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Women in STEM: Past and Present

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Dr. Billie Blair, organizational psychologist and President/CEO of the international management-consulting firm, **Change Strategists**, Inc recently spoke with a client, a successful farmer from Virginia. He spoke about having recently entertained guests - a high-profile woman and her family- at his farm. He liked her; she had good family associations and she was pleasant. After spending the day with this smart, successful, prominent woman and her family, the farmer decided he thought her and her family were much like a Friday night football game. As we know, a football game involves coaches, players, quarterbacks, various supporters . . . and cheerleaders.

“And he said, ‘I see her as a cheerleader,’” says Dr. Blair, “I hadn’t heard anything like that in years. Just when you think we’ve made many advancements and accomplishments, you come right back to the fifties when I grew up!”

Why is it that women - regardless of their level of education or successes in medicine, politics, and law – are still being compared to cheerleaders and are still making 78 cents to a man’s dollar? If we look specifically at science, technology, engineering, and mathematics (STEM) fields, is gender diversity progressing or regressing? More importantly, does anyone care?

The **American Association of University Women (AAUW)** sought to answer those very questions in their study entitled, “Why So Few? Women in Science, Technology, Engineering, and Mathematics”. In their report, AAUW researchers **Andresse St. Rose, Catherine Hill, and Christianne Corbett** looked to examine the challenges that women face while studying and working in STEM fields. They found that gendered beliefs about intelligence, struggles with stereotypes, spatial skills, workplace bias are all among many mental hurdles that often prevent women from getting involved in STEM. Perhaps those factors explain why colleges and universities awarded 138,874 STEM bachelor’s degrees to men and just 88,371 to women in 2007 even though women made up the majority of U.S. undergraduates. The AAUW cited other National Science Foundation (NSF) statistics in their report including their finding that more than half of STEM degrees awarded to women were in the biological sciences while numbers were exponentially smaller for women than men in fields like physics, engineering, and computer science.

“When I chose physics, I had no idea it was so male-dominated,” says **Lisa Mariani**, sophomore physics major and John P. McNulty Scholar at **Saint Joseph’s University** in Philadelphia. “I thought it was like the other sciences. When I started at St. Joe’s, I realized I was the only girl in the program out of twenty.” **Dr. Michael McCann**, professor of biology and associate dean for the sciences at Saint Joseph’s University and former director of the McNulty Scholars Program, agrees, “Women who are looking to go into physics programs as undergrads are not exactly a dime a dozen.”

Since women in STEM is such a valued asset (both academically and corporately), universities are starting to create programs to entice women into science careers. For example, the **John P. McNulty Scholars Program** for Excellence in Math and Science at Saint Joseph’s not only provides full-tuition scholarships, but seeks to create a challenging environment to help young women reach the top ranks of science and math professions. “We're really looking to create women who will not only be successful leaders in their fields, but will have the skill set and the inclination to mentor others (both men and women) coming behind them into these positions,” explains Dr. McCann.

Through mentorship, summer programs, professional internships, senior capstone experiences, and networking and professional development, the scholars are able to excel academically and professionally. Named after ’74 Saint Joseph’s alumnus John McNulty, who served first as Student Council President and later as a Board Trustee of the University, the scholarship program hopes to honor his work of mentoring and challenging women to achieve their fullest potential.

Like Saint Joseph’s University, **Lehigh University** in Bethlehem, Penn. also has a scholarship program for women in STEM called **ADVANCE**. The university received a five year grant from the NSF to create the program, hoping to increase the presence of women in science and engineering. **Dr. Hank Korth**, professor of computer science and engineering at Lehigh University, hopes ADVANCE recruits computer science majors to increase the program’s diversity. “We’re trying to convey the message that computer science isn’t about sitting in a dark corner writing code,” Dr. Hank Korth explains. “Computer science is what happens between when you hit ‘enter’ on Google and you get an answer back. We’re solving problems; we have to interact with the world around us.”

Fortunately, programs like the McNulty Scholars and ADVANCE seem to be working. According to the National Science Foundation (NSF), women’s presence in the federal science and engineering workforce increased from 21% in 2000 to 27% in 2009. “Whenever I speak up in class, I feel like the teachers are very receptive and willing to help and listen to my input,” says **Kim Nguyen**, junior biology major and McNulty Scholar.

Dr. Blair hopes the need for diversity trickles up from the university setting into the corporate world. She used to be the university dean at California State University and said faculty diversity was a university mandate. “In the corporate world, they still have the ability to hire who they want, and they tend to clone themselves. It happens a lot,” Dr. Blair says. “In my career, I have always been the first (and often the only) woman in the positions that I’ve held. A practice was made of not listening to the female voice: I would often say something in the boardroom and not be heard. A man would suggest the very same thing a minute later, and the CEO would sing his praises.”

Diversity in any setting is important. Problems are tackled and solutions are made by listening to various ideas and suggestions. If everyone was the same – same ethnicity, gender, culture, lifestyle – things would be monotonous and problems would be repeated. “Being open to another person’s input and talent is more beneficial than being close-minded and thinking only your way is the right way,” Nguyen says.

Although various programs like the McNulty Scholars and ADVANCE are finding success, and women, like Dr. Blair, are making their presence known in corporate America, there is still room to improve for women in STEM. Women in STEM are smart, and they prove it on their test scores and in their labs. However, they need to do more than that to compete with the men in their fields.

Network– Meet others, both male and female, who have the same or similar career path. They can be great mentors and provide expert advice on how to navigate through the field. **MentorNet** is an online mentoring network created to enhance diversity in science and engineering. Also, attend conferences like the Grace Hopper Conference that are designed specifically to teach and recruit STEM women.

Brag–You spent hours researching and hours in the lab. Be proud of your accomplishments. “Don’t be afraid to point out your successes,” Dr. Korth says. “If you look at the scores in my intro classes, the women do just fine and are quite often at the top of the class. That doesn’t get noticed because they aren’t making themselves as visible as men.”

Persevere –If you don’t feel like the lone ranger now, you may post-academia. The statistics don’t lie; the STEM field is still very male-dominated. “Build your own skills, build a positive outlook, and build confidence in yourself,” Dr. Blair suggests. “I see a lot of women – engineers, in particular – who are intimidated or daunted being in the field because it is mostly a man’s field. Ignore what goes on when you must. And be assertive: call it to their attention so you can break the sexist pattern.”