

Northeast Regional Network Meeting
Friday, February 6, 2004
Stony Brook Manhattan

I. Review of Reinvention Center Activities

A. Participants at the last conference recommended strongly that the Center focus on ways to promote interdisciplinarity in undergraduate education. The Center has addressed this recommendation in two ways:

- i. Math/Bio Project: The Center applied successfully to the NSF for funds to conduct a study designed to assess the current state of undergraduate biology, and specifically to investigate how quantitative approaches are being incorporated into the curriculum at research universities. The project, which involves a survey and interviews, will also ascertain the ways in which undergraduate programs in mathematical and computer sciences are educating their undergraduates about opportunities for them to apply quantitative approaches and methods in biological research. We have just completed the survey and interviews and are analyzing the data. We will disseminate the findings in a report and through the regional networks. In addition, we plan to compile an inventory of exemplary courses and programs, which will be posted in the Resources pages of the Center's Web site.
- ii. The Center has twice made Interdisciplinarity the focus of the Spotlight feature of its Web site. The first Spotlight was on "Achieving an Interdisciplinary General Education." The second Spotlight looked at the "Minor as a Vehicle for Interdisciplinary Education." Both Spotlights have thoughtful essays and models of successful programs or courses.

B. Assessment

Following up on the conference presentation on assessment by a team from the University of Delaware, the Center applied unsuccessfully to the NSF for a project involving the modification and implementation of the Delaware instruments on four campuses. The Delaware instruments, which had been developed by a panel of faculty and assessment specialists, were designed to assess the short- and long-term impact of participation in research on current undergraduates, alumni, and faculty. The proposal was rejected because the reviewers felt it relied too much on the Delaware instruments, which did not make "a systematic effort to capture or assess the learning advantages for students who participate in research."

There was a lot of interest in the project and many campuses wanted to participate. We narrowed the list to twelve and then the final four based on their size, nature of the undergraduate population, history of student participation in research, status as public or private university and the presence of an infrastructure to support the project.

The program officer and others at the NSF have suggested that the Center organize a workshop on assessment that, rather than focus on assessment and assessment tools per se, focus instead on the design and supervision of undergraduate research experiences in light of specified goals and desired outcomes for the undergraduate students, faculty, and graduate students. One goal for example is likely to be the development of cognitive skills (i.e. in reasoning, critical thinking, communication, persuasion). They feel that good assessment tools can be developed only after the goals and desired outcomes are articulated and that the process include the voice of faculty.

In parallel with this emphasis on the experience, we can work on designing assessment tools that will serve to codify the learning advantages of undergraduate research participation. This will require input from a group made up of faculty who supervise undergraduate research and assessment specialists.

Joan Bennett noted there had been considerable science faculty input in the process that led to the development of the Delaware assessment tools included the input of a panel of faculty. She felt that the problem was that the Delaware tools were concerned with cognitive and behavioral development and the NSF may have wanted greater involvement of behavioral psychologists and learning theory researchers. Randall Phillis pointed out that different parties have different goals that are assessed. Faculty are interested in content, researchers are interested in generating data for their work, and institutions are interested in outcomes. There are few assessment tools developed for cognitive thinking/persuasion/problem solving skills. Donna Brown stressed the importance of having behavioral elements such as self-discipline, taking on responsibility, and doing things on time, among the goals.

There was agreement that articulating the goals of undergraduate education would be very useful and important. Stan Katz suggested that when the Center convene a group to work on assessment with this new emphasis the meeting should include Mike Splitt at Northwestern who is involved in redesigning engineering education and in forming alliances across fields.

