In the fall of 2014, over 700 students participated in an experiment testing the efficacy of the flip-mastery model in teaching calculus. Four instructors taught two at least two classes each — the first a traditional lecture-style class and the second a flipped class. Graduate students created an online content-delivery and homework system giving the students a single website on which they could learn new material and answer homework problems. In this talk I will show how we combined a flipped classroom with mastery learning techniques and discuss some of our results. (Received September 20, 2016)