Enhancing Student Learning
Through
Innovative Teaching and Technology
Strategies

A University of Minnesota Proposal
to the Bush Foundation
to Renew the Current Grant
(Awarded for 3/1/01-6/30/04)
for the Upcoming Period of
11/1/04-12/31/07

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Introduction and Overview of Current Grant
Since March 2001, the Bush Foundation has supported an initiative to enhance student learning on the four University of Minnesota campuses. The goal of the initiative has been to foster the development of faculty skills for integrating innovative teaching practices, including new developments in technology-enhanced learning, to address problems of student learning.

The Final Report for the three-year grant period (submitted to the Bush Foundation on June 30th) highlights the particular faculty development program that each of the four campuses designed and implemented to enhance student learning. In addition, both reports prepared by the External Evaluators (the January 2004 Interim Evaluation Report and the Final June 2004 Evaluation Report) provide an excellent accounting of both the successes and challenges associated with current grant efforts.

As illustrated in the above-mentioned reports, each campus strengthened its own particular approach to enhancing student learning throughout the three years of the grant. Interview data gathered by the External Evaluators from 44 key leaders and participants during summer-fall 2003 provided considerable detail on the campus approaches and what participants felt was working well (e.g., peer facilitated work groups and student consultants at Morris; focus on student assessment and peer discussion groups at Crookston; individualized desk-side consulting in the Twin Cities and Duluth). Some of the common challenges reported in the interviews involved dealing with lack of faculty time, finding creative ways to engage faculty, and helping faculty who are new to technology achieve fluency with it.

The External Evaluators also found that many of the guiding lessons from the literature on faculty development had been successfully incorporated on each campus. The four most clearly embraced lessons were that the projects were “faculty led,” “drew on campus resources in teaching and technology,” “required sustained involvement rather than short-term skill building,” and adoption of a “developmental approach with individual faculty.” Campus programs were more varied in terms of “using a peer-based approach,” “exhibiting a student-centered approach” (i.e., focus on student learning problems), “disseminating successful models,” and “disseminating faculty participants’ knowledge / products.” The single greatest challenge reported was that of “engaging faculty in the evaluation of the impact of re-designed courses.”

This latter finding was further substantiated in a recent faculty survey. All 254 faculty participants1 from the previous three years were invited to respond to a 10-page online survey that asked about faculty motivations, purposes and intended outcomes of their technology and assessment projects, current status of the work, program impact and satisfaction, follow-up activities, and degree of evaluation and dissemination of project results. In terms of project evaluation, about one-third of the faculty sought student feedback about their course changes on questionnaires, or used student performance as a way to gauge the success of the course revisions. But far fewer faculty members engaged in more systematic evaluation of their project (see table below). Only 12

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1 185 useable surveys were obtained (72.8% response rate).
faculty members reported making a formal presentation, submitting a report, or writing a paper for publication.

<table>
<thead>
<tr>
<th>Ways in Which Faculty Have Evaluated Changes Made or Skills Developed in Bush Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of Evaluation</td>
</tr>
<tr>
<td>I have not yet tried to evaluate this in any way.</td>
</tr>
<tr>
<td>I have asked students to give me feedback on a questionnaire.</td>
</tr>
<tr>
<td>I have used student assessments as a way to gauge the impact of this work.</td>
</tr>
<tr>
<td>I have compared what I did with other models, published examples, or the literature.</td>
</tr>
<tr>
<td>I have asked peers or experts to review the work according to some established standards or “best practices.”</td>
</tr>
<tr>
<td>I have collected some pre- and post-data to see if students performed any differently.</td>
</tr>
<tr>
<td>I have collected some performance data from different groups (treatment and control / comparison) to see how changes affect students.</td>
</tr>
</tbody>
</table>

These findings may not be so surprising when one considers the fact that many respondents were in the first or second year of the program and still working on their projects. A great number of participants were new to technology; their main goal was to learn basic skills and get individual help with a specific teaching task or skill. Faculty may not have felt their efforts merited much in the way of an in-depth study. Other projects, however, involved substantial redesign and advanced use of multiple technologies, as shown in our content analysis of 83 faculty year-end reports from the Duluth and Twin Cities campuses. Still, it remains a significant challenge for faculty to acquire new instructional, assessment, and technology skills AND also conduct systematic inquiry into the effects of course changes.

On a positive note, the project had greater impact than perhaps expected in terms of continued faculty efforts outside of the program, and after the projects had “ended.”

- Nearly half of the faculty (48%) were expanding (improving or replicating) their initial project efforts.
- About two-thirds reported that their skill level had continued to increase over time.
- About one-third reported that they engaged in various follow-up activities (e.g., purchased materials or equipment on their own, signed up for a class, wrote a grant proposal, joined a discussion group) as a result of the program.
- Nearly 70% were “fairly well” or “very satisfied” with what they learned or produced as a result of the Bush program.
Two-thirds were “very” or “extremely interested” in continuing to work in the areas they focused on during the program.

Perhaps most important, over half of the faculty respondents \((n = 88)\) contributed substantive write-in comments detailing changes they observed in students as a result of their new skill levels or course changes. The main effects described fell into the areas of: (1) increased student interest, attention, motivation, participation, and effort; (2) better student preparation for class, homework assignments, and tests; and (3) greater breadth or depth of learning, critical thinking, or performance.

To further estimate the potential impact of the Bush program on faculty courses, the External Evaluators queried the University of Minnesota’s institutional faculty and student databases to tally the number of courses and sections taught by program faculty participants, and the number of students affected by changes in those faculty member’s instructional skills and courses. The findings suggest that the grant had considerable reach and potential impact.

<table>
<thead>
<tr>
<th>Potential Impact of Bush Grant</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>Number of unique courses taught by faculty during and after their participation in the Bush grant program, within the three-year grant period.</td>
<td>1,671</td>
</tr>
<tr>
<td>Number of unique course sections affected by faculty participants.</td>
<td>4,464</td>
</tr>
<tr>
<td>Number of students enrolled in courses taught by faculty participants.</td>
<td>14,720</td>
</tr>
</tbody>
</table>
**Proposed Programming for Continuation of Grant**

The four coordinate campuses have now reviewed their 2001-2004 grant efforts in light of the lessons learned. In response to the evaluation findings, each campus group has determined specific ways to extend and/or adapt its efforts to enhance student learning through instructional technology and other innovative teaching strategies.

In proposing new programming for a continuation grant, the campuses have used the following three goals to unite their efforts and the design of specific program activities:

**Goal 1:** Align grant efforts with current campus initiatives to keep student learning in the forefront.

Given the competing demands for their time, faculty need to (1) know that they are part of an institutional culture that values enhancing student learning and (2) have ready access to programming that promotes their growth as teachers. When institutional priorities and faculty commitments are aligned with each other and keep student learning at the forefront, the result is a win-win situation for faculty, students and the institution. The following descriptions of the program components indicate the specific ways each coordinate campus is aligning its grant efforts with campus initiatives to enhance student learning.

**Goal 2:** Foster a scholarly and collaborative approach to addressing student learning issues.

A key characteristic of a learning organization is the ability of its members to learn together and to add value to the organization by converting individual information into organizational knowledge (Nonaka & Takeuchi). In each of the following program components, the campus groups indicate how they will bring faculty and instructional staff together to reflect on their experience as teachers, discuss their insights with teaching colleagues, read literature to inform their thinking, and use the classroom as a laboratory to systematically investigate questions about enhancing student learning.

**Goal 3:** Integrate the assessment of student learning and the evaluation of student learning initiatives in the campus mainstream.

Assessment of student learning has become an important and highly visible component of higher education institutional improvement, accountability, and accreditation. Faculty use both informal classroom assessment techniques and course assessment procedures to understand what their students are learning—then they use these findings to shape their teaching. In the programming proposed for the continuation grant, each campus uses assessment to create better conditions for teaching and learning.

The following sections highlight the learning issue each campus has selected for its focus, the design of the project proposed to address the issue, and the three-year implementation plan. In addition, each campus describes the people and campus units involved in the project as well as how they will evaluate their efforts and disseminate what they learn.
UM-Twin Cities:  
Promoting Student Learning in Large Classes

The Issue To Be Addressed

Whether UM-Twin Cities undergraduates sign up for courses in math or music or psychology or physics, their learning experience regularly involves enrolling in large classes that range in size from 50 students to over 700. The following demographics from Fall Semester 2003 highlight the range of large class sizes and the number of students enrolled in them:

<table>
<thead>
<tr>
<th>Course Enrollment Size</th>
<th>Number of Classes Offered</th>
<th>Total Enrollment</th>
<th>Number of Unsuccessful Grades (D,F,N,W)</th>
<th>Percentage of Students with Unsuccessful Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-24</td>
<td>1,898</td>
<td>26,798</td>
<td>1,898</td>
<td>7.1%</td>
</tr>
<tr>
<td>25-49</td>
<td>2,126</td>
<td>22,847</td>
<td>2,126</td>
<td>9.3%</td>
</tr>
<tr>
<td>Large Classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-74</td>
<td>205</td>
<td>12,575</td>
<td>1,282</td>
<td>10.2%</td>
</tr>
<tr>
<td>75-99</td>
<td>92</td>
<td>7,856</td>
<td>798</td>
<td>10.2%</td>
</tr>
<tr>
<td>100-149</td>
<td>113</td>
<td>13,913</td>
<td>1,737</td>
<td>12.5%</td>
</tr>
<tr>
<td>150-199</td>
<td>52</td>
<td>8,759</td>
<td>1,443</td>
<td>16.5%</td>
</tr>
<tr>
<td>200-299</td>
<td>26</td>
<td>6,303</td>
<td>815</td>
<td>12.9%</td>
</tr>
<tr>
<td>300+</td>
<td>22</td>
<td>9,011</td>
<td>1,313</td>
<td>14.6%</td>
</tr>
</tbody>
</table>

When it comes to succeeding in coursework, students often find that big is not better. The data for Fall 2003 indicate that students enrolling in large classes are almost twice as apt to be unsuccessful in their coursework as when they enroll in small classes. Of the 11,412 unsuccessful student experiences in Twin Cities courses in Fall 2003 (10.6%), 4,024 occurred in small classes--and 7,388 occurred in large classes.

Other Research I universities that rely on large classes as a cost-effective educational format for introductory and general education courses report similar or even higher non-success rates (Twigg, 2004). However, accepting such a reality is not consistent with UM-TC goals to improve four-year graduation rates and overall retention rates. The Twin Cities campus is committed to providing an undergraduate experience where students can make timely progress toward a degree.

For over a decade the Twin Cities campus has exhibited its commitment to improving undergraduate education by purposively targeting issues associated with class size. In 1990, when the Undergraduate Initiative began, the Twin Cities campus announced that it had successfully decreased the number of registrations in courses of more than fifty students by 41%, and it had increased the number of registrations in courses with fewer than twenty students by 44%. In addition to making more small classes available to students, departments made a concerted effort to assign the best faculty to teach the
Twin Cities’ largest classes. Through the University's Reallocation and Restructuring Plan in the early 1990's, the Twin Cities campus dedicated more than $1,200,000 for course development and equipment expenditures associated with large classes. The 1996 Accreditation Self Study Report emphasized that nearly all first and second year students were benefiting from the university’s financial investments in coursework in history, anthropology, political science, child psychology, biology, physics, astronomy history, classics, chemistry, and food science and nutrition.

Yet issues concerning course size persist, and UM-TC administrators, faculty, instructional staff, and students continue to express concern about the problems associated with teaching and learning in large classes. Everyday experience of teachers and students as well as a growing body of research corroborates that in large classes, there is: (1) less active student involvement in the learning process; (2) reduced frequency and quality of instructor interaction with students; (3) reduced student satisfaction with the frequency of assessment and quality of the feedback; (4) reduced depth of student thinking inside the classroom; (5) reduced breadth and depth of course objectives and course assignments; (6) reduced course-related learning strategies used by students outside the classroom; (7) lower levels of academic achievement (learning) and academic performance (grades); (8) reduced overall course satisfaction with the learning experience; (9) lower student ratings (evaluations) of course instruction (Cuseo, 2004).

