What Limits the Learning of Students in Introductory Physics Courses at GSU?

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Executive Summary
This project will examine the factors that affect successful learning of physics concepts in introductory physics courses at GSU (Phys1111/1112/2211/2212), develop predictors of success, and determine potential interventions to increase student learning. Over the last year an infrastructure of assessment and data collection has been put into place within the department of physics & astronomy involving diagnostic testing in mechanics and electricity & magnetism and surveys of demographic and educational data using an IRB-approved protocol. The proposed work will use this diagnostic and survey data to examine the roles of factors such as physics and math background, gender, age, race & ethnicity, and native language in student learning of physics concepts to determine key predictors and vulnerable populations. Based on this analysis the instruments used for diagnostic testing and survey data collection will be revised to better identify the key factors contributing to student success. In addition, this work will examine the effectiveness of previous interventions including Supplemental Instruction and SCALE-UP physics. The results of this analysis will be disseminated locally within the department via meetings with instructors, regionally and nationally through web distribution and publication in professional journals and presentations at professional conferences.