A106 11:45 a.m. Variability in Student Learning Associated with Diverse Modes of Representation*

David E. Meltzer; Iowa State Univ. Dept. of Physics and Astronomy, Ames, IA 50011-3160; 515-294-9358; fax: 515-294-6027; dem@iastate.edu

Physics instruction employs a variety of representational modes includeing diagrammatic, mathematical/symbolic, graphical, and "verbal" (i.e., oral and written passages employing ordinary language). Instructors attempt to assess students' understanding by observing their problem-solving performance as expressed though use of these diverse representations. I have been investigating possible differences in student learning and student performance associated with one or another representational mode in particular contexts. In the preliminary work reported here, matched sets of virtually identical problems have been presented in two or more representational modes on the same quiz or exam. I will discuss how error rates on problems in one representation compare to those using other representations; initial results suggest differences are small. I will also present data regarding relative degrees of student confidence when using the different representations. Initial results suggest that inter-representational differences on this measure might, in some cases, be more pronounced than are error rates.

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