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8. Promoting Gender Equity Through a Technology Day Camp

by David W. Dailey

This reports on a technology day camp conducted to promote gender equity through computer and technical activities. Sixteen middle and high school students were involved in three areas including computer-assisted drafting, graphic arts, and manufacturing. Results of a survey of student attitudes toward computers and gender equity are discussed.

By the early 1980s, computer usage was well established in schools, but primarily among male students (Alvarado, 1984; Collis, 1985; Lockheed & Frakt, 1984; Miura & Hess, 1984; Sanders, 1985). Differences in computer use between males and females develop early through gender-segregated activities; male-dominated advertising, messages, and software; and the predominance of males with out-of-class access to computers (Collis & Martinez, 1989; Damarin, 1989; Lockheed & Frakt, 1984; Sanders, 1985). When asked about their software preferences, females chose word processing and business or research applications while males were more interested in programming (Lockheed & Frakt, 1984). Damarin (1989) noted that many programs are based on competition with the computer, the clock, or some type of scoring device leading to further female anxiety.

In 1989, Collis and Martinez reported nearly universal computer experience among secondary students during the previous 10 years, although males still outnumbered females in regular computer use. Damarin (1989) also found male dominance in computer labs while females are often denied access due to self-imposed limitations based on math anxiety and their perception of computers and sciences as a male domain.

Methods suggested for improving computer equity include guaranteed access to females outside of class, group interaction, and use of the computer as an educational tool (Sanders, 1985). Alvarado (1984) suggested that teachers screen software for sexism and provide female role models. Teachers must also self-monitor to avoid sexist generalizations and employ gender-fair language and materials (Darling & Sorg, 1993). Such practices “will allow females to compete equally with males in the technologically based American society, where basic computer competence and ability to learn technologically-related job skills are essential” (Taylor & Mounvield, 1994, p. 304).

In an effort to demonstrate that gender bias and stereotyping can be overcome, a technology day camp for students 13 to 16 years old was conducted at a medium-size university in the up-

per South. The purpose of the day camp was to promote technology education among secondary students and particularly encourage female students to consider enrollment in technology-based classes in secondary and postsecondary institutions. The term *gender equity* as used herein refers to equal awareness and access to computer resources including hardware, software, and technology programs in general.

TECHNOLOGY DAY CAMP

Objectives

The primary objective of the day camp was to expose students, especially females, to technical fields and career opportunities thereby increasing their awareness and interests in technology. Further objectives challenged male/female stereotypes in technology careers while maintaining a cooperative learning and working environment.

Participants

Students aged 13 to 16 residing in the local county were contacted and recommended by either their technology education teacher or guidance counselor. Initial enrollment was limited to 45 students with a requirement of 51% females. Twenty students enrolled, and 16 completed the work-

shop, equally divided between males and females. Six middle and high schools in the county were represented.

Day camp instructors included university faculty, local school technology education instructors, and a guidance counselor. The four university members taught graphic arts, computer-assisted drafting, hydraulics/pneumatics, and crafts during the academic year. An additional purpose of the workshop was to provide an opportunity for the all-male university faculty to better understand gender-equity issues. The technology education teachers, two of whom were female, taught at both middle and high schools within the county. The goal of having a mix of university and local school faculty was to improve relationships and increase ongoing interactions. The guidance counselor was also female.

Activities of the Camp

The 16 students were divided into three groups that rotated through three technical areas: Computer-Assisted Drafting (CAD), Computer Electronic Publishing, and Manufacturing. To provide information on alternative energy sources, such as solar cookers in third-world countries, was an additional goal of the camp. Each rotation included some aspect of solar cooker production.

Three 70-minute sessions with a break between each was the model the camp followed during the week. Either a counselor or faculty member presented information on vocational decision making, educational opportunities, and careers in technology fields during breaks. Students also enjoyed smores (a graham cracker, chocolate, marshmallow treat) prepared using a solar cooker.

