



Models of Academic Support
Library/Faculty Fellows for Undergraduate Research
University of California, Berkeley

2007 INTERIM REPORT (2004-2007 SUMMARY)

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Cumulative Project Highlights

Research in higher education consistently shows that students must do more than 'just listen' in order to effectively learn. They must discuss, read, write, problem solve, engage in analysis, synthesis and evaluation. In other words they must be involved in 'active learning'. For the past decade in research universities, special attention has been devoted to how we might achieve these expectations through inquiry-based and research-based learning approaches.

At the large research university, it is widely understood that the challenges to this engagement might be more striking than at other institutions. The Mellon Library/Faculty Fellowship for Undergraduate Research has allowed UC Berkeley to investigate what it would take to adopt and then support such instructional innovations. The results are exciting, extensive and serendipitous. Mellon Faculty Fellows have followed paths of pedagogical innovation, and their students have been immersed in stimulating learning environments. The affects are neither fragmented nor isolated. The experiences of the Mellon participants (faculty, staff and students) have infused the campus. An excitement bubbles when a new faculty is hired, a new course proposed, or a faculty development workshop convened. Initiatives are suggested, ideas shared, strategies compared, efforts coordinated. In short, the Mellon Library/Faculty Fellowship for Undergraduate Research has become both a catalyst for an array of UC Berkeley teaching and research innovations and a benchmark for success.

The following are highlights of the 2004-2007 project's impact:

- ◇ In fall 2007 Berkeley's Vice-Provost for Undergraduate Education and Academic Senate launched the Undergraduate Student Learning Initiative (USLI), a new effort to support departments in establishing educational goals and evaluation procedures for all undergraduate programs. It represents an unprecedented opportunity to work with individual departments to support curricular change that will allow Berkeley to achieve common goals for undergraduate learning. One of the most important of these, and a linchpin of the Mellon Project, is to equip undergraduates with research skills that will prepare them to undertake successful capstone research projects.
- ◇ 31 Mellon courses were re-designed, incorporating information competencies, research skills, and the use of the Library's print and digital collections as integral components; 25 of these were large enrollment courses with at least 100 students. The project reached 11,201 distinct students during this period.
- ◇ 35 Faculty Fellows were selected through a competitive application process. Their participation broadened the project's reach to include 20 new departments beyond those impacted by the Pilot Project.
- ◇ 49 academic staff from the Library, Educational Technology Services, Graduate Student Instructor Teaching & Resource Center, and the Division of Undergraduate Education served on Mellon Implementation Teams or the Steering Committee over this time period.

- ◇ Over 200 Graduate Student Instructors received orientation and experience assisting in the implementation of a research component in undergraduate courses.
- ◇ The Assessment Consultant worked with faculty to develop a range of methods to learn more about students' information literacy and research abilities. Findings were used to improve those assignments and inform approaches of value to large research universities.
- ◇ New models for deepening librarian skills in instructional design and technologies were implemented and improved the library's potential for sustaining Mellon-generated changes.

Project Background

In December 2003, the University of California, Berkeley received a four-year grant in the amount of \$749,000 from the Andrew W. Mellon Foundation. From 2004-2007 the grant helped enrich collaborations among Berkeley Faculty, the Library, American Cultures Center, Division of Undergraduate Education, Educational Technology Services, Office of Educational Development, and Graduate Student Instructor Teaching and Resource Center (units alternately referred to as the Academic Partners and Project Partners) to create a scaleable and sustainable model for curriculum changes that strengthen connections between undergraduate research, information literacy, and library collections in large enrollment, lower division and large impact courses. In Berkeley's highly decentralized environment, it is the faculty who oversee the campus curriculum and they, with other classroom instructors, must therefore be primary agents of curricular reform.

This project was an outgrowth of a 2002-2004 Mellon Foundation grant in the amount of \$138,000 to the University of California, Berkeley to harness Berkeley's renowned research strength and improve the connections between faculty research and undergraduate education while encouraging the use of library collections and the acquisition of information literacy skills as integral parts of student learning.

The 2004-2007 project's core objectives were to:

- strengthen the community of faculty committed to creating undergraduate research opportunities that utilize library collections;
- support faculty serving as change agents for teaching within the academy;
- encourage the use of libraries and library collections;
- strengthen collaboration among campus academic partners in support of instructors and instruction; and
- influence curriculum and instruction in order to improve student learning.

