

**Reform of Introductory Science Courses for Non-Major
Interim Report
November 30, 2004**

Glenn C. Kroeger
glkroeger@trinity.edu

210-999-7607

Trinity University, Department of Geosciences

Redesign of Exploring Earth; an inquiry-based studio format geoscience course

June 1, 2004 – May 31, 2005

\$7,900.00

1. Original Goals and Objectives

The goal of this project is to significantly improve the student experience in *Exploring Earth* through the redesign of the structure of the course and sequence of topics, and the reimplementation of major student projects that comprise the course. Specific objectives include increasing the role of student inquiry in shaping the scope and methodology of the projects, and making the geoscience content of the course more holistic. The redesign will include (1) developing a new introductory field-based project that poses questions and defines goals for the entire course, (2) reordering and recombining topics into a more articulated sequence of fewer but larger projects, (3) integrating the availability of TabletPCs into the projects as a quantitative tool and source of content information via Just-in-Time-Teaching (JiTT)¹, (4) developing a set of pre-project readings that provide focused content background and stimulate an inquisitive approach to each project and (5) developing a capstone project that provides students with a sense of closure and accomplishment in the course.

2. Any changes made in goals or objectives to date

The biggest change in our plans involves the “size” of course projects. We initially intended to structure the course around fewer, larger projects. In our work last summer, we decided to take a different approach, matching attention spans with smaller “bite-sized” pieces.

- The course now meets for two, two-hour sessions per week, rather than the one hour “lecture” and three-hour “project” periods of past years.
- Many projects are one-hour in length or shorter, and are interspersed with lecture and discussion with the natural flow of topics.
- Shorter projects are completed in class and drive the flow of topics with immediate hands-on exploration of content material.
- Longer projects overlap multiple class periods and require additional reading or reference work and more substantial reports.
- Longer project build in scale toward the capstone project.

3. Activities underway and/or completed to date

- The new introductory field trip has been developed and run for the two sections of the course this fall

- The reordering of topics and project has been completed and used in the two sections of the course this fall. In order to eliminate the “disjointed” feel of the course, we have implemented a strong content backbone
 - Projects on interpretation of rock types have been spread out across more of the semester. This removes the “we are finished with rocks” syndrome.
 - Application and environmental topics and projects are interspersed with rock projects providing immediate “usefulness” of rock interpretation skills. For example, volcanic hazards follows igneous rocks and groundwater follows sedimentary rocks.
- We have introduced an introductory project, in the second class meeting, derived from “Discovering Plate Boundaries”, a classroom exercise developed by Dale Sawyer at Rice University. This project emphasizes organization of observations about plate boundaries to produce usable models for interpreting global data sets.
- We have developed a capstone project integrates observational and interpretational skills from all previous projects and field trips. Students, playing the role of geologic consultants, unravel the geologic history of a fictional region using maps, cross sections, rock specimens, thin sections, fossils and geochronologic data. They are asked to use their interpretations to recommend solutions to an environmental problem. This capstone project was used in both sections of the course this fall.

4. Any snags or unanticipated delays encountered

We have postponed the implementation of TabletPCs in the course. We felt that the underlying course structure had to be “right” before we added the technological complexity of the tablets. We have purchased a prototype system and are finishing the implementation of the opening plate tectonic project and the JiTT materials for igneous and sedimentary rocks on the TabletPC. We plan to test these materials in one section of the course this spring, with full implementation of the TabletPCs by next fall.

5. Approved Budget

Faculty stipend, summer 2004, Kroeger	\$3,750.00
Faculty stipend, summer 2004, DeGraaff-Surpless	\$3,750.00
Vehicle mileage for scouting field trip locations	\$200.00
First year mentor workshop (lunch and supplies)	\$200.00

6. Financial Accounting from receipt of funds through October 30, 2004, showing amounts spent to date and for what it has been spent.

Through October 30, 2004 we have spent:

Faculty stipend, summer 2004, Kroeger	\$3,749.99
Faculty stipend, summer 2004, DeGraaff-Surpless	\$3,749.99
Vehicle mileage for scouting field trip locations	\$269.23
First year mentor workshop (lunch and supplies)	\$0.00

Leaving a balance of \$130.79. See attached budget summary

Date	Src	Ref.No	Description	Opening Balance	Debits	Credits	Closing Balance
25-1385016-52900 REDESIGN EXPLORING EARTH : SPON. PROJ. SALARIES							
Jun 30	PR	001191	PRD END: 06/30/04 SU Earnings		3,483.50		
Jul 30	PR	001209	PRD END: 07/31/04 SU Earnings		3,750.00		
Aug 17	JE	J029869	Overpayment of Wages			266.50	
Aug Totals				0.00	0.00	266.50	
Totals for 25-1385016-52900				0.00	7,233.50	266.50	6,967.00

Date	Src	Ref.No	Description	Opening Balance	Debits	Credits	Closing Balance
25-1385016-53000 REDESIGN EXPLORING EARTH : FRINGE BENEFITS							
Jun 30	PR	001191	PRD END: 06/30/04 SU Employer Cont		215.98		
Jun 30	PR	001191	PRD END: 06/30/04 SU Employer Cont		50.51		
Jul 30	PR	001209	PRD END: 07/31/04 SU Employer Cont		232.50		
Jul 30	PR	001209	PRD END: 07/31/04 SU Employer Cont		54.38		
Aug 17	JE	J029869	Overpayment of Wages			20.39	
Aug Totals				0.00	0.00	20.39	
Totals for 25-1385016-53000				0.00	553.37	20.39	532.98

Date	Src	Ref.No	Description	Opening Balance	Debits	Credits	Closing Balance
25-1385016-54100 REDESIGN EXPLORING EARTH : GENERAL OPERATING EXPENSES							
Sep 22	PJ	V0182276	Glenn Kroeger		161.63		
Sep 24	JE	J030314	AUG VEHICLE UTILIZATION		107.60		
Sep Totals					269.23	0.00	
Totals for 25-1385016-54100				0.00	269.23	0.00	269.23
Totals for FUND: 25 - RESTRICTED-GRANT UNCONDITI				0.00	8,056.10	286.89	7,769.21

11/30/04

Trinity University
Account Availability Report Ending 11/30/2004
Options - Available/Met/Exceeded Budget

Page: 1

Fiscal Year: 2005

FUND: 25 - RESTRICTED-GRANT UNCONDITIONAL

GL Account	Allocated Budget	Actual	Encumbrances	%Committed	Available
25-1385016-52900 REDESIGN EXPLORING EARTH : SPON.	6,967.02	6,967.00	0.00	100.00	0.02
25-1385016-53000 REDESIGN EXPLORING EARTH : FRING	532.98	532.98	0.00	100.00	0.00
25-1385016-54100 REDESIGN EXPLORING EARTH : GENER	400.00	269.23	0.00	67.31	130.77
Totals for FUND: 25 - RESTRICTED-GRANT UNCONDITI	7,900.00	7,769.21	0.00	98.34	130.79