These outcomes provide sharp contrast to what we know promotes student learning:

A growing body of research points to the value of undergraduate learning environments that set high expectations, promote active and interactive learning, and give students personal validation and frequent feedback on their work. Yet...large-class settings have historically been heavily lecture-centered, requiring minimal student engagement and expecting little more than memorization of terms and concepts as evidence of student learning. The sheer size and anonymity of large classes seem to militate against the very elements that promote students’ involvement and intellectual development, learning, and success. (MacGregor, Cooper, Smith and Robinson, 2000).

In his book Rejuvenating Introductory Courses, Kenneth Spear highlights another negative consequence of enrolling new students to large lecture classes:

In these formative experiences, students learn what it is to be a student, what is required to get by. If the students are taught to be passive seekers and transcribers of information, that is what they become. Further, they set their sights accordingly in subsequent courses, often actively resisting our attempts in upper-division courses to get them to go beyond the information we give them (pp. 6-7)

At the same time that many are building an empirical case against large classes, others are piloting efforts to use instructional technology and innovative teaching strategies to determine how best to offset the problems traditionally associated with large class size. For instance, recent advances in wireless technology let faculty use response systems to
engage students in large classes and quickly find out how well students grasp the material or what they think about an issue (Woods and Chiu, 2002; Everett and Ranker, 2002). Faculty who adhere to the “Seven Principles for Good Practice in Undergraduate Education” use e-mail correspondence, on-line journals, and chat rooms to promote faculty-student contact—or experiment with on-line peer editing to promote cooperation among students (Chickering and Gamson, 1999). Others are redesigning large lecture courses to incorporate blended learning models. Faculty combine various delivery modes that blend offline with online learning, independent self-paced instruction with people-based collaborative learning, or directive, structured performance support with discovery-oriented learning (Rossett, Dougis, & Frazee, 2003; Singh, 2003; Dziuban, Harman, & Moskal, 2004). Perhaps the most significant research project pertaining to large-enrollment classes currently underway is the Program in Course Redesign conducted through the Center for Academic Transformation at Rensselaer Polytechnic Institute. With support from the Pew Charitable Trusts, this multi-institutional program has awarded $6 million in grants to thirty projects. Colleges are redesigning their instructional approaches using technology to achieve cost savings as well as quality enhancements to learning. While all 10 projects in Round 1 have successfully reduced their costs, only five of the 10 have reported improved learning outcomes; four report no significant difference, and one was inconclusive (Twig, 2004). Such results suggest that there is still much to learn about promoting learning in large classes—and that achieving cost savings and improving learning at the same time may be difficult.

Given the financial situation at most large institutions, large classes will continue to be a reality. At the University of Minnesota-Twin Cities, we want to determine what particular approaches to using innovative teaching and technology can change these large courses in productive ways for both teachers and students. This goal is in keeping with current campus initiatives to keep student learning in the forefront. In their 2003-2004 “Accountable to U” report, President Robert Bruininks and Board of Regents Chair David Metzen state that one of the four over-arching goals for the upcoming year is to improve the educational life of students by “enhancing teaching and learning, promoting better progress and improved graduation rates, and maintaining and improving student satisfaction levels.” Determining how to promote better student learning in large classes will help the Twin Cities campus achieve this goal.

Description of Project
The goal of this three-year project is to improve student learning in large classes through innovative teaching and technology strategies. Twelve “Course Teams,” each focusing on a particular course, will re-design a large class that is offered regularly on the Twin Cities Campus. Course teams typically will be made up of three individuals: a faculty member, a teaching specialist or teaching assistant, and an undergraduate. Six of these course teams will focus on 1000-level courses, and six will focus on 3000-level courses. Efforts of the six 1000-Level Course Teams and the six 3000-Level Course Teams will be coordinated and supported by a Teaching & Technology-Enhanced Learning Consultant, an Assessment & Evaluation Consultant, and a faculty leader who is also a project participant in a 1000 or 3000-level team.

All twelve Course Teams will be involved in a collaborative research project to determine the impact of innovative teaching and technology strategies on student learning in large
classes. The research project will include a range of large class environments (see chart at the beginning of this section for a distribution of Twin Cities large class enrollments).

All Course Teams in the research project will work over a period of three years to enhance student learning by (1) engaging students actively in the learning process and (2) encouraging students to be reflective and responsible learners; each Course Team will choose the particular strategies they want to use to achieve these goals. After the first year of the project, Course Teams may propose to address an additional variable associated with learning issues in large classes, such as reduced depth of student thinking in the classroom. If resources are available, consultants will work with Course Teams to plan, implement, and evaluate the effect of innovative teaching and technology strategies on these secondary variables.

Conducting on-going assessment of student learning through classroom assessment techniques (CATS) will be an integral part of each project so that the Course Teams will know who the learners in their large class are, what these students know and understand, and what teaching strategies are having a positive impact on their learning. In addition, Course Teams will use common measures to evaluate in each particular large class environment the effectiveness of the strategies used to engage students actively in the learning process and encourage them to be reflective and responsible learners. If it is financially feasible, the Research Project will use additional standardized evaluation tools (such as the National Study of Student Engagement) in order to compare local research results with findings at the national level.

Programming for Course Teams will build on principles of scholarly teaching and promote a collaborative approach to addressing issues involved with teaching and learning in large classes. All twelve Course Teams will meet together as a multidisciplinary group on a regular basis to:

1. reflect on their experiences with large classes and share their observations with peers;
2. inform their thinking about teaching and learning in large classes by reviewing literature, learning about instructional technology, and considering options for course re-design;
3. determine how to use their classroom as a laboratory to explore how to enhance student learning in large classes;
4. update their colleagues on project efforts to promote student learning through innovative teaching and technology strategies in their large class.

Each Course Team will also meet individually with the Consultants on a regular basis; these meetings will provide an opportunity for the Course Team and Consultants to focus on project-specific issues. Together they will shape the project goals, a strategic plan to achieve the goals, and methods to assess the impact of the project on student learning.

Course Teams, with support of their department chair and college dean, will apply to participate in the project. Preference will be given to Course Teams who propose to work with large 1000 and 3000 level courses that are taught regularly. Courses which
show evidence of a need for improvement (significant DFNW rates) and which are offered in multiple sections are ideal. Course Team members who are convinced there is a need for change and are interested in taking a scholarly and collaborative approach to improving student learning through innovative teaching and technology strategies are excellent candidates. (Note: If a Course Team intends to include more than one faculty member, one teaching specialist or TA, and one undergraduate in the project, then the proposal will need to include a description of what additional resources the college or department will provide to cover additional costs.) Depending on the membership of the Course Teams, this grant project will partner with a minimum of 12 faculty, 12 teaching specialists or TAs, and 12 undergraduates to promote student learning in large classes. The impact on students will depend on the size of the large classes targeted in the project and how often each of these classes is taught each year; if each class is taught once per year, the project will affect from 2000-5500 students during a three year period.

This project to promote student learning in large classes will have an impact on both students and faculty/TAs on the Twin Cities campus and beyond. Outcomes of this project will include:

- an increased understanding of student learning in large classes at UM-TC.
- knowledge of particular strategies, approaches or tools that positively impact student learning in large courses.
- principles of good practice for promoting student learning in large lectures.
- dissemination of research-supported findings about student learning in large classes.
- the professional development of Twin Cities campus leaders who use innovative teaching and technology strategies to address teaching and learning challenges associated with large classes.
- the design and implementation of a UM-TC campus model that brings together working teams from various disciplines to address an institutional problem through a scholarly approach to teaching and learning.

**Three-Year Time Line**

**Pre-Grant**

**August/September 2004:**
- Share grant proposal with College Deans and request they consider how they might match or extend grant support with additional funds and/or other appropriate incentives to Course Teams who are selected to participate in the grant.

**October 2004:**
- Raise awareness about issues involved in promoting student learning in large classes through a campus conference.

**November 2004:**
- Issue call for proposals to faculty and instructional staff to be involved in 3-year project.

**December 2004:**
- Select and invite grant participants.
Year 1
January 2005-December 2005:
- Hold monthly large-group meetings with Course Teams.
- Hold monthly meetings between consultants and Course Teams.
- Assist Course Teams with assessing student learning in their large class and re-designing large class.
- Assist Course Teams with piloting innovative teaching and technology strategies in their classes and using research tools to determine the impact.
- Gather information from student course participants via student survey.
- Conduct evaluation of first year grant activities with faculty and students.

Year 2
January 2006-December 2006
- Analyze evaluation data from courses taught in Year 1.
- Hold on-going meetings with Course Teams and provide support for Course Teams to adapt their projects to promote student learning based on feedback received.
- Design and implement plans for Course Teams to share insights/findings with others in their departments who teach the same or similar large course.
- Conduct evaluation of second year grant activities with faculty and students.

Year 3
- Analyze evaluation data from courses taught in Year 2.
- Hold on-going meetings with Course Teams and provide support for Course Teams to adapt their projects to promote student learning based on feedback received.
- Provide opportunities for Course Teams to mentor others in the process of promoting student learning in large classes.
- Assist Course Teams with writing about their projects.

June 2007-December 2007
- Analyze evaluation data from courses taught in Year 3.
- Support Course Teams in preparing to disseminate their research findings.
- Host national conference on promoting learning in large classes.
- Participate in a minimum of three regional/national conferences to disseminate findings.
- Conduct evaluation of 3rd year grant activities with faculty and students.

People and Campus Units Involved
This grant project will build on the programming expertise and the infrastructure of the Center for Teaching and Learning Services and the Digital Media Center. Joyce Weinsheimer, CTLS Director, and Linda Jorn, DMC Director, will coordinate the grant activities for the Twin Cities campus. Four professional staff from CTLS and DMC will serve as Technology-Enhanced Learning Consultants and Assessment & Evaluation Consultants for the Course Teams. Two faculty members will partner with the CTLS and DMC teams to each provide leadership to either the 1000-level Course Teams or the 3000-level Course Teams. Faculty, Teaching Specialists or TAs, and undergraduates who make up the Course Teams will come from a variety of disciplines that offer large classes to undergraduates on campus.
The Council for Enhancing Undergraduate Learning will be a primary partner in this grant effort. The Council, now beginning its third year, provides leadership to the Twin Cities campus on assessing student learning and using the results of on-going assessments to shape campus efforts to improve student learning. The Council has agreed to co-sponsor the Fall 2004 Conference to raise awareness about the need to enhance student learning in large classes.

In deciding to focus the renewal grant on teaching and learning issues associated with large classes, the planning team consulted with faculty in the current Bush grant and other CTLS and DMC programs, members of the Academy of Distinguished Teachers, the Council for Enhancing Student Learning, the Senate Committee on Educational Policy (SCEP), and the Associate Deans of colleges that primarily serve undergraduate students. All are interested in supporting the initiative if it is funded.

**Evaluation**

The evaluation plan for the Twin Cities project will target two areas. First, we will evaluate the impact of Course Team efforts to promote student learning in large classes by (1) engaging students actively in the learning process and (2) encouraging students to be reflective and responsible learners. We will do this by:

- comparing success rates (ABC) and non-success rates (DFNW) of students in a re-designed course to other sections of the same course or similar U of M classes. Trends will also be measured against data collected from the three semesters the course was offered prior to the course redesign versus data collected from the course each semester after the redesign.
- measuring the effectiveness of particular innovative teaching strategies and technology enhancements on targeted learning outcomes for students in large classes through the use of faculty reflection logs to document processes, accomplishments, challenges, lessons learned and outcomes.
- comparing responses to specific student evaluation questions in the re-designed course to other sections of the same course or similar U of M classes, and document trends from semester to semester.
- surveying students about their experience/satisfaction/engagement in the re-designed course- wherever possible a control group of students enrolled in a similar course that has not be redesigned will be surveyed to monitor differences in student experience.

