

AAS 207th Meeting, 8-12 January 2006

*Session 27 Probing and Understanding Effective Learning and Teaching
Poster, Monday, 9:20am-7:00pm, January 9, 2006, Exhibit Hall*

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[27.07] Development of Student Exercises with Instructor Support at the Astronomy Workshop Solar System Collisions Web Tool

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During the spring 2005 semester, seven students taking ASTR101 General Astronomy for non-science majors at the University of Maryland were interviewed while completing an assignment using the Astronomy Workshop Solar System Collisions web tool (<http://janus.umd.edu/astro/impact/>). The Astronomy Workshop Solar System Collisions web tool can be used to investigate how different variables affect collisions in a fun, but informative manner. Based on the 2005 spring interviews, three web-based activities were developed as appropriate for homework or as enrichment to coursework. The first activity explores how the impactor's mass affects energy released, crater diameter, frequency of similar impacts, and magnitude of the earthquake generated by the impact. The second activity investigates the energy released and damage done when the impactor's density is changed. Collisions by icy bodies are compared to those of rocky and metallic materials. The third activity compares collisions on different planets. In addition to masses and densities, velocities vary in these collisions. The activities are written so that introductory astronomy students will interpret the differences observed in terms of kinetic energy.

During the fall 2005 semester, ASTR101 students at the University of Maryland were interviewed and observed as they completed the three activities described above using the Solar System Collisions website. The twelve students in this study were selected based on pretest scores on the Astronomy Diagnostic Test. An effort was made to include students of diverse backgrounds and mathematical experiences. Based on these interviews, final revisions have been made. Student exercises on the website and the directions on how instructors can use these materials in their courses are ready for field-testing at other institutions. Faculty interested in participating in the field-test for this project during spring 2006 are encouraged to contact the authors.

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The author(s) of this abstract have provided an email address for comments about the abstract: deming@astro.umd.edu

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