Enhancing Student Learning Through Innovative Teaching and Technology Strategies

University of Minnesota Proposal

Final Report

June 30, 2004

Principal Investigators:
Carol A. Carrier and Robert J. Jones

Grant Directors:
Marilyn Grave, University of Minnesota, Crookston
Linda Deneen, University of Minnesota, Duluth
Bert Ahern, University of Minnesota, Morris
Emily Hoover, University of Minnesota, Twin Cities

Funded March 1, 2001 – June 30, 2004
I. Introduction and Project Overview

The University of Minnesota’s Enhancing Student Learning through Innovative Teaching and Technology Strategies project, funded by the Bush Foundation, was originated to foster the development of faculty perspectives and skills for integrating innovative teaching practices, including new developments in technology-enhanced learning, to address problems of student learning. In a needs assessment conducted on all four campuses of the University of Minnesota, faculty identified common student learning problems including: time constraints; incomplete reading or note taking; lacking adequate preparation in math, reading and writing; study skills; motivation; and performance on assignments and tests. Faculty identified areas about which they would like to learn more to improve their teaching and student learning. These areas included web-based instruction, active learning, multimedia teaching tools, enhancing lectures, and diverse learning styles. Both this needs assessment and faculty development efforts within the University of Minnesota suggested that mid-career faculty might be a particularly receptive audience for a faculty development project that addresses these needs.

Review of the literature provided some key concepts to guide planning for the structure of the project:

- The program should be faculty led
- The program should target primarily mid-career faculty who already have a number of years of teaching experience, and tend to have clearly identified faculty development needs and strong interest in programs to assist them in meeting those needs.
- The program should draw on campus-based resources for assistance for faculty in innovative teaching strategies and in technology application.
- The program should maintain a student centered approach with a focus on student learning problems that are primary to course design, delivery, and evaluation.
- The program should provide individual assistance and mentorship to faculty participants on teaching and technology.
- The program should emphasize sustained involvement rather than short-term skill building.
- The program should foster collaboration among faculty participants.
- The program should include a strategy for disseminating outcomes to a broader campus audience.

Using these guidelines, each of the four campuses developed and implemented their own approach to the faculty development program. The participating units in this grant were University of Minnesota campuses at Crookston, Duluth, Morris, and nine of the ten freshman admitting colleges within the Twin Cities campus. Each campus developed a strategy for implementing the faculty development program based on the guidelines stated above and the specific style and needs of the faculty participants. All campuses stressed the ultimate outcome of improving student learning. Findings from the literature and experience in previous faculty development efforts indicated that the development process would not be rapid and immediate, but rather that success would come through sustained continuous growth over time.
II. Summary of Implementation of Program for the Four Campuses

A. Crookston (UMC)
   i. Project goals

The UMC program began with a dual focus on what faculty hope to accomplish based on their instructional goals and how technology would be most usefully integrated with other strategies to improve student learning. Faculty learned how to assess the impact of instructional strategies and teaching tools and their effective use in enhancing student learning. Reflecting the constructivist perspective of the program, faculty learned to conceptualize technology not just as a means of delivering information but as a knowledge construction tool that students learn with rather than from.

**Objectives:**

1: Develop at least two Faculty Cohort Teams with a minimum of five members and a maximum of seven members in each group during Program Year One; four Faculty Cohort Teams with a minimum of five members and a maximum of seven members during Program Year Two.

2: Design, offer, evaluate, and conduct follow-up discussion of Teaching and Learning Workshops and Retreats.

3: Offer opportunity for faculty to apply for Teaching and Learning Mini-grants to design classroom assessment activities or to use technology as a tool for the enhancement of the teaching and learning environment.

   ii. Progress made towards goals/objectives including activities undertaken that led to fulfilling goals/objectives for the three years of the grant.

On the UMC campus, the goals of the program were defined into specific objectives. Each objective is followed by a brief narrative and tables are included in Appendix 1 to visually represent evidence of accomplishment.

**Objective 1:**

Faculty cohort teams were used as a vehicle for being actively engaged in reflective teaching. Meeting frequently increased collaboration among faculty. During the three year grant period, all teams were interdisciplinary but one. This allowed bridging connections to develop with colleagues across the campus. A sense of ownership of this faculty development program, shared values regarding student learning and instructional responsibilities, and a sense of community have evolved among the participants who engaged in faculty cohort teams. This faculty development program has confirmed the value of faculty members being intellectually engaged in the inquiry of student learning.

We exceeded our expectations as to the number and percentage of our faculty who want to actively engaged in reflective practice and learn more about enhancing student learning. (Table 1 and 2) Additional statistical data from the UM database reflect the following: a) each faculty participant taught an average of eight (8) unique courses during the grant program; b) six (6) faculty participants had instructional responsibilities for 51 or more courses/section over the three year program; and c) 3,331 students were enrolled in courses taught by Bush Faculty Cohort Team participants during the three year program.
Table 1: Number of UMC faculty participating during the three years of the grant

<table>
<thead>
<tr>
<th>Year</th>
<th>Projected participants</th>
<th>Actual participants</th>
<th>Projected teams</th>
<th>Actual teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-2002</td>
<td>10 – 14</td>
<td>37</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>2002-2003</td>
<td>20 – 28</td>
<td>41</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>2003-2004</td>
<td>20 – 28</td>
<td>24</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2: Gender and discipline demographic data on UMC faculty participants

<table>
<thead>
<tr>
<th># Faculty Participating All 3 years</th>
<th>Male</th>
<th>Female</th>
<th>Agriculture</th>
<th>Arts, Humanities Social Sciences</th>
<th>Business</th>
<th>Math, Science T ech.</th>
<th>Natural Resources Plant Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>15</td>
<td>8</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

Objective #2:
Educational events were planned to facilitate the work of Faculty Cohort Teams. During the first year, understanding and increasing student engagement with the use of case-based and problem-based teaching approaches was introduced. Then Faculty in cohort teams chose to study one or more of the student learning issues identified in the pre-grant needs assessment. The focus during year two moved to the use of classroom assessment techniques. We introduced the use of classroom assessment techniques to help faculty determine if changes in methodology, practices or tools influenced student learning. Faculty Cohort Teams then selected, designed and implemented a classroom assessment project or a teaching activity focused on improving one of the student learning issues identified in the grant proposal.

During year three, we provided faculty training to specifically apply these techniques to courses they teach to enhance student learning. In addition, a workshop on how to make public our expectations for student learning with the use of primary trait analysis was taught.

A total of seven (7) full days of education were provided during the three year grant period. Two Teaching and Learning Full Day Workshops were held during program year one and two. Faculty Teaching and Learning Retreats were offered each Fall 2001- 2003. Educational events and their relationship to the achievement of grant program objectives were collected. (Appendix 1: Event Summaries and Tables 3, 4, 5).

