

Preparing Women for the Workforce: Engaging Girls in Math, Science and Technology

Dr. La Verne Young-Hawkins
Department of Teaching Learning and Culture
laverne@tamu.edu

Dr. Chanda Elbert
Agricultural Education
CElbert@tamu.edu

Texas A&M University
College Station, Texas 77843

Abstract

“As we prepare for a new century in which women will account for almost half of our workforce, we must face facts: For America to have a first-class workforce tomorrow we must provide a first-class education for girls today (American Association of University Women).”

Changes in the economic status of women and the increasing number of women in the workforce, call for the expansion of educational and career opportunities for women and girls. Approximately 46% of women in the workforce earn wages below the poverty level compared to 27% of the men (Cited in Maddy-Berstein, C., & Cunanan, E. 1993). The majority of women employed in the largest and most stable U.S. companies work in clerical, blue-collar, service, and sales jobs at the lower hierarchy of the organization (Harlan & Berheide, 1994). In addition, two-thirds of all minimum wage workers are women, 61% of working women have little or no ability to advance, and a disproportionate number of those who work lack health insurance and other benefits. Women have traditionally earned among the lowest incomes of all workers. Young women making the transition from school to adult life pursue different paths than do

young men, “differences that have economic as well as career implications” (STW Resource Bulletin, 1996).

According to Milgram (1996), currently, most young women graduating from high school and going straight into the workforce can expect to take home paychecks that are 25% smaller than their male counterparts. About half of young women ages 16-24 work in jobs that pay an overall wage of \$338 per week, in contrast to almost 60% of young men work in jobs that pay an overall wage of \$448.00 per week- a \$110 wage differential. This differential is linked to the occupations in which women and men are employed.

Young girls not going to college need help most of all. According to reports by the Association of Women in Science, Engineering and Math (AWSEM,1998), the Bureau of Labor Statistics (1992) reported that 31% of girls receiving high school diplomas in 1992 did not participate in the labor force, compared to 15% of boys graduating the same year. Further, of those girls and boys who have graduated from high school, and do progress to employment, there is tremendous disparity in the occupational fields that they work in and in the wages they earn. By directly or indirectly excluding women from significant educational opportunities, we are jeopardizing their chances of attaining the professional careers that might lift them from the cycle of poverty. (p.1)”

Changing this pattern is not just a matter of fairness but one of economic urgency. If we continue to compromise the education of half our workforce, America will lose its competitive edge. Equity efforts that influence women’s career planning, attitudes towards work, career aspirations and education are crucial to the advancement of young women today.

Educators and community leaders are working in communities across the nation to change the future for girls in school. Researchers have found that girls begin first grade with comparable skills and ambition to boys and that they consistently match or surpass boys' achievements in science and mathematics as measured by scholastic aptitude tests, achievement test and classroom grades. Yet, by the time girls finish high school, most have suffered a disproportionate loss of confidence in their academic abilities and are less likely to engage in careers requiring high level math, science or technology (AAUW, 1991). Research further showed the achievement of girls in math and science courses declines as their grade level increases. Unintentionally, schools collude in the process by systematically cheating girls of classroom attention, by stressing competitive-rather than cooperative-learning, by presenting texts and lessons devoid of women role models and reinforcing negative stereotypes about girls abilities. Unconsciously, teachers and counselors also dampen girl's aspirations especially in math, science, and technology.

Schools and society must play a role in changing the negative messages girls receive. It is time for a commitment to an educational system and society that encourage girls to attain their full potential. Parents, and educators as well as leaders in business, government, and the media must take action to help girls be the best they can. In an increasingly technological society, we can no longer afford to let our schools sideline girls and discourage their achievement. Sophisticated technology is increasingly significant to our nation's economic, political and social health. Almost every element of society- fields such as music, sports and agriculture-are being touched by technology. To prepare for these jobs, MST must be presented to every student so they will feel encouraged gaining the skills and knowledge necessary for technical careers.

There are many factors both within and outside the classroom that result in girls' being turned away or turned off from engaging in math science and technology (MST). The purpose of this on-going study is to identify and describe those factors that influence female's to pursue non-traditional careers in selected math, science and technology related fields. The context of the study is to provide educators, parents, and the community at-large with successful strategies for engaging females in MST courses and increasing their participation in non-traditional MST related careers. Female freshmen college students enrolled at a large southwestern university will be recruited for the study to gauge their perceptions on the factors influencing their career paths. The study will implore both quantitative and qualitative measures. An on-line survey instrument will be used to collect demographic information and responses to general questions regarding the factors influencing their career aspirations. A representative sample of females from both traditional and non-traditional career fields will be selected for interviewing. An open-ended interview was selected to allow probing for more in-depth responses and information about how and why they made their career choices (Bender, 2002). A pilot test of the instrument will be conducted with females attending a similar institution in order to measure instrument reliability. Validity will be established through a review of the instrument by a panel of experts in the areas of research, gender-related issues and career assessment. Written results of the research, including quotations from the data will be used to support findings and interpretation.

References

American Association of University Women (1994). Shortchanging girls, Shortchanging America (2nd ed.). Executive Summary. Washington DC: Author.

Bender, S. (2002, October). Female student career aspirations in science. SSTA Research Center Report #94-04 [On-line]. Available: http://www.ssta.sk.ca/research/education_equity/94-04.htm6.htm

Harlan, S. & Berheide C. (1994, January). Barriers to workplace advancement experienced by women in low-paying occupations (Center for Women in Government No. B9434073). Albany, New York: University of Albany.

Maddy-Berstein, C., & Cunanan, E. (1993, May). Working together for sex equity: Nontraditional programs that make a difference. Technical Assistance for Special Populations Program, 5(1), 1-5.

Milgram, D. (1993, October). School-to work: Preparing young women for nontraditional careers, A trainer's workshop guide. National Institute for Women in Trades, Technology & Science, p.3.

National School-to-Work Learning and Information Center (1996, April). Non-traditional School-to-work opportunities for young women. Resource Bulletin [On-line]. Available: <http://www.stw.ed.gov/factsht/bull0896.htm>