

Abstract Submitted
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Methods to Improve Performance of Students with Weaker Math Skills in an Algebra-based Physics Course LEIGH SMITH, Dept of Physics, Univ of Cincinnati — I will describe methods used at the University of Cincinnati to enhance student success in an algebra-based physics course. The first method is to use ALEKS, an adaptive online mathematics tutorial engine, before the term begins. Approximately three to four weeks before the beginning of the term, the professor in the course emails all of the students in the course informing them of the possibility of improving their math proficiency by using ALEKS. Using only a minimal reward on homework, we have achieved a 70% response rate with students spending an average of 8 hours working on their math skills before classes start. The second method is to use a flipped classroom approach. The class of 135 meets in a tiered classroom twice per week for two hours. Over the previous weekend students spend approximately 2 hours reading the book, taking short multiple choice conceptual quizzes, and viewing videos covering the material. In class, students use Learning Catalytics to work through homework problems in groups, guided by the instructor and one learning assistant. Using these interventions, we have reduced the student DWF rate (the fraction of students receiving a D or lower in the class) from an historical average of 35 to 40% to less than 20%.

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