Objective #3:
Six (6) Teaching and Learning Mini-Grants applications were submitted May, 2003 and four (4) faculty projects were approved. Grants began during Summer 2003 and continued through Spring 2004. Faculty stipends were released after final project reports were completed and provided to the Bush Campus Coordinator.

Summary of UMC Funded Mini-Grant Projects:
- **“The Effect of Graphs and Computers on Students’ Achievement in College Introductory Economics Courses”** The two objectives were to determine if the use of computers per se had any positive influence on students’ understanding of introductory economics and to investigate the effect of graphs on student’s performance in college level introductory economic courses.
- **“A Survey and Analysis of Students’ Academic Efforts and Their Perceptions Regarding Institutional Standards and Expectations”** Objectives were to ascertain and evaluate students’ academic efforts while attending UMC; provide pertinent information to concerned faculty and administration; and to provide comparisons of this information with the expected academic effort as set forth in University of Minnesota guidelines.
- **“Multi-Learning Enhancers and Synthesizing Concepts for Menu Design and Analysis”** Objectives included increasing student reading of course materials, student preparation for
the class meetings; assessments of student learning; improvement of students synthesizing and summarizing ability.

- “Developing a ‘Principles of Marketing’ Course Assessment Plan” Objectives included development of a course assessment plan; incorporation of WebCT, identification of issues within the course curriculum that are “muddy” or not fully comprehended.

iii. Unanticipated results
We significantly exceeded our expectations as to the number of faculty actively engaged in reflective practice and interested in learning more about student learning (Table 1). During the first two program years monthly Faculty Cohort Team meetings were attended enthusiastically. During year three there was a significant drop in Cohort Team activity. Difficulty making time and/or finding common meeting times that worked for all members were frustrations that were expressed. However, twenty-three (23) faculty members participated in Faculty Cohort Teams for a three year period. At a time when demands for faculty time are significant and complex, this is a worthy accomplishment.

UMC does not have a Faculty Development Office/Officer and the campus Bush Coordinator needed assistance with the selection of trainers/consultants and topics that would satisfy the learning needs of the majority of the faculty. The Bush Teaching and Learning Advisory Committee members provided valuable feedback in the initial discussion and planning phase and members deserve much of the credit for the success of Faculty Cohort Teams.

We expected more applications for Bush Teaching and Learning Mini-Grants. The deadline was extended twice to facilitate faculty submission. However, several faculty said they “wanted to” but just didn’t have the time to consider a project and write a proposal. The faculty who conducted the Mini-Grant Projects articulated, verbally and in writing, the value of their projects. They shared a common belief that the mini-grant award created the incentive to investigate or study a new approach.

iv. What did you learn because of this grant?
Teaching is a priority for UMC faculty members. Regardless of the length of tenure on our campus, they possess a passion for teaching and they want to be intellectually engaged in the scholarship of teaching. This faculty development program provided an exceptional opportunity for us to engage in reflective teaching as we reviewed the role of innovative teaching and technology strategies as tools that can enhance student learning. Faculty participating in our Faculty Cohort Teams as well as the educational events, now feel more comfortable in acknowledging their need to analyze and evaluate their teaching practices and if, and how, teaching practices and/or technology make a difference in student learning. In the UMC proposal we stated: “At the cornerstone of reflective practice and the scholarship of teaching is the idea that educators continually examine what they do and the contexts in which they do it.” This Bush program provided the resources for faculty to demonstrate their commitment to improving student learning. (Appendix 1: Tables 6, 7, and 8)

v. Will you make any changes based on these results?
The Bush Campus Coordinator/PI will approach our new Vice-Chancellor for Academic Affairs and seek financial support for the continuation of professional development training on campus that focuses on student learning. The Bush Campus Coordinator provided the former Vice-Chancellor for Academic Affairs with documentation of educational events and faculty efforts to assess the enhancement of student learning for inclusion in the UMC Progress Report on Assessment of Student Learning to the Higher Learning Commission, June 30, 2003. Examples of individual faculty plans, implementation procedures, and results of their intervention to assess
vi. Do you have any plans to share your results or findings? How?
Two faculty members have made presentations on their work to their professional organizations. Prof. Behrooz Sedaie presented the results of his project “The Effect of Graphs and Computers on Students’ Achievement in College Introductory Economics Courses” to the Midwest Economics Association March 2004, in Chicago, Illinois. In June, 2004, Eric Burgess, Instructor of Management, will be presenting at the Association of Collegiate Business Schools and Programs Annual Conference, “Moving from Good to Great in Institutions of Higher Learning: Will the Learning Outcomes Assessment Process Help Get Us There?”

During the opening week events for Fall 2004, a Bush Dinner Celebration will be held. At this time all faculty members who received Bush Teaching and Learning Mini-Grant Awards will share their results with our campus colleagues. Additionally, a summary of this Bush program’s sponsored activities will be published on campus and provided to the campus academic and administrative members and the campus advisory committees. Documentation of faculty efforts to assess the enhancement of student learning will be included in UMC’s, Higher Learning Commission Self-Study. Examples of individual faculty plans, implementation procedures, and results of their intervention to assess student learning as a participant of our Bush Faculty Development Program will be reviewed for inclusion. The Campus Coordinator will be providing the community newspaper an article highlighting our accomplishments. An article for publication consideration by the New Directions for Teaching and Learning, a Jossey-Bass Higher and Adult Education Series quarterly periodical, will be submitted.

B. Duluth (UMD)

i. Project goals
The UMD proposal is based on the premise that technically sophisticated and adept faculty can incorporate technology-enhanced learning into their courses fairly easily, while other faculty need specific assistance to do so. The UMD proposal was directed specifically toward "late bloomers," faculty who are not familiar with the latest educational technology, especially web-based instruction. To become involved, these faculty require a great deal of assistance. The UMD proposal brought together specific topics on teaching and learning that faculty have identified: student learning styles, active learning, web-based course instruction, and multimedia teaching tools.

ii. Progress made towards goals/objectives including activities undertaken that led to fulfilling goals/objectives for the three years of the grant.
UMD used Bush Foundation funding to develop and administer the Technophytes Cohort Program, as described on the web site at [http://www.d.umn.edu/itss/etrg/technophytes/](http://www.d.umn.edu/itss/etrg/technophytes/). The word “technophyte” was invented to describe a neophyte to technology. There were three cohorts, one during each year of the grant. Cohort 1 included 20 faculty, Cohort 2 included 19 faculty, and Cohort 3 included 23 faculty.

This program, aimed at “late bloomers” among the faculty, consisted of the following components:

- Individual consultation provided by the staff of Information Technology Systems and Services (ITSS) as well as by faculty who are proficient with educational technology. Technophytes were encouraged to meet for an hour a week with their mentor. The
emphasis during consultation sessions was on just-in-time learning and hands-on learning. Mentors were skilled at encouraging technophytes to do things for themselves, with support from their mentors.