The project focused on two strategies aimed at creating a context and an academic support structure to encourage curricular experimentation and change by:

- developing and nurturing a cohort of instructors dedicated to a new way of teaching who would, in turn, become change agents within their departments and throughout the university; and

- supporting a campus collaboration of project partners that could serve as catalysts for change and would work together to create and provide an infrastructure of support for faculty and other instructors.

The grant supported a variety of activities to create and support a community of faculty at Berkeley dedicated to research-based learning as they sought to engage their colleagues in conversations about their experiences. It also supported broad campus priorities and objectives related to undergraduate education as outlined in the Western Association of Schools and Colleges Educational Effectiveness Report for Berkeley and in the campus Academic Plan. During the first three years of this project, three cohorts of faculty participated in a series of activities; the fourth year included support and evaluation for the final cohort of Fellows and a cumulative evaluation of the project.

At the outset Project Partners committed to exploring ways to build on the 2002-2004 Pilot Project and to emphasize issues of sustainability. Partners agreed to:

- initiate and support campus projects related to teaching and learning including the New Faculty Orientations, Presidential Fellows, and e-Berkeley Symposia;
- cultivate and extend the collaboration among the Project Partners, involving a greater number of people and different levels of our organizations to better scale and sustain Mellon-inspired changes in teaching and learning on the campus;
- institutionalize Mellon-inspired curriculum changes within large enrollment, lower division, and high impact courses by systematically identifying and cultivating relationships with individual faculty members, department chairs and deans and strategically funding curricula changes within targeted departments;
- host periodic events for the Fellows and more widely on campus to promote key goals of the Mellon grant and share innovations with others within the academy;
- involve Graduate Student Instructors (who are heavily involved in the delivery of large enrollment courses on the campus) in these curricular changes, thus increasing the base of instructors beyond the Mellon Fellows cohorts;
- launch a program of post-Institute, cross-Partner implementation teams to share expertise among the project participants and extend our capacities to advise and support the Fellows;
- increase the program focus to include the impact of Mellon courses on student learning, by separating overall project evaluation from assessment of student learning and assigning resources to each of these distinctive focuses;
- collect assessment and evaluation data to inform future initiatives; and
- publicize our efforts and promote our vision on campus, regionally, nationally and internationally.

During the project, Faculty Fellows ...

- participated in the intensive *Mellon Faculty Institute for Undergraduate Research* in which they explored strategies for integrating undergraduate research, teaching information literacy, mentoring Graduate Student Instructors (GSI), and utilizing instructional technology into their courses;
- worked with Implementation Teams (I-Teams) composed of Project Partners with expertise in information literacy, assessment, Graduate Student Instructor training, educational technology, and assignment design;
- implemented assignments in new or revised courses, in some cases conducting classroom assessments of the changes; and

- shared the results of their efforts with colleagues in their departments, across departments on campus, and in their professional associations.

During the project, Academic Partners ...

- used the 2002-2003 evaluation data to improve project activities;
- strengthened the campus collaboration through this and related projects;
- created Implementation Teams with staff from the Project Partner units to consult with individual Faculty Fellows on topics such as assignment design, development of learning outcomes, assessment of student learning, and use of learning management systems and related technologies;
- planned events Fellows to discuss the results of their efforts with each other and with the broader local and national academic community; and
- contributed to the overall project evaluation.

Project Schedule

Each spring and fall semester, Project Partners managed activities that related to recruiting and supporting two cohorts of Fellows. The final six months of the grant were dedicated exclusively to analyzing the evaluation data gathered from all years.

YEAR ONE

January - May 2004

Reviewed evaluation data from the 2002-2004 Pilot Project to prepare for the next cohort of Mellon Fellows. Revised the Mellon Institute content. Selected Institute facilitators. Focused the selection criteria on large enrollment, lower-division, and high impact courses. Publicized the 2004-2005 Fellowship. Awarded the 2004-2005 Fellowships.

May - June 2004

Conducted the 2004 Mellon Institute.

June - December 2004

2004-2005 Fellows continued to work with their Implementation Teams -- consisting of multiple Project Partners and in some cases the Assessment Consultant -- to revise syllabi and/or assignments that would incorporate research opportunities and would take advantage of library collections. Courses scheduled for the fall semester were implemented. Publicized the 2005-2006 Fellowship.

YEAR TWO

January - May 2005

Implemented and selectively evaluated fall courses from the 2004-2005 Fellows. Continued consultations with 2004-2005 Fellows for spring courses. Organized campus events for 2004 Fellows to discuss their experiences and their impacts. Planned the 2005 Mellon Institute. Awarded the 2005-2006 Fellowships.

