2017

Learning About Women in STEM for First-Year Students [Liberal Arts: Math and Science]

Reem Jaafar

Ian Alberts
CUNY La Guardia Community College

This assignment consists of in-class activities, discussions and take-home assignments. It makes sense for students to complete it as two separate assignments: one as a reflection and one as a research summary. These assignments are part of the LMF syllabus.

In-Class (Lab hour) (1hour activity using Excel)

1) **Play a little! Let's guess what percentage of**

    i)   ---- physicists and astronomers are women;
    ii)   ---- chemical engineers are women;
    iii)   ---- electrical or computer hardware engineers are women; and
    iv)   ---- mechanical engineers are women.

2) Read the tabulated data carefully
http://www.nsf.gov/statistics/seind14/content/chapter-2/at02-17.pdf
What information does the table present?

3)

a) Fill Table 1 below (be careful, start **from 2001).**
Table 1:

Year	Label	Males who earned bachelor's degrees in Psychology	Males who earned bachelor's degrees in Engineering	Females who earned bachelor's degrees in Psychology	Females who earned bachelor's degrees in Engineering
2001	0				
2002	1				
2003	2				
2004	3				
2005	4				
2006	5				
2007	6				
2008	7				
2009	8				
2010	9				
2011	10				

b) Using Excel, Graph the number of **Males** who earned bachelor's degrees in **Psychology** versus the year (starting with year 0 in 2001 as indicated). <u>Find the best linear fit.</u>

c) Graph the number of **Males** who earned bachelor's degrees in **Engineering** versus the year. <u>Find the best linear fit.</u>

d) Using Excel Graph the number **of females** who earned bachelor's degrees in **Psychology** versus the year (starting with year 0 in 2001 as indicated). <u>Find the best linear fit.</u>

e) Compare the rate of increase of the three graphs. Interpret in terms of the slope.

f) What trend do you notice?

<p style="text-align:center">• •</p>

<p style="text-align:center">• •</p>

Reflection

It is a well-known fact that men outnumber women in fields such as Sciences and Engineering.

Read the article: Why Are There Still So Few Women in Science?

The article can be found at: http://www.nytimes.com/2013/10/06/magazine/why-are-there-still-so-few-women-in-science.html?pagewanted=all

By EILEEN POLLACK

Answer in complete sentences (during class based on class discussion on the NYTimes article)

1) The author claims that there is a bias against women scientists. What facts in the text back this claim?

2) What are the reasons cited why there are few women in Science? Are you surprised? What are other reasons why you think this is the case?

3) What were the author's challenges as an undergraduate student at Yale?

4) Do these challenges exist today? In what sense have things changed?

5) How was the author impacted by her professors (both positively and negatively)?

6) Why did the author decide to finally write her article?

7) Do cultural signals affect student's ability to perform on an exam? Explain.

8) The text cites the work of some who claim that **"**no real harm is done if women choose not to go into science." Explain the finding of that work. Does the author agree with it? What do you think about it, that is, do you think society needs more women in science? Why or why not?

Towards the end, the article states:

"As so many studies have demonstrated, success in math and the hard sciences, far from being a matter of gender, is almost entirely dependent on culture — a culture that teaches girls math isn't cool and no one will date them if they excel in physics; a culture in which professors rarely encourage their female students to continue on for advanced degrees; a culture in which success in graduate school is a matter of isolation, competition and ridiculously long hours in the lab; a culture in which female scientists are hired less frequently than men, earn less money and are allotted fewer resources."

Given <u>your own culture</u>, to what extent do you see the statement applicable to you? Write a one-page essay (600 to 900 words) explaining the influence of culture on your career choice and whether you think it might have impacted your decision to major or not to major in science. In your essay, explain how you have decided to choose your own career path, and address how the Math and Science courses you have taken at LaGuardia so far have impacted your thoughts/beliefs about your potential career.

Upload the essay to your ePortfolio.

● ●

● ●

Research Summary

Discussion: In the New York Times article, the author discusses her decision not to pursue a degree in STEM despite having a degree in the field. Can you name one famous woman scientist? What era did she live in? How did she excel?

Online Pdf Book:
Nobel Prize Women in Science. *Their Lives, Struggles, and Momentous Discoveries* by Sharon Bertsch McGrayne
Read section 1: "A Passion for Discovery" pp. 3-8 (Read & Distributed in Class; you can also find it in the book sent as a pdf).
Answer the questions below (100-150 words per question for questions 1 through 4 and 250-400 words for question 5). Please write FULL and Complete Sentences.

1. Why have so few women won Nobel Prizes in science?

2. List some obstacles these women faced.

3. What were the main differences between Europe and the US?

4. What were some of the factors that helped these female scientists succeed?

5. Did you experience any obstacles in choosing your major and/or career path? What were they and how did you overcome them?

6. Chose one female scientist from First Generation Pioneers or Second Generation or The New Generation. Read her biography. Summarize it and explain what aspect you found most interesting or fascinating about her.

Oral Presentation

Based on your selection, pick one Nobel Prize winner who you think of as a role model. Give a 90 second presentation to the class (without any ppt) about this winner and explain what you found most interesting about her, and how her story may relate to you.