- Group discussions to encourage members of the cohorts to meet together and discuss topics related to the use of technology in education. These meetings were held over lunch, where discussions were both lively and supportive.
- Emphasis on using technology to improve the delivery of a course. Mentors reinforced their philosophy that technology should be chosen to meet a pedagogical need. Technology for technology’s sake was discouraged.
- Special mini-workshops for technophytes only. Many technophytes were reluctant to attend open campus training sessions, so the mini-workshops provided a safe environment for those who felt insecure about their skills.
- A grant of $1000 awarded to each technophyte to use to enhance the technological toolbox. Technophytes purchased specialized software, peripherals, digital cameras, and personal digital assistants with their funds.
- Support for technophytes to attend conferences was provided during the third year of the program. Conferences were required to be focused on educational technology. Sixteen technophytes attended conferences.

iii. Unanticipated results
ITSS staff members have been available to assist any faculty member with any technology project related to teaching and learning at no charge. We were surprised to discover that many faculty were either unaware of this service or reluctant to take advantage of it. The formality of the Technophytes Program gave faculty “permission” to use the services of these two ITSS staff members.

We did not anticipate that the primary incentive for this program would be the mentoring. We expected that the $1000 grant would be the primary incentive, but in fact, many faculty had difficulty determining how to spend the grant. The individualized mentoring was far and away the most popular part of this program. In retrospect, the late bloomers appear to be among the faculty who were particularly apprehensive about learning in groups and fearful about appearing incompetent in front of their peers.

We were pleasantly surprised at how far some of our technophytes were able to advance in this program. Some of them are now among our most technically able faculty members and are enthusiastic about trying new things with technology, both in the classroom and outside of it. Some faculty reported being able to work more productively as a result of this program.

We were also startled to find that some faculty members among the more technologically advanced on campus were eager to take advantage of the Technophytes Program. Some of them felt that they had forgotten skills they had learned before. Others simply wanted the structure of the program to help them advance.

iv. What did you learn because of this grant?
Faculty members appreciated the special programs; particularly those that helped them overcome barriers to self-improvement. Faculty members are human beings with their own set of insecurities that can interfere with progress. Specially designed programs that address these insecurities and provide structured learning do lead to positive results.
Students appreciate the effort faculty made to improve their technology skills. They seem to recognize and understand that not every new project that faculty try will be a success. A review of courses shows that faculty in the program taught approximately 664 unique courses during this time period. Approximately 7768 students took these courses at UMD. We would like to better understand the impact on student learning, and we hope to address this in our next grant proposal to the Bush Foundation.

Additional Outcomes:

- The final results of the comprehensive survey of participants showed very positive faculty satisfaction. On the Duluth campus, 48 out of 62 participants completed the survey. These survey results are consistent with program assessments we did on this campus.
- Technophytes reported enjoying the sense of community engendered by this program. They found it valuable to hear from faculty members in other departments about their activities, successes and failures.
- Customizing programs to the needs and culture of our particular campus was valuable. The University of Minnesota is a large system spread across the state. Of course we should work together and learn from one another, and we do that. But one size does not fit all for a faculty development program. The flexibility of the Bush Foundation and the University of Minnesota in letting us develop what works for us has been invaluable.
- Faculty members reported that their biggest barrier to developing new skills is the time to devote to it. Nevertheless, this program helped them to make the time and to discover that some things they wanted to do could be fit in among their many other responsibilities.

v. Will you make any changes based on these results?

On the Duluth campus we have made the decision to continue the Technophytes program without the Bush Foundation funding. We have already accepted 20 faculty members into Cohort 4 for the 2004-05 academic year. Under the newly redesigned program, we will no longer give grants but will provide the mentoring that was so valued. The continued faculty interest in this program is gratifying.

vi. Do you have any plans to share your results or findings? How?

UMD faculty members have already shared results, both on campus and at professional conferences. Here is a list of faculty activities that are a result of Bush Foundation Funding for the Technophytes Program.

- Lynn Bye, Assistant Professor of Social Work, presented a paper in an electronic poster session at the National Council on Social Work Education Conference this spring entitled, “Siberian Correspondent Course Component.” According to Professor Bye, “I would not have been able to do any part of the project described in the paper, or prepare the electronic presentation without the support from the Technophyte Program and the guidance from Bruce Reeves.”
- Eileen Zeitz, Professor of Foreign Languages and Literatures, gave three presentations on campus sharing the expertise she gained as a result of the Technophytes Program.
- Faculty members in the departments of Education, Mathematics and Statistics, Social Work, Geological Sciences, Sociology/Anthropology, and Composition shared their technological expertise with their colleagues during a department visit, part of the Technophytes Program (http://www.d.umn.edu/itss/etrg/technophytes/deptvisits.htm).
• Sue Damme, Assistant Professor of Education, gave four presentations on campus, including one to colleagues from the Twin Cities Campus, sharing the expertise she gained as a result of the Technophytes Program.
• Dan Gliszczinski, Instructor of Education, gave presentations to faculty at UMD and UMTC regarding CPS handheld classroom technology systems.
• Carmen Latterell, Assistant Professor of Mathematics and Statistics, and Linda Deneen, Director of Information Technology, have had a paper accepted by the *T.H.E. Journal* entitled, “Evaluating a Program to Increase Faculty Use of Technology in Teaching and Learning.” The program referred to in the title is the Technophytes Program.
• Eight technophytes have shared information about their projects at our annual Tech Fest: [http://www.d.umn.edu/itss/etrg/techfest/](http://www.d.umn.edu/itss/etrg/techfest/).
• Several faculty members shared information they obtained at the conferences they attended on educational technology. They did this either at cohort lunches or by email.

**C. Morris (UMM)**

i. **Project goals**
The goals for the UMM component of the grant remained:

1. To increase faculty knowledge and understanding of the mutual dependence between teaching and learning styles and to show faculty how different types of instructional technology influence teaching and learning.

2. To teach interested faculty, especially mid-career faculty, how to master new technologies and to incorporate technology as an integral part of some of their course offerings.

3. To assist faculty in developing effective techniques for teaching students how to be critical and discriminating users of web resources.

4. To equip faculty to navigate the internet, to be able to discover appropriate sites, and to evaluate student use of the internet as a resource.

ii. **Progress made towards goals/objectives including activities undertaken that led to fulfilling goals/objectives for the three years of the grant.**

In the third year of the grant, activities addressed all four goals. As was determined during the first year of the project, however, we have emphasized the identification of appropriate instructional technology for faculty members’ instructional goals. This has meant that attention to the mutual dependence between teaching and learning styles has been indirect. The balance of attention to the goals varied within each Triad [see below], but all addressed Goal 2.

