

Abstract Submitted  
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**Assessing effectiveness of lab curriculum in promoting student understanding of kinematics** CHANDLER DENNISON, EMILY GRANSTON, ANDREW BOUDREAUX, Western Washington Univ — Prior research in physics education has identified specific aspects of the concepts of velocity and acceleration that introductory calculus-based physics (ICBP) students tend to struggle with (Trowbridge and McDermott, 1980, 1981; Shaffer and McDermott, 2005). At Western Washington University, ICBP students complete guided inquiry labs that target these difficulties explicitly. The labs draw on and adapt existing research based curricula such as *Tutorials in Introductory Physics* (McDermott and Shaffer, 2001), use MBL sensors for real time data collection, include targeted use of PhET simulators, and ask students to reflect on changes in their understanding. Student learning has been assessed by administering free-response pre- and posttest questions similar to those used in prior studies. Three researchers collaboratively constructed rubrics to categorize student responses. Interrater reliability was found to be greater than 85%. Results of the data will be presented as evidence for the effectiveness of the kinematics lab activities.

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