

Affordances of Simulation-based Science Assessments

Jodi Davenport

WestEd

Edys Quellmalz

WestEd

Michael Timms

WestEd

Abstract: What are the affordances of simulation-based assessments for eliciting science inquiry skills? To test the affordances, WestEd's SimScientists program created 3 versions (static, active and interactive) of computer-based Ecosystems assessments. In the static version, students viewed still images on the screen. In the active version, students viewed animations, but did not conduct active investigations. In the interactive version, students designed and ran their own experiments. All versions assessed the same science inquiry skills (e.g., making observations, designing experiments, evaluating predictions etc.). Eight middle-school students completed each assessment version while thinking aloud. On items that required declarative knowledge, students performed similarly across versions. However, on items requiring more sophisticated reasoning (e.g., experimental design), students performed better when generating their own trials in the interactive version, than when recognizing correctly designed trials in the active and static versions. The results suggest that simulation-based assessments provide more complete measures of students' science proficiency.