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**A Proactive Approach for Improving the Mathematical Foundation of Students Taking College Physics** LEIGH SMITH, JAMES SULLIVAN, HOWARD JACKSON, Department of Physics, University of Cincinnati, Cincinnati, OH 45221 — We report on preliminary results using the mathematics teaching program ALEKS (see [aleks.com](http://aleks.com)) along with the use of Just-in-Time-Teaching (JiTT) and Peer Instruction (PI) to improve the performance of students in College Physics, an algebra-based course. ALEKS, an adaptive program based on artificial intelligence and long-used in the mathematics community, was made available to students 5 weeks ahead of the first class session with participation encouraged by the award of a small class credit. Student participation and engagement was remarkable with many students making significant gains in their mathematics performance. Preliminary data suggests that performance on the first midterm was strongly correlated with performance within ALEKS. The use of JiTT and PI in two out of the four classes suggested overall a modest increase over standard lecture sections, but with women performing significantly better in these classes. We acknowledge the financial support of McGraw-Hill and ALEKS and the National Science Foundation through CCLI grant DUE-1022563.

Leigh Smith  
Department of Physics, University of Cincinnati, Cincinnati, OH 45221

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