

## Chapter 7.9

# Interventions and Solutions in Gender and IT

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### INTRODUCTION

The role of women in technology-related fields began with promising contributions from pioneers like Grace Hopper. In recent years, women have moved away from information technology (IT) fields, and the number of women selecting IT majors in universities continues to decline. Likewise, the number of women employed in the IT workforce remains low and declining.

Researchers have recognized the problem and have investigated the many reasons for low participation of women in IT-related fields. Re-

searchers have proposed various interventions to fill the pipeline and retain women in computing.

In this chapter, we provide an overview of the current state of women in IT. We focus on girls and women at various life stages, from early education to the IT workplace. We also provide a discussion of the various methods and appropriate interventions that may be employed to encourage women to become empowered users of technology worldwide.

We use a broad definition of IT, which includes computer science (CS), computer engineering, information systems (IS), information technology (IT), and related professional fields. By examining research from multiple technology-related fields,

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we gain a clearer picture of the many ways that women may participate in IT.

Recent research on gender and IT has used an interdisciplinary approach, which has greatly expanded our potential for understanding why women decide not to pursue IT-related fields and how to implement appropriate interventions. Researchers from topics as diverse as IS, psychology, social sciences, education, and feminism, have taken a distinctive approach to understanding why women are not better represented in the IT workplace. We believe this broad, interdisciplinary approach has great potential to understand motivations for women pursuing IT-related careers. As Trauth & Niederman (2006, p. 8) said, "... the IT profession is challenged with meeting the demand to enlarge the IT workforce by recruiting and retaining personnel from historically underrepresented groups." This chapter looks at women in IT, shedding light on one historically underrepresented group.

## **BACKGROUND**

Previous literature on women in IT has focused on education and the IT workforce. More recent research pursuits have focused on feminism as a lens through which to view gender and IT. The following sections discuss these areas.

### **Primary and Secondary Education**

To increase the pipeline of women pursuing IT-related majors in universities, we must reach girls at a young age. Many factors, both structural and social, influence career choices of both genders, as seen in Adya & Kaiser's (2005) model. Generally speaking, social influences come from role models and influences by family members, peers, and the media; whereas structural influences are found in the support provided by educational institutions. One ubiquitous and early influence on a young girl's perceptions of computers comes through the

mass media and its gendered implications, as reported by Gannon (2007). For example, magazines that appeal to teenage girls, including those with global editions for other cultures, consistently fail to portray women in professional careers using technology (Adya & Kaiser, 2005), but, rather, focus on beauty, fashion, and relationship items. Even as young women expand their readings and increase their exposure to home computing magazines, they will find images of women as novices when dealing with technology, in contrast to technologically competent and powerful males (Johnson & Lynch, 2006).

Although there has been little advice regarding how to counteract the media influences, researchers have made multiple suggestions on how to modify structural influences, one of which is the use of single-sex schools. However, a recent study showed that girls in single-sex schools did no better than their counterparts in coeducation schools in deciding to major in CS (Olivieri, 2005). Olivieri proposes that the lack of computer knowledge and understanding are more common reasons that girls do not choose to major in CS rather than the presence of mostly men in IT courses.

Some researchers have advocated exposing girls to programming as early as possible to increase their comfort and skill in developing simple programs on their own, believing this exposure will give girls an edge when they take the first programming course in college. However, Katz, Allbritton, Aronis, Wilson & Soffa (2006) note that girls who develop programming skills in high school may do so at the expense of advanced math skills. Clearly, that outcome is not satisfactory since math skills are highly correlated with success in CS.

### **Post-Secondary Education**

Student perceptions of IT are "moderately gendered with a greater emphasis on masculine traits and abilities" (Joshi & Schmidt, 2006, p. 38). Students pursuing university degrees often do

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