Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Parallel Performance Analysis between Free Response Environments and the Force Concept Inventory in Introductory Mechanics Courses NICOLE BOBBITT, AARON WADE, CHANDRA PRAYAGA, University of West Florida — This paper reports our attempts to: 1) create a problem solving situation that folds in both kinematics and force discussions 2) find a way to model and predict common thought processes that cause typical misconceptions identified by the Force Concept Inventory (FCI). Two pen and paper test questions were designed with these goals in mind, both broken into specific elements to arrive at a quantifiable fragmentation of the necessary thought processes required to solve the problem. These results were compared to pre- and post-FCI data to analyze the common misconceptions as defined by FCI. The data was analysed using factor analysis to group performance across the two environments. Two styles of grading were used to highlight the effectiveness of this method. Ultimately this, and any future questions, would become a tool in the classroom to pinpoint the critical ideas with which a typical student struggles during an introductory mechanics course.

Nicole Bobbitt
University of West Florida

Date submitted: 28 Nov 2012 Electronic form version 1.4