In keeping with the project design, the third year involved the largest number of faculty. Fifty-three faculty members operated in 18 triads led by participants in the previous year’s working groups to explore a variety of applications of instructional technology for their courses and programs. In addition, five mentoring partnerships paired junior and senior faculty members, exchanging the IT proficiency of the former with the instructional and professional experience of the latter. Four student partners, who had assisted the working groups in the second year of the project, worked with the triads that emerged from their group. An instructional technology seminar continued under the leadership of a professional support staff person.

Grant resources went primarily to support the use of instructional technology through the purchase of software and hardware as well as conference attendance. Participants in the Triad Groups received an allocation for such purposes. The core faculty who had designed the
working groups of the second year coordinated the work of their triads and assisted the Project Director in over-sight, evaluation and planning for a continuation grant. While Bush Foundation grant funds supported the Project Director’s activity, the NTNT (PT3) grant secured the time of the core group.

IT TRIADS
Characteristics: discipline-based, intergenerational/rank inclusive, gender balanced
Unlike the previous year, when groups brought faculty together across departmental lines, this year’s Triads usually involved faculty members in the same or closely-related departments. Eight of the eighteen groups were discipline-specific and five were confined to cognate disciplines, the remaining five crossed divisional lines. Faculty members from twenty-three different disciplines participated. Participants distributed themselves across ranks, types of appointment and gender. Each triad shared a student technology assistant with 3-4 other triads.

Triad’s composition:

<table>
<thead>
<tr>
<th>Tenure status</th>
<th>Probationary</th>
<th>Tenured</th>
<th>Non-tenure track</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23</td>
<td>34</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31</td>
<td>37</td>
</tr>
</tbody>
</table>

Varied topics:
Triads worked on a wide variety of projects:
- From the modern languages faculty one triad worked on strengthening the Language Teaching Center and another developed web-based materials for advising about and evaluating study abroad experiences.
- Math and statistics faculty incorporated the software, LaTex, which helps students as well as faculty communicate their findings more effectively.
- Computer science faculty members developed a program web-site to improve student advising.
- Four members of the education faculty developed ways to incorporate SmartBoard into their curriculum as a tool with manifold applications for K-12 instruction.
- Several groups explored ways to vary their teaching techniques through the use of course webpages – threaded discussions, on-line testing, incorporation of media.
- The discovery of resources on the internet that enrich student learning characterized several of the discipline-based groups as well.

Participants made progress reports at the end of fall semester and came together early in spring semester to discuss their experiences. At the end of the year, many attended a capstone event which showcased the results of some of the projects [http://www.mrs.umn.edu/~sungurea/bushgrant/april20/april20bush.html] and featured a presentation on the challenges and future directions of Technology Enhanced Learning by Billie Wahlstrom

Impact:
The most common thread among the Triads was the development of webpages for courses and programs. For some this stood at the first level on the Student Engagement [sharing of information] and Technological Purposes [technology used primarily for course management]
Scales. Yet many created new exercises demanding analysis, synthesis and even evaluation. These exercises expanded the ways of evaluating student learning and, therefore allowed students to exercise their varied learning styles. As important as any other consequence, instruction is becoming a more public activity as faculty and students alike place their materials on-line and invite others to analyze and evaluate them.

**IT MENTORING TEAMS**

Four of the five mentoring teams operated across the year. The one that lasted for only a semester explored a specific methodology for instruction which turned out not to fit the needs of the mentored senior faculty member. The others were more broad-based. A team of historians, for example, explored the use of on-line databases for text and images from primary and secondary sources and also the use of “personal response systems” for encouraging student interaction and facilitating testing in large course. The senior historian’s use of images in PowerPoint presentations as well as use of on-line sources improved dramatically.

**Impact:**
The consequence of the mentoring teams for student learning is hard to measure. On the other hand, strengthening collaboration across “generational lines” within disciplines expands the instructional methods available to the individuals and should improve the coherence of the curriculum in the program.

**IT SEMINAR**

This activity suffered at the beginning of the year in the face of the complex task of facilitating the Triads. The campus’s Instructional Technology coordinator offered leadership for the second semester establishing Tech Tuesdays – a brown bag noon meeting primarily for the introduction of new IT tools but also allowing for discussions of efforts to use new techniques {e.g., student web presentations, use of student personal response units.

**Impact:**
Attendance was sparse. On the other hand, the listing of topics and presenters led to some wider dissemination via individual conversations.

**Assessment:**
This year’s activities engaged over half of the UMM faculty in organized explorations of the effective use of technology enhanced learning. The intensity and frequency of the discussions varied along with the consequences for instructional practice. Given the breadth of faculty involvement, every UMM student is likely to have experienced a course experimenting with the use of technology enhanced learning. The impact for student learning is not yet clear. It is clear, however, that faculty make use of IT techniques more frequently than before. Individual reports point to new instructional practices that include the full range from communication to analysis to evaluation. In contrast to the beginning of the grant period, instructor and course webpages have increased in frequency and in the richness of their content [see survey] More generally, discussions of teaching practices has intensified.

### iii. Unanticipated results

**Positives:**
- The enrichment of support funds for participants in the project due to the cooperation of the UMM Pt3 grant (in support of improving k-12 teachers use of computer-based instructional technologies) provided greater incentives as well as tools [software and hardware] for the participants.
The working groups were over-subscribed at the beginning of the year and, despite expected attrition for a variety of reasons [e.g., resignations, unexpected new demands on time]; twenty-two individuals completed the year-long activities.

The value of the student partners was greater than anticipated. While one group leader did not make use of a student partner, those that did found the students to be unexpectedly resourceful in discovering techniques in support of the learning goals.

The definition of triad activity for the third year evolved toward a more collaborative model. These triads involve each member of the working groups identifying two colleagues [probably in one’s discipline or in a closely related area] with whom to continue the exploration of ways in which computer-based techniques can strengthen the learning of their students.

Mixed results:
- Keeping the instructional goals in the forefront, driving the search for appropriate techniques, was a challenge. Faculty appeared to respond more readily to project descriptions that referred to concrete techniques than to learning goals. At the same time, our experience reflected that reported more widely on the POD Network listserv. Instructional Technology draws faculty into discussions about instructional goals and expectations of student learning, and thus encourages collaborative attention to instruction and student learning that would otherwise not emerge.

Negative results:
- Involving so many faculty created severe administrative demands, book-keeping and processing of requests far exceeding expectations. Tracking activity and gathering reports exceeded reasonable expectations.
- The use of Student Technology Assistants [STA] needs more structure than we expected. They worked well in the second year because of a tighter focus and fewer faculty clients. When 15 faculty members shared one STA, however, they hesitated to ask for help and the STA did not have the time to initiate contact with each person. We needed a better system for allocating student time across the faculty

iv. What did you learn because of this grant?
Reviewing the three years of activity, the campus project used a multi-pronged effort to involve a majority of the faculty in TEL. Beginning with a faculty workshop keynoted by Steve Gilbert of the Teaching and Learning Technology Group, a series of ever-expanding workgroups, complimented by brown-bag seminars and IT mentoring, involved 63 or 51% of the full-time faculty. Over the three years, 2428 students have experienced the results, admittedly of widely varied intensity, of these faculty members’ explorations.

