Neha Rao

Mrs. Reddy, Mr. Belmonte

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How do STEM barriers affect the prospect of girls joining STEM pathways, and how might that change if young girls were exposed to more encouragement towards women participation with the help of the government or community?

Women fought to be able to make up nearly half of the workforce, but are still underrepresented in Science, Technology, Engineering, Mathematics (STEM) (Martinez and Christnacht). Compared to men, women are still falling behind in the STEM fields by a large amount. The number of STEM workers affects America's economy, which pushes the need for women to pursue STEM. There are multiple factors that led to the lack of women in STEM, and in order to fix this issue, they need to be addressed. The help of the government and community is needed to make that possible for future girls in STEM.

Although efforts in STEM have improved the demographics, women are still trailing behind men in many fields. This can clearly be seen in the academic journal article "Addressing the Gender Gap: Women's Perceived Barriers to Pursuing STEM Careers," where the authors inform that according to the National Science Board, "there has been a steady decline in women earning bachelor's degrees in computer science with females earning 28% of degrees conferred in 2000 compared to 17% of degrees in 2011"(Swafford and Anderson 62). The negative trend in women pursuing a STEM degree shows just how alarming the situation was in the past and that actions should be made for this not to occur once more. More recent information illustrates how large the gender disparity is in the number of women with STEM degrees. In the statistics

provided by “The State of Girls and Women in STEM,” an infographic from the National Girls Collaborative Project, it is shown that the percentage of men with a bachelor’s degree in engineering is 81% compared to the women’s 19%, the difference of having the degree in computer science is 82% to 18%, and in physics it’s 61% to 19%. These statistics clearly depict how severe the gap between men and women is, despite the improvement compared to the past. When examining the information, it can be observed that the changes in the disproportionality depend on the subject. This gender imbalance then carries over to the Science, Technology, Engineering, and Mathematics workforce.

The distinction between the two genders can also be seen in the workforce, despite women attributing to half of the workforce. The article “The STEM Gap: Women and Girls in Science, Technology, Engineering and Math,” published by the American Association of University Women, wrote that “Women make up only 28% of the workforce in …(STEM), and men vastly outnumber women majoring in most STEM fields in college. The gender gaps are particularly high in some of the fastest-growing and highest-paid jobs of the future, like computer science and engineering.” The progress made in STEM helped to increase the number of women in those areas, however, this positive change has only improved the situation in some of the subjects. Jobs such as computer science and engineering, have excessive obstacles that haven't been fought through. This also illustrates the main issue that needs to be addressed, the lack of women in STEM, and that this affects a wide range of young girls, women working toward a degree, and the current workforce in STEM. To solve this issue the root of the problem needs to be addressed, in which the factors causing it would be essential to understand and produce a solution.

There are various factors for what causes the lack of women in STEM, including internal conflict and external views. In Laura McCullough's academic journal, "Women's Leadership in Science, Technology, Engineering & Mathematics: Barriers to Participation" she explains that "The latest research on gender differences in the sciences suggests that covert discrimination, implicit biases,... are some of the current issues hindering women's participation in STEM"(2). The factors depicted in this journal are all external and could be altered by society, for instance, implicit biases stem from stereotypes. Stereotypes including the negativity towards women in STEM can change based on the views and perspectives of people. To narrow down plenty of factors that contribute to this problem, the thoughts of women need to be taken into account to understand their perspective.

Instead of only reading about what women may feel, going to women and seeing what they actually view the problems to really help ensure accuracy. The academic journal "Addressing the Gender Gap: Women's Perceived Barriers to Pursuing STEM Careers" went directly to women and discovered what they recognize as obstacles when pursuing STEM careers which "included: patriarchy, lack of awareness of opportunities, STEM activities and products directed at males, …lack of encouragement and role models/mentors ..."(Swafford and Anderson 67). Looking at the perceived obstacles that women identified, it can be noted that in multiple of the factors, intimidation seems to play a big part, along with lack of guidance. The combination of intimidation without any guidance doesn't give way for girls to stand tall in STEM pathways. Intimidation has been a problem that has affected women's decisions and opportunities in many ways. According to Perrone, many women choose to not follow STEM practices due to the lack of confidence and female role models (Moakler and Kim)**.** Role models have the ability to give females someone to look up to that is similar to them and give them the

assurance that they can pursue and achieve something in STEM. Having someone to encourage them also helps to combat intimidation through reassurance, allowing women to freely choose their career path without the sense of inferiority. Having more females interested in and pursuing STEM fields also positively affects the United States' economy.

