



**August 4-5, 2004**  
**California State**  
**University, Sacramento**

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***Targeted Poster Session: TP-A***

**Challenges for the PER Community: An Exploration of Common Assumptions, Open Questions, and Current Controversies**

**Organizer: Paula Heron ([pheron@dirac.phys.washington.edu](mailto:pheron@dirac.phys.washington.edu)), Univ. of Washington**

**Where: Summit Room**

**When: 8:15 – 9:45 & 3:45 – 5:15, Thursday, August 5**

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Targeted poster sessions combine the graphic display of materials with the opportunity for discussion of the research. Sessions are organized around a common theme or body of work. Presenters introduce their posters with brief opening statements and end the session with a panel discussion of the research. The remaining time allows attendees to visit posters. Although it is not a requirement, all targeted poster session presenters are urged to present their research from the perspective of transfer of learning.

**Goal:** In this Targeted Poster Session, we will each identify specific common assumptions, open questions, or current controversies and argue the need for their illumination through research. We will challenge the community to tackle these issues and propose some initial steps. Participants in the session will be invited to refine and/or redirect these challenges, and pose additional ones of their own. The goal will be to stimulate research on some issues of importance for the field.

**Individual Poster Abstracts**

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## TP-A2

### **How Do You Hit a Moving Target? Addressing the Dynamics of Students' Thinking**

*David Meltzer* ([dem@iastate.edu](mailto:dem@iastate.edu)), Iowa State University

**Abstract:** From the standpoint both of research and instruction, the variable and dynamic nature of students' thought processes poses a significant challenge to PER. It is difficult merely to assess and characterize the diverse phases of students' thinking as they gain and express understanding of a concept. (We might call this the “kinematics” of students' thought processes.) Much harder still is uncovering the various factors (instructional method, student characteristics, etc.) that influence and determine the trajectory of students' thinking, and deciphering the mutual interaction of these factors. (We could call this the “dynamics” of students' thinking.) I will outline some of the initial work that has been done along these lines by various researchers, and I will identify some directions for future research that I think might be fruitful for workers in PER .