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Women in STEM and Gender Inequality

Today, there is a clear gap between the number of women and men who study STEM in college and eventually work in the field post-graduation. This is not an issue that has just recently begun, rather, it has always been a problem. It is a women's choice on which major they choose, but this choice is heavily influenced by gender bias and other factors that begin in elementary school. Women have the same potential as men in the field of STEM, but are often hesitant to prove it, leading to bigger issues like the wage gap. Because of this, I will look at texts rhetorically to construct a stance in relation to the essays I have analyzed. Yonghong Xu, author of "Focusing on Women in STEM: A Longitudinal Examination of Gender-Based Earning Gap of College Graduates" uses claims of facts from a ten year longitudinal study and his reliability in order to construct his arguments around the underrepresentation of women in these fields. Similarly, author David Beede from the US Department of Commerce who wrote "Women in STEM: A Gender Gap to Innovation" uses the appeals of significance and his credibility to make his claims. After analyzing these sources, I will be able to effectively establish my position in comparison to the two articles and discover ways to incorporate their rhetorical strategies for my final project.

The STEM fields are crucial to global and national development. The opportunities that these fields provide should not be limited to just men, but today they are. As a society, we have cultured the idea that women only belong in fields like education and social work; however, this

inequality does not reflect the progressive country that America is known for. Since the 20th century, America has made adjustments on how to demolish gender inequalities, but the question of the gap still remains. From my research in exercise one, my sources all discussed a few of the factors that contribute to the issue, like male dominancy, lack of female role models, stereotypes both inside and outside the classroom, and family related interruptions. Even though this issue can get complicated, all of these factors contribute to an ongoing cycle of women being discouraged from STEM fields that begins in elementary school and continues through post-graduation. Both of the authors I will analyze use rhetorical skills to discuss how the gender-based earning differences from field selection and its impact on women in STEM. They contribute to the larger conversation by conceptually showing the role of gender inequality in STEM fields and how women are affected by it. This not only frames the larger debate about gender disparity, but increases awareness of the issue.

Yonghong Xu, from the *Journal of Higher Education*, uses claims of fact and his reliability to effectively accomplish an investigation of women in STEM fields. Xu first makes claims of fact to show these issues exist from evidence of his ten-year longitudinal study on the earning gaps of college graduates. His claims of fact are verifiable and objective truths. For example, after research on the STEM wage gap, he found that since 1994 there has been a pattern on STEM men having an annual income that is “22% higher than that of STEM women, which was converted into a 15% gap in pay level once the number of hours worked was controlled for” (Xu, 512). This specific fact is proven by his research study, strengthening his overall point. In addition, he accurately makes claims about the disparity by providing supporting information like “Statistics have shown that women are more likely to attend less selective institutions; and institutional selectivity is considered a potentially salient influence on

the gender-based earning gap for college graduates” (Xu, 493). Furthermore, both these examples support his overall conclusions and prove that he has done his research. These facts can be objectively proven and be recreated which strengthens his claims.

In addition to claims of fact, Xu proves his reliability to the reader throughout the journal article. Yonghong Xu is an Associate Professor in the department of Counseling, Educational Psychology and research at the University of Memphis, which shows that the reader can trust that he knows his information. There is a note at the end of the article that states how the material is supported by a number of organizations like the Association of Institutional Research and the National Center for Education Statistics. The way he organizes his research by providing a preliminary analysis of the data, explains his methods and variables of the study, and then discusses the outcomes of his data with statistics and tables gains approval from the reader. This organization proves Xu’s expertise and the relevance of his analysis, which is essential when conducting a report like this. He also references other sources throughout the text to show that he understands the topic. For example, in order to conduct his study he uses Human Capital Theory (HTC) to evaluate individuals and their monetary benefits. He credits this theory to several other authors, including Daymont & Andrisani, Okamoto and England and Zhang (Xu 490). These authors can be found on the references page at the end of the article. When examining the references as a whole, it is evident his sources are from other scholarly journals and authors. All of these strategies prove his credibility, knowledge and insight on the issues concerning women in STEM fields.

