



Results

Hypothesis: If I work hard and gain a greater understanding of the writing process, I will produce a high quality essay.

Supporting Evidence:

In the past forty or so years, the proportion of women to men in the US workforce has improved dramatically, from about 38% in 1972 to 47% today (DPE Research Department) However, only about 11% of practicing engineers are women (Adams). There's no question that as our society advances, science qualifications will become more and more important, so in a field with an increasing demand and a shortage of supply, why is an entire gender so underrepresented? The engineering industry needs to do more to increase the number of women in the field in order to introduce new perspectives and to help remedy the skills shortage.

There are several explanations for the lack of females in the engineering industry, most of which are because of the stereotype that associates science/math with masculinity. Gender expectations throughout life disproportionately point males in the direction of STEM (Science, Technology, Engineering and Medicine) majors Although, according to the U.S. Department of Education, young girls are earning the same (if not higher) grades in these classes as boys are, we commonly assume that boys are just naturally better at these subjects than girls (Hill). Studies done by Shelley Correll show that because girls grow up believing that boys are naturally better at science and math, they are less likely to show an interest in this field (Hill). In other words, the expectation that males will do better in these subjects keeps girls from ever considering them in the first place. Along with this, there are significantly fewer female science role models than male, which reinforces the idea that science is mainly meant for boys. For example, if a girl is unsuccessful at a math problem, she feels discouraged and thinks that her failure is due to the fact that "girls just aren't as smart as boys." Instead of continuing to try, she may accept that math is for boys and lean towards a subject that is "meant for girls." I believe that this is a severe issue and it plays a leading role in the lack of females that ever gain an initial interest in engineering.

Another problem leading to the lack of female engineers isn't just the fact that women aren't entering the field in the first place; it's the fact that they don't stay. While 20% of engineering students are women, only 11% of practicing engineers are (Adams). This shows that women are exiting at alarming rates, and clearly, this isn't a coincidence. Since engineering is a male-dominated field, the environment is not as welcoming for women, and it is harder for them to get the same respect as men. Professor Brian Rubineau provides an example of this gender bias by saying "much of the hands-on aspects of engineering were treated as men's work and women were relegated to more secretarial duties" ("Why Female Engineering Students Leave the Field"). I think that this culture of sexism in the industry is ridiculous because women are just as fit as men are to do the same jobs. After all, if they weren't capable of the same thing, they would not have gotten the same job in the first place. This is making qualified women feel inadequate and therefore causing them to leave and is deterring young girls from ever being interested in the first place, two problems that have major consequences.

The consequences of these problems are extremely serious; engineers exist to solve the many different problems that our society faces and in order to tackle these, we need as many perspectives as possible, something we cannot do if we overlook a disproportionate portion of the population. Roma Agrawal, a structural engineer at WSP, says that “in any industry, a diverse environment is important for ideas” (Arthur). In other words, a wider range of opinions is beneficial because it offers creative new viewpoints. I think this is especially true for engineers because women are able to offer unique points of view to problems that men may not have thought of. If a large part of the population isn’t even considering engineering, imagine the talent and innovative ideas we are missing out on. Also, if women represent half of the population, they should represent half the people creating things for the population. Men do not know the way a product affects women, so instead of making assumptions, why not get the point of view of a woman? Engineers are problem solvers and having a diverse group would change things for the better.

Along with the problems associated with a lack of diversity, there is a labor shortage of qualified engineers, and we cannot afford to lose any people with the skills to help improve our country. America has always been an international leader when it comes to science; we were the first country to put a man on the moon (Figure 4.1), we invented the internet and we discovered electricity (Roach). None of these would have been possible without innovative minds, showing how important engineering is to our country. According to the PCAST, an advisory group appointed by the president, “if the country is to retain [this] historical preeminence in science and technology,” there is a need for “approximately 1 million more STEM professionals.” This number does not even include the amount of people who are currently projected to enter the field, so this shows that in order to meet the demands of our country and help keep the U.S. competitive in the world, we need a major increase in engineers. Even a small increase in the number of women in the industry would help us easily reach a million new engineers. Without a proportional amount of women in the field, I believe we are at risk of falling behind other countries. This, along with the new perspectives they would add, is why we need more women engineers.

In order to solve these detrimental problems and get more women into engineering, we need to change the “males dominate science” point of view that girls experience. One way to help get rid of the stereotype against girls in STEM subjects is by exposing them to more female role models in the field. By showing them that they are equally as capable to succeed as boys are, they will be more confident in their abilities and inspired to do well in the field. Another part of the solution is to encourage science for girls. Some schools are already doing this by implementing programs such as Engineering is Elementary (EIE), which promotes “engineering awareness among female students in the public school system” (Crawford). It is important we continue to expand programs like this because by spending more time working on these subjects, girls are more likely to choose a career in a science or engineering field. Furthermore, since the way girls are brought up has a major effect on their future, I believe it is very important that teachers and parents encourage them to take on challenges in math and science. It will take time to get rid of all the stereotypes against girls in science but it is imperative for the future of the engineering industry.

In addition, it is also important that engineering companies work on hiring and retaining more females in the workplace by getting rid of the culture of sexism. Researchers on the subject recommend that “CEOs and top management foster a culture of inclusiveness, helping to create clear paths for advancement and enforcing a zero tolerance policy for incivility and undermining” (Adams). That is, companies need to move towards a more diverse environment that makes sure everyone is included and treated fairly. To keep women from getting discouraged by the way they are treated, we need to make sure that they are respected for their abilities and are seen as equals. In order to do this, we should provide gender equality training to businesses so they can identify and deal with discrimination. In addition, companies need to be strict on punishments for those who continue to treat women unfairly. By making the workplace a more diverse and accepting place, I believe women will be compelled to not only get jobs in the engineering industry, but to retain these positions and make a positive impact on the world.

As a female majoring in mechanical engineering I have seen the stereotype against women in engineering first-hand, but I also know that my gender does not and will not hold me back (Figure 4.2). Although I have been underestimated in group projects and been one of two girls in a physics class, I know that I am equally as capable as my male peers, and I believe that this is something all women considering a STEM major need to know. The only way to solve the problems the world is facing is with a strong and diverse engineering industry, something that cannot happen if women continue to play such a minor role in the field. Therefore, by getting rid of the sexist stereotypes in the STEM field and by changing the way females are treated in the industry, we can increase the number of women engineers and reach our full potential as a country.

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Figure 4.1: Neil Armstrong, an American astronaut and the first person to walk on the moon

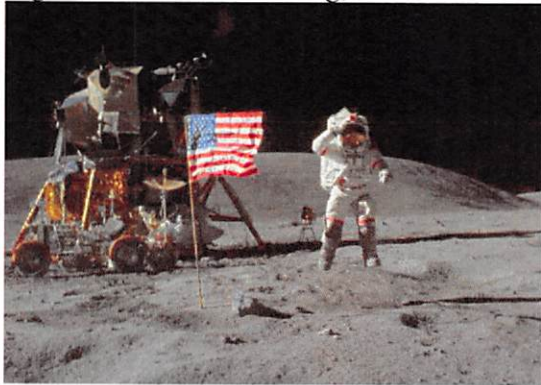


Figure 4.2: Danielle Pattee posing by a College of Engineering sign

