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Award Abstract #0737533

Preparing Students for Citizenship: Fostering Critical Thinking and Problem-solving Skills through Quantitative Reasoning and Scientific LiteracyNSF Org: [DUE](#)
[Division of Undergraduate Education](#)

Initial Amendment Date: September 24, 2007

Latest Amendment Date: September 24, 2007

Award Number: 0737533

Award Instrument: Standard Grant

Program Manager: Jill K. Singer
DUE Division of Undergraduate Education
EHR Directorate for Education & Human Resources

Start Date: December 1, 2007

Expires: November 30, 2010 (Estimated)

Awarded Amount to Date: \$140495

Investigator(s): James Myers magma@uwyo.edu(Principal Investigator)
Erin Campbell-Stone (Co-Principal Investigator)Sponsor: University of Wyoming
1000 E. University Avenue
LARAMIE, WY 82071 307/766-5320NSF Program(s): CCLI-Phase 1 (Exploratory),
S-STEM: SCHLR SCI TECH ENG&MATH

Field Application(s):

Program Reference Code(s): SMET,9178,9150

Program Element Code(s): 7494,1536

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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Last Updated:
April 2, 2007
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