Cracking the Code

The Gender Disparity in Tech

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Every day, we see technology advance further and further, with careers in computer science and engineering at their peak...and yet, women are being left behind. In 1995, **37% of computer scientists were women**, yet today, it's only **24%**. In ten years, it's expected to drop to **22%**. Our question is not whether or not there is a gender disparity—**women make up only 25% of employees and 11% of executives** in the industry—instead, we ask why are there so few women and gender diverse individuals in tech? Why do the numbers continue to decline, despite efforts to decrease the disparity? What can we do to finally close the gender gap? Or worse, **is this just the way it's supposed to be**?

This lack of diversity is problematic for the field of the future. **When we lack an entire portion of the population, we lose their unique perspectives**. Therefore, this issue doesn't just affect women in STEM—it affects everyone who would benefit from gender equality. It affects men in STEM, some of whom may be contributing to the disparity rather than helping to combat it. It affects larger businesses, who should be held accountable for making the STEM field welcoming. We see large tech corporations, such as Google and SpaceX, say they're encouraging gender diversity, but the statistics show otherwise. Universities are affected through their responsibility to provide proper STEM accessibility and give young women the option to explore the field. On a personal scale, many parents are affected, as they may want their little girls to develop an interest in STEM with no idea how to spark the passion. It even affects those in the conversation who don't believe that the gender disparity exists. Stuart Reges, a professor of computer science at the University of Washington, believes that _"women can code, but often they don't want to,"_ and that _"having 20 percent women in tech is probably the best we are likely to achieve."_ No matter your gender, no matter your career, no matter your opinion, **the gender disparity affects us all**.

In order to understand and combat this gender disparity, we suggest three approaches: **positive early exposure**, **examining and fixing the corporate role**, and **starting the difficult conversations**. Positive early exposure could encourage young girls to develop an interest in technology and coding, and give younger audiences the resources to better understand the field outside of stereotypical media portrayals. Understanding the role businesses and employers play in the issue is integral to holding these people accountable for their treatment to women in this work. Finally, starting this difficult conversation is another priority as we can not solve the problem if there are still people who don't believe in its existence. Organizations like Penn State's own **Code for Her**, as well as **Black Girls Code**, and **Girls Who Code** lead the way in this movement as they are a prime examples of how we can potentially improve the gender disparity.

Approach 1: Positive Early Exposure

We as a society need to change our outlook on women and their studies. The stereotype that STEM fields are for boys while the humanities are for girls is detrimental to the education of all children, as it discourages them from exploring their interests. If we provide more positive early exposure to STEM for the children who are typically ignored, **we can promote future interest in STEM careers**, helping to close the gender gap.

One way to provide positive exposure is by **showcasing female role models in tech**. From characters in movies to female tech teachers, girls will be able to see tech in a more desirable light if they see themselves represented. These women will **inspire girls to look into careers in the STEM field.**

Another method of positive exposure is to **promote and support pre-existing tech programs for girls** in their mission to foster the interests of girls across the world and eventually make careers out of their passion for tech. By supporting programs that are gender-inclusive, we can build confidence in young girls. The program **Black Girls Code** is projected to have taught **1 million girls by 2040**, and **Girls Who Code** has already taught more than **90,000 girls in the past 6 years**.

"Developing curriculum with girls' interests in mind and teaching in ways that girls prefer—such as project-based work—is needed to keep them engaged"

— *Susan Price on Reshma Saujani's mission statement for Girls Who Code*

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Questions to consider:
- How many of you had experiences with coding and computer science in childhood, and how did this influence your choices?
- How can people continue to advocate for Hollywood to represent women in technology, and how else can we advocate for inclusive depictions of female and nonbinary people in STEM?
- How can we help schools and states who lack the resources (i.e. coding instructors, computers, etc.) to provide comprehensive STEM education?
- How might we provide coding classes to lower income families who might not be able to afford programs like Girls Who Code?
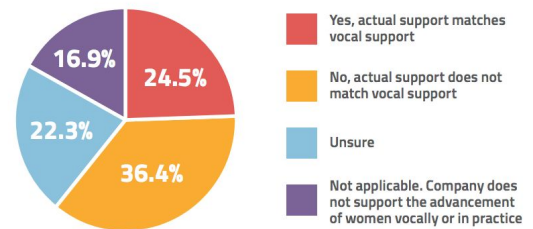
Approach 2: The Corporate Role

Women are not only brought into the tech industry without the same opportunities as men, but they are also driven away by the toxic workplace environments. In order to draw more interested women to tech, **we need to make the industry worth working in**.

