



# Women and Minorities in Technology: With Focus on Local Schools

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This is an ongoing project that will take several years to complete. The core of this study is to look at four local junior and senior high schools and find out the factors that affect female and minority groups in choosing their future education and career path. One way to accomplish this task, is to look at the guidance the students get from their counselors, existing programs in schools, and the way students' interests change as they move on to higher grades. The lack of females and minorities going to scientific and technological fields requires more proactive attention nation wide.

**INTRODUCTION**

As a woman growing in a male dominant society, I was troubled by the discriminatory attitude towards women. Gender based bias was embedded in every aspect of women's life, from their marriage, to proper behavior, and suitable jobs. Birth of a baby girl was never a cause for great celebration! Some families kept bearing children until they had a son! In such a society, I decided to go to an engineering school, and continued my education in computer science. I was determined to prove that girls could do whatever boys did and even more. When I married and moved to U.S. 25 years ago, I found out that the western culture has similar stereotypes for women! I also realized that because of lost opportunities there were very few minorities in colleges, especially in science and technology. Things have changed since, but minorities and women still have a long way to go to.

**BACKGROUND**

The gender and race schema (the preset attitude about gender and race) has been woven into the minds and hearts of the society including parents and teachers who have a direct impact on young children and transfer their own biases to the next generation. Gender schema exists even among those who consider themselves equalitarian. From very early age teachers and parents encourage boys' competitive and aggressive behavior by giving them special attention, but for girls such behavior is discouraged and not acceptable (Valian, 1999).

Parents do treat their children similarly in many domains, but in the area of gender they do not. Their own gender schema makes them blind to the specific ways they perceive and treat children differently. This is true with regards to the race schema as well. Many parents transfer their own biases about race to their children merely to protect them from discriminatory hurts in society! The data available since 1947 throughout 1980 on standardized testing in Grades 8 through 12 shows a dramatic decline in sex difference in test results (Feingold 1988). In 1947 for example, tests of verbal reasoning, abstract reasoning, and the ability to deal with numbers showed higher performance by boys. In 1980, those differences had been decreased, and numerical ability showed higher performance by girls. By 1980, similar tests in which girls were superior to boys in 1947, showed declining sex differences. This diminution is good evidence, that some portion of cognitive differences is socially constructed (Valian, 1999).

Some educators and sociologists suggest that women and minorities suffer in groups where they are present in small numbers. Significant improvement in performance appears as the ratio of minority to majority members improve (Etzkowitz, Kemelgor & Uzzi 2000).

**DESCRIPTION**

This project focuses on four local junior and senior high schools in Lafayette, and West Lafayette, Indiana, where I reside. These two cities are separated by Wabash river, and share a lot of resources. Having the Purdue University's main campus located in West Lafayette, makes a big difference in the quality of education in West Lafayette schools. My goal is to analyze the existing programs, and give suggestions to schools to encourage the girls and minorities' participation in scientific and technological fields. To find out more about the existing programs, and determine the factors that play a role for girls and minorities in making a decision, I have designed a questionnaire to be given to the counselors in local schools.

**The Questionnaire For Counselors**

1. How many students are registered in your Junior and Senior high school?
2. What percentage of your students goes to college after graduation?
3. What percentage of the graduating students are girls?
4. What percentage of the graduating students are minorities?
5. What percentage of the graduating students goes to college to pursue science and technology?
  - a. What percentage of these students are girls?
  - b. What percentage of these students are minorities?
6. Do you have programs designed for women and minorities' advancement in science and technology?
7. How do you advise students to decide the fields of studies?
8. In computer programming course(s), what percentage of students are girls or minorities?
9. In accelerated math and science courses, what percentage of students are girls or minorities?
10. In your opinion, what are the fields in which girls will most likely succeed?
11. In your opinion, what are the fields in which minorities will most likely succeed?

The West Lafayette high school has provided me with answers. I am awaiting the responses from other schools.

I have also designed a questionnaire for students. This questionnaire will be given to all the girl and minority students in 8th grade, this year. A follow up questionnaire will be given to them, each year as they move on to higher grades until their senior year. This way one can observe the changes in this group's thought process as they approach their graduation from high school.

**The Questionnaire For Students**

1. What subjects are you interested in?
2. Are you good in math?
3. Are you good in science?
4. What do you think of those students who are good in math or science?
5. Are you planning to go to college after graduation?
6. If you are not planning to go to college, is financial constraint a factor in that decision?
7. Would you be interested in continuing your education in a scientific or technical field? If your answer is no, please give a brief explanation.
8. Do you have a clear idea about what you would like to study once you enter college?

9. Do your teachers/counselors help you determine your academic goals?
10. What kind of job would you like to do when you finish your studies?
11. What kind of job does your family like you to do?

### CONCLUSION

In summary, parents and teachers perceive the children with their own race and gender schema, which affect the perception of the children from what they can achieve in life. This in turn influences children's ability and interests in academics. It is crucial for the educators to be aware of the biases that exist in society about race and gender. Having programs that promotes the participation of female and minority students in scientific and technological fields will encourage these students by giving them a chance to interact with other members of their own minority group and form their future goals. It is impera-

tive to invite women or minorities in technical fields to go and talk to these students in high schools, and share their experiences and accomplishments with them. Purdue University's main campus located in West Lafayette provides a good source for such programs. Girls and minority groups deserve getting the attention that they have been denied for decades. We as educators play a big role in achieving this goal.

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