Second, we will survey faculty involved in this three-year project about its impact on furthering a scholarly and collaborative approach to addressing campus teaching and learning issues.

Campus coordinators will also be surveyed annually to measure determine accomplishments, challenges, lessons learned and outcomes. Coordinators will also be responsible for a reflection log to track grant progress on campus.

**Dissemination and Assessment of Sustainability**

The project implementation plan will require the 12 Course Teams to share the process of what they do throughout the project as well as what they learn from their specific research. Dissemination efforts will include publishing on-line reflections and findings
from course projects, publishing case studies and research findings in newsletters and refereed journals, and presenting at conferences. The Twin Cities campus will host a conference during the last semester of the project to share the results of its efforts nationwide and to invite others to join in the sharing of best practices. Efforts to disseminate the research findings and principles of good practice for promoting student learning in large lectures should lead to their sustained use on the Twin Cities campus and beyond.
The Issue To Be Addressed
In most class settings the focus is on disciplinary content; as a result too little time is spent considering why, how, and what students learn and teachers teach. This project seeks to improve student learning by integrating and implementing:

- a reflective cycle of action research that engages faculty in a four-step process that involves planning, acting, evaluating, and reflecting (Mills, 2003)
- a model that engages students in four self-regulatory processes: self-evaluation and monitoring, goal setting and strategic planning, monitoring learning outcomes linked to teaching strategies, and implementing previously learned or new learning strategies (Zimmerman, Bonner, and Kovach, 1996).

Faculty will study three related areas: defining and measuring student outcomes; teaching methods and strategies that lead to these outcomes; and the values, philosophies, assumptions, and expectations inherent in those strategies. The ultimate goal of this reflective process is to improve student learning through teaching them self-regulation.

Research about self-regulation has led to three important findings. First, practitioners who train students in the use of learning strategies, such as goal setting and self-evaluation, attain higher standards of achievement in and across subjects and disciplines. Second, the self-regulated learners, once trained, will use decision-making learning strategies to attain academic and performance goals. Finally, students acquire these learning strategies through training, and faculty should not assume that learners will develop them on their own (Zimmerman, 1989; Zimmerman, 1998).

Therefore, this proposal seeks funding to study a number of different student learning issues under the common framework we call “reflective practitioners and self-regulated learners.” Examples of student learning issues that will be addressed are:

Promoting Reflective Learning Through ePortfolio in Composition: Beginning fall semester 2001, the Department of Composition implemented use of the University of Minnesota's ePortfolio as part of the required freshman composition course. A major pedagogical objective of the ePortfolio is to facilitate lifelong reflective learning. However, first-year students have had difficulty embracing the notion that they should invest time self-regulating their learning, as they see little immediate benefit in doing so. Therefore, while they do include a draft as well as a final version of the required argumentative research paper in their ePortfolios, they write little or no reflective
text on what they learned by taking this course, which introduces them to academic writing and invites them to be a part of this discourse community.

**Using Integrative Problem Solving in Chemistry:** The student learning issue addressed here is integrative problem solving. In General Chemistry I (offered fall and spring terms with 160-260 registrants), the majority of students are successful in learning individual concepts and principles, so they are able to solve single-concept problems (e.g., calculating molarity or solubility of a compound, writing a balanced chemical equation). However, these are only the building blocks for applying chemistry to “real-life” chemical problems. Success in the study of chemistry requires students to integrate multiple concepts, see relationships between them, and then use them to solve problems.

**Learning in Large Lectures in Computer Science:** This study will address fundamental issues of teaching and learning in two large lecture courses: Computer Science I (CS-1511) and Introduction to Programming in Visual Basic (CS-1121), typically taught to 100-200 students in large lecture hall settings. Both courses have high rates of withdrawal and F and D grades (WFD rate). The question is whether the WFD rate may be reduced by using particular educational techniques designed to improve student learning.

**Description of Project**
Approximately 10 UMD faculty will comprise the first group of reflective practitioners, using this reflective process to improve student learning:
1. Identify an important concept or skill that students in a particular class or discipline have trouble learning, such as those described above.
2. Set a specific goal to improve the teaching of this concept or skill, by examining each component of the self-regulatory model to identify learning strategies.
3. Meet regularly in person and asynchronously online in guided discussions to research and study teaching strategies, to practice self-reflection, and to identify student outcomes that can impact the goal.
4. Attend meetings on other UM campuses as appropriate.
5. Implement one or more strategies designed to meet the goal and train students to use these specific learning strategies.
6. Collect data to measure the impact of the implemented strategies.
7. Assess the impact of the strategies on the goal and on student learning.
8. Write and submit scholarly works documenting what was learned.
9. Attend professional meetings to strengthen expertise in reflective learning and to disseminate project findings.

A second and third cohort of faculty will be added in the second and third year of the grant, respectively.

In addition to aligning with ongoing campus initiatives in advising, retention, and mentoring, this project also aligns with the following campus faculty development and student learning initiatives:
• Classroom Assessment Techniques and Strategies (CATS): Sponsored by the UMD Instructional Development Service, the CATS (Angelo and Cross, 1993) group of 12 to 15 faculty will help instructors "learn from life" in the classroom through reflection, integration, and application by gathering information about their students goals, background knowledge, and comprehension.

• Technophytes Cohort: This program, previously funded by the Bush Foundation and now supported by Information Technology Systems and Services, has served three cohorts of faculty members, with a fourth beginning this summer. This campus-wide program mentors faculty who are self-identified as “late bloomers” to technology.

• Tech Talk: This interdisciplinary program, previously funded by the Bush Foundation and now supported by the Instructional Development Service, brings together faculty and staff for informal luncheon discussions about the impact of technology on teaching.

• ePortfolio Initiative: This system-wide initiative, originally conceived at UMD, encourages faculty, staff, and students to document their educational, professional, and personal development by storing records electronically in a central repository. The ultimate goal is life-long learning and reflection.

• Academy of Distinguished Teachers: The mission of the Academy is to strengthen the University's teaching and learning communities, advocate for students and learning, advocate for teachers and teaching, and serve as a resource on excellence in teaching.

Three-Year Time Line

Year 1

• November 2004: Establish the first group of approximately 10 reflective practitioners. Organize regular group meetings as well as establish an online discussion forum.
• December 2004: Meet to discuss the goals of the project. Study the reflective processes and self-regulatory model. Identify learning strategies.
• January-May 2005: Implement learning strategies in the classroom. Collect data, assess and reflect upon the effect of the strategies on learning and teaching through regularly-scheduled discussions among the reflective practitioners.
• May-August 2005: Analyze collected data, determine whether to continue individual studies or whether to submit results obtained to appropriate scholarly venues.
• August 2005: Evaluate year 1 process. Reorganize and plan for year 2.
• Attend professional meetings.

Year 2

• September 2005: Some members of the first group of reflective practitioners will choose colleagues to form new satellite groups. This will expand the program into the campus mainstream by initializing multiple groups of faculty with sponsorship from the original group. The foundational group from year 1 will continue as well.
• Repeat the process from year 1.
Year 3

- Repeat the process from year 2.
- The foundational group will write and submit a paper on the results of the entire process.

People and Campus Units Involved

The nine faculty members who have contributed to the writing of this grant proposal will become the foundation of the first group of reflective practitioners: James Allert (Computer Science), Susan Damme (Education), Mark Harvey (Theatre), Jill Jenson (Composition), Carmen Latterell (Mathematics and Statistics), Duane Millslagle (Health, Physical Education, and Recreation), Maureen O’Brien (Economics), Bilin Tsai (Chemistry), and Julia Williams (Education). Professor Tsai will be the principal investigator.

Information Technology Systems and Services (Linda Deneen, Barbara Johnson, Bruce Reeves) will provide technology support for the reflective practitioners as well as administer the technophytes program. Instructional Development Service (LeAn Rutherford) will provide instructional development support for the reflective practitioners as well as administer the CATS program.

Evaluation

Determining the effectiveness of the instructional technologies and innovative teaching strategies is the foundation of this program (Guskey, 2000; Guskey, 2002; Kirkpatrick, 1994). To evaluate the impact on students and the degree to which they became self-regulated learners, separate projects will involve data collection and analysis. For example, implementation strategies and evaluation techniques that may be used for the three learning issues described above are:

Promoting Reflective Learning Through ePortfolio in Composition: This project proposes to implement a bi-weekly reflective exercise into the computer lab component of the freshman composition course. Nationally-recognized experts on grading and assessment, Barbara E. Walvoord and Virginia Johnson Anderson, identify eight characteristics of excellent student reflective practice (1998, p. 84). Using this list as a guide, the instructor will ask students to examine the learning that occurred after completing each of the eight required essays written for the course (continuous reflection), rather than following the current practice of asking them to reflect at the end of the course only (singular reflection). A qualitative analytical comparison of the “continuous reflection” texts with previous “singular reflection” texts will test Walvoord and Anderson’s methods of self-regulated learning.

Using Integrative Problem Solving in Chemistry: Of the two sections of General Chemistry, one will be taught with four lectures and one discussion session per week, while the other will include three lectures, one integration-skill building class, and one discussion session per week. At the end of the course, student performance on single- and multi-concept problems will be evaluated, using homework and quiz performance, mid-term and final grades, periodic student focus groups, class participation (engagement) and lab
performance. Student evaluations of the instruction will be conducted throughout the semester so that teaching strategies can be adjusted.

**Learning in Large Lectures in Computer Science:** The project centers on implementing effective ways to use technology in large-lecture courses to address learning style issues and promote active engagement, self-regulated learning, and accurate assessment. Personal Response Systems (PRS) will be used regularly in discussion classes to provide anonymous, authentic feedback in a manner that can be immediately addressed. Interactive concept software will be used instead of PowerPoint to make lectures more dynamic. Students will also be encouraged to carry on discussions of course material using online discussion. The ultimate indicator of success will be a decline in the WFD rate.

Students in participating courses will also be surveyed to measure the effect of the course redesign on their learning experience, engagement, and satisfaction.

In addition to evaluating student outcomes, it will also be important to evaluate the success of the reflective practitioners program, under which studies such as those described above will be conducted. Therefore, at the conclusion of each of the three years, faculty participants will be surveyed as well as participate in formal focused feedback groups. Faculty will also be responsible for documenting accomplishments, challenges, lessons learned, and outcomes through faculty reflection logs. These results will form the basis of the final paper produced by the foundational group of reflective practitioners.

Campus coordinator reflections logs and surveys will also be used to track accomplishments, challenges, lessons learned and outcomes campus wide.

**Dissemination and Assessment of Sustainability**

The primary dissemination technique will be publications from the faculty participants. These articles may take various forms, including peer-reviewed journal papers, web-based publications, or newsletter articles. Some will also be presented at conferences and workshops regionally and nationally. Reflective practitioners will also share their results on campus, both formally and informally. Through these publications and presentations as well as through the creation of satellite groups, the goals of this proposal will be sustained on this campus as well as spread to many others.
The Issue To Be Addressed:
The UMM continuation grant proposal grows directly from experiences during the current grant. The first three years allowed a broad cross-section of the faculty to sample technology-enhanced learning (TEL) and aroused wide interest in it. Grant efforts, however, have not led to curricular transformation nor have they led to developing on-going support for TEL. In the next three years, the proposed project will involve fewer faculty but support more comprehensive course-revision projects. The supported projects will address multiple learning styles and aim to create diverse learning communities. Priority will be given to proposals that have wide applicability. The project will initially identify instructional issues of most salience on campus and TEL approaches that have the most potential for serving these needs. Next, the project will provide a support system – a Consulting Group of faculty, professional support staff, and Student Technology Assistants [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.

