plenty of natural light than in artificially lighted classrooms. Looking at test scores of 21,000 students in Orange County, California; Seattle, Washington and Fort, Collins, Colorado. The researchers found that students in classrooms with large

How Much Does Gender Count?

(Excerpted from: Girls Are...Boys Are: Myths, Stereotypes & Differences, Patricia B. Campbell, Ph.D. and Jennifer N. Storo, 1994)

As educators, and as people, we tend to assume that females and males are different indeed "opposite sexes." We see someone's sex as an important predictor of their abilities and interests and assume that if we know someone is a girl or boy, we know a lot about them.

That assumption is wrong! Knowing someone's sex may tell us a lot about them biologically but it tells us very little about them in other ways. Sex is not a good predictor of academic skills, interests or even emotional characteristics. In fact, as studies show, sex is a bad predictor.

There is a lot of talk about "sex differences" and a lot of research and writing as well. The reality is that girls as a group and boys as a group are more alike than they are different. Differences between individual girls or between individual boys are much greater than those between the "average" girl and the "average" boy. Yet, we tend to generalize from the "average" girl or boy to individuals. Overall, sex differences tend to be smaller than most other demographic differences.

Myths and Realities

Myth: "Real women don't do math."
"You're too pretty to be a math major."

Realities:

- High school girls who think of math as a "male thing" are less likely to go on to advanced math and are less likely to do well in math.
- Girls are much less apt than equally

Continued

talented boys to go into math-related careers; including engineering and the physical sciences.

Solutions:

- ▣ Stop saying things like “Women aren’t good in math.”
- ▣ Challenge others, both students and adults, when they make stereotypic comments about girls and math.
- ▣ Provide girls and boys with lots of examples of women and girls who are successful in math and science and interesting role models.

Myth: It is not necessary to look at the interaction of gender and race when dealing with girls in math and science.

Realities:

- ▣ There is little research about African American and Hispanic girls and the best ways to encourage them in math and science. There is potential for African American and Hispanic girls to be ignored and to feel invisible.

Solutions:

- ▣ Demand that research and statistical information be broken down by gender and race.
- ▣ When looking at results, look for both similarities and differences.
- ▣ When analyzing your own classrooms, look at what is happening in terms of gender and race.
- ▣ Analyze statistics for African American or Hispanic girls.

Good Classroom Practices

(Excerpted from: Parenting Our Daughters, Judy Gordon, Girls Count, 1999)

To ensure girls’ participation and success, classroom practices must:

- ✓ Have high expectations of all students and encourage all students to actively participate;
- ✓ Provide for a variety of learning styles;
- ✓ Use varied and flexible groupings;
- ✓ Create a climate of safety and respect;
- ✓ Reduce and eliminate bias, stereotyping and harassment;
- ✓ Use instructional materials that reflect the lives and experiences of females and males, and persons of all ethnicities and physical abilities;
- ✓ Teach students to use mistakes positively;
- ✓ Avoid premature rescuing, provide help only after it is asked for;
- ✓ Encourage students to set goals to learn new things, not only work on what is already familiar;
- ✓ Provide frequent feedback;
- ✓ Allow sufficient wait time after

Internet Resources

A new tool is now available to help teachers search thousands of learning resources on the Internet and find the materials that are right for their students. The Gateway to Educational material (GEM) at www.thegateway.org allows teachers to type a topic, grade level and other information into a search screen that retrieves lessons, instructional units and other free educational materials on that topic for that grade level. GEM lets teachers, as well as, parents and students search the instructional materials of more than 140 federal, state, university, non-profit and commercial organizations. Currently, more than 7,000 items are included in GEM with hundreds of new resources being added and new consortium members joining each month.

The following is list of Internet links that can supplement the career exploration section of the classroom curriculum or link to examples of successful women for use throughout the curriculum.

