

Abstract Submitted
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The Effect of Prior Knowledge and Gender on Physics Achievement JOHN STEWART, RACHEL HENDERSON, West Virginia University — Gender differences on the Conceptual Survey in Electricity and Magnetism (CSEM) have been extensively studied. Ten semesters ($N=1621$) of CSEM data is presented showing male students outperform female students on the CSEM posttest by 5% ($p < .001$). Male students also outperform female students on qualitative in-semester test questions by 3% ($p = .004$), but no significant difference between male and female students was found on quantitative test questions. Male students enter the class with superior prior preparation in the subject and score 4% higher on the CSEM pretest ($p < .001$). If the sample is restricted to students with little prior knowledge who answer no more than 8 of the 32 questions correctly ($N=822$), male and female differences on the CSEM and qualitative test questions cease to be significant. This suggests no intrinsic gender bias exists in the CSEM itself and that gender differences are the result of prior preparation measured by CSEM pretest score. Gender differences between male and female students increase with pretest score. Regression analyses are presented to further explore interactions between preparation, gender, and achievement.

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