Secondly, David Breede from the US Department of Commerce, creates his argument by relying the significance of his arguments and his credibility. Breede’s arguments align with the previous article and with the articles I used on exercise one. Not only does his argument have a

similar focus compared to the other articles, but he builds on what they have already said. For example, both examine employment for college graduates in STEM fields after graduation. However, he adds information like: “women account for nearly half of employed college graduates age 25 and older, but only 25 percent of employed STEM degree holders and an even smaller share -just about 20 percent – of STEM degree holders working in STEM jobs” (Breede). The additional information proves that Breed has done his research and understands how the conversation works. In addition, as an author for the Journal of Higher Education, Breede proves his credibility. His conclusion paragraphs are particularly strong because he tells the audience what to consider when doing further research on the topics, other than what has been discussed. He states, “While this report does not – and cannot – explain why gender differences in STEM exist, it does aim to provide data and insight that will enable more informed policymaking” (Breede). He wants to reader to know his data is credible; however, that here is more research to be done.

Breede also uses supporting facts, charts and tables to prove the significance of the topics. The issue of gender disparity in STEM fields has been around since the 1900s, but Breede’s evidence makes it clear to the reader that the issue is relevant today. While the brief was published in August of 2011, all of Breede’s research is from 2009. This data is less than ten years old making it a recent and relevant source for readers to get information from. For example, table 1 shows “Total and STEM Employment by Gender and Educational Attainment” from 2000 to 2009. By analyzing the difference between males and females with all workers against STEM workers, the data shows exact quantitative values which are necessary for interpreting the disparity. The table becomes a useful piece of rhetoric because the data proves to be continuous, rather than just discrete since it is longitudinal. This shows how Breede’s overall

arguments around gender disparity is an issue that relevant today. The progression proves that gender bias in STEM fields will continue to create further problems in the future, if no solution is found. For a major research report, data like this becomes extremely useful to interpret.

These two sources approach the issue of the imbalance of women in STEM fields by focusing on the wage gap in society. By examining these two sources and their rhetorical appeals, I am able to use their work to my advantage and further contribute to the conversation. In Xu's article, he uses the rhetorical appeals of claims of facts from a ten-year longitudinal study and his reliability to construct his arguments around the gap. Breede uses the appeals of accuracy and recency to make his claims. All of these rhetorical strategies have taught me the importance of incorporating them into my final paper. Both articles also highlight how a women's choice in studying STEM contributes to the discrepancy in the pay gap and I plan to investigate the possible factors that create this cycle of discouragement from STEM fields beginning in a girl's early educational career. Neither authors heavily a specific factor, they just touched upon which ones are relevant, which is why it will be important to find other journals that do. The gap does not just appear in college, there are factors that cause it beginning in elementary school like bias, stereotypes, role models and opportunity. Both authors have given me a great starting point because of the content and rhetorical appeals, and how my new perspective will fit in the conversation.

In conclusion, even though the majority of people are aware of the imbalance in pay, they are not aware of where the problem begins. Relative to both authors, I plan to position myself in a similar way by agreeing that the gap exists and investigating the earning differences; however, I want to study the roots of the issue. While both authors agree that the wage gap is caused by a number of issues in education, I want to focus on the cycle of discouragement that young girls seem to be thrown into when wanting to pursue a STEM career. The choice of attending college and course of study impacts a women's earnings, and what both authors do not touch upon is how this choice truly begins for a child in elementary school. I want to explore the issues like societal norms deeper that will cause a woman to not choose a STEM career path. Even though this issue of women in STEM fields and how it affects the pay gap is not a new conversation, I plan to bring new insight on the cycle that girls this generation are born into by using the appeals that Xu and Breede apply. This will allow the reader to clearly understand my position on the issue and the purpose I will establish.

Works Cited

- Beede, David N. "Women in STEM: A Gender Gap to Innovation." SSRN Electronic Journal, 2011, doi:10.2139/ssrn.1964782.
- Yonghong, Xu. "Focusing on Women in STEM: A Longitudinal Examination of Gender-Based Earning Gap of College Graduates." *Journal of Higher Education*, vol. 86, no. 4, Jul/Aug2015, pp. 489-523. EBSCOhost, search.ebscohost.com/login.aspx?direct=true&db=aph&AN=103183787&site=ehost-live.