Engaging Students in the Science and Engineering Practices of the Next Generation Science Standards (NGSS) with Computer Supported Collaborative Science (CSCS)

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Computer Supported Collaborative Science (CSCS) is a methodology that uses collaborative cloud-based resources to engage all learners in the collection, analysis, and interpretation of individual data in the context of whole-class data. CSCS turns hands-on classroom activities into more authentic scientific experiences, engaging students in the science and engineering practices specified in Dimension-1 of the Next Generation Science Standards (NGSS).

The CSCS Model emphasizes scientific inquiry in an evidence-rich, collaborative environment that places greater emphases on interpretation, evaluation, and explanation. The CSCS model replaces traditional "cookbook" verification activities in which students work in isolated lab groups, with discovery activities using student-generated procedures working in collaboration with multiple lab groups. The CSCS model provides an opportunity for students to experience how science is actually done by engaging in the scientific and engineering practices advocated in Dimension 1 of the NGSS, namely (1) Asking questions (for science) and defining problems (for engineering) (2) Developing and using models (3) Planning and carrying out investigations (4) Analyzing and interpreting data (5) Using mathematics and computational thinking (6) Constructing explanations (for science) and designing solutions (for engineering) (7) Engaging in argument from evidence(8) Obtaining, evaluating, and communicating information.

During this workshop, participants will learn how to engage students in the science and engineering practices mentioned in Dimension-1 of the NGSS using the Computer Supported Collaborative Science (CSCS) approach. Participants will gain experience developing resources that they can use to help their own students master these skills. We will conclude by having participants brainstorm additional ways the CSCS model can be used to help teachers improve student mastery of the Dimension-1 skills of NGSS.