This experience seems to confirm some of our premises.
- Instructional technology provides an opening for larger discussions of teaching;
- Exploring TEL with colleagues engages faculty members and sustains their interest in ways that short courses cannot;
- A broad range of faculty can find TEL attractive
- Incremental, small-step and collaborative learning works, as Steve Gilbert advised us.
- Discipline-based groups had the most concrete effect in reinforcing learning and application toward the instructional goals of the program
- It continues to be difficult to avoid having technique drive the inquiry rather than emerging from instructional design questions.
- The range of TEL approaches is over-whelming
TEL does not save faculty time

v. Will you make any changes based on these results?

Identified needs:
- Exposure deepens instructional design only haphazardly – we need to be more explicit about design issues
- Access to tech support is difficult – needs greater coordination
- More focused, in-depth projects are necessary to connect IT and instructional design

Our continuation grant proposal grows directly from this first grant’s experiences. These first three years have allowed a broad cross-section of the faculty to sample TEL, and aroused wide interest. It has not developed curricular transformation nor has it addressed the problem of ongoing support for TEL. In the next three years, we will involve fewer faculty but support more comprehensive course-revision projects. Priority will be given to proposals that have wide applicability. We will tighten the focus by identifying instructional issues of most salience on campus – e.g., improving writing, increasing student interaction – and TEL approaches that have the most potential for serving these needs. We will then design a support system – a consulting group of faculty, professional support staff, and STAs – to work with the individual projects. That support system will include a specialist in instructional design to keep the learning issues at the forefront. The implementation and review of the support system’s efficacy will shape the on-going campus structure for supporting TEL.

vi. Do you have any plans to share your results or findings? How?
The project director and the Core Faculty presented a progress report in year two to the IT Fair at UMM. The project director and a member of the Core faculty, Engin Sungur (Distinguished Teaching Professor of Statistics) presented the approach and preliminary results to the IXth Classrooms of the Future Conference, Minneapolis, MN, in May 2003. A modern languages faculty member reported on her project at a national conference, Internationalizing the Curriculum, held in Minneapolis in April 2004.

D. Twin Cities (UMTC)
i. Project goals
The overall goal of the Twin Cities campus was to create three nine-month UMTC college-based cohorts per year of 8-10 faculty to work cooperatively in integrating technology-based solutions with other innovative teaching practices in classes to improve student learning. Participants met in college cohorts to develop innovative teaching and technology strategies focusing on improving student learning in a particular course. The combination of in-depth interaction with a consultant and discussion with a college cohort regarding teaching and learning lead the Twin Cities campus to obtaining the project goal. Because the UMTC chose to involve three different colleges each year, the program "repeated" itself each of the three years of the grant.

The program addressed the diverse needs of faculty by combining the resources of the participant colleges, the Center for Teaching and Learning Services (CTLS) in the Office of Human Resources, and the Digital Media Center (DMC) in the Office of Information Technology. CTLS and DMC have shared a successful partnership for the last several years in addressing the technology-enhanced learning needs of faculty and instructional staff and their ongoing shared services model continued in this program.
The narrative below will be divided into sections with the reports from the colleges that participated during the 2003-2004 academic year followed by the analysis of the 3 year grant program within the UMTC project.

ii. Progress made towards goals/objectives including activities undertaken that led to fulfilling goals/objectives for the three years of the grant.

**College of Biological Sciences (CBS)**

The College of Biological Sciences Cohort began with participants setting goals and plans for developing new approaches to their teaching. Most participants were interested in exploring ways to use technology to promote student interaction in large enrollment courses. Other commonalities included the desire to learn how to use WebCT more effectively as a teaching tool.

Throughout the academic year, each CBS participant met with the consultant to discuss strategies and receive technical help to accomplish their goals. In addition, the entire group met together in workshops focused on WebCT, Breeze, and other teaching technologies as well as discussing individual projects.

At a minimum, all faculty started on their projects, ranging from exploring the use of technology in teaching to developing sophisticated web-based resources (http://biosci.cbs.umn.edu/class/bioc/3021/jsa/default.html; Username: bioc302; Password: biopic; http://www.cbs.umn.edu/BMBB/brl; http://geo.cbs.umn.edu/treekey). In several cases, the courses for which the technology was developed will be taught in Fall 2004. Faculty were enthusiastic about the value of the one-on-one mentoring that they received and also impressed that their consultants were excellent teachers, not just resources to learn how to use a particular technology. Many participants commented in their final self-assessment that discussing teaching with colleagues was a valued activity.

**College of Natural Resources (CNR)**

Participants within the CNR cohort represented all the departments within the college. The agenda was set for each semester collectively. This technique kept participants active within the group as they had a vested interest in each session. Throughout the year participants made significant progress on their individual projects. As a college cohort, we met monthly to increase our knowledge base of certain software applications and to discuss individual projects. The CNR cohort actively requested specific training for different software available such as Dreamweaver, Flash, WebCT, and Breeze. As a group we focused on student learning issues and how technology could help overcome some of the difficulties students were having in classes.

Faculty made excellent progress towards their goal of enhancing student learning in their classes. Projects ranged from learning the basics of WebCT to enhancing lectures with advanced technologies such as chat boards. As with other college cohorts, some of the courses for which the technology was developed will be taught first in Fall 2004. Faculty assessed their projects to maximize both faculty and student time. The one-on-one mentoring by consultants was very useful and the cohort interaction was helpful to participants to set deadlines for themselves so projects would be completed.

**Institute of Technology (IT)**

This project provided a unique opportunity to enhance several aspect of learning in undergraduate classrooms and to interact with colleagues on issues related to teaching pedagogy and technology enhanced learning. Since the participants were from engineering and
computer science areas, they were all experts on the use of computer and related technology within their disciplines. In all cases, they had regularly used discipline specific technology, such as programming software and simulation tools, in their classrooms. However, their familiarity with issues related to teaching pedagogy and the use of technology to improve student outcomes varied considerably. While participants had extensive experience with technology enhanced learning, some cohort members’ experiences were more limited. Projects undertaken focused on new modes of instruction in an effort to impact student learning using online webnotes, simulation tools, and developing a digital text. Each of these techniques was undertaken to enhance student preparedness for class and increase the accessibility of the material for studying.