This project seeks to create a dynamic and responsive environment where technological changes are used to address institutional needs. The project aims to more fully engage students by offering varied technology strategies and innovative teaching strategies to address diverse learning styles and create diverse learning communities. The substance for this approach stems from the seventh principal of effective learning, “respect for diverse talents and ways of learning” (Chickering and Gamson, 1999 and Graham et al, 2000, 2001). Instructional technology will help address the needs of diverse learners and enhance student performance in liberal arts undergraduate courses. Technology will be integrated into courses where it is anticipated that learning outcomes can be significantly advanced through instructional design and technology. Use of instructional technologies will improve communication and build better teamwork, critical thinking and problem solving skills.

The proposed project organizational structure aims to eliminate isolated efforts and outcomes by creating core and consulting groups. This will lead to greater project impact, more efficient, coordinated use of the IT resources of the institution, and improved integration of the project with UMM’s curriculum. UMM’s curriculum requires all majors to have courses that help students use computers productively to enhance their knowledge and skills in a chosen field of interest. The project implementation would be a substantial element of achieving this general education learning objective.

The proposed project will:
1. Design activities or processes that address multiple learning styles, such as visual, kinesthetic, and auditory (Summers, 2003).
2. Offer choices in the learning process.
3. Allow for different sequencing of information.
4. Encourage the expansion of preferences by developing multiple strengths.
5. Provide good support services when there are "gaps in learning".
6. Provide motivation and multistage training to faculty. Since “use of technology is only as good as the people and content behind them” and “good teaching is good teaching and bad teaching is even worse in a technology-based environment” (Foshee, 1999), this implication is crucial for substantial impact on student learning.
7. Provide enhanced and innovative learning activities by the application of instructional technologies such as simulations, interactivity, collaborative projects, interviews with experts and virtual learning teams. "Using technology to replicate the traditional face-to-face classrooms is a waste of time, energy and money. Technology is and should be used as a vehicle to assist institutions in reaching students who might not be otherwise reached because of distance or learning style. It is also a vehicle to assist instructors in achieving learning objectives in new ways"(Pahloff & Pratt, 2001).
8. Create a collaborative environment that encourages sharing individual evaluation/assessment of various IT tools on student learning. "Large investments in technology-based teaching can be justified only if it leads to significant changes in the way we teach." Bates (2000)

**Project Description**

The over-arching goals for the next three years are to:

1. increase the number and quality of IT-supported diverse learning experiences available to students;
2. increase student sense of engagement in learning by addressing multiple learning styles
3. create an integrated, efficient, and responsive system for technology enhanced learning.
   a. integrated: assuring coordination among the support staff and users.
   b. efficient: an effective way to balance between variety of options and available support resources; minimize duplication of effort.
   c. responsive: multi-level support for faculty innovations.

Toward these ends, the grant activities will focus on creating a three-component program for developing best practices with Instructional Technology. The program will include:

1. Dissemination of basic information via:
   • webpage of FAQ and list of colleagues as well as other resources.
   • identification of exemplary approaches,
   • demonstration sessions.
   • formation of a TEL consulting group – faculty, staff, students.

*The CORE GROUP will be responsible for achieving these goals.*

2. Instructional Development
   • Identify priority issues and create an instructional development system to address them.
   • Train student tutors for desk-side coaching.
   • Work with faculty teams who have identified a particular focus.

*The CONSULTING GROUP will be responsible for achieving these goals.*
3. Evaluation and Assessment
   - The TEL Consulting Group and support staff will help users of TEL to assess the efficacy of new practices.
   - Results of this work will feed into both the Dissemination and the Instructional Development initiatives.

   *The CORE, CONSULTING GROUPS AND PARTICIPANTS will participate in these efforts.*

In this project, the Core Group will work on institutional integration, filtration, and dissemination of information related to the use of technology to address diverse learning styles. The Consulting Group will provide help to the campus with related pedagogical, technological, and evaluative issues; they will specifically provide expert knowledge, training, consulting, and desk-side coaching. Faculty participants will handle instruction-driven development, implementation, and evaluation and assessment. This process is illustrated in the following diagram:

![Diagram illustrating the process of enhancing student learning through technology integration and evaluation.](image)

Grant funds will be used to (1) support the efforts of a leadership team (the Core Group), (2) facilitate the emergence of a Consulting Group, (3) develop a system for training student tutors, and (4) finance faculty instructional experiments. These groups will have specific and interlocking functions as they focus on enhancing student learning.

**Three-Year Time Line**
TRANSITION: Spring/Summer/Fall 2004
As a final stage of the current grant, the Core Group [faculty/staff/student] will prepare a select “bibliography/webpage.”

The core group will organize the material by student learning questions and draw upon:
- The experiences of the Triads and Working Groups.
- Advice from professional staff – Computing Services, Media Services, Library, Distance and Continuing Education, Digital Media Services, TELC, Distributed Computing, etc.
- National scene – TLTG, etc.

Fall 2004
The Core Group will introduce the faculty to the “select bibliography”/priority issues and solicit interest in exploring certain instructional issues specifically related to addressing diverse learning styles and creating diverse learning communities.

Based on faculty interest and expertise, the Core Group will identify a Consulting Group of faculty, staff and students.

Year 1
December 2004
The Consulting Group will develop a system of support for 2-3 issues identified as high priority among the faculty and present these issues as learning/implementation opportunities for faculty.

They will identify 5 faculty who wish to address one or more of these issues in one of their courses during the 2005-6 academic year.

Spring 2005
Consulting Group provides training for the individual faculty in line with their implementation plans.

Consulting Group and faculty participants will attend all-U workshop on instructional design and assessment.

Summer 2005
Participants will revise courses in line with training.

Fall 2005
Fall Retreat on Instructional Design and Assessment takes place.

1st year participants offer revised courses and give a progress report to other participants, Consulting and Core Groups after 10th week of semester.

The Core Group will modify the priority issues and TEL website in keeping with first year’s experience.

Consulting Group will present 2-3 TEL issues to the faculty, invite participation and identify 5 faculty members as participants.
YEAR 2
Spring 2006
Consulting Group provides training for 2nd cohort of faculty in line with their implementation plans.

Spring campus conference on TEL lessons – UMM ADT-sponsored with presentations by 1st yr participants and Consulting Group.

Summer 2006
Participants revise courses in line with training.

Fall 2006
2nd year participants offer revised courses, making a progress report to other participants, Consulting and Core Groups after 10th week of semester.

The Core Group refines the priority issues and TEL website in keeping with first year’s experience and offer preliminary recommendation for re-structuring of support services and resources to the Academic Support Services Committee and/or the Campus Resources and Planning Committee.

Consulting Group presents 2-3 TEL issues to the faculty, invite participation and identify 5 faculty members as participants.

YEAR 3
Spring 2007
Consulting Group provides training for 3rd cohort of faculty in line with their implementation plans.

All-Campus conference on TEL lessons sponsored by the Academy of Distinguished Teachers

Core Group develops a recommendation for structure and resources necessary to maintain effective instructional improvement.

Summer 2007
Participants revise courses in line with training.

Fall 2007
3rd year participants offer revised courses, making a progress report to other participants, Consulting and Core Groups after 10th week of semester.

Core Group provides final assessment of innovations and facilitate the implementation of structural reforms.

People and Campus Units Involved
Engin Sungur, Distinguished Teaching Professor of Statistics, will be the Campus Coordinator. Other members of the Core Group include Katherine Benson (Associate Professor of Psychology), Paul Myers (Associate Professor of Biology), Pam Gades
(Instructional Technology Coordinator for Computing Services), Karen Johnson (Program Associate for Distance and Continuing Education), and Scott Esler (student). Computing Services, Media Services, the Library, the Faculty Center for Learning and Teaching and the Vice Chancellor for Academic Affairs will provide support for the project. The Consulting Group will be formed based on the needs that become apparent during the implementation of the project; the group will consist of the individuals that possess experience in the area and trained students.

Faculty participants will come from the four academic divisions of the campus.

**Evaluation Plan**
The evaluation/assessment of the project will be done at three levels and each will produce and provide input to the other. These levels are (a) individual projects, (b) general area of IT tools, and (c) overall implementation. The Core Group will create base information to use for developing benchmarks for the evaluation/assessment process. The Consulting Group will provide support to faculty participants on the design of their assessment methods and tools that will lead to comparable results across the projects.

UMM’s Assessment Reporting System will be used to measure the improvement on student learning and provide another aspect of the integration of the project with the rest of the campus.

The expected outcomes of the project, the evaluation/assessment tool that will be used and the unit that will be responsible are given below:

**Outcome 1.** All of the designed learning processes will address multiple learning styles and offer choices in learning process.
Evaluation Tool: Analysis of the implemented processes
Unit In-charge: Core Group

**Outcome 2.** Project outcomes will provide learners different sequencing of information and help them develop multiple strengths.
Evaluation Tool: Student and Participant surveys
Unit In-charge: Consulting group and faculty participants

**Outcome 3.** The project will lead to innovative uses of IT tools and provide scientific evidence on their impact on the students’ learning.
Evaluation Tool: Student survey and knowledge-based evaluative tools (areas: cognitive, behavioral change and performance, and attitudes and values), and UMM’s Assessment Reporting System
Unit In-charge: Faculty participants and consulting group

**Outcome 4.** At least ten disciplines will incorporate TEL techniques in their courses in ways that improve student learning.
Evaluation Tool: Analysis of the project outcomes
Unit In-charge: Core group
**Outcome 5.** Faculty will demonstrate an increased awareness of recent TEL developments and their implications for student learning.
Evaluation Tool: Faculty pre and post surveys
Unit In-charge: Core group and consulting group

**Outcome 6.** Faculty members will demonstrate improved understanding of effective instructional design.
Evaluation Tool: Faculty pre and post surveys
Unit In-charge: Core group and consulting group

**Outcome 7.** Students reporting satisfaction with active learning supported by TEL will increase significantly.
Evaluation Tool: Student opinion survey
Unit In-charge: Faculty participant and consulting group

**Outcome 8.** Faculty will report improved support for their TEL efforts
Evaluation Tool: Faculty survey and interview.
Unit In-charge: Core group and consulting group

**Outcome 9.** The system for delivering TEL support will reflect revisions and restructuring in line with assessment of the experiences of the grant period.
Evaluation Tool: Project impact analysis
Unit In-charge: Core group

In addition to the aforementioned, wherever possible faculty reflection logs will be used for faculty to document ongoing effects on student learning, accomplishments, challenges, and outcomes.

Campus coordinator reflections logs and surveys will also be used to track accomplishments, challenges, lessons learned and outcomes campus wide.

**Dissemination and Assessment of Sustainability**
The Core Group will update the campus website with the training tools developed by the Consulting Group and the assessment of the individual projects.

The results of the individual projects will be shared with the campus community through seminars and reports.

The final assessment with recommendations for instructional improvement to enhance student learning will be shared with the University community and with a broader audience as feasible.

The proposal for improvements in the support structure for TEL will assure sustainability of the improvements and a system that allows further innovations
The Learning Issue To Be Addressed

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. Boyer (1990) states, “As a scholarly enterprise, teaching begins with what the teacher knows” (p. 23). At the Crookston campus of the University of Minnesota, faculty members will examine how instructional technologies and innovative teaching strategies can encourage cooperation and collaboration among students.

