

**Trinity University and the Associated Colleges of the South**  
**Third Report to**  
**The W.M. Keck Foundation of Los Angeles**  
**The Reform of Introductory Science Courses for Non-Science Majors Program**  
**December 31, 2005**

Report to the W.M. Keck Foundation of Los Angeles  
Reform of Introductory Science Courses for Non-Science Majors Program  
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Trinity University and the Associated Colleges of the South present the third report on the program activities made possible by a grant awarded on June 12, 2003, by the W. M. Keck Foundation of Los Angeles. This report covers the twelve-month period ending December 2005.

We thank the Foundation for their support and for granting the requested one year grant extension to June 2007. This will enable the receipt of final reports from the last round of the course mini-grants that will be awarded in May 2006.

**1. Progress Since Last Interim Report Dated 12/31/04**

a. **Program Committee membership**

Program Committee membership remained stable in the 2004-2005 academic year. Ed Roy, Trinity University, who has been instrumental in this project from the very beginning, retired from Trinity University in May 2005, and was replaced as the institutional representative to the program planning committee by Glenn Kroeger, also from the Geosciences. Dr. Roy will continue to serve on the program committee in a consulting role, focusing on the assessment/evaluation component of the grant.

Leo Pezzementi from Birmingham-Southern College, who also has been involved in this project from the very beginning, now chairs the program committee. Leo, who chaired the course mini-grant review committee, was replaced in that position by Tim Ward from Millsaps College, who also serves on the program committee.

The committee membership roster for 2005-06 is attached in Appendix A.

b. A **Mentoring and Information Sharing Workshop** was held September 17, 2005, at Furman University, Greenville, SC.

Fourteen ACS institutions were represented by 25 faculty members. In addition, Ed Roy [Trinity University] and Jeanette Norden [Vanderbilt University and Medical School] also participated. Dr. Norden serves as the outside evaluator in the grant assessment process.

Since a workshop as such was not included in the third year budget and all of the designated mentoring funds were still available, the Program Committee authorized the use of the designated mentoring funds to cover the expenses of the fall 2005 Mentoring and Sharing Workshop. Given the amount of formal and informal mentoring that occurred during this time at Furman, it was a fruitful decision.

The purpose of this gathering was to bring together the recipients of the 2004 and 2005 course mini-grants, the Science Reform Program Committee, and a third person from each campus [who was interested in submitting a mini-grant proposal] for

conversation, mentoring, evaluation, and dissemination. All of the course mini-grant recipients were asked to share what was happening with their projects. Those who had submitted final reports also were asked to address the following questions:

- What you would do differently, if you could?
- What did you learn along the way?
- In what ways did this process affect your own teaching and learning?
- What are your plans for further evaluation and dissemination?

The 2005 grant recipients also were asked to share any concerns they had encountered so far.

During the afternoon session, all participants were grouped by disciplines, and the faculty who were interested in submitting a proposal shared their potential proposal ideas in these disciplinary meetings. The purpose of this session was to help proposal development, provide grant mentoring, and emphasize the need for dissemination. At the end of these small group sessions, session, the total group reconvened to hear brief presentations by those planning to submit mini-grant proposals in one of the next two grant rounds. There was a good exchange of comments and questions after each presentation.

For the workshop's closing session, Jeanette Norden, who had been serving as an observer during the day, shared some of her reflection on the day and on the work that was presented. She offered very concrete suggestions to several of the presenters regarding resources and/or practices that they might find useful in their work.

Workshop participants also received a list of e-journals that will accept articles relating to science reform. Most of these online journals are refereed and non-science specific journals. Last year the Program Committee authorized the development of such a list to encourage dissemination beyond the usual science journals. This decision was based on the premise that faculty know the publication venues in their own disciplines, but may not be aware of other avenues. In addition to sharing the e-journal list with these workshop participants, it has been sent to every grant recipient, the program Committee members, and is posted on the ACS Science Reform website.

One of the impressive aspects of this workshop was how mentoring and sharing infused the entire day. It was truly gratifying to see people freely asking questions and offering ideas to each other.

Appendix C contains the complete workshop agenda, the summary of the workshop evaluations, and the e-journal list.

c. **Third Annual Meeting of the Program Committee**

The third meeting of the Program Committee for the Reform of Introductory Sciences course was held on September 18, 2005, at Furman University, Greenville, SC, following the Mentoring and Information Sharing Workshop on Saturday, September 17. Leo Pezzementi, Birmingham-Southern College, chaired the meeting.

The agenda included a review of the workshop held the previous day, the mini-grant process, dissemination efforts, an update on the Science and Math Values Inventory [Drury University] and who is using it in ACS, grant assessment, and a final Program Committee meeting in early Spring 2007.