In addition, the cohort met several times to informally discuss their projects and explore topics of common interest. Although the cohort members’ projects varied widely, several common themes emerged including course evaluation and assessment, the possible uses of technology tools (such as classroom management systems and computer based interaction tools), and the idea of the “semantic web”. Exploration of these topics included presentations on the use of evaluation in technology enhanced learning and of WebCT in a wide range of educational settings. The diversity of interests and breadth of knowledge within the cohort on these issues always led to lively and fruitful discussions.

Three year progress highlights:
The goal of the TC campus was to engage faculty in freshman admitting colleges in not only thinking about student learning issues but designing solutions specific to different disciplines to address them. Nine colleges within the TC campus participated over the three years (Carlson School of Management, College of Agricultural, Food, and Environmental Sciences, College of Biological Sciences, College of Education and Human Development, College of Liberal Arts, College of Natural Resources, College of Nursing, General College, Institute of Technology). College cohorts met regularly as a group to discuss individual projects with meetings scheduled separately with consultants. In almost all the evaluations, participants were very pleased with the consultants and enjoyed the dialogue with their colleagues as expressed by the following comments: “My advice is to outline your goals early and to meet frequently with your consultant”; “I used the group to force me to do something that was always on my list but never became a priority”; and “I relearned the value of small group interaction about teaching (this was reaffirmed not learned but it had fallen out of view for some time). I gained a great deal from the interaction with the other college faculty”.

The most common thread among the colleges was the development of webpages for courses and programs. Some participants undertook webpage development to share information with students such as the syllabus and calendar of events. But many faculty created new teaching pedagogies to use technology to simulate events such as livestock markets or circuits. These exercises were well received by students and helped to change the way students were engaged in class. With materials online, collaboration could be fostered as never before in the development of teaching materials. Thus an increase in peer to peer interaction common with research projects began.

iii. Unanticipated results
College of Biological Sciences
CBS faculty did not encounter unanticipated results. The major constraint in accomplishing goals, not surprisingly, was finding the time to develop and implement the desired technologies in the courses.
College of Natural Resources
The breadth of what the CNR group accomplished in technology enhanced learning was quite significant. Our group accomplished more than we thought we would.

Institute of Technology
The students found the use of the webnotes and “lab in lecture” exercises very useful, based on informal written surveys in both of these classes. While this was the outcome hoped for, the level of student satisfaction, especially with the webnotes, was higher than anticipated. However, at the same time, faculty involved in these projects realized that successful implementation of these learning paradigms required careful forethought and up-front planning. In the case of the visualization/simulation tool familiarization projects, the importance of follow-up activities designed to force students to continue to use the tools throughout the course was underappreciated at the projects’ outset. In all cases, the cohorts’ members found that the effort required to successfully convert content from one format (lecture, CD ROM, etc.) to another format (online tutorials, webnotes, hyperlinked HTML) is easy to underestimate.

One significant problem expressed by all members of the cohort was the lack of time they could commit to their project. While this is no surprise and is an issue for all faculty, it was especially acute within IT due to the large research programs directed by many faculty. For these faculty, involvement in these types of projects require either a very personal commitment on the part of the individual or significant incentives such as release time and student assistant support. The faculty involved in this cohort dealt with this time constraint issue by adjusting their project goals accordingly (some of which were overly ambitious to begin with), often in close consultation with their consultant.

However, despite the time crunch, all cohort members found the experience rewarding and plan to continue on aspects of their project next year. In particular, they found the interaction with their assigned staff consultant to be very useful and a key element in the success of their project.

Three year progress highlights:
This is the first time cohorts were organized around colleges and not around topic interest or randomly assigned to groups representing diverse subject areas to discuss teaching and learning issues. In a survey done prior to the grant, faculty felt strongly that they wanted to meet in college groups, not in campus-based groups. This structure had its advantages and disadvantages and seemed to be strongly influenced by the college. Many participants in their year end assessment suggested that meeting within college cohorts was beneficial because they could share units on specific content and find out what others are teaching and the pedagogies being used. However, the main disadvantage of meeting with colleagues within a college was potential lack of commitment to the group if another project arose. Almost all college facilitators commented on the difficulty of freeing enough time to accomplish the goals set out by the group.

iv. What did you learn because of this grant?
College of Biological Sciences
In large part, the outcomes of the CBS Cohort’s efforts will be realized in the future. Faculty who had not yet taken the plunge to use technology in their courses have developed the skills and understanding that they need to incorporate a variety of technology resources. They have made connections to other faculty and staff who can continue to help them think through their ideas and connect with needed resources. The bottom line is that faculty attitudes toward
technology are different now. For a couple of our faculty who were “early adopters” of technology in their teaching, new tools were developed (see URLs above).

**College of Natural Resources**
The consultants helped focus and implement faculty ideas. Some faculty reported that without the regular appointments from the consultants they would not have accomplished what they set out to do. CNR faculty implemented many TEL solutions in classes to enhance student learning.

The most important outcome is faculty are now aware of the possibilities in technology enhanced learning. Through contacts with the Center for Teaching and Learning Services as well as the Digital Media Center, participants enthusiastically want to continue working on their projects. Because of the comfort level, they are more willing to implement new technology strategies in their classroom and have colleagues to discuss the advantages and disadvantages of using different strategies.

**Institute of Technology**
The use of online webnotes for covering the simpler concepts in a course outside of lecture proved to be even more popular than anticipated. Indeed, in a student survey conducted of students’ perceptions of what was most useful to them, the webnotes had the highest rating, even ahead of the textbook, discussion sections, etc. While a student survey about the “lab in lecture” exercises indicated that many students liked the idea of seeing a problem before they encountered it in lab, a significant fraction of students surveyed felt that these exercises would be best left in the lab session itself.

Student’s appreciation for the materials developed to support the use of visualization/simulation tools proved mixed. In the case of the graphics/data visualization software, students either found this topic interesting (and even fun) or found the assignments too difficult and frustrating. The circuit simulation tool tutorial proved to be even less popular with the students, with most of them showing little enthusiasm for this tutorial over the product documentation supplied by the simulation tool vendor.

The exchange of ideas between members of the cohort, both at the scheduled cohort meetings and informally, was a significant outcome of this program. This type of interaction, especially across different disciplines, too rarely happens outside a program like this. The diversity of backgrounds and expertise in technology enhanced learning among the cohort members resulted in discussions that stimulated everyone and helped each cohort member improve their project. This program also introduced several of the faculty to the services and support available through the Center for Teaching and Learning and the Digital Media Center, particularly through the consultants that the faculty worked closely with. Faculty have indicated that they hope to continue to utilize these valuable resources as they expand these project.

