Chapter 71

Women's Roles:
Do They Exist in a Technological Workforce?

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ABSTRACT

Women have played a significant role in the birth and history of technology, yet their roles have diminished in recent decades and their voices have often gone unheard. Slocum (1975) states that though "women were probably its first inventors" (pp. 36-50), their roles are largely unrecognized and acknowledged. Lois Mossman, for example, one of the first women to play an active role in the pedagogy of the field now known as Industrial Technology, is rarely mentioned in contemporary literature or in discussion about the field of Industrial Technology. The myriad of Science, Technology, Engineering, and Math (STEM) programs are found throughout academia and the professions in the United States; however, women in these programs and fields are still underrepresented and their roles relegated to the margins. This chapter identifies and discusses the apparent inequality of the roles of women in the field of technology. Additionally, it offers several potential solutions for addressing the inequality, and offers recommendations on how women can assume, retain, and provide service in roles as technology leaders.

INTRODUCTION

Women have had few significant roles in male-dominated professions such as technology, engineering, and related fields. According to the National Science Foundation (NSF), "In the past 15 years, numerous reports have identified low numbers of females working in technology related fields" (Jacobs-Rose & Harris, 2010, p.12). Cultural trends in society have been blamed for this tendency. A women's role in technological related fields has changed following World War II, women transitioned from staying at home and taking care of the house to pursuing careers in nontraditional, male-oriented careers, "Historically, society believed a woman's role was in [the] home, caring for her husband and children, as opposed to the workplace" (Domenico & Jones, 2006, p. 2). According to Nieva and Gutek (1981), "the integration of a women ['s] [role] into the workforce was a slow process and was often viewed unfavorably by society" (p.2). There was basically no role for

women to participate in either teaching technology or pursuing a professional career in the field. Over the past 30 years, women's roles have begun to shift and has become more common to see them participating in teaching technology and obtaining careers in technological fields; however, their roles are still limited in that "Women are [still] under-represented in Science, Technology, Engineering, and Math fields of study and careers with a subset of STEM- Technology Education- possibly one of the least integrated fields for women as students and professionals" (Zuga, 1999, p.1) and in these fields according to Kucharvy (2011), "women have long accounted for small minorities of U.S. STEM graduate classes" (U.S. Graduate Schools as Magnets for Foreign-Born STEM Aspirants section, para. 2).

BACKGROUND

As women are becoming increasingly important additions to the technological workforce and as the workforce changes, Bell (1999), states that "… there is an increasing demand for companies and managers to be more sensitive to cultural diversity. Technology is available to everyone today, so what really make a difference to an organization is people and how effective they are in maximizing their potential" (p. 1). The role of women in technological areas has to be re-evaluated. According to the Department of Labor (2009), "women are projected to account for 51.2 percent of the increase in total labor force growth between 2008 and 2018" ("Quick Stats on Women Workers," para. 3). Technological advancements are constantly being made, and companies and academic institutions are becoming more evenly matched. As they examine how to differentiate themselves, both need to reconsider their assets in terms of inclusion, and not exclusion of women and their roles.

Diversification in the workforce is essential. This allows for different viewpoints, perspectives,

and solutions to problems that may exist and women can play very pertinent roles in shaping those viewpoints, perspectives and solutions. Metz (2006) stated that "due to the lack of female [roles] in technology, the global market suffered the loss of innovations that women could have brought to different professions within technology" (p. 13). The Industrial Technology programs unify the use of technology with society, and thus, diversity is definitely needed. Because women do not have many roles in nontraditional fields, they are outnumbered in Industrial Technology which has become an issue among technologists. Silverman (1999) noted that:

Experience has shown that women are interested in nontraditional occupations when they are actively recruited. Female high school students who are good at math and science and enjoy hands-on technology projects often turn away from higher level classes in these subjects because they are not aware of the kind of nontraditional careers available to them and cannot see themselves in technical or scientific jobs. (p. 3)

Assimilation of token females is not an acceptable answer either, "The goal of diversity is not to assimilate women and minorities into a dominant white male culture, but to create a heterogeneous organizational milieu" (Thomas, 1990, p. 1). If that is the case, why are there so few roles for women in technology related programs? Nelson (2004) posits that women's voices are missing from technology due to three primary reasons:

1. Women of the world lack access to technology.
2. Technology alienates and often exploits women.
3. Decisions about technology are made without women's voices (p. 2) .

Kulatunga, Shaw, and Nelson (1999) found that "the faculty population of Industrial Technology departments was reported to be less than 8% female by one study" and a more recent study puts

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