Workers with STEM knowledge and skills play an important role in driving innovation and economic growth in America, but the number of students pursuing STEM careers still lags behind the demand both in the United States and internationally (Swafford and Anderson 61). The lack of women in STEM is an issue that America cannot afford to have since they are already behind in the number of STEM workers needed. Clearly, the roots of the American economy results from the success of science and technology. Hence, equal opportunities should be given to everyone, to ensure talented and interested individuals are not overlooked; women should be given the same opportunities as men. Women are not only needed in the fields as leaders but as role models for the next generation of women in STEM as well (McCullough 8). Not only is gender disparity an ethical problem, but it also affects the country on a much more intricate level in the financial aspect. Therefore it is important to have as many people go into STEM fields as possible, including females and minorities.

The increase in females in STEM fields will not only benefit the economy but will benefit the subjects in a deeper aspect. Gender diversity provides science with valuable innovations and brings ideas with alternate perspectives to the table, without diversity these opportunities would be lost (Ortman). With diversity comes unique experiences, thought processes, and world views. The different mindsets and views that it brings are important in order to be able to see and understand the full picture of things, aiding to have more thorough innovations.

The lack of women in STEM is still very apparent, despite the leaps taken to bring us to where we are; the main factors that lead to this big gap are stereotypes, and the lack of confidence, opportunity, and role models. Through organizations and government resources, younger girls will have more opportunities to learn and get excited about STEM, this will help them gain an interest to pursue a STEM pathway.

In order to combat the gender stereotypes in STEM, it is important for young children to learn and help shape their views of STEM in a more beneficial light. Having the mainstream entertainment media support and promote inclusion in STEM through compelling STEM images, stories, and positive messages would help to reach children in a modern and familiar way (United States, Office). This particular course of action is thus more likely to be seen by a wider audience compared to other methods since it adapts to the way kids and teens currently entertain themselves. On the other hand, this limits the viewer to only people who have access to entertainment media, leaving them behind in this big leap forward. Having the media promote these ideas will help to spread the information, but access to activities and resources is also important.

In addition to changing the views on STEM through media, government intervention also helps to bring activities straight to schools. The government should pass the currently introduced bill, "Women and Minorities in STEM Booster Act of 2021," which would help to address the issue of the lack of women in STEM. This bill awards competitive grants to carry out specified STEM-related activities including common factors that cause the lack of women in those fields for example providing girls information, opportunities, and confidence to pursue a STEM pathway (United States, Congress). However, to receive the grant from the government the institution must be eligible, and ultimately ends up being a long process. Due to the excessively

long process through the government, the simple, fast, and easy activities from organizations can be of significant help to aid women in STEM.

Despite the new ways to implement positive views of women in STEM, children need to have the thrill and be stimulated to be aroused in the STEM pathways. The traditional hands-on and fun activities at events help young girls learn and get excited about STEM subjects through more active means (Gilbert). These events help to open girls up to the world of STEM and really engage them, without the pressure of external difficulties, leaving them with a true interest in the subjects. Despite the advantages, finding this opportunity is difficult when it is not as known to the public, and for some children, certain events are too far to attend or they do not have the means to get there.

The lack of women in STEM is a social issue that needs to be addressed. The disparity between men and women in Science, Technology, Engineering, and Mathematics is still very big, not only in the number of degrees awarded but in the workforce as well. Some of the most common reasons for the lack of women in STEM are low confidence, lack of role models, etc. This lack of people joining STEM then leads to negatively affecting the economy. To be able to fix this problem, utilizing mass media would help to attract a wider crowd. While the "Women and Minorities in STEM Booster Act of 2021," could send grants to institutions to use for funding STEM activities. Additionally, events with activities for children to attend would have more hands-on activities and connect more. The solution that seems the most effective would be a combination of media, government, and activities since individually they are not as fruitful but together they are more effective. While the media would help shift perspectives, the activities would help to really pull in girls to explore STEM, however, the implementation of this solution

would take a long time. In spite of the long duration needed to improve the situation, implementing these solutions could help bring it a step closer to that goal.

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