Women's History Month Lesson Plans

- <http://socialstudies.com/mar/women.html>

Distinguished Women Listed by Career

- <http://www.netsrq.com/~dbois/field.html>

Women in Science and Technology

- <http://www.witi.com/Center/Museum/Special/Wistmonth>

Biographies of Famous Women Architects

- <http://www4.ncsu.edu.unity/users/r/rlkeen/public/architects.html>

Notable Women of Computing and Mathematics

- <http://www.cs.yale.edu/HTML/YALE/CS>

Tips on Getting Girls Interested in Technology

Girls like to be with their friends. Invite groups of girls and their friends to join clubs and take classes that encourage math, science and technology skill building.

Girls need role models. They need to see women using technology competently and confidently. Incorporate various resources into your classrooms to highlight women's achievement in math, science and technology. Share information about women who are leaders in their field and make sure to invite female speakers to your classroom and to afternoon clubs.

When they ask, don't tell. Encourage girls to be daring with tools and machines.

Make a conscious effort to encourage girls. Make them lab assistants or choose a girl to help set up new hardware or software. Ask them difficult questions that require higher-order thinking.

Find out what percentage of the female students are enrolled in the higher level math, science, technology education and computer classes. If it's not 50% make the school aware of the problem. Talk to counselors, parents, and other teachers to enlist their help in encouraging female students.

In class, collaborate more; compete less. In general, girls respond better to collaborative rather than competitive projects. Encourage collaborations, but be alert to boys dominating groups.

Career Education Activities for Technology Classes

(Excerpted from: Schools without Failure, William Glasser; NY, NY: Harper & Row Publishers, 1969)

Class Meetings

Class Meetings can provide a method for classroom discussions of career development and technological issues with students. Class Meetings are simple and require students and teachers to follow a few simple rules. Teachers should:

- Arrange students in a circle.
- Establish ground rules for discussion:
 - Anyone can speak, but they have to raise their hand and be recognized.
 - Everyone must be respectful of the speaker.
- Initiate a class meeting with a topic question. Provide your response to the topic to demonstrate the type of response you want the students to provide.
- Mediate the discussion and prompt the students with additional questions.
- Use class meetings to focus on self-assessment or other issues.

Use Class Meetings to engage students in a class discussion after they have conducted research and/or obtained information on any of the following topics:

Interests Related to Technology

- ♦ What technical areas interest you?
- ♦ What technical areas are you not interested in?
- ♦ What is it about technical work that interests you?

Abilities/Aptitudes with Technology

- ♦ What technology skills do you feel competent in?
- ♦ What technology skills do you need to improve?

Concerns about Technology/ Environmental Impacts of Technology

- ♦ What is the impact of technology on the environment?
- ♦ What examples are there of technology's negative impact?
- ♦ Do the positive benefits outweigh negative impacts?

Technology Occupations

- ♦ How are technology jobs organized?
- ♦ What types of occupations are utilized in transportation technology?
- ♦ What technology job could you imagine yourself doing?

Studying Technology

- ♦ What types of college programs in technology are available?
- ♦ Where can you study about technology in college?
- ♦ If you could study a technical subject in college, what would it be?

Career Paths in Technology

- ♦ What is a career path?
- ♦ What is a likely career path for an architect?

Technological Trends

- ♦ What are the current trends in electronic devices?
 - ♦ What is the current performance of technology stocks?
-

Resource List

All of the websites listed below are useful both to student's and instructor's. However, the list of websites for students consists of sites that are targeted specifically to adolescent girls and may contain a variety of topics as well as the main topic of girls in technology. These websites may be more effective for "downtime" or for acclimating the students to internet use. The list of websites for instructors contains more educational information and may be more suitable for specific assignments as well as for

Websites for Instructors

<http://www>

- ♦ crpc.edu
- ♦ womenswork.org
- ♦ genderequity.org
- ♦ awsem.com
- ♦ girltech.com
- ♦ AAUW.com
- ♦ tcm.org
- ♦ awis.org

Websites for Students

<http://www>

- ♦ girltech.com
- ♦ smartgrrls.org
- ♦ teenvoices.com
- ♦ girlsinc.org
- ♦ backyard.org
- ♦ hues.net
- ♦ girlsplace.com
- ♦ planetgirl.com