

Abstract for an Invited Paper  
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**Modeling modeling: Facilitating student construction of scientific models<sup>1</sup>**

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An important thrust of investigations of student learning in physics has focused on cognitive aspects. Much less research has targeted the determination of the extent to which students in physics courses are successful in understanding the nature of the whole endeavor of physics: the construction and application of robust scientific models. We have found that many students emerge from their classes with little understanding of how a model they have studied is constructed or how to express the overarching strands of a specific model. We have also found that helping students deepen their conceptual understanding and hone their problem solving skills provides a necessary but not sufficient preparation for this task. Explicit instruction is required. In this talk, results of studies conducted at all levels will be presented and implications for instruction will be discussed.

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