National studies and reports support our selection of the student learning issue to be addressed in this grant project. Encouragement of cooperation and collaboration among students and the incorporation of active learning are both identified as significant attributes of quality undergraduate education (Chickering and Gamson 1987 and 1999; Ewell, P., and Jones, D., 1996; Chickering and Erhmann, 1996). Alexander Astin’s (1993) large-scale statistical studies across hundreds of colleges and thousands of students investigated 22 measures of student learning outcomes. Student-student interactions and student-faculty interactions were two outcomes that significantly affected academic achievement and student satisfaction. Using a very different approach, Richard Light (1992) studied one college, Harvard University, intensively. He and colleagues interview 570 undergraduate students at Harvard to find out what learning experiences in college they valued most. He concluded: “All the specific findings point to and illustrate one main idea. It is that students who get the most out of college, who grow the most academically, and who are happiest, organize their time to include interpersonal activities with faculty members, or with fellow students built around substantive, academic work” (Light, p. 6).

Parker Palmer (1997) reminds us that faculty and students each bring themselves to the teaching process. Therefore, one of our challenges in teaching is that we must find a way to connect with our students and how they perceive and react to the teaching and learning environment. We are learning that the factors that influence students’ learning are as varied and interconnected as the ways in which students learn. Research studies (Terenzini, Springer, Pascarella & Nora, 1995) have shown that critical thinking skills are promoted by out-of-class experiences perhaps as much as students’ classroom experiences. Baxter, Terenzini, and Hutchings (2003) have argued that essential learning outcomes for college students include critical, reflective thinking skills, the ability to gather data and to analyze and evaluate evidence. A variety of classroom and out-of-classroom experiences in which students engage in peer learning will be promoted in our investigations.

The selection of student-student collaboration as our student learning issue to investigate supports our campus focus on a student’s development of teamwork skills, a
UMC “Core Component”. At UMC “Core Components” are defined as dominant themes, transferable skills and abilities essential to an individual’s success in any occupation or life setting. With our small campus size we have a minimal number of faculty members in one discipline, so we have limited our focus to one student learning issue that is applicable to faculty in all disciplines.

**Description of Project**

**INSTITUTIONAL GOAL #1:**

Align BUSH Faculty Development Grant efforts with current campus initiatives to keep student learning in the forefront.

Improving student achievement and retention is critical to the growth and maturity of our campus. Pascarella and Terenzini (1991) have called to our attention that various forms of student involvement have substantial effects on student retention and development. Intellectual and interpersonal activities in which students choose to engage in are both included in defining student involvement. Boyer (1990) states that “faculty who care about students and engage them in active learning” (p. 12) demonstrate a vision which strengthens a sense of community. Froh and Hawkes (1996) suggest that collaborative learning recognizes that both academic and interpersonal involvement is essential to student learning. Students’ active involvement in their own learning has extensive and strong research support. Cross (2000) reminds us that virtually all research findings regarding collaborative learning come to positive conclusions. Further, Cross (2000) states that “Students have to do the actual work of learning by actively making connections and organizing learning into meaningful concepts. When students are interacting with other students to clarify, explain, and understand, they are actively building their own minds” (p. 1). However, “Simply placing individuals in groups and telling them to work together does not in and of itself promote higher achievement and greater productivity” (Johnson, Johnson, and Smith, 1994, p. 317). Therefore, UMC needs to investigate which teaching strategies and/or technology tools promote quality collaborative learning in college students.

In 1993 UMC became the first “Laptop University.” The results of a Spring 2004 UMC Survey on “Faculty Use of and Desired Support for Information Technology” indicate the high percentage of faculty who value the following in terms of technology’s role in enhancing learning:
- 72% “Provides more opportunities for documentation of student learning”
- 80% “Allows students to more easily complete sample problems & simulations”
- 86% “Makes it easier to redesign and improve course modules”
- 89% “Increase course communications among faculty and students”

This data supports our scholarly investigation of enhancing student learning by examining how instructional technologies, as well as innovative teaching strategies, can encourage cooperation and collaboration among students. Stephen Ehrmann, Vice President of The TLT Group (Teaching, Learning, and Technology), and formerly Director of Flashlight with the American Association of Higher Education, has stated that “without asking hard questions about learning, technology remains an unguided missile” (1995, p. 7). On the TLT website, [http://www.tltgroup.org/Seven/2_Stu-Stud_Cooperation.htm](http://www.tltgroup.org/Seven/2_Stu-Stud_Cooperation.htm) examples of how technology can enhance collaborative learning
include, but are not limited to, the following: group projects and assignments, peer editing of individual assignments, email correspondence, discussion of reading, course websites with discussion rooms or chat rooms, asynchronous discussion, sharing information electronically for group presentations etc.

This grant proposal is also designed to help UMC document how faculty members are working to promote and assess student learning. The UMC campus will be intensely engaged in preparing our Self Study for the Higher Learning Commission during the 2004-2005 year.

INSTITUTIONAL GOAL #2:
Foster a scholarly and collaborative approach to addressing student learning issues.

UMC PROGRAM ACTIVITIES:
1. Encourage collaboration and partnerships among faculty committed to the scholarship of teaching by establishing Faculty Learning Communities to investigate collaborative learning and other forms of active learning.

This program proposes to extend and refine the model of our first three years of BUSH Faculty Cohort Teams. Faculty development literature continues to strengthen our use of cohort-based models. Recent cohort-based models are referred to as Faculty Learning Communities (a FIPSE initiative) and Communities of Practice (a National Learning Infrastructure Initiative.) At UMC we will continue to use a cohort-based model; however, during the implementation of our renewal grant program, we will refer to our faculty participant groups as BUSH Faculty Learning Communities.

Eligibility for participation in BUSH Faculty Learning Communities would include: (a) previous participation in Faculty Cohort Teams during the original (2001-2004) BUSH faculty development grant focused on “Enhancing Student Learning Through Innovative Teaching and Technology Strategies” and (b) full-time faculty appointment with teaching responsibilities. This eligibility determination is based on extending work began during the original grant period (2001-2004). BUSH funding provided professional development training for our participating faculty members in cooperative learning and case-based and problem-based approaches to enhancing student learning (Karl Smith), and classroom assessment techniques (Mimi Steadman and Douglas Eder). In addition, the forty-nine (49) faculty who volunteered to participate in Faculty Cohort Teams during the original grant period were engaged in reflective practice as they studied current literature regarding student learning, experienced a collaborative relationship working with colleagues across disciplines as members of independent Cohort Teams, and attempted to implement classroom assessment techniques in their courses. Studying and using Classroom Assessment strategies will help us move to the next level of our scholarly investigation – Classroom Research. California State University, Northridge, a large, comprehensive university, implemented a Classroom Research program in the early 1990's and found that their program benefited from a campus climate that supported innovation, an existing faculty development structure, begun with a small group of committed faculty who had already demonstrated interest,
classroom assessment training, and faculty leadership that owned the process and determined its direction. (Berry, Filbeck, Rothstein-Fisch, & Saltman, 1991)

Members of BUSH Faculty Learning Communities will engage in the on-going systematic study of student-student collaboration. Documentation of their efforts as reflective practitioners will be summarized twice a year or per semester. Members of BUSH Faculty Learning Communities will be eligible to apply for the limited number of Classroom Research Partnership Grants.

2. Provide resources for teaching scholars to be awarded Classroom Research Partnership Grants.

K. Patricia Cross and Mimi Steadman (1996) have defined Classroom Research as the “ongoing and cumulative intellectual inquiry by classroom teachers into the nature of teaching and learning in their own classrooms. At its best, Classroom Research should benefit both teachers and students by actively engaging them in the collaborative study of learning as it takes place day by day in the particular context of their own classrooms. Teachers are learning how to become more effective teachers, and students are learning how to become more effective learners” (p.2). Improving education through the systematic study of teaching and learning is the goal of Classroom Research. Classroom Research is learner-centered, collaborative, context-specific, scholarly, and relevant (Angelo and Cross, 1993; Cross and Steadman, 1996). It is an applied form of inquiry. In this “action-oriented” approach the research-practice gap disappears as the teacher and researcher are the same person(s) (Angelo, 1991)

Classroom Research differs from traditional research in that it uses students as collaborators, rather than as subjects (Steadman, personal communication, June 3, 2004). Students benefit by gaining insight into their own learning as they become co-collaborators in a Classroom Research project. Classroom Research also does not require a strictly experimental design. Steadman reminds us that Classroom Research aims for depth and relevance. Steve Erhmann, Co-Director of TLT Group (Teaching, Learning, and Technology), suggested that this grant proposal might show more of a “deep and narrow impact” (personal communication, June 3, 2004). The results may not effect large numbers of students, yet the results might be more dramatic (per student) and the affects of “activities” would probably be easier to observe. The value of Classroom Research for our campus with small class sizes and a career-oriented curriculum is that the outcome will be investigated cross-disciplines.

Members of Bush Faculty Learning Communities will be eligible to apply for Classroom Research Partnership Grants. Grant funds will be predominately used to cover course releases and/or faculty summer stipends, limited student salaries, and general operating supplies. There are sufficient grant funds to support approximately four faculty members for Classroom Research Partnership Grants per year. This could be one research study that four faculty members conduct in two or more disciplines OR two research studies with two faculty members engaged in each study. For example, professors in Biology, Early Childhood Education, Horticulture, and Marketing might
investigate the same researchable question OR two Computer Applications Professors might want to study the same researchable question.

Classroom Research Partners determine their research methodology and design. Generally, steps include identifying the student learning area (student-student collaboration/collaborative learning), narrowing the focus within the learning issue to investigate further, reviewing existing literature for research and theory related to the learning issue, generating a researchable question, determining data collection methods, analyzing data, transforming raw data into useful information for instructional decisions, and disseminating their knowledge to their colleagues on campus, in the discipline, and/or in the field of higher education.

Examples of two broad researchable questions we would target in at least two research studies during the three year grant period follow: (1) What kind of training and structure for peer learning groups results in higher quality of student products? and (2) What kind of training and structure for peer learning groups results in students’ perception of higher value?

Classroom Research scholars will further define these broader researchable questions based on their area of interest. For example, one study might focus on whether coaching as a teaching strategy improves or enhances the quality of student work for the majority of students. Another study might focus on the specificity or clarity of written directions provided to all partnered students. An in-depth investigation of the effect on students developing a deeper level of understanding of a specific course concept with the use of collaborative learning could become a classroom research study. A study of the usefulness, impact, or value of varied Group-Work Evaluation forms used to collect feedback on students’ reactions to cooperative learning and/or study groups would be another feasible Classroom Research project.

In summary, this project attempts to further our knowledge of how professors can provide high quality collaborative learning experiences for college students. Outcomes of this project will include:

- the development of faculty members as reflective practitioners committed to the scholarship of teaching;
- an increased understanding of what improves the quality of student collaboration in classes;
- the dissemination of our Classroom Research findings relative to principles of good practice promoting student collaboration.

INSTITUTIONAL GOAL #3:
Integrate the assessment of student learning and the evaluation of student learning initiatives into the campus mainstream.

Documentation of faculty efforts to assess the enhancement of student learning and the evaluation of the value of training events during the first two years of our original BUSH Enhancing Student Learning grant period were included in the University of Minnesota, Crookston campus Progress Report on Assessment of Student Learning submitted to the Higher Learning Commission, June 30, 2003. Examples of individual faculty plans,
implementation procedures, and results of their intervention to assess student learning were included in the appendix of the campus report.

The Campus Coordinator will continue to provide evidence of faculty efforts and results to the Academic Affairs Office in an effort to integrate what participants learn and accomplish as they work to positively impact student learning on this campus. For the BUSH Renewal grant, members of Faculty Learning Communities will be asked to share the results of their scholarly investigations with the Campus Coordinator and the Vice-Chancellor of Academic Affairs. This documentation will highlight faculty efforts to determine how instructional technologies and innovative teaching strategies can encourage cooperation and collaboration among students as a form of active learning. This evidence will be integrated within our Higher Learning Commission Self-Study for the University of Minnesota, Crookston campus.

