Feb. 09, 2017

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center taking successful local science teaching ct to national scale

October 1, 2015 0 Comments

After unleashing the power of geospatial technology to transform classroom learning, experts at Northern Arizona University are opening up the map to spread their ideas nationally.

Lori Rubino-Hare, professional development coordinator at NAU's Center for Science Teaching and Learning, and her team were recently awarded nearly $2 million by the National Science Foundation to scale up their success in the NSF-funded Power of Data project.

The new project will involve establishing an academy that will train facilitators to use the methods and tools that were successful in Power of Data. Those facilitators—who may include curriculum coordinators at school districts or college faculty who offer continuing education for in-service teachers—will then share that knowledge with teachers across the country through local workshops.

At a workshop in the Cline Library Learning Studio, teachers share their plans to implement geospatial technology projects with students.

Eventually, up to 900 teachers and 27,000 students could benefit.

This new and ambitious step culminates six years of funding and demonstration projects that infuse science learning with geographic information system technology and a problem-solving approach.

"GIS helps layer information so users can make sense of spatial data," Rubino-Hare said. "Students are looking for patterns in the data and making recommendations based on their analysis. It's been really successful."

The GRAIL Lab at NAU and a statewide site license for Esri software have been key components. Now the challenge is to take what has worked locally and regionally and extend it across the country.

Brooke Whitworth, assistant professor of science education at the center, will use video observations, interviews and surveys to assess the project's effectiveness.

"As a researcher, I want to see if we can develop a professional development model that translates from facilitators to teachers to students," Whitworth said. "When we select facilitators, the goal is to sample from different parts of the country and from different contexts, such as urban and rural. We want to know if the context influences the teacher's ability to do this."

Facilitators will be recruited to apply to the academy, and Rubino-Hare said the success of the new program hinges on the quality of those who attend. "It comes down to their willingness and ability to conduct two teacher workshops at their own sites."

Rubino-Hare acknowledged that some teachers have faced obstacles when trying to bring the technology-based approach to their own schools, either because the technology was not supported or because the curriculum at their school was too rigid. The ongoing national discussion of standards, though, is not expected to be a factor.

According to Whitworth, "What this approach does well is teach the scientific practices that are regarded as 21st century learning skills. Regardless of the standards in place, these attributes are important for all science students to learn and develop."

Rubino-Hare expects many experienced and accomplished teachers will choose to attend the facilitator-led workshops when they become available across the country.

"Oftentimes it's teachers who have been teaching long enough to know that what they've been doing might not be working," Rubino-Hare said. "They are looking for a new way to engage students."

National recruitment is expected to begin in January 2016, with the first institute of 15 facilitators to be held at NAU in the summer.

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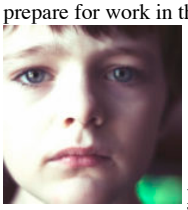

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