Models of Program-Scale Change

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Context of the program

Community Effort

Curricular material
- Engaged pedagogy
- Assessment
- Interdisciplinary
- Enticing societal issues topics.

Use these to make change at a scale bigger than a course
Program Design: Laying the Foundation for Tomorrow’s Workforce

**Strengthen Workforce Preparation in your Program**
Proactively addressing workforce preparation through a student’s degree program can yield significant positive results for your students, their future employers, as well as your program. Explore:
- Career opportunities
- Skills & experiences
- Employers and alumni

**Increase the Diversity of your Graduates**
Broadening the diversity of students learning about the Earth brings new perspectives and ways of knowing to issues of great societal importance. It also greatly enlarges the pool of potential future employees for all the professions that require Earth expertise. Explore:
- Attracting students
- Supporting students
- Successful strategies

**Embed Sustainability in your Program**
Common models for incorporating sustainability into your degree program can be adapted for success in your local institutional context. Explore:
- Common models
- Program descriptions
- Essays
- Learning outcomes

**Prepare Future Teachers**
Expose future teachers to active learning, the scientific method, systems thinking and other skills they will need to teach the Next Generation Science Standards. Explore:
- Teacher preparation
- Effects of the NGSS
- Interdisciplinary strategies
- Practical teaching opportunities
- Professional development
Building a portfolio of models

• Modeling programmatic changes
• Building a set of diverse approaches, grown organically from a variety of institution types
• Multiple models that are tailored to institutional culture
• There is no one size fits all. There are common elements
Scale of impact

Program

Institution

Several institutions

Entire State

*Global campus
Three Examples:

- Partnership between a Geo-rich institution and local MSI’s and 2YC’s. 4 partnerships.  
  http://serc.carleton.edu/92548

- Earth literacy across the curriculum. Place-based approach. 11 departments
  http://serc.carleton.edu/108256

- Community of practice. Expanding model. Linking classroom activities to service learning. 17 courses.
  http://serc.carleton.edu/91209
Common Elements
(early indicators)

• Alignment with goals at the home institution(s).

• Multiple efforts at the department, program, or institutional level.

• Context-specific faculty development activities supporting material adoption.

• Materials alone not a sufficient vehicle for change.
InTeGrate Involvement

**Support**
- One-on-one support for operating at the program level
- Assessment consulting
- Frequent feedback

**Community**
- All team meetings
- Peer-peer support
- Interaction through professional development
Implementation Programs

InTeGrate implementation programs has resulted in the development of 16 models of ways to bring geoscience to a diverse range of disciplines, institutions, and networks. These programs will also provide the documentation and resources necessary to help other groups implement similar programs.

Programs in Progress

The implementation program at California State University - Chico will provide a new General Education pathway with the thoughtful incorporation of the InTeGrate curriculum throughout the new Sustainability Pathway. Additional outcomes from the adaptation of InTeGrate curriculum in the Sustainability Pathway include infusing geoscience curriculum across students' GE experience. Geoscience perspectives offer breadth to the pathway by exposing students to specific topics they would not frequently encounter in liberal arts courses. Multiple perspectives on issues like climate change and sustainable agriculture practices provide a bridge through multiple courses and disciplines that improve students' science literacy throughout lower and upper division GE coursework.

An interdisciplinary team at Claflin University (CU) seeks to increase interest in the study of Earth Sciences among underrepresented minorities across multiple disciplines, and their capacity to apply concepts related to resilience and vulnerability in human-environment systems to address societal issues driven by climate change. To accomplish the goal, undergraduate majors in Biology, Environmental Science, Psychology, Criminal Justice, and Business will develop and incorporate a geoscience and analytical framework module as part of their regular schedules. The module will focus on responses to human or naturally induced hazards, and their management.

A Grand Valley State University project plans to redesign the geoscience core and upper-division geology, and physics. The courses will incorporate Earth science and geologic content skills, as well as those skills unique to each discipline.

Faculty at Gustavus Adolphus College are working together to develop a module for general education to raise climate literacy among faculty and students and setting the stage for the module implementation that follows. Faculty within and outside the discipline are increasing climate change literacy in the classroom.

http://serc.carleton.edu/91212