Three-Year Time Line

“Transition Phase” (summer/fall 1994)

- Compilation of bibliography of all literature reviewed by the Campus Coordinator during the past three years in preparation for use by Faculty Cohort Teams and grant writing activities. Bibliography will be available electronically at our project website, as well as a paper copy.
- Faculty members who have participated in Faculty Cohort Teams during original grant period (2001-2003) will complete an simple application stating one objective they would hope to accomplish with participation in Faculty Learning Communities (renewal grant).
- Training in Classroom Research would be provided by Mimi Steadman, co-author with K. Patricia Cross of the text, Classroom Research: Implementing the Scholarship of Teaching. This training is in preparation for implementation of Classroom Research Partnership Grants. Only members of Faculty Learning Communities, who are the faculty eligible for the research grants, will be the recipients of the training. All Faculty Learning Communities participants will receive their personal copy of the textbook prior to the training.
- Share BUSH 2001-2004 Final Report and the BUSH Renewal Grant Proposal with five (5) new Department Heads and Academic Affairs Office in the summer and with faculty when they return in the fall.

Year One, 2004-2005

- Request opportunity to meet with eligible faculty during the opening week schedule to provide an introduction to the BUSH Renewal Grant program. Set up additional meeting later in September or early October.
- Discuss with current BUSH Teaching and Learning Advisory Committee the inclusion of additional faculty members with broader representation with the new academic restructure on campus.
- Develop a faculty constructed application proposal for Classroom Research Partnership Grants.
- Initiate organizational meetings focused on integrating the grant program with other academic support needs and opportunities on campus. Academic Affairs Office, Instructional Technology Center, Department Heads, and the BUSH Teaching and Learning Advisory Committee.
- Faculty Learning Communities will begin their work, including monthly meetings.
- Awards for Classroom Research Partnership Grants by December 1st.

Year Two, 2005-2006

- Continue supporting the work of Faculty Learning Communities, award of Classroom Research Partnership Grants, meetings with T&L Advisory Committees and UM Inter-
Campus Coordinating Committee; requesting academic support, monitoring progress, documentation and interim reporting.

- Dissemination of findings.

Year Three, 2006-2007

- Continue supporting the work of Faculty Learning Communities, award of Classroom Research Partnership Grants, meetings with T&L Advisory Committees and UM Inter-Campus Coordinating Committee; requesting academic support, monitoring progress, documentation and interim reporting.
- Dissemination of findings.

**People and Campus Units Involved**

Professor Marilyn Grave authored the original and renewal BUSH grant for the Crookston campus and is the Campus Coordinator. A BUSH Teaching and Learning Advisory Committee has served during the original three-year program (Professors Stephen Davis, Larry Huus, Dan Lim, Ken Myers, Sharon Stewart, Lyle Westrom.) It is expected that membership will continue to evolve with faculty interests, priorities, and workload issues. Additional faculty members, who are representative of our new academic departments, will be added if this renewal grant is funded.

The Campus Coordinator for this project will continue to regularly share information and request support from the Vice-Chancellor for Academic Affairs Office. In the past month an Interim Associate Vice-Chancellor of Academic Affairs for Institutional Research and Development has been appointed to serve through the summer months and he has also had brief status updates.

**Evaluation**

Evaluation of the classroom research program will include at a minimum the following: 1) documentation of Bush Faculty Learning Community members efforts to enhance student learning with the use of collaborative learning; 2) interviews with faculty members who were awarded Classroom Research Partnership Grants; 3) compilation and analysis of each funded classroom research project; and 4) a survey of student and faculty experiences, engagement, and satisfaction as co-participants in a research project.

Data collection methods include the following:

- Faculty reflection logs to measure accomplishments, challenges, lessons learned, and outcomes.
- Annual faculty surveys.
- Student surveys;
- Student outcome/achievement data on projects in semesters prior to grant implementation and continued tracking through the end of the grant;
- Successful versus non-successful grades in participating courses 3 semesters prior to grant implementation and 3 semesters during.

Campus coordinator reflections logs and surveys will also be used to track accomplishments, challenges, lessons learned and outcomes campus wide.
**Dissemination and Assessment of Sustainability**

Members of Bush Faculty Learning Communities will share the results of their projects with the Office of Academic Affairs for documentation of faculty efforts to assess student learning as we engage in the Higher Learning Commission Self-Study for the University of Minnesota, Crookston campus. In addition, faculty will share the results of their project through any of the following: campus-wide seminars, teaching and learning workshops, presentations at state, regional or national conferences, campus/institutional publications, or other professional publications. Publication submission to the Jossey-Bass Higher and Adult Education Series journal, New Directions for Teaching and Learning or New Directions for Higher Education will be strongly encouraged. The journals are indexed in College Student Personnel Abstracts, Contents Pages in Education, and Current Index to Journals in Education (ERIC).
Evaluation Plan for the Proposed Bush Grant Renewal
The evaluation of the current grant (2000-04) has been conducted by Dr. Connie Schmitz of Professional Evaluation Services and Dr. Darwin Hendel of the University of Minnesota. The proposed evaluation plan has been developed in consultation with Dr. Schmitz and in collaboration with the University’s cross-campus coordinating leadership group. The plan also potentially incorporates contracted services from Indiana University for the administration of their College Student Experiences Questionnaire (CSEQ), and partnership with Dr. John Kellogg at the University of Minnesota who will provide institutional data on students’ academic performance in selected courses.

Programmatic Shifts in the Proposed Continuation Grant
The campus proposals for the 2004-07 program show considerable evolution in campus leaders’ thinking about the best way to focus energy and resources to impact student learning. In thinking about what the core elements of the evaluation should be, the Evaluators analyzed the core elements of the proposed campus programs (see next page).
## Issues, Strategies, and Outcomes: UM Bush Faculty Development Grant (2004-07)

<table>
<thead>
<tr>
<th>Campus</th>
<th>Issue to Address</th>
<th>Fac Dev Strategy</th>
<th>Interventions</th>
<th>Faculty Outcomes</th>
<th>Student Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twin Cities</td>
<td>Teaching and learning challenges in large classes; high % of students with unsuccessful grades</td>
<td>12 “course teams” redesign large courses and collaborate on researching effects. Regular meetings, ongoing support from CTLS and DMC consultants.</td>
<td>Instructional technology and innovative teaching strategies that use classroom assessment and encourage active learning, reflection and responsibility.</td>
<td>Enhanced teaching skills and enhanced capacity to study the effects of teaching practices on student learning. Publishable studies on course redesign.</td>
<td>Increased student engagement, learning, and satisfaction; decreased % of unsuccessful grades (N, F, N, W) in 12 redesigned courses.</td>
</tr>
<tr>
<td>Duluth</td>
<td>Too much emphasis on content; lack of reflective teaching and lack of self-regulated learning. Weak writing and problem-solving skills, and high % of unsuccessful grades.</td>
<td>Faculty cohort learns a four-step cycle of action research (“reflective practice”); apply to composition, general chemistry, and large computer science classes.</td>
<td>Model that engages students in four self-regulatory processes.</td>
<td>Enhanced course design, classroom assessment, and use of innovative teaching strategies.</td>
<td>Stronger goal setting, self-evaluation, use of learning strategies, and student achievement.</td>
</tr>
<tr>
<td>Morris</td>
<td>Priority instructional issues with wide applicability that can be addressed by TEL (technology-enhance learning).</td>
<td>Comprehensive course revision projects supported by website, training, and consulting group of faculty, staff, and students.</td>
<td>An integrated, efficient, responsive system for TEL.</td>
<td>Increased awareness of TEL and understanding of instructional design. Increased number and quality of IT-support-ed courses.</td>
<td>Increased student engagement and improved student learning.</td>
</tr>
</tbody>
</table>
Program Changes and Directions for Evaluation

The evaluation plan described below reflects changes in the proposed continuation grant:

- Campuses will consolidate their efforts around instructional problems in specific courses or disciplines to a much greater degree than in the current grant program. Some of the 2000-04 programs struggled at times to keep their efforts focused on student learning, and not just technology. Now the campuses are at a point where they can put instructional design, student learning outcomes, and student assessment first, and use technology and other strategies to serve those goals.

- The programs are now more aware of what it takes to make significant changes in teaching and learning, and what it takes to support meaningful classroom research. For example, more internal staff expertise (in assessment, teaching, and research) is amassed to support interdisciplinary course redesign teams on the Twin Cities campus. A stronger infrastructure for supporting course improvement (i.e., the core TEL consulting group) is an explicit goal for the Morris campus. Crookston is funding collaborative faculty-student research grants every year. Duluth is involving their Instructional Development Service and strengthening their “reflective practice” approach.

- Campuses expect to work with fewer faculty members overall, but to have significant impacts on students by virtue of (a) working with large gateway or foundation courses that reach a high number of students every semester, or (b) bringing about more profound design changes in courses (see above).

- On the larger campuses, teaching assistants and teaching specialists are recognized as important members of course design and delivery. Because changing courses—not just faculty—represents an important objective of the grant, TAs and teaching specialists are explicitly included as members of cohort teams.

- More campuses will incorporate student feedback at the point of course development through the use of student assistants/consultants (Morris, Twin Cities). Students are seen as critical partners in collaborative research projects on teaching at Crookston.

- A greater degree of structured group collaboration is apparent in the continuation grant on all four campuses. In addition to the Twin Cities’ interdisciplinary course teams, faculty cohorts with discipline affinities are seen in the Duluth proposal. Faculty learning communities are central to the Crookston proposal.

- Enhancing faculty scholarship on teaching and the dissemination of projects and results remains a strong goal across all four campuses. More intentional support for this goal has been built into this proposal. The additional support provided
for faculty through team work will compensate, or at least acknowledge, the
time shortage faculty feel.

- Finally, campuses are being more intentional in positioning their programs with
  other institutional priorities, and in striking better partnerships with local support
  units and resources.

Overall, this proposal is less like an individual faculty development grant, and more of a
strategic grant to improve learning conditions and outcomes in specific courses and
disciplines. Individual faculty members are no longer the “problem,” no longer the sole
focus of development, and no longer the only solution. This has some interesting
implications for system-level evaluation.

Evaluation Plan
The external evaluation is designed to fulfill some information needs that go across
campuses, and to answer some questions that are of common interest. The external
evaluator will work with campuses in a variety of ways (see Roles and Responsibilities in
the next section) to coordinate activities at the system-level. Campuses may also
engage in some local evaluation activities that will be reported in their annual project
reports. The plan described below is structured to address the following guiding
evaluation questions:

Guiding Evaluation Questions
1. What implementation successes and challenges were experienced?
To what extent did the campuses meet their goals in terms of:

- Engaging the desired number of faculty, teaching specialists, staff, and student
  assistants in grant-related projects?
- Focusing on the desired number and type of courses?
- Reaching the projected number of students with redesigned courses / teaching
  methods?

Evidence needed to answer the questions:

- Campus coordinator perceptions and local evaluation feedback.
- Documentation of process variables: number of faculty, TAs, staff, student
  assistants, courses (plus contact information needed for other evaluation
  activities) and students enrolled.

Method used to collect / analyze the evidence:

- Campus coordinators meet monthly and exchange progress reports, write annual
  reports.
- Standardized documentation form and tracking database with yearly updates.
  Campus coordinators will forward this information to the external evaluator.
  Student enrollment figures will be obtained from the U of M Institutional Research
  and Reporting Service unit (IRRS).
- Campus coordinator reflection logs and annual surveys to monitor campus wide projects,

2. In what ways did the identified courses change as a result of the initiative?

_Evidence needed to answer the questions:_

- Changes over time in course syllabi / websites in terms of course design elements (e.g., learner outcomes, use of assessment, technology, and active and collaborative teaching strategies).

_Method used to collect / analyze the evidence:_

- Annual review by the external evaluator of Evidence that supports and documents course redesign (syllabi, reflection logs, surveys, project rubrics, etc.)
- Establish internal goals for student outcomes to monitor project success and make changes as needed.
- Qualitative content analysis. A classification schema of changes will be made, and an overall score for degree of change will be computed.

