

Fostering Technology Interest Among High School Girls

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INTRODUCTION

This article describes a pilot program that uses a holistic approach to address the multitude of barriers girls face when considering a career in the information technology (IT) field. Girls with Engineering Mindz (GEMz) is a highly structured technology program developed to encourage female high school students to embrace technology while strengthening their academic, personal, and social development. GEMz is not just a program for girls to develop technical skills. The premise of the GEMz program is to attract and maintain its participants by developing multiple components of the “whole” person. The GEMz program was designed to attract its participants to the IT industry through a three-prong strategy: develop technical skills in a societal framework, enhance basic life skills, and promote positive self-images. The name GEMz was selected to promote enthusiasm and collaboration among program participants. Teams are given the names of precious gems, (e.g., Diamonds, Rubies, etc.) to symbolize their positive self-worth as valuable contributors to both technology and their communities.

BACKGROUND

During the past two decades, numerous researchers have reported on the dissipating ratio and the shrinking pipeline of women in IT (Camp, 1997; Frenkel, 1990; O’Lander, 1996). According to the National Center for Education Statistics, in the 1983-1984 academic years, 37.1% of the bachelor degrees in IT

were awarded to women. Unfortunately, 19 years later, for the 2002-2003 academic years, women were only awarded 27.0% of the bachelor degrees in IT, a 10.1% decrease.

The under-representation of women in IT is a downward, spiraling cycle, a self-perpetuating phenomenon. Consider the research literature and develop a scenario of a female high school student who is an excellent problem-solver, a logical thinker, and someone who enjoys working with both computers and people. The student is considering her aspirations to attend college and contemplating her major. According to Teague (2000), many girls do not view computer science as a viable career option. Rowell et al. (2003) found “... enjoyment and interest have been shown to be a major reason students select a career ...” (p. 54). They reported that males were 17.0% more likely to have an interest in computer programming. Weinberger’s (2004) research indicated that many girls did not choose IT as a major because they did not think the courses would be interesting. Girls may have the misconception that the primary career in IT is a programmer who sits alone in a room hacking at a computer all day with little opportunity to interface with other people (Beyer, Rynes, & Haller, 2004; Margolis & Fisher, 2002). Furthermore, during their formative years, girls tend to not have the same “magnetic attraction” to computers that some of their male counterparts do (Margolis & Fisher, 2002). Girls usually do not consider themselves “hackers” or “computer geeks,” and due to social gender stereotyping, the computer has been labeled as a “boy’s activity” (Kiesler, Sproull, & Eccles, 1985; Margolis & Fisher, 2002;

Moorman & Johnson, 2003; Pearl et al., 1990; Shashaani, 1994). Girls who are interested in the IT field are so outnumbered that there is an intense “sense of isolation” (Frenkel, 1990). As if this sense of isolation were not enough, the boy’s magnetic attraction to computers and societal biases help to perpetuate the expectation of students, parents, and educators that “boys and men, not girls and women will excel in and enjoy computing” (Margolis & Fisher, 2002, p. 16). Consequently, the current computer culture is alienating and uncomfortable for girls and women (Frenkel, 1990; Kiesler et al., 1985; Pearl et al., 1990).

How can girls become more knowledgeable and comfortable with the IT industry? Unfortunately, Jepson & Perl (2002) noted, “school counselors typically have very little basic information on the IT industry...” (p. 37). Furthermore, one of the most cited research issues regarding understanding the IT industry is that while girls usually have first-hand knowledge of female doctors, lawyers, and teachers, girls do not have sufficient female IT mentors and role models (Cohoon, 2002; Klawe & Leveson, 1995; Moorman & Johnson, 2003; Spertus, 1991; Townsend, 2002). Additionally, researchers have reported that some women feel significantly less confident than men in their computer ability (Beyer et al., 2004; Margolis & Fisher, 2002; Shashaani, 1994; Teague, 2002). Considering the possibility of the cumulative effect of these interest barriers, it is no wonder that girls lack a career interest in the IT field. The female high school student who is contemplating a major decides not to pursue a career in IT and the cycle continues ...

PROGRAM MODEL

Girls with Engineering Mindz (GEMz) is a highly structured technology program developed to foster IT interest by developing numerous components of the whole person. The GEMz program is based on a holistic approach, designed to attract young women to the IT industry by combining strategies suggested by previous research. These strategies include: foster overall computer usage (Shashaani, 1994); develop technical skills in a societal framework (Margolis & Fisher, 2002); dispel the geek misperception (Beyer et al., 2004; Margolis & Fisher,

2002; Pearl et al., 1990); build self-confidence (Beyer et al., 2004; Teague, 2002); and expose GEMz participants to female IT role models (Cohoon, 2002; Klawe & Leveson, 1995; Moorman & Johnson, 2003; Spertus, 1991; Townsend, 2002).

The primary goal of the program is to inspire female students to use, experiment with, and feel comfortable with computers. GEMz is designed to portray the IT industry as both a human and a technical discipline. The focus is to encourage female high school students to improve their technical skills through utilizing computer technology for a purpose: the betterment of their communities and society as a whole. GEMz supports the ideology that numerous activities in the IT industry involve working on teams and not just sitting alone in a room hacking at a computer all day. The majority of IT jobs include a combination of individual and team activities. Therefore, it is essential for GEMz participants to enhance their skills through personal contribution and team collaboration. This concept of team is expanded to community, as GEMz participants broaden their sense of social responsibility through involvement in a community service activity. Female IT role models are utilized to help support and encourage young women and serve as living examples of successful women in the IT industry. Interacting and obtaining guidance from successful role models helps enhance the self-confidence of GEMz participants. It also provides positive evidence and imagery to enable them to recognize and visualize their full potential.

PROGRAM IMPLEMENTATION

The GEMz program implementation structure employs a three-tiered, holistic approach to attract high school girls to the IT industry. The tiers are: Tier I—Develop Technical Skills in a Societal Framework; Tier II—Enhance Basic Life skills; Tier III—Promote Positive Self-image and Encourage Social Interaction. All activities in the GEMz technology program seek to provide young women with a well-rounded exposure to IT, community, team-building, and self-development. The following sections describe the specific tactics executed to implement the three-tiered, holistic approach.

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