- C. The Center had submitted a proposal to the NSF for a Science of Learning Center (SLC) Catalyst Grant to study past current NSF-funded Science and Technology, Engineering and Materials Science Research Centers to determine the extent to which and how they were incorporating their research advances into their undergraduate education. Based on the findings, as well as on input from experts in the science of learning and various science disciplines, the Center sought to identify effective models and practices and create an integrative prototype that campuses could use in developing their own SLCs. The proposal was rejected because the reviewers felt it did not fall within the SLC

Catalyst program guidelines, which were designed to support campus groups planning to develop SLCs. The NSF plans to establish a new category in its next solicitation that will accommodate proposals like ours. The Center will re-submit its proposal at that time.

- D. Now that the Reinvention Center is three years old and appears firmly established the Center's Executive Board has developed By-Laws for the Center. The By-Laws strengthen the role of the regional networks by calling for the creation of Advisory Boards for each. Further, they establish a connection between each of the regional networks and the Executive Board by requiring that one member of each regional network Board to be on the Center's Executive Board. The Executive Board also decided to establish a Center institutional membership fee of \$1500. There was a consensus among those present that the fee should not be implemented until next year, after the next national conference, given the severe budgetary problems many universities are having.

II. A Review of the Program for the Reinvention Center's Next Conference

There was general satisfaction with the planned conference format and program. Based on the recommendations of the group, two breakout sessions will be added: One on integrating research-related activities into living/learning communities, to be included in the first breakout group, and the other on "Technology and Pedagogy." The latter session, to be scheduled in the second breakout group, will consider ways to increase connections between teaching and learning centers and actual instruction, with a possible emphasis on effective use of information technology. The suggestion was also made that we include a session that addresses the costs and possible problems arising from increasing participation in research by undergraduates. The costs include faculty time and time management, and real world problems in terms of resolving interdisciplinary vs. disciplinary education issues. The group suggested several potential speakers and breakout session leaders. Reinvention Center will follow up on these. WE ALSO WELCOME ADDITIONAL RECOMMENDATIONS.

In order to prevent the overcrowding that plagued the breakout sessions at the last conference, it was suggested that we offer multiple sessions on the same topic if the size of a session becomes an issue. The Center will move up the deadline date for early registration in order to be able to identify especially popular sessions and plan accordingly.

III. Research Learning Community (RLC)

The Reinvention Center has had conversations with officials at the NSF about developing a prototype of a research-oriented learning community directed at 1st and 2nd year students and designed to prepare them for meaningful participation in research. A distinguishing feature would be in its grounding this preparation in the liberal arts. In addition to basic science and math courses, "Research Learning Community" (RLC) requirements for example might include courses in which students learn to read and interpret texts, evaluate information, gain skills in communicating both in writing and orally, and have sequential research-oriented experiences. The goal will be to develop a model that engages students in inquiry-based learning early and helps them from the outset to develop the broad competencies and specific disciplinary skills they will need for a productive research experience.

Gayle Reznik of the Reinvention Center provided an overview of existing learning communities. An outline is attached. Although learning communities enjoyed (and still enjoy) a certain vogue in the 1990s as university administrators have sought ways to create small groups to counter the size and impersonality of the university, the Reinvention Center survey in 2001 found that while these communities are popular with university administrators and good recruitment tools, students tend to find them limiting. Only two institutions reported expanding learning communities in the future. Similarly, it has been difficult to get faculty to buy in.

In her overview, Gayle provided models of existing learning communities that have elements that we may want to adapt in creating the prototype. In addition, Randall Phillis described the BIOTAP learning community at the University of Massachusetts which offers a very intensive experience in the first two years, but then tapers. This is a common problem that will need to be addressed in any prototypical RLC that we develop. He suggested that the prototype we develop should include an English/Writing component so that students might develop critical skills of critique and persuasion (in arguments of science, and social/political realm).

