Who Benefits? Student Achievement in Flipped and Traditional College Algebra by Gender and Ethnicity

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Active learning in postsecondary mathematics has been established as a pedagogical tool that can contribute to more equitable outcomes for historically underrepresented students. The 2014 Freeman report calls upon the mathematics education community to engage in a second generation of research to explore the efficacy of different active learning techniques, particularly for underrepresented minority groups. In this article, we consider the academic outcomes in flipped and traditional lecture pedagogy college algebra courses by gender and ethnicity at a large urban Hispanic-Serving Institution. This study took place over four semesters and included 3,836 college algebra student attempts. The results show that pass rates in the flipped setting were higher for both male and female students than in traditional lecture pedagogy courses. Similarly, pass rates increased for both White/non-Hispanic and Hispanic/Latinx students in flipped courses, with a larger difference for Hispanic/Latinx students. When considering gender and ethnicity, the difference favoring the flipped setting was significant for Hispanic/Latinx females. We conclude that the flipped model in this study led to improved academic outcomes in college algebra for students overall, with a larger increase for Hispanic/Latinx students.

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