Abstract Submitted
for the APR18 Meeting of
The American Physical Society

A Game-Centered, Interactive Approach for Using Programming Exercises in Introductory Physics[1] CHRIS ORBAN, Ohio State Univ - Columbus, RICHELLE TEELING-SMITH, University of Mount Union, CHRIS PORTER, Ohio State Univ - Columbus — Incorporating computer programming exercises in introductory physics is a delicate task that involves a number of choices that may have a strong affect on student learning, especially for absolute beginner programmers. We present a series of hour-long activities for classical mechanics that resemble well-known games such as "asteroids," "lunar lander," and "angry birds" as well as more sophisticated interactive visualizations. These activities use an browser-based programming framework that provides a game-like environment to give students a feel for the physics. We discuss experiences from using these programming exercises in freshman physics classes at OSUs Marion campus, classes at the University of Mt. Union and high school physics classes in Ohio. This will include results from animated assessments such as the animated Force Concept Inventory developed by M. Dancy and other animated questions. As an aid for implementing coding activities into high school and early college physics classes we also launched the STEMcoding youtube channel (go.osu.edu/STEMtube), which features a high percentage of students from underrepresented groups.

[1]Funds from an OSU internal grant and the AIP Meggers Award

Chris Orban
Ohio State Univ - Columbus

Date submitted: 12 Jan 2018 Electronic form version 1.4