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What outcomes might we anticipate from students engaging concurrently with modeling and differential equations content?

There is always some debate about whether differential equations content should be taught before modeling or whether the content should be discovered through modeling. In this session, I will first present an overview of mathematical modeling that emphasizes students' mathematical thinking during modeling. I will then present examples from two recent educational studies of students engaging with differential equations content without having learned the content first. The first examines learning outcomes in an undergraduate classroom where the instructor maintained emphasis on the relationship between real world conditions and assumptions and mathematical properties and parameters. The second examines the self-confidence of student teams and their teacher-leaders as they participated in an extracurricular modeling competition. (Received September 24, 2017)