Virtual Fieldwork and Teacher Professional Development

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ABSTRACT:

Fieldwork is crucial to geology education, yet in 2006, 24% of Earth science teachers were not Earth science certified (CCSSO, 2009). Is it reasonable to expect teachers, who have not had field experience themselves to lead meaningful fieldwork for their students? Fieldwork is a core activity for applying inquiry to real-world scenarios. How can we support teachers in using local and regional geology to teach Earth science in an inquiry-based way?

Through Enhanced Earth Systems Teaching through Regional and Local (ReaL) Earth Inquiry, a professional development (PD) and curriculum materials development project funded by the National Science Foundation (NSF DRL 0733303), we are developing a nationwide series of Teacher-Friendly Guides for teaching about regional and local geology and we are creating PD programs with teachers in each region. Teachers are gaining field experience, making virtual fieldwork experiences (VFEs) and taking students into the field.

The PD program begins with a face-to-face workshop involving fieldwork at geologically interesting sites. This provides a brief, mentored introduction to fieldwork. As teachers work in the field and classroom, they also collaboratively create a VFE of the field sites for use in their classrooms.

The program continues post-workshop through virtual study groups in which the teachers complete the VFE they began during the workshop and support each other as they create VFEs of sites near their schools. Through the collaborative process of creating a VFE of the workshop field sites, teachers learn the skills needed to create a VFE of their local sites.

As teachers work to create VFEs, they must consider their local environment as a classroom. VFE creation requires close study of field sites with considerations of what would be relevant to a scientist in the field. This is explicitly intended to be a step towards actual fieldwork with students.

As the project continues, a database of VFEs grows creating a resource not only for teachers in the PD program but for any Earth science teacher. When the database becomes large enough, users will be able to easily compare local sites to others that are progressively different or by changing different characteristics, e.g., comparing sites with similar bedrock geology but different climate characteristics.

See virtual.fieldwork.org.

Performing inquiry at a distance (remote sensing), Teacher-created resources for teaching local Earth systems science.

Using the local to understand the global.

Encouraging system approaches & in depth study Leads to actual fieldwork.