Preparation Students for Citizenship: Fostering Critical Thinking and Problem-solving Skills through Quantitative Reasoning and Scientific Literacy

**ABSTRACT**

Interdisciplinary (99)
By integrating natural sciences and using global context to create social science connections, a new science course, Global Sustainability: Managing Earth’s Resources, and its Web site are preparing STEM and non-STEM students for active citizenship. These focus on improving critical thinking and problem-solving while providing training in literacies necessary to master scientific content. With improved quantitative reasoning and...
scientific understanding, students are better understanding global sustainability. Course materials are being disseminated as learning objects via a project Web portal. By building learning objects of variable scope (animations to case studies), the project is promoting adoption and adaptation by instructors teaching sustainability to different audiences from a variety of perspectives. Assessment and evaluation of course pedagogy and material on student learning are on-going project components. Project materials and results are being publicized through faculty development workshops and short courses at national meetings of scientific and educational societies.

By presenting science in context, the project is demonstrating the importance of scientific literacy and quantitative reasoning, enticing students into STEM fields and encouraging students to view sustainability from different global perspectives. It is also showing how societal problems must be addressed by tempering science, technology and engineering with social, political and cultural norms.

By catching students early in their academic careers, the project is improving attitudes toward STEM fields and global sustainability. Associated faculty development efforts are providing disciplinary experts with the pedagogical knowledge and understanding necessary to develop meaningful and lasting learning experiences for their students. Dissemination of learning objects is assisting instructors in creating innovative and effective introductory science courses anchored on a global perspective. Simultaneously, the project is facilitating a national dialog between educators devoted to improving quantitative reasoning and scientific literacy via the investigation of global sustainability.

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