3. To what extent did the faculty development strategies used on each campus have the intended effects on faculty? That is, to what extent did:

- Faculty (and TAs) exhibit greater skills and use of “reflective practices”?
- Collaboration increase across a community of scholars around teaching issues?
- Participation lead to completed classroom research projects and products?
- The programs meet the needs of their participants?

_Evidence needed to answer the questions:_

- Faculty pre-post responses to survey items that cover the following domains:\(^2\)
  a) Forms of participation and degree of involvement with the program.
  b) Frequency of using skills and practices associated with “reflective practice.”\(^3\)
  c) Collaboration with other faculty, staff, and students around teaching and research on teaching.
  d) Description of classroom research project
  e) Description of classroom products (papers, reports).
  f) Program satisfaction, areas for improvement.
  g) Impact of the program on their pedagogical thinking, practices, research.
  h) Faculty characteristics (campus, years involved, demographics).

---

\(^2\) Items will replicate many of those used on the current faculty survey.

\(^3\) See items used with the Twin Cities Council for the Improvement of Undergraduate Education.
Methods used to collect / analyze the evidence:

- Annual online survey of instructors (faculty and TAs) using “Survey Monkey,” an internet survey site with pass protected access.
- Every participant fills out a pre-survey and up to three post-surveys (depending on when they join the program).
- Annual data analysis provided by the external evaluation. Results disaggregated by campus and by year; degree of change over three years will be explored.
- Conduct annual focus groups with participating faculty.

4. To what degree did student learning in redesigned courses improve overtime?

Evidence needed to answer the question:

- Course grades; percent of students in identified courses who did not drop the course in the first two weeks, who subsequently earned a letter grade of D or F, withdrew from the course, or took an incomplete.

Methods used to collect / analyze the evidence:

- The University IRRS will extract the data for identified courses every semester for three years.
- Trend data will be displayed in a table and explained in a brief narrative by the external evaluator.
- Faculty and student surveys, pre- and post- tests with students, faculty reflection logs, student product and project grades.

5. What trends in student use of technology, engagement with learning, experiences with faculty, and other outcomes were observed over time in identified courses?

Evidence needed to answer the question:

- Student responses to a Student Experiences and Outcomes Survey in particular the scale scores for: hours spent preparing for class, computer and information technology, course learning, writing experiences, experiences with faculty, student acquaintances, scientific and quantitative experiences, and opinions about school.

Methods used to collect / analyze the evidence:

- Electronic surveys administered each semester in participating courses analyzed by the external evaluator. Surveys will be coded for campus, course, and year of administration (e.g., 2005 and 2007). Comparisons of findings with national norms for similar institutions will be made for general benchmarking purposes.
Evaluation Roles

PI Responsibilities:

- Monitor project implementation at each campus and conduct monthly conference calls with campus coordinators.
- Serve as the primary contact to the external evaluator for the system-wide evaluation.
- Monitor monthly progress reports from external evaluator and disseminate information to campus coordinators, making adjustments to implementation as necessary.

Campus Coordinator Responsibilities:

- Write annual program reports, describing implementation of program activities, local evaluation findings, coordination with other campus initiatives, and lessons learned.
- Submit annual process data to the external evaluator according to a standardized form.
- Participate in planning sessions with the external evaluator to develop a common faculty survey. Provide feedback on other system-level evaluation tools (such as the course syllabi content analysis protocol) and procedures.
- Share findings generated by the external evaluation with their campus colleagues.
- Work with external evaluators to finalize campus evaluation designs and develop data collection instruments.
- Complete coordinator surveys annually and periodic reflection logs.
- Participate in regularly scheduled conference calls.

External Evaluator Responsibilities:

- Work with campus coordinators to finalize evaluation designs and data collection instruments for local evaluations (faculty surveys and reflection logs, student surveys, internal goals, etc.)
- Design program tracking web site to collect and track program data and variables.
- Develop protocol for reviewing evidence that supports and documents course redesign on a per term basis.
- Develop, administer, analyze, and report faculty and student survey findings per term or year as appropriate.
- Service as contact person for working with IRRS to review trends in course indicators.
- Conduct faculty focus groups annually and report summary data.
- Develop campus coordinator reflection logs and surveys.
- Participate in monthly conference call with campus coordinators.
- Suggest common report format for annual campus coordinator reports
- Write two annual and one final report describing the external evaluation and summarizing them from annual campus reports.
<table>
<thead>
<tr>
<th>Evaluation Method</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracking database</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>- # of faculty, TAs, staff, student assistants and their contact info.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- # of courses and course identifiers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- # of students enrolled (see Course Indicators)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syllabi Review and Analysis (n = 40-50 courses)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Faculty Survey⁴ (1 pre-, up to three posts per faculty)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Course Indicators⁵ % of D, F, W, I</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CSEQ</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Campus Consultation and Coordination</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Annual and Final Reports</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

⁴ “Faculty” refers to all teaching personnel, including TAs
⁵ IRRS involvement constitutes in-kind U of M contribution.
Budget
The University of Minnesota system requests a budget of $990,000 distributed over a three-year period as charted below. For specific information about how funds will be used, each University campus has provided a detailed budget of the expenses required to implement its plan.

### University of Minnesota System Three-Year Budget

<table>
<thead>
<tr>
<th></th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
<th>Three-Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crookston</td>
<td>$30,600</td>
<td>$30,600</td>
<td>$30,600</td>
<td>$91,800</td>
</tr>
<tr>
<td>Duluth</td>
<td>$41,200</td>
<td>$55,950</td>
<td>$70,850</td>
<td>$168,000</td>
</tr>
<tr>
<td>Morris</td>
<td>$36,450</td>
<td>$41,475</td>
<td>$36,450</td>
<td>$114,375</td>
</tr>
<tr>
<td>Twin Cities</td>
<td>$175,255</td>
<td>$175,255</td>
<td>$181,315</td>
<td>$531,825</td>
</tr>
<tr>
<td>External (Cross-Campus) Evaluation</td>
<td>$28,000</td>
<td>$28,000</td>
<td>$28,000</td>
<td>$84,000</td>
</tr>
<tr>
<td><strong>Total Request</strong></td>
<td><strong>$311,505</strong></td>
<td><strong>$331,280</strong></td>
<td><strong>$347,215</strong></td>
<td><strong>$990,000</strong></td>
</tr>
</tbody>
</table>

University of Minnesota System In-Kind contributions: .05 FTE Grant Principal Investigator; .05 FTE clerical support

### UM-Twin Cities Three-Year Budget

The Twin Cities campus proposes a budget of $177,255 for year one and two and $181,315 for year three, for a total of $531,825 over three years. These funds will support Faculty, Teaching Specialist or TA, and student involvement in the 12 Course Teams, provide salary and benefits for 2 Teaching & Technology-Enhanced Learning Consultants and 2 Assessment & Evaluation Consultants for a combined effort of .6 FTE, provide .1 FTE of the clerical support for the project, and support travel of presenters to national conferences. In addition, funds will be used to support Course Team projects and to disseminate findings through a University of Minnesota hosted national conference at the end of the project. The Twin Cities in-kind contribution will include salary and benefits for .10 FTE of the CTLS Director and the DMC Director and .2 FTE clerical support.

### UM-Twin Cities Expenses

<table>
<thead>
<tr>
<th></th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary and benefits for .6 FTE consultants in Teaching &amp; Technology-Enhanced Learning and Assessment &amp; Evaluation</td>
<td>$46,904</td>
<td>$46,904</td>
<td>$46,904</td>
</tr>
<tr>
<td>Professional development stipend for 2 Faculty group leads $3,000 each (1 for 1,000 level; 1 for 3,000)</td>
<td>$6,000</td>
<td>$6,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Description</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Professional development stipend for 10 faculty at $2000 each.</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>12 TAs and/or Teaching Specialist Salary, benefits, or professional development.</td>
<td>$24,000</td>
<td>$24,000</td>
<td>$24,000</td>
</tr>
<tr>
<td>10 Undergrads at 10hrs/wk at $10.00/hr for 30 weeks</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>120 hours/week stud tech work at $10/hr for 30 weeks</td>
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<td>$36,000</td>
<td>$36,000</td>
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<tr>
<td>Clerical support .1 FTE</td>
<td>$3,232</td>
<td>$3,312</td>
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<tr>
<td>Clerical benefits</td>
<td>$1,050</td>
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<td>$1,189</td>
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<tr>
<td>Food and Supplies</td>
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<td>$2,864</td>
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<tr>
<td>Hardware/Software for project</td>
<td>$1,000</td>
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<td>$1,000</td>
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<tr>
<td>Travel Funds for CTLS and DMC staff to co-present research findings with faculty at Conferences</td>
<td>$3,962</td>
<td>$3,962</td>
<td>$3,962</td>
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<tr>
<td>End of Grant Conference (allocate $6,000; $2,000/year)</td>
<td></td>
<td></td>
<td>$6,000</td>
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<tr>
<td><strong>Subtotal for each year</strong></td>
<td><strong>$175,255</strong></td>
<td><strong>$175,255</strong></td>
<td><strong>$181,315</strong></td>
</tr>
<tr>
<td><strong>Total request for 3 years</strong></td>
<td></td>
<td></td>
<td><strong>$531,825</strong></td>
</tr>
</tbody>
</table>

In-Kind U of MN Twin Cities support each year:

.1 FTE of CTLS and .1 DMC Directors’ time to serve as Grant Coordinators
.2 FTE clerical support
**UM-Duluth Three-Year Budget**

Bush Foundation funding will be used primarily to provide summer salary and staff support to the reflective practitioners. We request a three-year budget of $168,000 for the UMD project. Funding will cover faculty, staff, and graduate student salaries and fringe benefits, technology equipment and software, faculty travel for intercampus meetings and for professional development, administrative expenses, and retreat and meeting expenses.

<table>
<thead>
<tr>
<th>UM-Duluth Expenses</th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Positions:</td>
<td>$11,000</td>
<td>$11,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>(Salary and Fringe Benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI/Director</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clerical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer Salary/ Fringe for faculty participants</td>
<td>10,000</td>
<td>20,000</td>
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</tr>
<tr>
<td>Salary/Fringe for graduate research assistants</td>
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<td>8,000</td>
<td>8,000</td>
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<tr>
<td>Technology equipment and software</td>
<td>5,500</td>
<td>5,500</td>
<td>5,500</td>
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<tr>
<td>Faculty travel for intercampus meetings</td>
<td>450</td>
<td>750</td>
<td>1,200</td>
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<tr>
<td>Faculty professional development</td>
<td>2,250</td>
<td>4,500</td>
<td>6,750</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>2,000</td>
<td>2,200</td>
<td>2,400</td>
</tr>
<tr>
<td>Retreat and Meeting Expenses</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
</tr>
<tr>
<td><strong>Subtotal per year</strong></td>
<td><strong>$41,200</strong></td>
<td><strong>$55,950</strong></td>
<td><strong>$70,850</strong></td>
</tr>
<tr>
<td><strong>Total request for three years</strong></td>
<td></td>
<td></td>
<td><strong>$168,000</strong></td>
</tr>
</tbody>
</table>
**UM-Morris Three Year Budget**

The Morris campus requests $114,375 over a three year period to (1) support the efforts of a leadership team (the project coordinator and the Core Group), (2) facilitate the emergence of a Consulting Group, (3) develop a system for training student tutors, and (4) finance faculty instructional experiments. Additional funding is requested to sponsor campus workshops and to support attendance at conferences.