During the discussion of the course mini-grants, each committee member was asked to return to campus and encourage their colleagues to submit proposals for the remaining two grant rounds. The ACS Council of Deans also was asked to encourage their natural science faculty who teach introductory courses for non-majors to submit proposals.

Program Committee members and course mini-grant recipients continue to be encouraged to share what they are doing as part of this grant. The e-mail lists created for use by Program Committee members and ACS science faculty are used to facilitate communication among and share resources with each set of constituents. The ACS web site, <http://www.colleges.org/sciencereform/index.html>, offers yet another venue for dissemination. Grant recipients are asked for permission to post their proposals and final reports on the site, and most grant this permission. There is only one case where copyright issues prevented posting most of the final report.

The major portion of the meeting focused on the assessment component of the grant and establishing a timeline for related activities. Jeanette Norden, as the outside evaluator, asked a lot of questions that helped to focus the intent, direction, information needed and a reasonable timeline. It was agreed that one of the things to be acknowledged up front is that the very nature of the grant funding cycle means the long-term investment results cannot be determined by the 2007 final grant report.

There will not be a meeting of the Program Committee in 2006. The next meeting of the Program Committee also will be its final one and will be held early Spring 2007. Birmingham-Southern College is a tentative host site for this meeting.

A complete Program Committee Meeting agenda and meeting summary are found in Appendix B.

d. **The second Course Mini-Grant recipients** were announced in early May 2005. Five proposals were received and five grants were awarded to faculty in Biology (3); Physics (1); and collaboration among Biology, Chemistry, and Geology (1). A complete recipient list is included in Appendix E., along with the funded proposals and copies of the interim reports.

e. The deadline for the **third round of Course Mini-Grants** was October 14, 2005. Five proposals were received from faculty for introductory courses in Biology, Geoscience, Chemistry, and for an interdisciplinary core course. Four PIs were asked to revise their proposals, addressing concerns around pedagogy, budget, assessment, and evaluation, and resubmit them by the end of January 2006.

One course proposal was funded in this round after the PI provided additional information. Morehouse College faculty Larry Blumer (Biology and principle PI), Valerie Haftel (Biology), Lance Shipman (Chemistry), Duane Jackson (Psychology),

Curtis Clark (Mathematics), and Aakhut Bak (Physics) received \$19,720 to design and test *A New Interdisciplinary Core Course*. The proposal is found in Appendix

## **2. Problems Encountered Or Unanticipated Developments in Project/Program Since Last Interim Report**

a. Fortunately, unlike 2004, the 2005 workshop held at Furman University was not impacted by a hurricane. Unfortunately, it was impacted by flight reductions caused by airline bankruptcies. Two workshop participants, one of whom was a mini-grant presenter, were stranded in Memphis and never made it to Furman. While not disastrous, it was disappointing for everyone and a problem for the two faculty members who were stranded.

b. Five proposals were submitted for the March 2005 Course Mini-Grant deadline. Since there was hope that the number of proposals received in the second round would be more than the number [9] received in the first round, this was a disappointing development. As a result, a renewed effort to encourage proposal submissions is underway. Members of the ACS Council of Deans are encouraging their faculty. Program Committee members are talking one-on-one with their colleagues to encourage submissions. Multiple announcements via the science faculty e-mail list, the ACS e-Palladian, and the Palladian have been and will be made, all designed to get the word out and encourage proposals.

The Program Committee approved the addition of an October 2005 mini-grant round to encourage more submissions. And, the 2005 workshop at Furman was designed to invite science faculty who were interested to submit a proposal to attend, learn more about the process, hear what their colleagues are doing, and provide the opportunity for them to more fully explore and develop their proposal ideas.

Two of the five proposals received in the October 2005 mini-grant round were from participants in the fall 2005 Furman workshop. At least an additional seven participants from the fall workshop indicate they plan to submit proposals for the March 2006 deadline.

In discussing possible reasons for the decline in proposals at the Program Committee meeting, time and tenure concerns repeatedly surfaced as hindrances. Since these kinds of issues are best addressed at the individual institutions, Program Committee members continue talking with their chief academic officers about these issues, encouraging them to promote faculty involvement in this initiative.

c. This item is not so much stating a problem as it is acknowledging a challenge. While the final reports from the course mini-grant recipients provide a final reporting of their activities for the grant period, it does not mean that all of the PIs will be able to provide a comprehensive report on their overall, individual projects, especially if new or revised courses/modules are taught after the mini-grant period ends. In several cases, because of local campus curricular cycles, the new or redesigned courses/modules may not be implemented and or evaluated until one or two years after the mini-grants

end. Furthermore, the process for publishing in peer reviewed journals often takes 18-24 months, which means PIs may not know until some time after the final report for this Science Reform Grant is submitted whether or not a submitted paper will be published or is actually published. The challenge then becomes ascertaining the long-term investment of the grant when complete information will not be available by June 2007, which is the ending date of this Science Reform Grant. The core Assessment Team of Ed Roy (Trinity University), Leo Pezzementi (Birmingham-Southern College), and Jeanette Norden (Vanderbilt University and Vanderbilt Medical School) will discuss this issue at their meeting on January 16, 2006.