**Three year progress highlights:**
Using campus based resources is one of the key concepts outlined in the literature for successful faculty development. The UMTC campus has invested resources in WebCT as well as in the Center for Teaching and Learning Services and the Digital Media Center. These resources were used in conjunction with the grant to deliver a strong, focused program. The consultants, an integral part of the program, were based in one of these centers. At the conclusion of their one year of participation, many faculty continued to use resources provided by these centers.
How great an impact did the program have on students on the TC campus? Seventy seven faculty participated through the three years of the grant, teaching a total of 429 classes, reaching approximately 23,000 students. How specifically did this program impacted student learning? Through faculty self-assessments we learned that faculty made use of technology-enhanced learning. We also learned that not everything tried positively impacted learning. However, most faculty reported that they are continuing to work on their project, modifying when necessary, seeking student and colleague input, and focusing on improving student learning.

This is the first grant project that organized participants through their college affiliation. The organization thus determined participation. Advantages to using this type of organization within a large research university were an increase in sharing teaching related materials, evaluating different teaching methods, and encouraging closer working relationships with colleagues in similar disciplines. Some faculty, working with others in their college, are proposing new courses or new ways of thinking about teaching existing courses. The shared purpose of teaching and learning was enhanced.

v. Will you make any changes based on these results

- Bush grant activities provided an opportunity for the Center for Teaching and Learning Services and Digital Media Center to develop a stronger working relationship. Participants reported that they benefited from the collaborative efforts of these units.
- The program was faculty led and there were advantages and disadvantages. The working relationship among the grant program leader and the Directors of CTLS and DMC was strong. However, there was not a tight link between the grant program leader and the Council of Undergraduate Deans which might have been desirable. The undergraduate deans are the individuals within the colleges that made the decision to participate or not as a college and are influential in bringing attention to the program.
- Many of the faculty who participated were tenured or had been teaching specialists for years. So the program met the target audience. However, in cohorts that did have intergenerational groups, interaction was often strong as there was a sense of energy when meeting and working with people of different backgrounds.
- Projects were designed with a student learning problem identified. However, many faculty joined the program to develop their skills as well as address student learning issues. Sometimes the skill development took the entire year, so the student learning issue identified did not get addressed during the year the faculty member participated. An overall evaluation of the program described faculty as being satisfied with the program. Self assessments at the end of the year of participation were done and overall faculty recommended to their colleagues to start small, be focused, use your consultant, talk with the college cohort (or whatever support group is there) and use the cohort to help set deadlines.
- The program provided individual assistance and mentorship to faculty participants on teaching and technology. In their self-assessment reports, faculty expressed appreciation for the individual consultants and the assistance they provided.

During the first phase of this grant, faculty representing a broad cross section of disciplines were involved in grant activities representing 90% of the freshman admitting colleges on the TC campus. However, we have not seen wide spread curricular changes or resolved the issue of support for technology enhanced learning. In the next three years, we will involve fewer faculty teaching large lecture courses. We will propose that course revision occur over a three year period and assessment and evaluation be built into the projects. Priority will be given to proposals that have wide applicability. We will include a team to support the projects including faculty mentors, teaching assistants, technical consultants and undergraduate student support.
The expectation of the teams will be a comprehensive review of the course, changes made to the course, and evaluation of the results of the changes made.

vi. Do you have any plans to share your results or findings? How?
Faculty on the Twin Cities campus have shared results, both on campus and at professional conferences. Although an exhaustive list is not presented, examples of presentations given are below.

*College of Biological Sciences*
Most of the work of the CBS cohort was focused on WebCT and not readily available to the general public (however, please see above URLs). Most faculty shared their work with colleagues within their departments or at University-wide meetings.

*College of Natural Resources*
CNR participants conducted a college-wide seminar (May 2004) discussing what they learned and how others may be able to implement similar initiatives. All participants have active WebCT sites developed for their classes and some hope to share their findings at regional and national meetings as the sites develop.

*Institute of Technology*
The cohort members who developed webnotes, “lab in lecture” exercises, and materials for the graphics/visualization software plan to share their experiences, materials, and results with other faculty members within their department. Since the courses impacted are taught by several different faculty members on a rotating basis, wider dissemination of the results of these projects is almost certain. The faculty member working on conversion of his CD ROM based course to an online hyperlinked digital text version routinely presents his work on innovative teaching methods at regional and national conferences, and he anticipates presenting the results of this project at these conferences over the next year.

*Three year progress highlights:*
The TC campus held a conference “Partners in Learning: A Campus-Wide Symposium on Best Practices to Enhance Student Learning” April 2004 where projects were showcased. The 90 minute presentation began with an overview of the grant program on the TC campus defining the goals and highlighting a few of the overall projects. Then four individuals representing three colleges gave overviews of their project. The room was full and there was enthusiastic response about the projects. A number of college cohorts have given presentations within their departments/schools about the projects undertaken. As with many faculty development programs, many of the projects begun in the first year are just maturing as the faculty member and their students decide how best to use technology to enhance learning opportunities. There have been many interesting projects, and some have failed. But the timing of this grant was perfect to introduce faculty to the array of programs available to help students learn.
E. What are your future plans for sustaining this program or project?

This grant gave the four campuses of the University of Minnesota the chance to work closely together in faculty development. The shared goal of the grant was to use innovative teaching and technology strategies to improve student learning. Because of the very different sizes and missions of the four campuses, the grant was structured to allow flexibility. This flexibility strengthened the grant program on each campus because the programs were customized to the needs and culture of each campus. The University of Minnesota is a large system spread across the state and one size does not fit all for faculty development. The flexibility of the Bush Foundation and the University of Minnesota in letting the campuses develop individual programs while working under the umbrella of innovative teaching was invaluable.

This grant allowed us to learn how to work together as one system in addition to appreciating the differences of the four campuses. The coordinating team met monthly to bring each other up to date on project activities. The team used each other as sounding boards for dealing with difficult issues that arose. The grant coordinators of the campuses effectively used email to brainstorm ideas and resolve the issues. This is a very different model than has been tried before. Most University of Minnesota initiatives are campus based. The model of shared cooperation will continue with the renewal grant.

The evaluators of the present grant wrote “At times it has felt, at least to members of the evaluation team, like the whole is less than the sum of its parts. That is programs on each campus seem to fit with the particular campus’s' resources, directions, and culture; but it is difficult to articulate what common theories, goals, or anticipated outcomes bind the campuses together.” Based on this observation, and in conjunction with discussions and experience of the first grant, the four campuses defined themes for the continuation grant. These themes are aligning grant activities with individual campus priorities, using a scholarly approach to curricular change, and integrating evaluation into each project. The continuation grant will bring projects from all four campuses closer together while allowing flexibility to fulfill campus needs.

Using technology to enhance learning alters the support structure that is needed for faculty teaching classes. New issues arise ranging from where the equipment will come from to who will train faculty on best practices. This grant began to address these issues by changing the way support units interact with faculty. This new alignment of support staff from existing programs for faculty to interface with will continue as faculty participants found the consulting valuable.

