Abstract Submitted
for the SES09 Meeting of
The American Physical Society

Performance of 5000 students in introductory mechanics[1] MARCOS CABALLERO, KEITH BUJAK, Georgia Institute of Technology, MATTHEW KOHLMYER, North Carolina State University, RICHARD CATRAMBONE, M. JACKSON MARR, MICHAEL SCHATZ, Georgia Institute of Technology — We present the performance of nearly 5000 students on a standardized assessment of force and motion (Force Concept Inventory) for two fundamentally different physics curricula; a traditional course based on the Knight text and a reform course based on the text of Chabay and Sherwood, Matter and Interactions (M&I). The traditional course is a standard physics curriculum with particular emphasis on constant force motion. The M&I course is a modern approach to physics instruction with computer modeling and an emphasis on the generality and dynamics of Newton's Second Law. We find poorer performance for students who have taken the M&I course as compared to students taking the standard course. This under-performance is consistent despite the superior performance by M&I students on common exam problems in other areas of mechanics. We offer explanations for this consistent under-performance in the realm of force and motion as well as some results from recent work to combat these misconceptions in the M&I course.

[1]This group is supported generously by National Science Foundation's Division of Undergraduate Education (DUE0618504, DUE0618519, and DUE0618647).

Marcos Caballero
Georgia Institute of Technology

Date submitted: 30 Aug 2009 Electronic form version 1.4