Several recommendations were made:

- Step 1 of the RLC development process: Assess faculty interests and faculty/campus strengths with respect to resources and course offerings to see how the RLC can build onto these interests and strengths. Every effort should be made to use what exists and not to add.
- The theme needs to be carefully defined and be congruent with existing teaching and research. If the theme is too broad, it often becomes meaningless. If it is too narrow, it suffers the limitations of existing learning communities.
- Faculty buy-in is essential and most likely to occur when the learning community has a connection to a faculty member's research interests and is aligned with faculty teaching and other commitments. Similarly, faculty from all departments/units that are involved need to feel that they are essential parts of the team. Thus genuine collaboration is critical.
- In order for the RLC to maintain the interest of faculty and students and last, it needs a "hook." A "hot topic" might serve as a hook. Another approach might be to organize the community around a service/social engagement/experiential theme. Duke has recently received a FIPSE award for a community-based project with many elements we are proposing. Dennis Jacobs, Professor of Chemistry at Notre Dame, is directing students in an interdisciplinary study in an urban neighborhood in Chicago. Dennis will be leading a breakout session on the community as a resource at the November conference.
- The RLC needs to be project-based and include both curricular and co-curricular opportunities for experiential learning.
- The prototype needs to be flexible for all campuses, so that it fits within different campus cultures and infrastructure. On some campuses for example learning communities originate within Student Affairs and on others within Academic Affairs

- If graduate students are going to be important members of the RLC, they must be properly trained and instructed in how to mentor and teach undergraduates. In addition, issues of compensation and RA vs. TA need to be addressed. Graduate students who receive this training might also be mentors for other populations (high school students).
- Upperclassmen can remain involved by serving as mentors to the first- and second-year students in the RLC. They represent another resource in addition to faculty and graduate students.
- The RLC needs to be distinguished from current learning communities (living in same dorms and occasional involvement of faculty).
- Instead of focusing on 1st and 2nd year students, as was the original intention, we might want to focus on transfer students, who are an increasing presence on many research university campuses and could truly benefit from the small community and enrichment activities.

It was the consensus of those present that the Reinvention Center form a group of faculty/researchers/scientists and professional staff currently involved in learning communities to explore the RLC idea.

IV. Humanities Initiative

Humanities faculty attending the last conference urged the Reinvention Center to sponsor forums that focus exclusively on undergraduate education within the Humanities. In response to this call, the Center submitted a “focus” proposal to the NEH, to establish a network made of faculty whose research and/or teaching was in literature to provide a structure through which these faculty collectively could address disciplinary and institutional challenges that are fundamental to undergraduate teaching and study of literature. Unfortunately, the proposal was rejected. The Center is therefore moving forward another way. First, it has set aside time at all four network meetings in the spring 2004 for discussions of what faculty would like to see happen at the forums and to consider also such questions as what undergraduate scholarship means in the humanities and how scholarship should be conceptualized in relation to the discipline and in relation to interdisciplinary interests. Following this round of meetings, the Center will convene a small group of faculty across all Humanities disciplines to sift through and give shape to the recommendations and develop an agenda for the Center. Colleagues from the Carnegie Corp., National Humanities Center, ACLS and possibly organizations like the Consortium of Humanities Institutes and Centers, made up of directors of Humanities Center will be invited to participate.

A team from the U of Delaware made up of Joan Bennett (English), Fred Adams (Philosophy), and James Dean (English) gave a presentation on Delaware’s approach to undergraduate research in the Humanities. It is modeled to a great extent on undergraduate research in the sciences in which students pursue independent projects that relate directly to the faculty member’s own research interest. This differs from the more common practice of students conducting independent studies and theses on a topic that is independent of the faculty supervisor’s own scholarly activities. Students typically begin planning their project in the spring semester, work

on it full time during the summer, and then continue on it, earning “undergraduate research” credits during the following academic year. Some faculty require a thesis or paper at the conclusion of the project. All students are required to write a perspective on their work-in-progress for presentation at a University of Delaware summer conference; those doing senior theses present finished work at a spring UD UR symposium. Many of the students also present their work at professional or student conferences, and some are co-authors of articles. An important program requirement is that from the outset both faculty and student have an understanding of the connection between their work. In addition, faculty supervisors are expected to meet with their students throughout the summer in order to monitor the students’ progress. A key element of the summer experience is a “research seminar” in which 4-5 students working in loosely related areas meet to discuss their work and issues related to research. A graduate of the program serves as the facilitator.

