# Chapter I
# Media and Women in Technology

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## ABSTRACT

*Many Western nations face a critical shortage of skilled professionals in science, technology, engineering, and mathematics (STEM).  However, despite abundant opportunities, few women prepare themselves for careers in these fields.  Several of those concerned with the problem have proposed that new media programming, such as television dramas with women engineers, computer professionals, and/or engineers in leading roles, might help attract more women to STEM fields.  This paper identifies a theoretical rationale for a media centered strategy, and describes a pilot study whose data suggest that a media-centered approach might have some success in producing greater interest among women in pursuing STEM careers, particularly information technology careers.*

## INTRODUCTION

"It is still news whenever women tackle any job American society traditionally has seen as male" (Vavrus, 2002, p. 11).  In July 2005, fifteen major American business groups, led by the Business Roundtable, issued a joint statement decrying the declining prominence of the United States in science, technology, engineering, and mathematics (STEM), and calling for the nation to double the number of college graduates in those fields by 2015. The statement cited data indicating that

more than 50 percent of the current United States science and engineering workforce is approaching retirement age and that by 2010, if present trends continue, the vast majority of all scientists and engineers in the world will be living in Asia.  The report claimed that the scientific and technical capacity of the United States has already begun to atrophy, threatening America's standard of living at home and leadership in the world (Business Roundtable, 2005). Within the engineering community in particular, concerns about a shortfall of qualified professionals have been voiced for

over a decade (Heckel, 1996; National Science Board, 2000). Corresponding concerns for their nation's welfare and standing in the global political economy have been expressed in many countries throughout Western Europe (Femtec, 2002).

It is widely understood that part of the solution to the escalating problem of the shortage of well trained technical personnel in all advanced industrial nations involves attracting considerably more women to careers in STEM disciplines. In the United States, there is substantial occupational segregation by sex. Although women constitute 46 percent of the labor force, less than a quarter of the scientists and engineers in the country are women (Mervis, 2000). Precise international comparisons of occupational segregation are difficult because nations seldom use comparable detailed occupational coding systems (Jacobs, 1993, p. 133). However, available data do indicate not only the existence of such a gendered division of labor throughout Western Europe, but also the likelihood of its persistence. For example, while half of all university students in Germany are women, women represent only 34 percent of all students in the natural sciences and 19 percent of all students in engineering (Femtec, 2002, p. 2). Similarly, men were found to be over represented among computer science graduates in all 21 industrial nations considered in a recent study. In the United States, the "male over representation factor" is 2.10, in the United Kingdom 3.10, in France 4.57, and in Germany 5.58 (Charles & Bradley, 2005).

Approximately half the potential STEM talent pool consists of women. Therefore, in 2000, a United States government commission was charged with developing strategies to attract more women and minorities in STEM careers. The commission reported to the Committee on Science of the House of Representatives that significant barriers to these goals persist (Committee on Science, 2000). Such deterrents range from differing male/female attitudes toward science and technology that begin to diverge as early as elementary and middle school, to the absence of women faculty, mentors, and fellow students in college and university classrooms that create a "chilly climate for women" in these areas (AAUW, 2000; Seymour, 1999).

A recent report by the Committee on Maximizing the Potential of Women in Academic Science and Engineering, created by the National Academies (2007) affirmed that women have the ability and drive to succeed in science and engineering, but they face persistent structural barriers and personal bias. As the result, they continue to be lost throughout every phase of their education. The report concludes that failure to act will be detrimental to our nation's competitiveness.

In the field of information technology, career opportunities for women abound. Yet despite the obvious advantage of entering this area, there has been a steady decline in the number of computer science bachelor's degrees awarded, particularly to women (Camp, 1997). In 1983-84, more than 37 percent of the bachelor's degrees in computer science were awarded to women. Ten years later, the percentage had fallen to 28 percent, and it has held relatively steady through the new millennium (Camp, 2002).

An examination of research on women in computer science revealed that the emphasis at the post-secondary level is on the social psychological factors that prevent women's inclusion (Dryburgh, 2000). Margolis and Fisher (2002) used the metaphors of a "clubhouse" to describe the extent to which women are excluded from the male purview of computing, and "dreaming in code" as "emblematic of a male standard of behavior in this computer-oriented world." The authors no longer want to try to fit women into this male culture. They issued a call to arms for a revolution in the culture and curriculum of computer science that will encompass and respect the contributions that women can make to the discipline.

As young women grow older, fewer of them express interest in studying STEM subjects. One

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