Project Data Sheet

Hands On

Last updated: 14 February, 2003 Revision: 03

Project Objectives

- Provide the ability for students to experience and learn science through the sense of touch and force feedback.
- Demonstrate an economical haptic solution applied to science study using inexpensive and widely available components.
- Establish the merit and feasibility of haptics-augmented science education and simulated NASA missions.

Sample Use Cases

- A middle school student learning basic physical mechanics interacts with demonstration software via a game joystick that causes her to feel the resistance of a mass when she pushes it, stops its forward motion, or explores the force required to push it up various inclines.
- Students explore the strength of chemical bonds by feeling their relative attractive forces via a joystick.
- Biology students learn the strength of individual skeletal muscles by feeling through a joystick their varying strength throughout their contraction and the limitations on their range of motion.

Customers

- K-12 students and educators

Deliverables for Phase 1

- Ohio University science education software and tutorial, augmented with a joystick to provide force-feedback
- NASA mission-simulation software application demonstrating the use of joystick interaction to enhance the educational value
- Lesson plans for the above applications
- Journal article and conference paper
- Evaluation of technology and its potential

Milestones for Phase 1

ET.2-L.2-HAP.1	*When*	*What*	*Confidence*
ET.2-L.2-HAP.2	1 Apr '03	Science education software module	Green
ET.2-L.2-HAP.3	1 Aug '03	Journal paper	Green
ET.2-L.2-HAP.4	1 Aug '03	Lesson plans	Green
ET.2-L.2-HAP.5	1 Aug '03	Conference paper	Green
ET.2-L.2-HAP.6	1 Sep '03	NASA mission simulation software	Green
ET.2-L.2-HAP.7	1 Sep '03	Project and technology evaluation	Green

People

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Partnerships

- Ohio University's Haptics Lab, College of Education, and Technology Transfer Office
- Dr. Teresa Franklin, Ohio University College of Education, Dept. of Instructional Technology
- A commercial graphics and audio programming company
- NSF-funded Education Materials Development project at Ohio University

Technologies

- Haptics
- 3D immersion software
- Ohio University educational assessment techniques

Quality Assurance

- Local testing in lab
- Testing and evaluation by selected teachers and students

Dependencies

- None