

Abstract Submitted  
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**Modeling Applied to Problem Solving** ANDREW PAWL, ANALIA BARRANTES, DAVID E. PRITCHARD, Massachusetts Institute of Technology — Modeling Applied to Problem Solving (MAPS) is a pedagogy that helps students transfer instruction to problem solving in an expert-like manner. Declarative and Procedural syllabus content is organized and learned (not discovered) as a hierarchy of General Models. Students solve problems using an explicit Problem Modeling Rubric that begins with System, Interactions and Model (S.I.M.). System and Interactions are emphasized as the key to a strategic description of the system and the identification of the appropriate General Model to apply to the problem. We have employed the pedagogy in a three-week review course for students who received a D in mechanics. The course was assessed by a final exam retest as well as pre and post C-LASS surveys, yielding a one standard deviation improvement in the students' ability to solve final exam problems and a statistically significant positive shift in 7 of the 9 categories in the C-LASS.

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