

**Frequently Asked Questions**  
**Appalachian Information Technology Extension Services, (AITES)**  
**GSE/EXT Project (0832913)**

**Do women really only make up 13% of the Information Technology (IT)-workforce?**

Ironically, while the U.S. is in the forefront of the international field of IT there is an acute talent shortage in the U.S. of IT-enabled-workers. Most significant in this talent shortage of IT-enabled workers is the reduction of women in the IT pipeline. Since 1986, the percentage of women in the IT workforce has dropped from 40% to 14%; this drop has resulted in women, as of **2007**, making up about 13% of the IT workforce.<sup>1,2</sup>

As revealed by the 2003 Information Technology Association of America (ITAA) Blue Ribbon Panel on Information Technology (IT) Diversity report; this drop of women in the IT workforce has been steady. In 1996 women made up 41% of the IT workforce, in 2002 35% of the IT workforce was women. The latest 2007 figure provided by the ITAA states that 13% of the IT workforce is female.<sup>2</sup>

To understand the U.S. IT workforce context it is crucial to make certain that the term ‘women’ includes only **indigenous (native-born)** U.S. women and excludes those women born and raised outside the U.S., so that the numbers are not inflated. This is especially important since the U.S. requires an IT indigenous talent pool for our most classified IT work and continuation of industry innovation. Therefore, though there are variations in the reported percentage of women in the U.S. workforce (up to 25%) the ITAA percentages used for the purposes of the AITES project reflect indigenous U.S. women only.

**I see many women in my IT department – how can there be so few women in the field?**

The percentage of women in the IT workforce is a *national* percentage: this means that there are several day-to-day examples that will not reflect the national percentage. For example, there tends to be more women in IT and other technology-related job in Education (both primary and secondary). Since the field of Education has traditionally been a ‘women’s workplace’ we find a higher percentage of women in IT-related jobs within Educational organizations both public and private.

Likewise, many IT-enabled women who come from outside of the U.S. come to the States to attend college and/or university. Several world regions (Africa, Middle East, and Asia) have a much higher percentage of women in IT and Science, Math and Engineering - related fields. Many of these women find employment in the U.S. IT industry after completing their degree in the U.S. system of higher education. These non-native born women provide much needed talent for the field but the US also require native-born (indigenous) IT talent.

Regardless of how much talent we may be able to import from elsewhere the need for IT-enabled workers will increase. The Bureau of Labor Statistics projects that between 2008-18 IT jobs and careers will grow faster than average compared to all other occupation categories; IT employment overall (all job types) is projected to increase 30% in the 2008-2018 decade.

## **In what ways does the field of IT create barriers for girls and women?**

Researchers have struggled to understand why proactive efforts to recruit indigenous U.S. women to computer-based fields often are not successful. Even when they have both the skills and interest in computers, females of all ages consistently **express** less confidence in their technological abilities.<sup>3-5</sup> Many fail to make a connection between their skills and interests and a career choice.<sup>6-8</sup> Other factors shown to deter young women from viewing IT as a career choice include lack of encouragement from parents,<sup>9</sup> gender stereotypical views held by parents and teachers, stereotypical views about the nature of IT work, lack of opportunities to use computers in creative and collaborative ways, and having few trusted or credible sources of IT-related information.<sup>10-12</sup>

Our earlier research identified subtle and implicit biases such as gender stereotypical views as a significant factor deterring young women from viewing IT as a viable career choice.<sup>6,7</sup> These views, often held by school counselors, teachers, and parents, along with stereotypical views about the nature of IT work, communicate negative values and beliefs that are embedded in the local environment surrounding young girls and influencing their career decisions.<sup>13</sup> Lack of encouragement from influential adults or ‘*stokers*,’ preconceived notions, attitudes and stereotypes regarding IT are some of the most difficult barriers for girls to overcome when interested in pursuing an IT job. Subtle implicit biases are equally consequential as other forms of bias and tend to be more difficult to examine and address.<sup>13</sup>

Discrimination is commonly experienced as explicit hostility, but main barriers to girls’ entry in the IT workforce are day-to-day subtle, implicit biases that go largely unexamined. The notion of implicit bias comes from cognitive psychology research and refers to the prejudices people unknowingly hold that nevertheless frame their perceptions and judgments of and interactions with others.<sup>14</sup> Our unconscious suppositions about gender (how we usually think about how men and women should behave or look like) tend to reflect cultural, normative, and communal notions of gender that we are born into and acquire over time.<sup>15</sup> Negative gender implicit biases value men and masculine traits over all other traits. Research demonstrates that negative gender implicit biases produce an accumulation of disadvantage over time which creates larger systematic trends such as the underrepresentation of women in IT.<sup>14</sup> Addressing the negative implicit biases prevalent in many girls’ environments is a crucial consideration to successfully promote girls interest in IT. As such, an effort to recruit and retain women in IT necessitates building community capacity through broad-based, community-oriented early intervention programs that are grounded in local norms and values.<sup>16-20</sup>

## **Why has there been such a drop (from 40% to 14%) in women and overall in the IT workforce since 1986?**

Several factors are considered to be significant in the decline of both male and female students’ interest in IT jobs and careers.

- In the 1980’s and 90’s Law and Business became viewed in the U.S. as the most lucrative fields. This pulled many away from IT.

- The large percentage of foreign-born teaching assistants and faculty, some of whom have cultural values that are perceived as not being supportive of women being educated or joining the IT workforce.
- The dot-com bubble (1995-2000) the bust of the Internet and related fields has created a myth that IT is a non-lucrative industry
- A pervasive notion that most or all of the IT jobs have been outsourced

### **Why is the AITES project focused on girls – what about boys?**

Overall U.S. women make up 46.6% of our national workforce and own 40% of our private businesses.<sup>21</sup> To not reach out to women in response to the acute IT-talent shortage is to waste our human resources. Gender diversity improves innovation, increase our native-born IT talent and ensure role models to continue to expand out IT-talent pool.

We also find that what is good for women and girls tends to benefit boys and men. Other NSF-funded STEM-equity outreach projects have documented the unintended benefit of a 20% increase in male recruitment and retention while working toward the recruitment and retention of female students.

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