

Gender Differences in Mathematics Achievement among Engineering Students

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Abstract-

Recent research on the gender gap in mathematics achievement [1] has found no differences among Spanish undergraduate students in business administration degrees. This study aims to replicate the aforementioned work in an engineering school, which differs notably in its sample composition: a lower percentage of female students and a higher proportion of top-performing students in mathematics. Combining regression models with NeuralSens, a state-of-the-art algorithm based on interpretable neural networks, we analyze the academic achievement in two first-year mathematics courses (Algebra and Calculus) and one second-year course (Differential Equations), considering a sample of 1,832 undergraduate engineering students. NeuralSens is employed to verify that the linear regression specification captures the underlying relationships and that no relevant nonlinear effects have been omitted. Overall, female students perform as well as, or slightly better than, their male peers across the three courses, although the effect sizes are small. These results hold even in a context traditionally considered unfavorable to female students. Our findings highlight the importance of using comprehensive and continuous evaluation methods over isolated standardized tests when assessing mathematics achievement and suggest that female students' performance in engineering programs is not inferior when proper assessment methods are employed.

Index Terms- Engineering, gender differences, academic achievement, mathematics, performance measurement

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