Classroom Research has been defined by Cross and Steadman as the “ongoing and cumulative intellectual inquiry by classroom teachers into the nature of teaching and learning in their own classrooms”. Improving education through the systematic study of teaching and learning is a theme in our continuation grant. Aligning resources to assist faculty to ask questions and collect data when they are making changes in the structure of classes will let us assess more fully the impact of faculty development programs on student learning.
Appendix One:
Summary of Training Events held at UMC

Fall 2001 Faculty Teaching and Learning Retreat, August 19 and 20
Training:  “Enhancing Student Learning Through Student Engagement”
          “Enhancing Student Learning Through Case-Based and Problem-Based Approaches”
Consultant: Dr. Karl A. Smith, Morse-Alumni Distinguished Professor, University of Minnesota, Twin Cities; Lilly Teaching Fellows Program, Michigan State University
Participants: 39 faculty

Spring 2002, Teaching and Learning Workshop, February 15
Training:  “Who is Responsible For Learning? Building Student Engagement”
Consultants: Collaboration for the Advancement of College Teaching and Learning, 2000-2001 Traveling Workshop; Dr Virginia Arthur and Dr. Wendy Klepetar, Management Department, College of Saint Benedict
Participants: 33 faculty and 9 professionals working with Student Services

Fall 2002, Faculty Teaching and Learning Retreat, August 19 and 20
Training:  “Enhancing Learning and Teaching Through Classroom Assessment”
          “Classroom Research: Scholarly Investigations to Improve Student Learning”
Consultant: Dr. Mimi Harris Steadman, consultant on teaching and learning issues in higher education; co-author with K. Patricia Cross, Classroom Research: Implementing the Scholarship of Teaching; former research specialist at the National Center for Research in Vocational Education at the University of California, Berkley
Participants: 42 faculty

Fall 2002, Teaching and Learning Workshop, October 18
Training:  “Enhancing Student Learning with Classroom Assessment and Technology”
          Seminar/Discussion Sessions included: “Critical Thinking” and “Primary Trait Analysis or Rubrics”
Consultant: Dr. Douglas Eder, Associate Professor of Neuroscience and Director, Undergraduate Assessment and Program Review, Southern Illinois University, Edwardsville
Participants: 33 faculty and 4 other professionals attended the full day workshop

Fall 2003, Faculty Teaching and Learning Retreat, August 28 and 29
Training:  “Teaching Content is Not Enough: Strategies to Help Student Learn How to Learn in your Discipline”
          “Making Public our Expectations for Student Learning: A Hands-on Assessment Design Workshop”
Consultant: Dr. Mimi Harris Steadman, consultant on teaching and learning issues in higher education; co-author with K. Patricia Cross, Classroom Research: Implementing the Scholarship of Teaching; former research specialist at the National Center for Research in Vocational Education at the University of California, Berkley
Participants: 39 faculty
### Table 3: Achievement of Training Objectives (UMC)

<table>
<thead>
<tr>
<th>Assessment Statements</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start this academic year eager to enhance my courses with strategies focusing on student learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02; N = 32</td>
<td>47%</td>
<td>47%</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02; N = 25</td>
<td>40%</td>
<td>44%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; N = 26</td>
<td>42%</td>
<td>58%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify characteristics, benefits, and guidelines for using Classroom Assessment Techniques (CATs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02, N = 32</td>
<td>53%</td>
<td>47%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02; N = 25</td>
<td>32%</td>
<td>60%</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply Classroom Assessment Techniques (CATs) during the Retreat/Workshop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02, N = 32</td>
<td>41%</td>
<td>47%</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02; N = 25</td>
<td>28%</td>
<td>52%</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devise strategies to help students improve reading skills across the disciplines and design a brief reading strategies instruction activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; N = 26</td>
<td>44%</td>
<td>52%</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distinguish types of rubrics and how to use them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; N = 26</td>
<td>58%</td>
<td>34%</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construct a rubric to evaluate constructed-response test questions and performance assessments.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; N = 26</td>
<td>22%</td>
<td>44%</td>
<td>30%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Develop a draft “insider’s guide to success” for learning and study strategies for one course. August, '03; N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyze whether the tests and assessment activities you currently use assess for quality and understanding. August, '03; N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>42%</td>
<td>46%</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: Faculty Planning to Focus on Student Learning (UMC)

<table>
<thead>
<tr>
<th>Assessment Statements</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start this academic year eager to enhance my courses with strategies focusing on student learning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02; N = 32</td>
<td>47%</td>
<td>47%</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02; N = 25</td>
<td>40%</td>
<td>44%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; Retreat, N = 26</td>
<td>42%</td>
<td>58%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 5: Quality of Training (UMC)

<table>
<thead>
<tr>
<th>Assessment Statements</th>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, how would you rate the quality of this workshop/retreat?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02; Retreat, N = 32</td>
<td>56%</td>
<td>32%</td>
<td>7%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>February, '02; Workshop, N = 17</td>
<td>53%</td>
<td>35%</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02 Workshop, N = 25</td>
<td>40%</td>
<td>48%</td>
<td>8%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>August, '03; Retreat, N = 26</td>
<td>55%</td>
<td>30%</td>
<td>11%</td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>
### Table 6: Passion for Teaching (UMC)

<table>
<thead>
<tr>
<th>Assessment Statements</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renew my passion for teaching</td>
<td>36%</td>
<td>57%</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '01; Retreat, N = 28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02; Retreat, N = 32</td>
<td>34%</td>
<td>44%</td>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02; Workshop, N = 25</td>
<td>36%</td>
<td>32%</td>
<td>32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; Retreat, N = 26</td>
<td>50%</td>
<td>46%</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 7: Rethink My Teaching Role (UMC)

<table>
<thead>
<tr>
<th>Assessment Statements</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rethink my teaching role</td>
<td>25%</td>
<td>64%</td>
<td>11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '01; Retreat, N = 28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '02; Retreat, N = 32</td>
<td>41%</td>
<td>44%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October, '02 Workshop, N = 25</td>
<td>33%</td>
<td>37%</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August, '03; Retreat, N = 26</td>
<td>46%</td>
<td>50%</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 8: Faculty Use of Resources Provided by Program/Training (UMC)

<table>
<thead>
<tr>
<th>Assessment Statements</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use resources (handouts &amp; Angelo/Cross textbook) given at retreat to use CATs this year for feedback on student learning. August, '02; N = 32</td>
<td>50%</td>
<td>47%</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use resources given at workshop to use assessment activities this school year for feedback on student learning. October, '02; N = 25</td>
<td>44%</td>
<td>40%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use resources provided at retreat to improve reading and/or study skills in my students. August, '03; Retreat, N = 26</td>
<td>41%</td>
<td>55%</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use resources provided at retreat to engage in ongoing learning about rubrics. August, '03; Retreat, N = 26</td>
<td>56%</td>
<td>26%</td>
<td>18%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>