<table>
<thead>
<tr>
<th>UM-Morris Expenses</th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Coordinator</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Responsible for report-writing, chair Core Group,</td>
<td>$5000</td>
<td>$5000</td>
<td>$5000</td>
</tr>
<tr>
<td>• oversee/implement assessment/evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(salary and benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Support staff</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(salary and benefits)</td>
<td>$3000</td>
<td>$3000</td>
<td>$3000</td>
</tr>
<tr>
<td><strong>Core Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Spring/summer 2004 from old grant (2 faculty members, 2 professional staff @$500)</td>
<td>$2000</td>
<td>$2000</td>
<td>$2000</td>
</tr>
<tr>
<td>(salary and benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Consulting Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Student stipends 4 @$2000</td>
<td>$13,500</td>
<td>$13,500</td>
<td>$13,500</td>
</tr>
<tr>
<td>• Faculty - 3x$1500 (salary and benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Professional staff - 2x$500 (salary and benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Workshop on Instructional Design and Assessment</strong></td>
<td></td>
<td></td>
<td>$5,000</td>
</tr>
<tr>
<td>• All-campus draws central funds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2d yr fall retreat - $5000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Conference attendance</strong> (2 national mtgs per yr)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Core Group</td>
<td>$2,500</td>
<td>$2,500</td>
<td>$2,500</td>
</tr>
<tr>
<td>• Dissemination of results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Faculty Participants [5@2000]</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Faculty grants</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>(salary and benefits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supplies (phone, duplicating, etc.)</strong></td>
<td>$450</td>
<td>$475</td>
<td>$450</td>
</tr>
<tr>
<td><strong>Subtotal for each year</strong></td>
<td>$36,450</td>
<td>$41,475</td>
<td>$36,450</td>
</tr>
<tr>
<td><strong>Total request for 3 years</strong></td>
<td></td>
<td></td>
<td>$114,375</td>
</tr>
</tbody>
</table>
UM-Crookston Three-Year Budget

The Crookston campus requests funding in the amount of $91,800 over a three-year period. Grant funds will predominately cover academic salaries to provide course release or summer stipends to faculty members awarded the Classroom Research Partnership Grants. This plan takes into consideration the UMC campus faculty workload policy (12 credits per semester or 24 credits per year) which makes it challenging to engage in research projects.

<table>
<thead>
<tr>
<th>UM-Crookston Expenses</th>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Salaries and Fringe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus Coordinator summer work= 5,000</td>
<td>$24,200</td>
<td>$23,300</td>
<td>$23,300</td>
</tr>
<tr>
<td>Faculty – Research Grants (course release and/or summer stipends) @ $2,000 - 5,000 per faculty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Salaries and Fringe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 hours @ $10 + fringe</td>
<td>$ 2,200</td>
<td>$ 2,200</td>
<td>$ 2,200</td>
</tr>
<tr>
<td>Consulting Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ 1,000</td>
<td>$ 1,500</td>
<td>$ 1,500</td>
<td></td>
</tr>
<tr>
<td>General Operating Supplies (food, office, books)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ 2,000</td>
<td>$ 2,400</td>
<td>$ 2,400</td>
<td></td>
</tr>
<tr>
<td>Telephone, FAX</td>
<td>$ 200</td>
<td>$ 200</td>
<td>$ 200</td>
</tr>
<tr>
<td>Travel</td>
<td>$ 1,000</td>
<td>$ 1,000</td>
<td>$ 1,000</td>
</tr>
<tr>
<td>Subtotal for each year</td>
<td>$30,600</td>
<td>$30,600</td>
<td>$30,600</td>
</tr>
<tr>
<td>Total request for three years</td>
<td></td>
<td></td>
<td>$91,800</td>
</tr>
</tbody>
</table>

External (Cross-Campus) Evaluation Budget

We have allocated $84,000 to support the efforts of an external evaluator. This individual will serve as the program evaluator of the system-wide grant and an evaluation consultant to each campus. Of the funding allocated to evaluation, $77,500 will be used for designing and administering data collection tools and analyzing the data. An additional $1,500 will be used to support campus consultation and $5,000 will be used for preparation of reports. See Timeline for External (Cross-Campus) Evaluation for a more detailed account of these activities.

The University of Minnesota intends to contract with MGT of America, Inc. to conduct the external evaluation for this project. MGT of America, Inc., was established 30 years ago in Tallahassee, Florida, for the purpose of providing high-quality management and research consulting services to public sector entities. With our corporate office in Tallahassee, Florida, regional offices have been established in Olympia, Washington; Sacramento, California; Austin, Texas; Columbia, South Carolina; and Washington, D.C.

The firm’s full-time staff of over 130 professionals bring a wealth of knowledge and depth of understanding to all our client engagements, delivering the quality services our clients expect and deserve. Our organizational mission is supported by our capacity to deliver an extensive range of services to a variety of public sector institutions, nonprofit groups, private businesses, organizations, and institutions. Our consultant services are
supported by a full complement of support staff personnel, office space, and technological equipment required to meet our clients’ needs. The services we provide include:

- program evaluation;
- higher education consulting;
- educational technology consulting;
- information technology consulting;
- strategic planning;
- business process reengineering;
- communications and marketing consulting;
- disparity studies;
- facilities planning and analysis;
- management and organizational reviews;
- market and opinion research;
- funding studies and models;
- user fee studies; and
- human resource studies.

MGT is recognized as one of the nation’s premier higher education planning and management research consulting firms. As a result of their extensive experience in higher education, has a keen understanding of university, college, and state system operations that far exceeds that of the competition. More than half of MGT’s 2,500 client engagements have involved educational institutions or state education agencies.

Higher education clients served by MGT include:

- state universities;
- private colleges;
- community colleges;
- state higher education boards;
- governors’ offices;
- legislatures;
- special study commissions; and
- nonprofit organizations.

MGT has also conducted evaluations and program services to the following Foundations:

- J.A. and Kathryn Albertson Foundation;
- National Foundation for the Improvement of Education;
- Institute for Higher Education Policy;
- Mammoth Lakes Foundation;
- Henry and Rilla White Foundation;
- Cal Poly Pomona Foundation;
- Community Voices;
- Michael and Susan Dell Foundation;
- Florida Children’s Forum;
- The McConnel Foundation;
- Lance Armstrong Foundation;
- Ronal H. Brown Foundation; and
- The Jesse Ball DuPont Fund.
A great advantage MGT offers to clients is their understanding of educational structures and operations, and how best business practices can be applied to those structures and operations. MGT’s staff includes individuals who have served in various roles throughout the education community, many of whom were educators before they became consultants. Thus, they have credibility with the educational community.

The staff at MGT fully understand the process of grant evaluation. Their relevant past experience provides superior qualifications to provide service as the external evaluator for the Bush Foundation Grant. MGT's accomplished consulting team includes professionals who have experience with directly related studies. Below, the relevant experience of each of the project staff members is outlined as it pertains to the needs of the University.

Partner-in-Charge: Mr. David Brittain. Mr. Brittain, a Partner with MGT, will be the Project Director for this study. He is recognized as one of the top national experts in educational technology. Electronic Learning Magazine identified Mr. Brittain as one of eight national educational technology gurus. He is a Past President of the International Society for Technology in Education and Past President of the National Educational Computing Association. Mr. Brittain has participated in information technology conferences in Australia, England, Mexico, and Puerto Rico as an invited speaker, and he was asked by the Southern Regional Education Board to assist in the development of guidelines for technology planning.

Prior to joining MGT, Mr. Brittain served as the head of educational technology for the Florida Department of Education. In this role he was instrumental in the design and implementation of the Florida Information Resource Network (FIRN), a statewide data communication network connecting all of Florida’s public school districts, community colleges, and universities with the Department of Education. During his tenure with the Department of Education, he also managed the “Retrofit for Technology Project,” which provided internal wiring and networking resources to 10 percent of Florida’s schools through a grant program. Mr. Brittain has an M.S. degree in Public Administration from Florida State University.

Project Director: Ms. Cynthia Newsome. Ms. Newsome is a consultant with MGT and is a former secondary teacher and school technology coordinator. Since joining MGT, she has worked extensively with schools and school districts and has frequently assisted districts in planning for the effective use of technology. Moreover, she was the assistant project director on a project to evaluate a Technology Innovation Challenge Grant awarded to the Florida Learning Alliance, a partnership representing 34 districts in Florida. Ms. Newsome is also a member of the International Society for Technology in Education and the Southeast Evaluation Association. Ms. Newsome will serve as the Project Director for this project.

Technical Advisor: Dr. Kent Caruthers. Dr. Caruthers has a broad background in higher education administration. He has over 30 years of experience in developing strategies that address issues of funding and administration of higher education systems, universities, and colleges. Much of his consulting work for our clients has been in the formulation and evaluation of policies and procedures that impact institutional efficiency and effectiveness. During his career, he has served as a campus institutional research officer and as a system director of planning and budgeting. His consulting engagements have taken him to over 300 colleges and universities in 35 states.
Prior to joining MGT in 1980, Dr. Caruthers was Director for Strategic Planning for the National Center for Higher Education Management Systems, Director of Planning and Analysis for the State University System of Florida, and Senior Institutional Research Analyst at Oklahoma State University.

As a consultant with MGT, Dr. Caruthers has served numerous higher education clients. He is a noted national expert on strategic planning and funding strategies in higher education. He is the author of “Mission Review: Foundation for Strategic Planning” (with Gary B. Lott), and “A Study of the Funding Process for State Colleges and Universities” (with Richard Novak). Additionally, he has conducted workshops across the nation on higher education strategic planning. Dr. Caruthers has an Ed.D. degree in Educational Administration and Higher Education from Oklahoma State University.

Technical Advisor: Dr. Jerry Ciesla. Dr. Ciesla is a senior partner with MGT who has over 30 years of educational research and consulting experience. Dr. Ciesla currently directs MGT’s Program Evaluation Division, and coordinates MGT’s quality assurance program. Dr. Ciesla oversees MGT’s yellow book compliance guidelines and the American Evaluation Association (AEA) standards, which ensure that MGT meets federal government and professional practice standards for program evaluation. Dr. Ciesla has conducted numerous in-depth studies related to student achievement and the professional development of teachers, school, and district administrators. Dr. Ciesla’s significant experience in program evaluation includes multiyear studies involving implementation and impact analysis. Dr. Ciesla holds an Ed.D degree in Science Education from Indiana University.

Consultant Team Member: Dr. Kimberly Hardy. Dr. Hardy holds a Ph.D. in Higher Education. She has a broad range of experience in higher education, particularly in the areas of distance learning, Web-based instruction, learning management systems, and instructional systems design. Her areas of expertise include statistical analysis, program planning and evaluation, and survey research design. She has strong quantitative data analysis skills and has served as the coordinator for survey research for numerous college and university projects. Prior to joining MGT, Dr. Hardy served as a Student Development Specialist at Edison Community College and as a Graduate Advisor for Michigan State University’s Department of Residence Life.

Consultant Team Member: Mr. Sean Friend. Mr. Friend is an analyst with MGT and has a B.S. in Management Information Systems and Mathematics Education from Florida State University. He served on a team to evaluate the impact of technology resources, support, and teacher professional development on teaching and learning for the Technology Innovation Challenge Grant awarded to the Florida Learning Alliance. He is also serving as a Team Member on a project to assist the Florida Educational Technology Corporation by providing support for its 2005 conference program. Mr. Friend is also a member of the Southeast Evaluation Association. He will serve as an analyst for this project.

Programmer/Database Manager: Mr. Michael Reynolds. Mr. Reynolds is a Programmer and Web Developer with MGT. Mr. Reynolds has served as a Team Member on a longitudinal evaluation for the Arkansas Department of Education. This project
assessed the overall effectiveness of the Reading First program. His experience includes working on the development of multiple software applications, including insurance applications for desktop computers, the Web, and handheld devices; a business analysis system; and backend systems. Through working on the development of these systems, he has acquired an advanced understanding of full lifecycle development. Along with his knowledge of system design, he also has advanced programming skills in Visual Basic 6.0, Access 2000, Crystal Reports 8.5, Coldfusion MX, JavaScript, and SQL Server.
Works Cited


