

Girls Who Code: Encouraging Girls towards STEM Careers

Girls Who Code – While enrolment in computing science and engineering degrees has largely evened out among men and women, the professional participation of women in the technology sphere continues to lag behind

It's a conundrum. While enrolment in computing science and engineering degrees has, in many jurisdictions, evened out among men and women, the professional participation of women in the technology sphere continues to lag behind.

Though women may enter the STEM workforce with great anticipation, they often encounter what has been termed the “chilly climate” and eventually drop out (the “leaky pipeline”). The “deficit model” attributes this problem of underrepresentation to the lack of education, experience, interest or skill of women (and other marginalized communities), suggesting that the issue will disappear, and STEM workplaces will become more welcoming, if we can fix women's “lack” of skills, while the opposing view considers fixing STEM from a masculinist culture to one that is welcoming of diversity.

In one area in particular, software development, women's participation continues to decline. Increasingly, and alarmingly, the information to which we have access is determined by software algorithms, based on our digital identities across platforms. As Mangan (2019) points out, we should be concerned about the under-representation of women in this field not only because of the economic impact, but also because of the social, cultural and political implications of a world “running on software” (p. 64) developed primarily with a male perspective (c.f. European Commission, 2019).

Current research in this area has evolved from a focus on personal attributes that disadvantage women in a fixed world of technology, to how gender shapes, and is shaped by technology. In other words, technology is not neutral territory, but reflects the values and experiences of its creators. Obviously, in an increasingly diverse world, women from all cultures, with many different experiences and beliefs should be included in the design and creation of the tools and platforms that manage our participation in the social, economic and political world.

In this article I highlight three early interventions, although there are many more that are place-based and culturally appropriate, such as pilot summer camps (c.f. Doerschuk, Liu & Mann, 2007). Many of these interventions are based on diversity, equity and inclusion principles, including initiatives that focus on particular communities such as Black, Latinx or Indigenous girls.

Girls Who Code

Perhaps the best-known “intervention” is Girls Who Code (GWC), a non-profit initiative who declare themselves “the world’s largest pipeline of future female engineers” ([Girls Who Code, 2021](#)).

The initiative has served over 300 thousand girls worldwide, including historically underrepresented groups (e.g. Black and Latinx girls/women). Girls Who Code explicitly describes their goal to eliminate the gender gap in STEM and get three times as many girls into the STEM workforce by 2025. GWC’s strategy, starting with girls in grades 3-12, is gender-specific, and supports participants with clubs and summer camps led by women in the tech industry.

Solving challenges identified by community partners forms the basis of the coding program. In addition to the summer camps and clubs Girls Who Code also sponsor networking opportunities for university students in computing science programs and events offered in collaboration with STEM companies. Such events go beyond a focus on coding, for example, offering mentorship from industry insiders. While a global success, critics of this approach point out that the program is designed to help girls learn to cope with a toxic, masculinist industry rather than transforming the industry itself (c.f. Smits, 2021).

INTechH Camp for Girls (USA)

InTech, a series of 5-day summer camps and after-school programs in North Carolina, South Carolina, and California, is designed for Black and Latina girls in grades 6-12 who are interested in STEM careers.

The program is designed around 3 pillars (Braswell et.al., 2021, p. 687):

1. Inform, which “provides girls with opportunities to master essential computer science concepts, such as creativity, abstraction, algorithms, and programming, and to learn about different potential pathways for technology careers.
2. Inspire, which “introduces young Black and Latina girls to women with a background in the technology industry, who share their educational and career experiences”.
3. Innovate, which “provides girls with opportunities to work together in lightweight teams in which they learn how to create and implement technology solutions”.

Working in a team setting, girls reap the benefits of peer teaching, peer learning, and increased student engagement. During COVID-19 the camps were offered virtually to girls in Canada and the U.S. The program emphasizes representation, collaboration and community-building, and culturally appropriate learning activities, i.e. “exploring and expanding the awareness of the various social, ideological, cultural, and political contexts in which language and literacies of power operate” (p 688). The virtual camp was

evaluated, and the leaders concluded that while such experiences increase participants' confidence and interest in computing, short-term interventions need to be supplemented with longer-term, sustained strategies.

Kids Code in Norway

Volunteers including parents and community organizations run Kids Code in Norway, an after-school code club operating since 2013 in Norway. As with the two initiatives described above, the clubs emphasize participation of underrepresented groups in STEM, especially girls, although boys are accepted and, in fact, dominate many of the clubs' enrolment.

These clubs are directed at children in primary grades and emphasize “digital competence” as a “tool for success, power and empowerment in society” (p. 103). Intersectional representation is not emphasized; the atmosphere is informal, and the leaders work with translated coding materials from other jurisdictions in Europe and North America. Volunteerism and “fun” distinguish this approach from the more structured examples, above; There is little effort to introduce participants to role models or mentors, nor are the clubs sustained by a network of industry experts.

The jury is out on aspects of these interventions. For example, a gender-exclusive approach has been questioned for its inauthenticity and seeming failure to realistically challenge the culture of the STEM workplace. However, participants report appreciating the low-risk environments and the increase in self-confidence and self-efficacy.

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