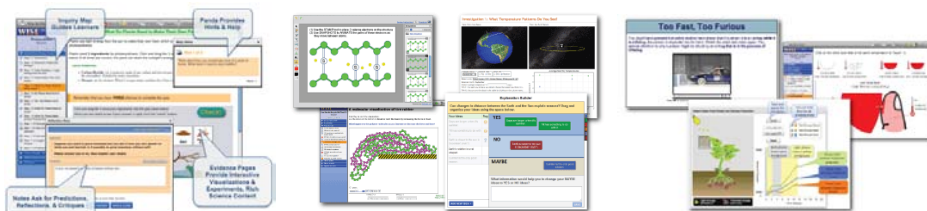


Technology Enhanced Science Instruction via the WISE Learning Environment



Background and Documented Results

Building on years of successful research and development, WISE (The Web-based Inquiry Science Environment) is a powerful, open-source online learning environment that supports guided inquiry, embedded assessments, peer collaboration, interactive computer models, and teacher customization (Lee, Linn, Varma & Liu, 2010; Gerard, Spitulnik, & Linn, 2010). WISE 4.0 has been developed since 2008 and publicly available in 2010. It allows curriculum designers, researchers, and teachers worldwide to design, customize, share, and enact their digital curricula using the WISE platform. Students observe, analyze, experiment, and reflect as they navigate WISE projects. Teachers guide and evaluate the process using a suite of classroom-based and online tools.

The current WISE projects are designed to help students learn abstract science concepts and complement science teachers' regular classroom instruction. These standards-based curricula are developed through teams of content experts, school teachers, educational researchers, and computer scientists with iterations of refinement and revisions. WISE curricula have been tested in middle and high school classrooms for over two decades in more than 10 school districts. Prior research has shown that WISE curriculum units improve student learning of difficult standards-based science topics (Linn et al., 2006) and that students continue to integrate their ideas and strengthen their understanding even after the units have been completed.

Students and teachers who have worked with WISE curricula find the curricula engaging and informative (Chang & Linn, 2010; Gerard et al., 2010, Varma, et al., 2009). Research data have shown the modules are effective in helping students learn complex science concept areas such as earth science, physics, and chemistry (e.g., Shen & Linn, 2010; Varma & Linn, 2011).

Potential Applications

Individual students differ in their experiences, their interests, and their abilities. Some may excel at writing, while others may have a penchant for drawing. Some may speak multiple languages fluently, while others may be learning English as a second or third language. That's why WISE provides a variety of tools, activity patterns, and instructional scaffolds that afford multiple ways for expressing and assessing understanding—so no students' abilities go unrecognized, and all have the chance to succeed.

WISE subsists on generous support from the National Science Foundation, which means it's available for anyone with a computer and Internet connection. Driven by an active community of technology developers, WISE is continually being expanded and improved. Teachers can access the WISE project library or customize their own technology-enhanced curricula. WISE's powerful teaching tools make grading and classroom management easier, so teachers can focus on quality individual interactions with their students.

For More Information

- WISE learning results - telscenter.org/publications
- WISE learning environment - <http://wise4.berkeley.edu/webapp/index.html>

