CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

S0416

Project Title

Gender Bender: A Study on Teacher Gender, Student Gender, and Academic Achievement in STEM

Abstract

Objectives/Goals

The purpose was to examine the relationship between teacher gender, student gender, and performance in STEM.

Methods/Materials

Two large counties in California, Alameda and Los Angeles, were selected via Simple Random Sample. Data on male and female performance on the 8th grade CST Life Science Exam was collected for every middle school in Los Angeles and Alameda County using the online STAR database. Each school was contacted to acquire data on teacher gender. Based on the genders of 8th grade Life Science teachers, each school was categorized into five main categories: Male(M), Majority Male(mM), Equal(E), Majority Female(mF), Female(F).

Results

Based on the 2-Samp Z test comparing the average test score of all 8th grade males and all 8th grade females on the CST Life Science exam, there is a significant difference between the two scores (z=8.3843, df=464, p=2.5807x10^-17). The 2-Samp Z tests comparing the average test score of males and females within each category (M, mM, E, mF, F) verified this conclusion. Males consistently outperformed females.

There was also a significant difference in student performance within each category, that is both male and female performance differed greatly based on the gender of the instructor. The ANOVA test comparing the average score of males in each category indicated a significant difference in male achievement based on the gender of the teacher (F=8.143, df=4, p=2.38x10^-6). The ANOVA test comparing the average score of females in each category also indicated a significant difference in female achievement based on the gender of the teacher (F=8.025, p=2.93x10^-6). Robustness tests conducted on the results verified the accuracy of the values.

Conclusions/Discussion

A thorough statistical analysis of the data exhibits that in general, males outperform females in STEM subjects. The study also suggest that students tend to perform better when instructed by a teacher of the same gender, i.e. females perform better when taught by females while males perform better when taught by males. Despite the results of this study, further experimentation is necessary before considering gender based classrooms and promulgating such findings.

Summary Statement

The project is an examination of the relationship between teacher gender, student gender and STEM performance.

Help Received

Mother helped collect data. Father helped with board.