Chapter 2
Male Dominated Industries:
Jobs for the Boys

ABSTRACT

This chapter aims to: look at the current position of women working in the SET sector from higher education through to the workforce, using data from the UK and USA as examples; consider previous research looking at the lack of women in the sector as a whole and some industries, such as engineering in particular; focus on the construction industry, one of the most gender segregated occupations and working environments (the construction site), in order to examine gendered occupational segregation; provide readers with an in-depth look at women's underrepresentation in the ICT sector; discuss strategies for including and attracting more women to the computer science and technology occupations, proposed by researchers globally; and highlight why it is important for women to be involved in the creation and production of technology, as well as users and consumers.

INTRODUCTION

The aim of this chapter is to provide readers with knowledge of the current position, as there is a lack of women within this sector worldwide. The discussion will focus on higher education system and the workforce. Research in the area, in recent years, has influenced policy and development initiatives across the globe, to increase women's interest and participation within the sector from early education through to employment (i.e. Xu Y, 2008). To present a comprehensive picture of the issues within countries, data will focus on two countries the UK and USA, however the issues are global and impact on all women working in male dominated industries.

This chapter focuses on the lack of women within the SET and ICT sectors, primarily on the position of women in the sector in the UK and USA. The SET sector in generally and many of the industries within the sector such as ICT and construction represent classic examples of male dominated occupations and industries. Data from the Labor Force Statistics, 2007 indicates that there were 556,159 women and 2,468,507 men working in SET occupations in the UK (women

DOI: 10.4018/978-1-4666-2107-7.ch002

were 18.7% of all SET workers and men 81.3% a proportion roughly 1:4 female to male). In terms of the proportional growth, overall the number of SET women workers increased by 12.3% between 2002 and 2007 (a 62,000 growth from 504,364 in 2002), which is proportionately almost double that of their male counterparts (a 6.5% or 150.000 growth from 2,317,837 in 2002) (UKRC, 2008). In 2008, 5.5 million people worked in SET occupations of which just 12.3% were female (Jordan, 2010). Not only are women under represented in the SET sector as a whole but they also tend to be concentrated in the lower echelons of the sector, suggesting that both vertical and horizontal segregation exists within the sector. For example, in 2007-08 only 9.3% of all full time SET professors were female (Jordan, 2010). In 2008, women held only 9% of board directorships in SET companies, all male boards existed in 35% of SET companies and only 27.5% of SET companies had more than one female director on their boards (Jordan, 2010). Similar statistics are found in the American SET sector with women and black and ethnic minority groups under represented throughout the American workforce in science and engineering occupations (National, Science Foundation, 2011). According to the National Science Foundation (NSF), "the science and engineering workforce is largely white and male" (NSF, 2011, p8).

As we have highlighted, the aim of this book is to debate the gender divide in terms of women's careers and employment outcomes. We recognize individual choice is influenced by a number of factors, such as personal interests, stereotypes, expectations and socialization, which we discuss throughout our book. Our focus is on the situation of women in the sector, from university education and through their career, rather than pre university education or childhood. However, we wish to touch briefly, in order to scene set, on the debate on gender and mathematics and SET in schools.

GENDER AND MATHEMATICS

Early math achievement is considered an important factor to career aspirations and attainment (Shapka, Domene and Keating, 2008; Ma and Johnson, 2008; Watt, 2008). Indeed, research looking at gendered career intentions found a gender divide in high school for both mathematics and English subject courses leading to gendered differences in career intentions (Watt, 2008). Mathematics achievement has been found to be important to career self-efficacy (Betz and Hackett, 1983). According to Betz and Hackett's (1983) career self-efficacy theory, career self-efficacy is viewed an important factor in career choice. Therefore, math achievement plays a prominent part in career choice and aspirations.

Mathematics is particularly important, as math knowledge is essential for many positions within the wider SET sector. In 1980, Sells noted the importance of math for career attainment and put forward the notion of mathematics acting as a 'critical filter'. Mathematics is viewed as important and acts as a critical filter that limits access to male dominated, high status, high earning careers as well as individual motivations and beliefs which steer women away from STEM (Watt and Eccles, 2008). For instance in a Canadian study, Shapka, Domene and Keating (2008) mathematics achievement in early high school acts as a critical filter which limits education and occupational aspirations. It has been reported that there is a general decrease in the number of students taking mathematics courses in the UK (Mendick, Moreau and Hollingworth, 2009). Entries for A-level mathematics in the UK dropped 12% between 1994 and 2007 (Mendick et al., 2009). Recent figures from the UK found just 22% of all acceptances on mathematical and computer science degree courses in 2010 were female, a decrease of just 1% from 1996 (UCAS, 2011). It has recently also been acknowledged that women are underrepresented in the top mathematic positions within England with the Guardian newspaper reporting that the