

1106-R1-532

**Joseph Phillip Brennan\*** (jbrennan@binghamton.edu), Binghamton, NY , and **Laura Anderson.** *SUNY Binghamton's Hybrid Approach to Teaching Calculus.*

At Binghamton, Calculus 1 is taught to over 1,000 students each fall. The satisfaction and performance of students in this course is often poor. We had hoped to improve student success by changing how we teach and not by lowering our standards.

In the fall of 2013 the Binghamton University Department of Mathematical Sciences undertook an experiment in flipped teaching with Calculus 1. We wanted to compare flipped and our traditional methods in several respects:

- Which method leads to better student performance in terms of computational ability? In terms of more in-depth problem-solving ability? conceptual understanding? performance in Calculus 2?
- Were the answers to the above questions different for students coming in with weaker math skills than the norm? Were they different for people seeing Calculus for the first time than for those with a high-school calculus course behind them?

Overall, our quantitative analysis found moderate benefits to flipping over traditional methods for all groups studied. Informally, while student opinion varied, instructors largely were quite positive, finding that their students were more engaged and that instructors were able to give students more individualized attention. (Received September 01, 2014)