

Chapter 52

Women and STEM

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ABSTRACT

While battling great odds in terms of discrimination and bias, women within the United States have made valuable contributions to the workforce. Now that the second decade of the 21st century is upon us, women have come into all facets of the workforce, finding a niche in Internet Communications Technology (ICT) as well as within Science, Technology, Engineering, and Mathematics (STEM), which should allow women more of an opportunity to pursue occupations. However, it seems that women are lagging in this part of the workforce within the constructs of science, technology, education, and mathematics also known as STEM. This glass ceiling, or gender barrier, may make matters worse in terms of reporting these kinds of women's issues because these reports are often written by men. In addition, the ideas and perceptions of masculinity and femininity have been scrutinized and analyzed in this chapter, and it is not difficult to realize the differences in gender based on biological functions.

INTRODUCTION

Within the United States women have made a valuable contribution to the workforce, while battling great odds in terms of discrimination and bias that go along with the sheer fact that they are women. As cited in Swain (2003) "Women's employment possibilities have ebbed and flowed through the 20th century and by the early part of the century, the Suffrage Movement marked the beginning of women's political and career autonomy" (p. 12). During WWII as males left positions open to become warriors, women were at home filling

these job gaps, becoming work warriors. According to the National Archives (2013), "The War Manpower Commission, a Federal Agency established to increase the manufacture of war materials, had the task of recruiting women into employment vital to the war effort" (para. 2). Although the war effort did not last a long period of time, it was enough of a jolt to women in order for them to realize they had a place within the workforce (National Archives, 2013). Giving women work allowed them to raise the economic standards of themselves and that of their families (National Archives, 2013). As cited in Swain

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(2003, p. 13), “Employment developed by the 1960s, and there was a resurgence of feminism within the workplace” (Chavetz, 1990). Management opportunities, especially for women who had secondary education, also presented itself during this timeframe (Tanton, 1994). The *Feminist Mystique*, by Betty Friedan (1963) also gave women a sense of ideology and independence within a growing workforce, giving them an ideological sense of independence and freedom through their work participation. Inasmuch as this happened to be a coup for women, executive positions were more difficult to attain (Tanton, 1994). Against this background, the focus of this paper is women in STEM professions. The challenges women face working in a field that has historically been predominantly a male profession are discussed. This chapter focuses on women in STEM professions and examines the challenges they face working in a field that has historically been predominantly a male profession, and offers solutions to assist women in their persistence within STEM fields.

WOMEN AND THE CURRENT WORKFORCE

Now that the second decade of the 21st century is upon us, women have come into all facets of the workforce. Within the Internet Communication Technology (ICT) sector, “women continue to add value to the technology workplace (BizTech Africa, 2013, p. 1). “The dynamic and innovative Internet and Technology (IT) environment challenges women to assume a more interactive role in the workplace. In the IT space, risk taking and risk mitigation, combined with their emotional quotient (EQ), are the major drivers and differentiators” (BizTech Africa, 2013, p. 2).

In terms of ICT, which is a part of science, technology, engineering, and mathematics (STEM), this mode of communication and global connection is expanding and with this should be opportunity for more women who would like to pursue oc-

cupations in technology. ICT is only one aspect of STEM. Other related fields are also discussed in terms of men when compared with women in STEM fields, Gorman, Durmowicz, Roskes, and Slattery (2010) state there is a gap in STEM employment, state that there is a disparity in the amount of women within the fields of STEM, and “From the perspective of women in the academy, it is of special interest to note that these concerns occur in the context of a gender imbalance in the STEM workforce (Gorman et al., 2010, p. 2). In addition, according to Marcantoni, Castellino, Cicchetti, Mallamci, and Rastelli (2011) “Men are more likely than women to opt for physical science, mathematics and computing, but it is engineering, manufacturing and construction that have the greatest differentiation of choice, with 18.5% of men graduating in this area, compared with 6.9% of women” (p. 387). Furthermore, “The pattern of two sexes polarized or concentrated within scientific fields or occupations at the same level is called horizontal segregation: it represents differences that do not necessarily imply inequality between women and men (Marcantoni et al., 2011, p. 387).

There seems not to be an innate or inherent reason for this gap when comparing males and females, in terms of cognitive talents, although high-level bureaucrats may render women less capable. For example it is unsettling when someone who is an economic expert and political powerhouse like Lawrence Summers makes edits about women. Marcantoni et al. (2011) states that “during his presidency of Harvard University, suggesting that innate differences between the sexes might explain women’s poor representation in science and engineering” when “there is no evidence that biological/innate differences might render women incapable of achieving academic distinction in math, physics or engineering” (p. 387). Hedges and Nowell (1995) postulate women lack spatial ability, while Georgiou, Stavriniades, and Kalavana (2007) suggest that aptitude between the genders is not the issue, but the beliefs about

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