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Award Abstract #0920800

Expansion of "The Math You Need , When You Need It" Through Widespread Implementation

NSF Org:	DUE **Division of Undergraduate Education**
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Investigator(s):	Eric Baer ebaer@highline.edu (Principal Investigator) Helen Burn (Co-Principal Investigator)
Sponsor:	Highline Community College P O Box 98000 Des Moines, WA 98198 206/878-3710
NSF Program(s):	CCLI-Phase 2 (Expansion), S-STEM:SCHLR SCI TECH ENG&MATH
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ABSTRACT

This CCLI Phase 2 project addresses the need for student-centered resources that introduce quantitative skills into introductory geoscience courses to increase the quantitative literacy (QL) of students, particularly general education students. This project reduces the significant challenges faced by faculty due to students' varied mathematical preparation and attitudes towards mathematics. It builds upon a CCLI Phase 1 project, "The Math You Need, When You Need It."

Intellectual Merit: TMYN are self-paced, web-based student modules that support teaching and learning of quantitative topics in introductory geoscience courses. Pilot projects at the University of Wisconsin Oshkosh (UWO) and Highline Community College (HCC) combined several proven pedagogies: student centered instruction, online modular resources and Just -in-Time Teaching. TMYN is being expanded: 1) to develop a variety of implementation models; and 2) to further facilitate the teaching and learning of quantitative skills in the geosciences. The effectiveness of the TMYN modules is being explored by training faculty in their versatility and working with interested faculty to design effective and innovative implementation models. Ten additional modules are being developed to bring the collection of TMYN collection to 16 quantitative concepts. A large dataset and web-based resources, including a tutorial in the use and implementation of TMYN, are being produced. The expanded TMYN program is building resources related to teaching that could make this project self-sustaining.

Broader impacts: This project contributes to increasing QL for undergraduates. Increasingly, colleges and universities are recognizing QL as an important outcome for their graduates. The modular design of TMYN allows for tailoring to individual courses and can support increased QL for the more than 350,000 students that take introductory geoscience every year. The project is designed to support geoscience faculty that want to integrate quantitative aspects of geoscience in their courses with little additional effort and minimal alienation from under-prepared students. Geoscience faculty with experience and leadership in the use of QL in the classroom are participating in workshops and using web pages that detail the results of the use of TMYN modules at many different institutions. The use of the SERC web server ensures widespread dissemination.

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