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2018

Women in Science: Why So Few? [Liberal Arts: Math and Science]

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Assignment Description

This assignment was designed for students in LMF 101 (First-Year Seminar for Liberal Arts: Math & Science) and is conducted in conjunction with students from a capstone course, LIB 200 (Science, Technology, and Humanism). The assignment aligns with the Inquiry and Problem-Solving Core Competency and the Written Ability. In this assignment, LMF 101 students research and read several articles centered on the topic of Women in STEM. They then write an essay that integrates the information from these sources to address the history, biases, and potential causes of the underrepresentation of Women in STEM. LIB 200 students peer review these essays, and LMF 101 students, in turn, respond to these peer reviews. The assignment concludes with a combined class discussion on the topic and the process. The overall goals for this assignment include the following:

1. Students will utilize the appropriate library search engines to find a resource relevant to a particular topic.
2. Students will analyze and integrate evidence from multiple sources on a complicated topic, and they will use the evidence they gathered to answer questions and arrive at logical conclusions.
3. Students will assess the reliability of data and/or claims made in the literature.
4. Students will cite sources appropriately.
5. Students will understand the importance of peer review, understand how constructive criticism can help improve scholarly work, and learn how to respond to feedback in ways to improve the outcome of their work.

Students can be engaged in a variety of activities centered around Women in STEM in addition to this assignment. Sample activities can be found at https://academicworks.cuny.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1013&context=lg_oers

The article included for this assignment can also be used as a reflection as described in the previously published assignment found in the link above. We recommend that faculty schedule the library workshop for LMF students early in the semester, so that instructors have ample time to provide feedback to students on their sources.

LMF 101 is a dynamic course with a variety of objectives; this assignment is aligned with students' ability to utilize on-campus resources, the foundational knowledge in mathematics and

science associated with the interpretation, critical thinking, synthesis, analysis, reflection and evaluation, and the ability to understand differences in culture and perspective. This assignment encompasses 10% of the overall grade in this course.

The LIB 200 course centers around gender and women's studies in spoken and written format. Students learn about the status of women in STEM fields, analyze the underrepresentation of women in STEM and its implications on the need for a diverse workforce. Students also learn about feminism, the first and second waves of feminism, title IX, and sexual harassment. Students need to frame the contributions of famous women in Science in historical context. They should also be able to use constructive criticism to provide LMF peers with valuable feedback.

Peer review Part:

This project was part of a mini-grant that aimed to provide the Liberal Arts experience to students across the academic spectrum, and the peer-review process is meant to facilitate this aspect of the assignment. You might want to incorporate at least a peer-to-peer feedback report within the same class if your class is not part of a collaboration. You would just need to modify the peer review process as you see fit. We believe this process is important, and we suggest you show LMF students an actual cover letter that you have used when revising your manuscript, and the feedback you received from reviewers. Students enjoyed this activity because they felt it was real. Explain to them the process and how most manuscripts must undergo several rounds of revisions before publication.

Timeline:

Week 1: Students are introduced to the nature of the scientific process, types of resources (primary, secondary), and how to conduct library searches (reserve library orientation session). Assignment is described to students.

Week 3: Research summary is due. Summaries are distributed to LIB 200 students.

Week 5: LIB 200 students peer reviews due.

Week 7: LMF 101 responses to peer reviews due. In-class discussion on the topic is conducted.

The reading should be discussed in class. Once done, students should be able to complete the assignment in a week.

LMF 101 Course Goals Associated with Assignment:

1. Demonstrate understanding of habits of mind essential to college success (eg, persistence, flexibility, and metacognition) and foundational knowledge in mathematics and science.
2. Interpret the values and ethics of mathematics and science and discuss how these values and ethics directly influence personal, academic, and professional success in their careers.

3. Demonstrate an understanding of the structure and logic of technical writing; show a basic level of proficiency in the fundamental writing, reading and speaking skills necessary to deliver information in a contextual and coherent manner.
4. Demonstrate the use of skills and knowledge gained from diverse experiences to enhance learning and success.
5. Describe the diversity of LaGuardia Community College and demonstrate capacities to collaborate across differences in culture and perspective.

LIB 200 Course Goals Associated with Assignment

1. Identify the terminology and concepts central to the field of gender and women's studies students.
2. Identify and understand the challenges and the historical frame of the underrepresentation of women across STEM fields.
3. Research and value the contributions of women to STEM fields.
4. Examine and interpret material using the theory and research methods of gender and women's studies and apply these ideas to current social issues.
5. Present ideas concerning gender and women's studies in spoken and written presentations.

