Computer Supported Collaborative Education - Strategies for Using Collaborative Web-Based Technologies to Engage All Learners

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Abstract: In the summer of 2010, twenty secondary school science teachers participated in an intensive eight-day institute to learn new teaching strategies developed by teacher educators at California State University Northridge (CSUN). These techniques, known collectively as *Computer Supported Collaborative Science* (CSCS), make use of new free collaborative web-based document technologies to engage all learners in interactive lecture and discussion. Electronic quick-writes provide instructors with richer information than is afforded by audience response systems, and make possible detailed formative assessments. In addition, CSCS techniques allow students to participate synchronously in whole-class research projects by contributing their findings to collaborative web-based documents that serve as databases for classroom research. All teachers participated in classroom activities with middle school students who were engaged in a CSCS-based inquiry science class taught in CSUN's Summer Academic Enrichment Program (SAEP). One hundred percent of institute participants recommended CSCS "very enthusiastically", and post-institute surveys showed significant gains with respect to teachers' intentions to incorporate activities that are facilitated by CSCS, such as the analysis of whole-class data and the evaluation of large data sets.

The objective of our current research is to study the effectiveness of CSCS as a technique for engaging learners in secondary school science classrooms. CSCS-trained teachers participate in periodic follow-up workshops to provide tools for implementing CSCS in their classrooms. Although results from pre- and post-institute surveys indicate significant transformations in teacher intentions, it is necessary to document actual trends by collecting data regarding pedagogies actually employed by CSCS-trained teachers, and their perceived influence on student engagement in learning. Researchers will conduct additional surveys and interviews with CSCS-trained teachers to determine the extent of CSCS implementation and its impact on student engagement and learning. Although it is anticipated that teachers will encounter numerous technical constraints in their implementation of CSCS, it is also anticipated that those who are successful in implementation will see significant increases in student engagement in classroom lessons, laboratories, and related activities.