

Testing InTeGrate Curriculum at Undergraduate Institutions in the El Paso Region

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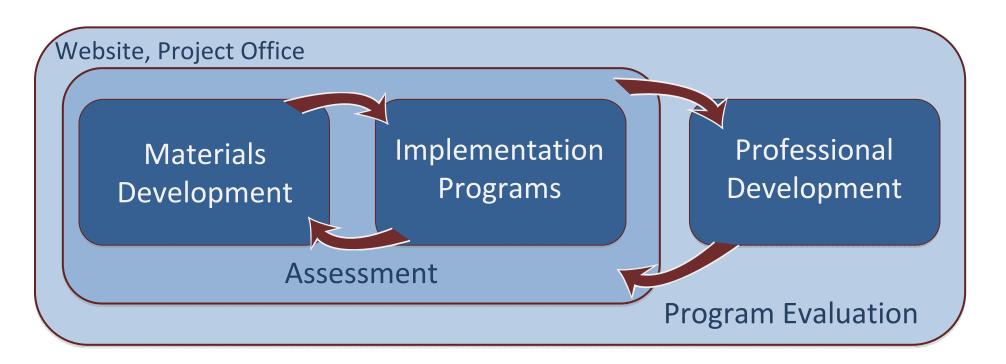


A five-year community effort to improve geoscience literacy and build a workforce prepared to tackle environmental and resource issues

http://serc.carleton.edu/integrate



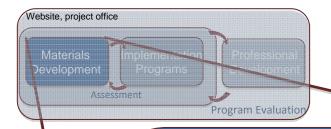
Transforming What, How and Where of Undergraduate Geoscience Teaching



InTeGrate

Interdisciplinary Teaching of Geoscience for a Sustainable Future





Materials Development

Creating the resources needed to teach geoscience in a new way

Transforming the way we develop materials

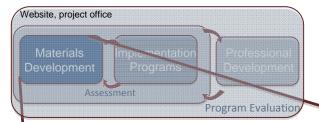
Linking creation and testing, student learning outcomes

- 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

InTeGrate

Interdisciplinary Teaching of Geoscience for a Sustainable Future





Materials Development

Introductory modules on literacy themes

Interdisciplinary courses

Geoscience for engineers and scientists

Teacher preparation modules

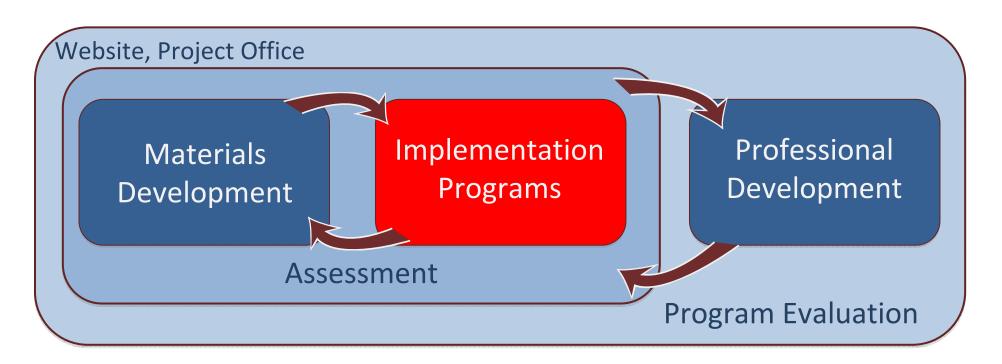
Geoscience in other disciplines

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] <u>or</u> Earth Science 1 & 2 [6] <u>or</u> 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 <u>UTEP</u> in Fall 2012 in Introduction to Environmental Science, Physical Geology, Earth Science 1 and at <u>EPCC & ECHS</u> 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

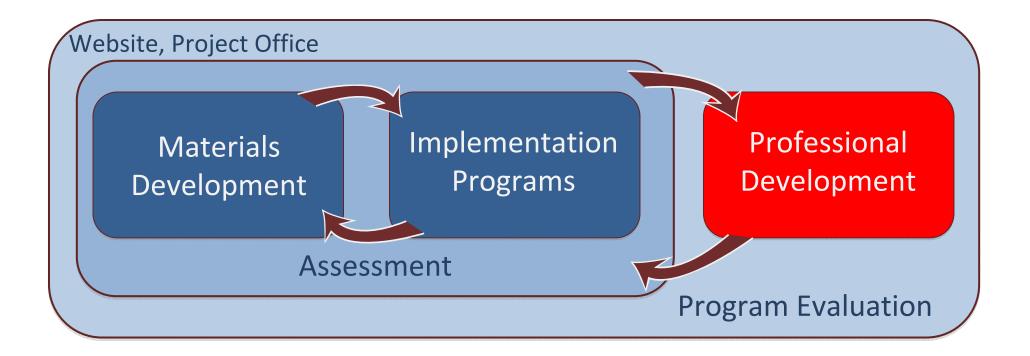
- Activities to engage family
- Tie-in to local community
- English literacy issues
- Inter-institutional activities to raise self-esteem







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