Research Summary: Women in STEM

Inquiry and Problem Solving in the Written Modality

Step #1:

For this assignment you will read the following article: "Why are there still so few women in science?" by Eileen Pollack. In addition, you will look for at least one more article (through a library search engine) that addresses the topic of Women in STEM. Based on these articles you will write a 2-4-page essay. In this essay, you must address the questions outlined below, making sure to appropriately cite your sources. You must utilize and cite all of your sources in your essay using in-text citations. You must also compile the list of sources in a bibliography. Please use APA format. The Pollack article can be found here:

<http://www.nytimes.com/2013/10/06/magazine/why-are-there-still-so-few-women-in-science.html?pagewanted=all>

Note: When you are using the library search engine, think about the different angles we used to cover the topic. Which aspect fascinated you the most? Which aspect of the under-representation would you like to research further? Choose a paper that speaks to your interests.

In the past students have chosen papers across the spectrum such as: the underrepresentation of women of color in STEM, how awareness about gender roles and stereotypes about science careers may help women, how identity may predict future career choices, the effects of gender composition on group studies in STEM, etc.

Guiding questions:

- Why are there so few women in science?
- Is there bias against women in science? Based on your answer, what facts do or do not back this claim?
- Do the same challenges that women in science face currently exist as they did years ago? Is there evidence to suggest that things are getting better? Why or why not?
- Pollack, in her article, cites the work of some who claim that “no real harm is done if women choose not to go into science.” What do you think about this claim? Do you think society benefits from a greater number of women in science? Why or why not?
- For any article it is always important to consider whether the facts/data presented are reliable. For those papers that you read, do they seem reliable? Why or why not?

Step #2:

A capstone student in LIB 200 will be a peer-reviewer, and he/she will critique your work. After you receive your peer reviews, you will have a chance to modify your work based on their review. In addition, you will respond to each of their concerns about your essay in a cover letter. In your cover letter, you will explain why you did or did not take into account each of their suggestions, explaining your reasoning behind each decision. A revised version of your assignment must be uploaded on e portfolio.

Research Paper Rubric

Adapted from: [https://www.cte.cornell.edu/documents/Science Rubrics.pdf](https://www.cte.cornell.edu/documents/Science%20Rubrics.pdf)

Category	Exceeds Standard	Meets Standard	Nearly Meets Standard	Does Not Meet Standard
Thesis statement	Clearly and concisely states the paper's purpose in a single sentence, which is engaging and thought provoking.	Clearly states the paper's purpose in a single sentence	Thesis statement is incomplete and/or unfocused	Absent, no evidence
Introduction	The introduction is engaging, states the main topic, and previews the structure of the paper.	The introduction states the main topic and previews the structure of the paper.	The introduction states the main topic but does not adequately preview the structure of the paper.	There is no clear introduction or main topic, and the structure of the paper is missing.
Body	Each paragraph has thoughtful supporting detail sentences that develop the main idea.	Each paragraph has sufficient detail sentences that develop the main idea.	Each paragraph lacks supporting detail for the main idea.	Each paragraph fails to develop the main idea.

Organization, development of idea	Writer demonstrates logical and subtle sequencing of ideas through well-developed paragraphs; transitions are used to enhance organization. Argument is well-developed.	Paragraph development present but not perfected, but logical argument still follows.	Logical organization; organization of ideas not fully developed.	No evidence of structure or organization, argument is illogical or has no basis.
Conclusion	The conclusion is engaging and restates the thesis.	The conclusion restates the thesis.	The conclusion does not adequately restate the thesis.	Incomplete and/or unfocused. No firm commitment to thesis.
Mechanics	No errors in punctuation, capitalization, and spelling.	Very few errors in punctuation, capitalization, and spelling.	Many errors in punctuation, capitalization, and spelling.	Numerous and distracting errors in punctuation, capitalization, and spelling.
Usage	No errors in sentence structure and usage.	Very few errors in sentence structure and usage.	Many errors in sentence structure and usage.	Numerous and distracting errors in sentence structure and usage.
Citation	All cited works are done in the correct format with no errors.	Some cited works are done in the incorrect format.	Few cited works are done in the correct format, inconsistencies evident.	Absent
Bibliography	Done in the correct format with no errors. Includes correct number of references that are relevant to the study and no prohibited references.	Done in the correct format with few errors. Includes correct number of references that are relevant to the study and no prohibited references.	Done in the correct format, but with many errors. Includes few references, or references that are irrelevant to the topic.	Absent, or includes no relevant references.