During the CAD session, students learned basic computer design and layout skills using AutoSketch, a beginning CAD program where they planned and created layouts for the solar cookers. In the Manufacturing area, students watched a video on solar applications in third-world countries and the production of a simple, yet effective solar cooker. To facilitate production, each group of students started with a previously prepared set of plans. A technology education teacher assisted as students measured, cut, and assembled cardboard sheets into an operational

solar cooker. The cardboard was covered with aluminum foil, and some models included an insulation layer. Students completed production in four days and demonstrated the units by solar cooking food for a picnic the last day of the camp.

Each group of students designed and printed a t-shirt as a first project in the graphic arts phase of the camp. Students also produced a booklet about the workshop. Layout and planning were considered, and each student used word-processing software to compose a paragraph about his or her experiences of the week. One faculty member rotated between sessions with a digital camera, photographing students at work. Photographs were downloaded and assembled into booklet layouts. Output was to laser-direct imaged plates used to print the booklet. By the end of the week, each student folded and stitched a booklet that he or she had actually produced. Students were introduced to software used by graphic arts professionals including Illustrator, WordPerfect, PageMaker, and PhotoShop. Although hands-on time with each software package was limited, each student learned basic skills and applications practiced by professionals.

On the last day of the camp, students prepared hot dogs, baked beans, nacho cheese, and brownies in the solar cookers they had built. Parents joined students and day camp staff for a picnic of solar-cooked food to close the week. Camp participants also completed a questionnaire designed to measure reactions to camp activities and gender equity.

OUTCOMES

Responses to the questionnaire indicated that students felt that they had become more familiar with computer use and the technology areas emphasized during the week. The following comments to an item on gender equity indicate that male/female stereotypes are dissolving.

"There are jobs out there for both genders and almost any job can be done by both sexes."

"That males and females can do the same things easily."

"Either sex can accomplish any career in Technology."

"In today's workforce, males and fe-

males have an equal opportunity in the technology field."

During break time each day, a short presentation encouraged students to begin thinking about career choices, particularly in technology fields. Responses to a question on what students learned about choosing a career elicited the following comments:

"That choosing a career is hard because you have so many jobs to choose from."

"It is sort of hard."

"I learned many new career opportunities involving technology."

DISCUSSION

Based on student responses to the informal questionnaire, it appeared that there was progress in reaching the objectives of promoting gender equity, improving attitudes toward males and females working together, and increasing career awareness. Although student attitudes toward gender equity were evaluated only by means of an informal questionnaire, further research is suggested by means of a controlled study to determine whether such a day camp would actually contribute to positive attitude change.

Of the eight faculty involved in the day camp, only two were female although recommendations in the literature on computer equity included increasing the number of female role models (Alvarado, 1984). Technology fields are still primarily male dominated; however, females are making inroads. Two female students attending the day camp indicated an interest in technology teaching, and at least one had been influenced by a female role model.

Sanders (1985) suggested that groups of girls be targeted since girls prefer to work among friends. Also, allowing girls to work together and promoting the computer as an educational tool rather than a toy would appeal to females. Because of the small groups in each of the sections during the day camp, each student was able to work at his or her own computer, but interaction between students was open and free. All software used during the camp was of a practical nature, and commonly used by industry.

Darling and Sorg (1993) reported that by the year 2000, women will

represent 47% of the workforce, with four fifths of the new entrants women, minorities, or immigrants. Even though Title IX legislation was passed in 1972, education without gender bias is still not the norm because discrimination based on gender is "difficult to define, much less prove" (Darling & Sorg, 1993,

p. 18). Teachers, rather than legislation, are the key to promoting sex equity in the classroom. They can support students in programs that are not gender traditional; encourage career decisions based on skills, abilities, and goals rather than gender; and encourage females to enter high-wage, new, and emerging

technical occupations (Darling & Sorg, 1993). The technology day camp can be a device to promote high-skill, high-wage opportunities among females, and also demonstrate gender fairness in the classroom and laboratory.

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