One way to make the workplace more inclusive is to **enforce respectful attitudes**. The unfortunate truth is there will always be voices of dissent against women in the tech industry. Victims are usually discouraged from reporting harassment with attacks on their character and even outright threats. **This prevents anti-discriminatory rules from being enforced, and the guilty parties go unpunished**. By overcoming the social stigma associated with confronting workplace harassment, people in the industry can ensure gender equality is a priority in the workplace.
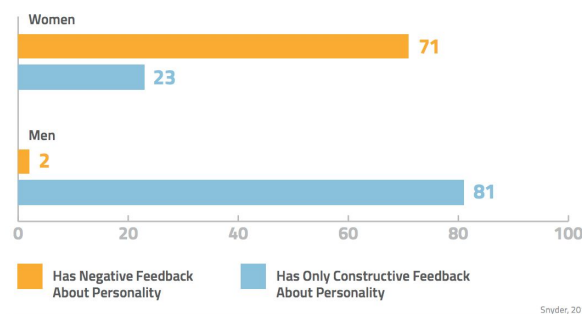

FIG. 1.15 // Actual Support Women in Tech Report Receiving

Do you feel that your company provides actual support in the form of programs/training to match the vocal support around advancing women in tech?

- 24.5% — Yes, actual support matches vocal support
- 36.4% — No, actual support does not match vocal support
- 22.3% — Unsure
- 16.9% — Not applicable. Company does not support the advancement of women vocally or in practice

Rerendered from Anderson et al., 2013

FIG. 4.7 // Kind of Feedback Received in Critical Reviews

Women: 71, 23
Men: 2, 81

- Has Negative Feedback About Personality
- Has Only Constructive Feedback About Personality

Snyder, 2014

We can also hold businesses responsible by **requiring gender bias training**. Gender bias is not necessarily a conscious decision. For example, women typically receive more complaints about their personality in job reviews than men. While men are encouraged to be assertive, women are often described as **"bossy"** for similar behaviors. Training in gender bias **helps people recognize when they are unintentionally committing microaggressions**, which encourages more respectful attitudes towards women.

"60% of women in tech reported unwanted sexual advances"

— Elephant in the Valley

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Questions to consider:

- How do we support victims who step forward when confronting workplace harassment?
- How can we hold abusers in the industry accountable for their actions?
- How can we encourage businesses to provide sensitivity training for gender bias?

Approach 3: The Difficult Conversation

Many people find that talking about gender inequality is difficult. However, if we ever want to see a change for the better, we as a culture need to start addressing this issue and holding each other accountable for our actions and attitudes as individuals . After all, **we can not find a solution for a problem people still doubt the existence of**.

One way to approach these conversations is to **educate people about the gender disparity**. Encouraging schools and businesses to empower all ages and teach them about the benefits of diversity in tech will give people a better understanding of the issue itself and the stake they have in it.

We should also **hold ourselves as individuals accountable for our actions**. Boycotting businesses who discriminate against women, calling out sexist remarks, and believing women when they speak up against harassment are examples of how an individual can make a difference. *The National Center for Women and Information Technology* (NCWIT) found that most men changed their minds about women in tech through either **their own experience as part of a different minority**, or through **stories told by female family members and coworkers**. NCWIT also found that **aware leaders** helped influence men's thinking. We should encourage all men to view sexist harassment the same way they view harassment they may face; to believe the stories of harassment told by coworkers, the same way they would treat stories of female friends and family; and to use their privilege to educate colleagues about the importance of gender diversity.

TABLE 1: SUMMARY OF EXPERIENCES THAT INFLUENCE MEN'S THINKING

Professional Experiences (91% of men)	Personal Experiences (83% of men)
Female Boss	Minority Experience
Learning about Microinequities	Working Wife/Partner
Aware Leaders	Daughter
Data Collection	Mother's or Sister's Experience
Seeing Gender Bias	Sense of Fairness

www.ncwit.org   Male Advocates and Allies: Promoting Gender Diversity in Technology Workplaces

"85% of our leaders are men in this company, and if they are not advocates, then the culture won't change—we won't have the right environment."

— *NCWIT Male Ally and Advocate Interviewee*

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Questions to consider:
- What progress have we made in the gender gap? How did we achieve this?
- How will we know when the issue is "resolved?"
- What can an individual do to propel conversations about blatant sexism?
- Why is our society hesitant to accept the gender disparity as real and problematic?
- How can we persuade people that are resistant to these changes?
- How can we give educators the tools to approach this topic?

Still interested? Check these out:

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https://sites.psu.edu/codeforher/**

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