Testing InTeGrate Curriculum at Undergraduate Institutions in the El Paso Region

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A five-year community effort to improve geoscience literacy and build a workforce prepared to tackle environmental and resource issues

http://serc.carleton.edu/integrate
Transforming What, How and Where of Undergraduate Geoscience Teaching
Materials Development

- Creating the resources needed to teach geoscience in a new way
- Transforming the way we develop materials
- Linking creation and testing, student learning outcomes

- Developed and tested by teams with members from at least 3 institutions
- 150 team members; >25 from 2YC and minority serving institutions; 1/3 from outside the geosciences
Materials Development

- Introductory modules on literacy themes
- Interdisciplinary courses
- Geoscience for engineers and scientists
- Teacher preparation modules
- Geoscience in other disciplines

Interdisciplinary Courses Under Development

- Energy, Earth, and Us
- Geologic Hazards and Humans
- Coastlines and Coastal Hazards
- Water and Society
- Modeling the Earth System
Transforming What, How and Where of Undergraduate Geoscience Teaching
Implementation Programs

- Infuse geoscience throughout the curriculum within and beyond geoscience departments AND within and beyond single institutions

- Leverage existing geoscience, environmental science and engineering programs to address solutions for societal problems

- Engage younger students in the geosciences and increase geoscience enrollment
UTEP Cluster Implementation

K-12

ECHS ➔ El Paso CC ➔ UTEP

K-12 -12 districts, 170000+
ECHS – 5 campuses, 1500
EPCC-5 academic campuses, 25000+
UTEP-one campus, 22000+
~80% K-12 teachers are UTEP grads
Student body mirrors city/county

- 82% Hispanic
- 30% limited English
- 66% low income
- 30% adults over age 25 have not finished HS
- 60% UTEP grads are first in their family to attend/finish college
Challenges

• Place bound students
• Limited financial resources, part-time
• Lack of family support, knowledge
• Careers involving outdoor work not attractive
• Language barriers
• Low self-esteem, imposter syndrome
Opportunities

• Local geology
• Important environmental problems
• Interest/concern in helping community
• Family engagement
• Close networks between institutions
• Students eager and hard working, good mentors
Curriculum

*Texas common core requirement in natural science (7 hours including 1 lab)

(Physical/Historical Geol. [7-8] or Earth Science 1 & 2 [6] or Envir. Science + Introductory Geology /Biology course [7])

*Earth Science 1 taken by K-8 education majors

* Geological Engineering – UTEP class required for juniors in civil engineering
Plans?

- Select introductory modules (especially water) at UTEP in Fall 2012 in Introduction to Environmental Science, Physical Geology, Earth Science 1 and at EPCC & ECHS in Physical Geology
- Most modules (both introductory and teacher prep) taught at UTEP Spring 2013, EPCC & ECHS in Physical Geology, Earth Science 1 and 2 and at UTEP in Geological Engineering
- Go beyond Geoscience/Envir. Sci. in third year
Beyond classroom

• Activities to engage family
• Tie-in to local community
• English literacy issues
• Inter-institutional activities to raise self-esteem
A Systems Model for Transformation of Individuals, Institutions, and the Geoscience Community
Program Elements

• National Workshops (programs/courses)
  • 4 in summer 2012 (sustainability in geoscience and across all disciplines, methods of geoscience, environmental geology)
  • 3 planned for 2013 (environmental justice, geoscience in other science courses, program level workshop)
  • Include Faculty, Adjuncts and TAs
  • In collaboration with NCSE, Cutting Edge, and Professional Societies
• 24 Travelling Workshops
• Virtual Events
• Website
Get Involved!
http://serc.carleton.edu/integrate