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**On flipping first-semester calculus: a case study.**

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Summary: High failure rates in calculus have plagued students, teachers, and administrators for decades, while science, technology, engineering, and mathematics programmes continue to suffer from low enrollments and high attrition. In an effort to affect this reality, some educators are ‘flipping’ (or inverting) their classrooms. By flipping, we mean administering course content outside of the classroom and replacing the traditional in-class lectures with discussion, practice, group work, and other elements of active learning. This paper presents the major results from a three-year study of a flipped, first-semester calculus course at a small, comprehensive, American university with a well-known engineering programme. The data we have collected help quantify the positive and substantial effects of our flipped calculus course on failure rates, scores on the common final exam, student opinion of calculus, teacher impact on measurable outcomes, and success in second-semester calculus. While flipping may not be suitable for every teacher, every student, and in every situation, this report provides some evidence that it may be a viable option for those seeking an alternative to the traditional lecture model.

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