

UNIVERSITY of NEW HAMPSHIRE

“Excellence in Outreach Scholarship”

Outreach Scholars Academy

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1. Project Title: Environmental Sciences Teacher Training Program in Central America

2. PROJECT DESCRIPTION

The long-term goal of this project is to develop a teacher training program in environmental sciences for upper elementary and/or middle school teachers in Central America. Specific project goals are to: (1) provide instruction on environmental sciences, with an emphasis on soil and water quality; (2) provide training on hypothesis testing, experimental design, and sample collection and analysis; and (3) assist teachers with implementing environmental science in their classrooms.

3. BACKGROUND INFORMATION/STATEMENT OF THE ISSUES/PROBLEM

Over the past decade, there has been a dramatic increase in concern and awareness about the state of K-12 science education in the U.S. The National Science Foundation and other agencies have increased the level of funding available for teacher training programs, particularly for programs that partner K-12 teachers with university scientists. There are now many opportunities for K-12 teachers in the U.S. to get post-graduate training in the sciences. A similar effort is needed at the international level. During a workshop in Costa Rica in 2007, I heard from Central American scientists that K-12 teachers in Central America do not have the opportunities that U.S. teachers have for post-graduate training, particularly in the sciences. I have begun initial discussions with two colleagues in Costa Rica and Guatemala to develop a teacher training program to address this need.

4. PROJECT DETAILS

Goals and Objectives: The first step toward achieving the goals outlined above is to conduct a needs assessment to determine the extent to which K-12 teachers in Central America have access to post-graduate training in the environmental sciences. I have received funding from the UNH Center for International Education and the Department of Natural Resources to spend three months of my sabbatical during AY2008-2009 conducting a needs assessment in Costa Rica and Guatemala.

Target Population/Audience: Upper elementary and/or middle school teachers in Central America.

Methods: During my visit to Costa Rica and Guatemala, I will hold focus groups with teachers and develop and conduct a survey that addresses the following questions:

- Are teacher training programs in the environmental sciences available and if so, what types of programs are available?
- What are the barriers to teachers participating in these programs?
- If such programs are not widely available, what program content would be of most value to the teachers (e.g., hypothesis testing, experimental design, environmental sampling techniques, curriculum development)?
- What incentives (i.e., stipend, classroom supplies, equipment) would encourage teachers to participate in such a program and apply their new knowledge in the classroom?

I plan to compare public versus private and urban versus rural schools to determine whether there is differential availability of and/or participation in teacher training programs. Once the needs assessment has been completed, I will use these data to seek external grant funding to initiate and implement the program over the next few years.

Evidence of External Collaboration and Partnership: I will be collaborating on this project with colleagues at the Center for Tropical Agriculture (CATIE) in Turrialba, Costa Rica (Gabriela Soto) and Rafael Landivar University, in Guatemala City, Guatemala (Nancy Giron). Ms. Soto is a soil scientist whose research focuses on organic coffee production. Dr. Giron is a water quality specialist. Initially, Ms. Soto and Dr. Giron will help identify teachers to participate in the needs assessment, assist with survey development and serve as translators. In the longer-term, they will be involved with program development and implementation.

UNH partners include Eleanor Abrams in the Department of Education and Karen Graham, Director of the Leitzel Center. Drs. Abrams and Graham will assist me with survey development and analysis, proposal development, and program assessment. I plan to use two existing UNH programs (PROBE and TESSE) as models, modifying them based on the outcome of the needs assessment.

Expected Impact: I expect that when fully implemented this program will increase the science education opportunities for K-12 teachers and students in Central America. It will also foster partnerships between teachers and in-country scientists. The needs assessment and program evaluation will provide useful data for the international science education community.

Scholarly Connection: This project does not directly relate to my current research; however, I believe that over time, the contacts and relationships that I develop through this project will lead to research opportunities. I also expect that the data generated as part of the needs assessment and program evaluation will provide valuable information to science educators and funding agencies regarding the need for science education programs in Central America and the types of programs that are most suitable for this part of the world.

5. EVALUATION PLAN

As noted above, I will be working with Eleanor Abrams and Karen Graham to develop the needs assessment and program evaluation.