USING TABLETS FOR COLLABORATION IN TEACHER PROFESSIONAL DEVELOPMENT

The Center to Support Excellence in Teaching's Stanford Summer Teaching Institute focuses on the development of K-12 teachers and educational leaders through learning experiences that model core instructional practices, and connect practitioners in applying those teaching and leadership strategies. This year's symposium on "Going Deeper with the Common Core" examined the kind of teaching that will support the new Common Core State Standards (CCSS) Initiative. In their course on "Implementing the Eight Mathematical Practices in Secondary Mathematics," Susan Million and Ph.D. Candidate Charmaine Mangram leveraged mobile technology to provide participants the opportunity to work collaboratively and develop methods to be used in their own classrooms.

The eight mathematical practices in the CCSS describe 'habits of mind,' views, and expertise that mathematics teachers of all grade levels should seek to develop in their students within the context of the grade-level mathematics content standards. The eight practices including problem solving, reasoning and proof, communication, representation, connections, adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition. In order to illustrate this broadened concept of what it means to be mathematically skillful, Million and Mangram showed classroom videos of teaching and learning that exemplified one or more of the eight practices. They set up stations where small groups of teachers would view a video displayed on an iPad, and use support materials to identify and analyze together which of the mathematical practices they had seen. The featured videos were selected from CSET's library as well as from the Inside Mathematics website (insidemathematics.org). "Using the iPads enabled us to have five different stations going at once, rather than having only one computer or one video for all the teachers to look at," says Million. "We were in a small room, so it gave us the opportunity to move outside of the classroom into a different place—it was very mobile. It enabled us to share a lot more videos and clips with teachers within the same time period."

The small groups circulated the room until they had visited each station, and then reconvened to engage in a whole-class discussion about what approaches they could replicate in their own classrooms and schools. Using iPads provided greater flexibility, collaboration, and impact during the video-viewing portion of the activity, thereby setting the foundation and allowing more time for the debrief that followed.

Million and Mangram used the iPads in a second activity where participants navigated the Smarter Balanced Assessment Consortium website that outlines the new CCSS-aligned assessment system that will be used to measure student progress. Teachers worked on iPads in pairs to complete a "Smarter Balanced Scavenger Hunt," view, and take a sample student test, in order to get a sense of what type of questions are going to be asked and what the new computer-based assessment will look like.

When asked about what advice she would give others interested in using iPads in their teaching and research, Million recommended loading all of the appropriate applications and website bookmarks well in advance. She also cautioned users to replicate any online tasks on the mobile devices—there was an Adobe Flash-based interactive tool on the Smarter Balanced website that worked on a computer internet browser but would not display on the iPads, as the Safari iOS web browser does not support Flash.

CSET is already planning to use the iPads for next year's Summer Teaching Institute and is seeking to incorporate the devices into their other teacher professional development initiatives.

To reserve the GSE iPads, iPad Minis, or Nexus 7 Android tablets for your work, contact Debbie Belanger (*belanger@stanford.edu*).

DESIGNING A MORE INTUITIVE ONLINE SURVEY INSTRUMENT WITH THE QUALTRICS JAVASCRIPT PLUGIN

Race has been a long-standing topic in curriculum and instruction in school biology, particularly in how it is treated by textbook chapters on genetics. Dr. Brian Brown's Ph.D. Candidate Brian Donovan is interested in how adolescent conceptions of race are shaped by genetics and other science curricula, with the goal of identifying effective educational models for these subjects that teach about race while preventing racial stereotyping and challenging prejudicial beliefs.

How genetically similar are humans and frogs?
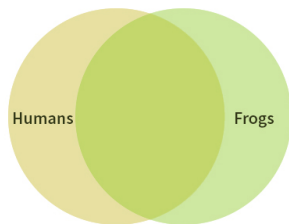
Last year, Donovan conducted a series of field experiments looking at the impact of racialized vs. non-racialized treatments of various genetic disorders in text and curricular materials. In order to examine whether the treatment conditions differentially impacted how students conceptualize race, Donovan administered content-validated race conception survey instruments measuring the students' biological (fixed) conceptions vs. social constructivist views of race, as well as the extent to which they tied racial differences to genetics in traits such as academic and artistic ability.

After his initial experiments showed that the intervention conditions did affect student conceptualizations of race, Donovan needed a finer-grained survey instrument to clarify the particular attitudes on which the intervention was having an impact. "The instruments I was using didn't really allow me to get at which aspects of racial thinking might be changing." And, because of the adolescent age of the population in his study and its subject matter—racial attitudes that were more likely to be based on gut feelings than on rational thinking—Donovan wanted a new measure that was "intuitive, straightforward, and not so much tied down by analyzing and interpreting 22 statements."

The new measure that he had in mind was modeled after an Immersion Scale, used in psychological research, which resembles a Venn diagram and prompts respondents to indicate their perceived level of similarity and difference between two categories. Such a tool would allow him to ask students in a visual and intuitive manner about their views of biological similarities and differences between groups.

Unfortunately, this Venn diagram question type did not exist within a digital survey instrument. By experimenting with Qualtrics, a web-based tool for creating, conducting, and managing online surveys, Donovan discovered that users may create and customize survey question formats and accomplish more advanced functionality by adding JavaScript. He contacted GSE-IT's Noah Freedman, who was able to program and fine-tune a question type to Donovan's research needs: "I wanted it to be a plugin in Qualtrics that I could use over and over again; I wanted the circles to come up randomized so that there's no anchoring; I wanted to be able to put labels in the circles and to be able to change those easily; I wanted something that was continuous so that you can have more variation; and I didn't want the kids to see the specific number or percent overlap." The question type that Freedman created returns a continuous variable from 0 to 100 in terms of percent overlap. Responses integrate with other survey items, including 'stock' Qualtrics question types, and auto populate in a single, downloadable Excel spreadsheet or .csv file.

"I initially set it up as a freelance project, but that wasn't very useful because I needed to sit down with a person and talk through it, and that's where having tech support really helped out," Donovan says. This year, he will continue to develop, pilot, and validate the survey instrument, which will be part of his dissertation proposal.

GSE considering open source Canvas Learning Management

GSE is pilot testing an open source version of the learning platform, Canvas, for hosting course materials and online learning tools in five GSE courses this quarter. The LMS is being examined to replace Blackboard, which has been used as a supplementary online discussion and digital artifact exchange space for GSE courses. Canvas, by Instructure, was launched in 2011 and is being used by hundreds of colleges, universities, and school districts. After experimenting with a variety of platforms, GSE-IT selected Canvas for its user-friendly interface and open source technology that allows its users the opportunity to develop their own delivery methods, integrate with web tools and services, and permeate "the wall" between the LMS and the Internet. GSE-IT is currently implementing video conferencing and interactive video production and annotation capabilities within Canvas. GSE's Canvas instance works with the Office of the Registrar to automatically enroll students in Canvas courses, while also giving faculty the flexibility to invite auditors and participants from outside of Stanford, if desired.

To learn more about Canvas or the pilot, contact the GSE-IT Canvas Team at instructionalsupport@stanford.edu