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Comparison of Student Perceptions of Flipped Teaching in Undergraduate STEM Courses Across Two Institutions

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Abstract

Flipped teaching (FT) creates an environment to actively engage the learner as opposed to the often passive learning experience of traditional lecture-based teaching (TT). Evidence has shown that FT can increase student engagement when lecture is shifted outside of the classroom through pre-class activities while spending in-class time working on activities at higher Bloom's taxonomy levels. Research is lacking on which student population would benefit most from the FT. Six faculty from a four-year institution and six faculty from a two-year community college from STEM disciplines were selected to complete faculty development training on FT techniques. Upon completion of their training, faculty implemented FT in their classrooms the following semester. Student surveys were administered in each of these classes at the end of the semester. Students' perception of engagement in the university STEM classes was significantly higher ($p<0.0001$) compared to community college STEM classes. Similarly, the university students' level of confidence with the course material was significantly higher ($p=0.0002$) compared to the community college students. When overall attitude toward FT was assessed, the university students had a significantly more favorable attitude ($p<0.0001$) than the community college students. University students were significantly more likely to take another flipped course ($p=0.0001$) as well as recommend another student to take a flipped course ($p<0.0001$) than the community college students. Based on these results we conclude that students in the university setting have a more positive and receptive attitude toward FT compared to community college students.

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