

Assessing the Learning in Cyberlearning: Supporting Teachers with Technology-embedded Assessment Kimberle Koile, and Paul Horwitz, Concord Consortium; Doug Clark, Vanderbilt University; Diane Jass Ketelhut, Temple University

Question(s) for Discussion: How can we most effectively support teachers in approaching assessment within the realm of technology-enhanced instruction? How does assessment look in these realms, and how do these assessments help teachers approach teaching differently?

Session Description: This panel session will describe findings from a number of research projects investigating technology-embedded assessment and attempt to uncover cross-cutting answers to the question of how to best support teachers in their use. The panel will investigate questions within the overall topic of innovative technology-embedded assessment, such as how to help teachers interpret and use assessment results, how to embed assessments most effectively within curricula, and how to balance formative and summative assessment results. The panelists will each present a brief overview (5-8 minutes) of their projects and findings, and will then discuss cross-cutting questions related to the topic as posed by the moderator and by audience members. Panelists will represent and describe the following projects: (1) Computer-Aided Performance Assessment (CAPA), a three-year project to demonstrate the feasibility and cost-effectiveness of computer-assisted performance assessment for evaluating students' understanding of key topics in introductory electronics, focusing on students' ability to use and interpret readings from two common instruments: the oscilloscope and the digital multimeter. The project analyzed data from students' interactions with a model circuit, monitoring the steps they took as well as the answers they gave and grading them automatically on a teacher-modifiable rubric. (2) Science of Atoms and Molecules (SAM), and (3) Electron Technologies, two projects based on the Molecular Workbench software. These projects involve embedded assessments designed to measure students' comprehension of model-based investigation, and provide examples of how learning about interactive technologies can be documented and deepened. (4) SURGE (Scaffolding Understanding by Redesigning Games for Education), an online game developed to elicit and develop students' tacit understandings of forces and motion and to help them translate this into the formalized knowledge structures required in a school context. SURGE incorporates data gathering and measurement techniques to combine in-game recording of player interactions with standardized pre-post instruments shown to be valid and reliable measures of student formalized understanding of these concepts. SURGE's current research on assessment focuses on predicting formal understanding of "instructed concepts" from embedded assessment of students' performance and demonstrated intuitive understanding within the game. (5) Situated Assessment using Virtual Environments of Scientific Content and Inquiry (SAVE Science), a project developing an innovative system for evaluation of learning in STEM disciplines by designing and implementing a series of virtual environment-based assessment adventures (or quests) used for assessing both science content and inquiry in grades 7 and 8 in the School District of Philadelphia (SDP). In conjunction with teachers, SAVE Science is designing a novel assessment rubric based on student interactions within an authentic context-based science curriculum, embedded in a virtual environment. (6) Logging Opportunities in Online Physical Science (LOOPS), a project using technology to create timely, valid, and actionable reports to teachers by analyzing assessments and logs of student actions generated in the course of using online curriculum materials. The reports provide formative assessment results to teachers during the course of a lesson or within a unit, allowing them to make data-based decisions about alternative teaching strategies. (7) INK-12: Interactive Ink Interpretations in K-12, an exploration of the use of a network of tablet PC's in 4th- and 8th-grade math and science classes. The tablets are connected by an independent in-class network so that students can send their work to the teachers, who can in turn choose student work to display to the entire class using a projector attached to her tablet. The teacher is able to walk around the classroom holding her computer and receive students' work whenever they choose to send it.