d. In the original ACS proposal submitted to the W.M. Keck Foundation of Los Angeles, ACS indicated that its member institutions would participate in the first round of beta testing of the Science and Math Values Inventories that were being developed by colleagues at Drury University. As indicated in the December 2003 year-end report, the inventories were not available as soon as the developers thought they would be; in fact the Math Inventory was just completed and made available for use this year [2005]. Instead of being included in the first testing round, ACS was not invited to participate until the second round of testing that was begun in the fall of 2004. Because the ACS Science Reform workshop schedules and the schedule of invitations from our Drury Colleagues to use the inventories were out of sync with each other, this hampered the recruitment of ACS participants. Furthermore, there has been some frustration on the part of the ACS faculty who have used the pre-post Science Values Inventory in their introductory courses for non-majors with the time lag between submitting the completed inventories to Drury for scoring and receiving the tabulated results from Drury.

ACS remains committed to using the Science and Math Values Inventories and working with colleagues from Drury on this project to disseminate up-to-date information in a timely manner. Efforts also are underway to recruit more ACS faculty to use these pre-post course instruments, as one means of receiving information that will help them improve their introductory science courses for non-majors.

e. The ACS staff person who has been working with this grant program resigned from her position effective January 6, 2006. The Program Committee chair, consultant, and members will continue to provide effective leadership for this grant.

### **3. Further Progress Anticipated Within The Next 6 Months**

- The fourth and final round of mini-grant recipients will be announced the week of May 2, 2006.
- Dissemination will continue to occur via the *Palladian*, *e-Palladian*, the ACS website, and disciplinary state and regional meetings.
- A presentation will be made at the February 2006 PKAL meeting that is being hosted by Trinity University.
- A preliminary assessment piece will be developed by the end of February 2006.
- In Spring 2006, science faculty at Centenary College and Morehouse College will use the Science component of the Science and Math Values Inventory

developed by colleagues at Drury University. It is anticipated that additional science faculty also will use this inventory.

**4. Other Support Solicited/Received Since Last Interim Report**

None solicited/received

**5. In Hindsight, Would You Have Structured This Grant Differently, And If So, How?**

In hindsight, we would have set two dates during each academic year for the submission

of course mini-grant proposals. This would have kept the process before our target

audience and perhaps encouraged more submissions.

**6. Related Activities**

- Articles about the science reform initiative were published in the Winter, Spring, and Fall 2005 editions of the *Palladian*. Copies of these editions are included in Appendix G.
- John Snyder (Furman), program committee member, made a general presentation about the ACS Science Reform Program to the South Carolina Academy of Science meeting, March 16, 2005.
- Leo Pezzementi (BSC) and Ed Roy (Trinity), program committee members, participated in the Phi Beta Kappa (PBK)/PKAL Discussion in Science Education, April 22, 2005.
- Preston Miles (Centre), program committee member, made a general presentation about the ACS Science Reform Program at the Kentucky Academy of Science meeting, November 2005.
- Glenn Kroeger (Trinity), program committee member and course mini-grant recipient was involved in informal sharing via conversations at the 2005 South Central Section meeting of the Geological Society of America and in informal sharing at the 2005 annual symposium of the Keck Geology Consortium.
- Kristy Stensaas and Bob Nevins (Millsaps), course mini-grant recipients shared ideas with colleagues at several 2005 NSF-sponsored Chautauqua courses.
- David Wessner (Davidson), course mini-grant recipient:
  - Presented to the American Society for Microbiology meeting, Atlanta, May 2005.
  - Published a small book, *HIV and AIDS*, San Francisco: Pearson Education, Inc. [as Benjamin Cummings], 2005. See Appendix H.
  - Is in process of submitting a manuscript describing the website related to his new course and the results of the survey of first year students.
- Erich Uffelmann (W&LU), course mini-grant recipient:

- Presented information about his work at Sewanee: University of the South, February 18, 2005
- Conversed about his work with Ms. Elizabeth Court, Chief Conservator of Paintings, The Balboa Art Conservation center, San Diego, CA, March 16, 2005.
- Shared his revised course work with professionals in The Netherlands from May 8-28, 2005
- Presented information about his work at an NSF Science in Art workshop, June 8, 2005.
- Presented information about his work at Davidson College, November 18, 2005.

7. **Relevant Honors and Awards Since Last Report**

At this time, we are not aware of any honors and/or awards that have been received in 2005 by anyone involved in this program.