A major challenge is to help students choose a research topic. Jim’s practice is to pose several broad subjects when he initially meets with a student in the spring semester. He then works with the student to determine the specific topic. In an effort to facilitate the decision-making process, Jim is considering an innovative strategy whereby he will present the student with five cards, each with a possible research idea. The students will select the one that is of the greatest interest and, using that as a focus, Jim and the student will negotiate the actual topic.

Once the topic is chosen, Jim mails the student bibliographic references relevant to the project so that the student will be prepared to start working once the summer begins. Fred meets with the student two hours every other day to go over reading, analysis of arguments, and preliminary writing. Jim meets with the student once a week, a frequency that is more typical for Delaware faculty; he also “digresses” so that students become familiar with and think about general issues in the discipline. Both maintain ongoing communication with their students via email.

Most departments at Delaware have formulas for allocating “merit points” to faculty for instruction beyond the classroom, including supervision of undergraduate research. When faculty accumulate enough points, they are given a course off. Having such an incentive is valuable for attracting faculty, particularly if they have never had students before. During the summer, the student researchers receive \$3,500 stipends. The faculty supervisor receives \$500.

Professors who supervise student research gain companionship in the discipline and a different and more enthusiastic perspective than they are likely to obtain from graduate students. They also derive personal satisfaction. Often, they gain new insights and interests as a result of the student’s collaboration.

There are several benefits to the Delaware model: 1) It deeply engages a faculty member with an undergraduate; 2) It enables the faculty member to be aware of student learning processes; 3) It improves the quality of life for the faculty member, integrating the teaching and research identities; 4) Students test their interest and aptitude for scholarship; 5) Students gain a rigorous, exciting experience.

At Princeton, all undergraduates are required to have a “junior experience.” This is often in the form of a seminar addressing a subject. Students write individual papers, and the group as a whole writes a public paper. Princeton also requires a senior thesis.

There was a consensus that individual collaborative research can work for only a small number of undergraduates. To increase possibilities for students to approximate the intense collaborative experience, it might be productive to pursue group models or a seminar model. The seminar would be given by a faculty member and might be on an interdisciplinary subject. Graduate students might also lead it. Another approach might be to engage graduate students as supervisors; this would work only if the student’s project was directly related to that of the graduate student.

The Center’s Humanities initiative should address several key questions:

- How can humanities faculty best become engaged in deepening undergraduates’ experiential understanding of the research endeavor in the humanities?
- Should individual “apprenticeships” be encouraged for most humanities faculty?
- Should innovative course offerings that discovery learning experiences to be more active than traditional lecture-discussion be encouraged?
- Should models be developed for ways faculty can introduce their own research questions and discoveries into their undergraduate course offerings?
- Should models be developed for introducing humanistic thinking into non-humanities course offerings? How do we build on what we have? Interdisciplinary Humanities Centers for example are not typically oriented toward undergraduates. How can we integrate undergraduates into their activities?

V. Undergraduate Research Journals

Most faculty prefer their students to publish in professional journals rather than student ones. Boston University has a journal in which students write about science for a broad audience, rather than report on their own scientific work. The University of New Hampshire has an on-line journal in which students report on their work. Undergraduate journals are useful for funding raising and recruitment. Faculty often discourage student publication in student journals because of proprietary issues. However, Cal Tech and MIT both have undergraduate science journals and both seem to have overcome proprietary problems.

VI. Future “Spotlights”

The Center welcomes suggestions of topics and authors for future Spotlights. We would appreciate it if those of you who were at the meeting and indicated an interest in writing a short essay on a particular subject would contact us asap: reinvention@sunysb.edu. We invite all Center constituents interested in writing an essay for the Spotlight to get in touch with the Reinvention Center as well.