

How Do You Hit A Moving Target? Addressing The Dynamics Of Students' Thinking

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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. (We could call this the "dynamics" of students' thinking.) The task of deciphering the mutual interaction of these factors adds to the challenge. 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.