May – June 2005

Conducted the 2005 Mellon Institute.

June – December 2005

2005-2006 Fellows continued to work with their Implementation Teams. Courses scheduled for the fall semester were implemented. Publicized the 2005-2006 Fellowship.

YEAR THREE

January – May 2006

Implemented and selectively evaluated fall courses from the 2005-2006 Fellows. Continued consultations with 2005-2006 Fellows for spring courses. Organized campus events for 2005 Fellows to discuss their experiences and their impacts. Planned the 2006 Mellon Institute. Awarded the 2006-2007 Fellowships.

May – June 2006

Conducted the 2006 Mellon Institute.

June – December 2006

2006-2007 Fellows continued to work with their Implementation Teams. Courses scheduled for the fall semester were implemented.

YEAR FOUR

January – July 2007

Implemented spring courses from the 2006-2007 Fellows. Conducted interviews and surveys of Fellows, students, and Project Partners.

July 2007 – December 2007

Analyzed evaluation data.

2006-2007 Highlights

This section of the report focuses on the most significant activities during Year Four (January – December 2007) and supplements Interim Reports dated 31 January 2005, 31 January 2006 and 31 January 2007.

Project Evaluation

In 2005 a Steering Committee subcommittee met to review the draft Mellon Evaluation Framework which consisted of questions suggested by each of the Steering Committee members. Due to the complexity of the project and the limited resources for the evaluation, the subcommittee identified three core issues to focus: (1) impact on individual UC Berkeley faculty; (2) impact on the campus culture of learning; and (3) impact on student learning. These core issues aligned well with the grant's original goals and issues deemed to be most important to campus.

The Project Director hired Dr. Mary Sue Ammon in March 2006 as the Evaluation Consultant, bringing excellent experience and credentials from similar evaluation work completed for the Service Learning Center as well as an objective perspective. As the Evaluation Consultant, Dr. Ammon partnered with the subcommittee to prioritize and select a manageable set of questions to address in each of the three core areas, clarify processes for collecting and handling various types of data, and design data collection tools. She collected and analyzed qualitative and quantitative data from 2006-2007 as well as analyzed data collected during the earlier years of the project. The results of Dr. Ammon's work will inform the final report on the project submitted to campus administrators as well as future reports on the project appearing in the literature. The report is included as Appendix B.

Supporting faculty to serve as change agents within the academy

- The Assessment Consultant continued her assessment of student learning with three new Mellon courses: African American Studies 5A, Asian American Studies 20A, and Public Health 150E in partnership with the corresponding Fellows and I-Teams. The Assessment Consultant's report appears in Appendix A.
- Fellow Jonathan Simon delivered a presentation on his new Mellon-inspired undergraduate Legal Studies course at Cal Day, Berkeley's annual campus open house which features dozens of presentations by distinguished campus faculty.
- The Library Development Office spotlighted two Mellon Faculty Fellows, Bill Satariano and Brandi Catanese, and their revised Mellon courses and I-Teams in issues of the Development Office's publication *Fiat Lux*.
- The Steering Committee received a request from Cornell University to organize a workshop of peer-to-peer meetings to share the lessons Berkeley has learned as a result of the Mellon Project. The workshop is anticipated to take place over three days in March 2008 and include perspectives of senior administrators, project logistics, collaborative and support systems, working with faculty and graduate student instructors, assignment design and implementation, and the assessment of student learning.

Influencing instruction and course development

- Berkeley was in an excellent position to use the lessons learned from the Mellon project at the program level in a parallel initiative that was launched in fall 2007. The Undergraduate Student Learning Initiative (USLI) [<http://education.berkeley.edu/usli.html>] is a campus-wide initiative to support departments in establishing educational goals and evaluation procedures for all undergraduate programs. This initiative has several interlocking contexts: (1) the restructuring of our academic program review process to focus more substantive attention on undergraduate education; (2) a self-study focused on undergraduate educational effectiveness completed as part of our most recent WASC accreditation [<http://education.berkeley.edu/accreditation/>]; and (3) a set of recommendations made by the Undergraduate Outcomes Task Force report and subsequently endorsed by the Academic Senate Divisional Council at the recommendation of the Committee on Educational Policy [<http://evcp.chance.berkeley.edu/documents/Reports/UOTFReport.pdf>].

The initiative is consistent with the campus culture at Berkeley in which the evaluation of student achievement is viewed as locally defined, discipline specific, and faculty driven. Each department chair has designated a faculty representative to lead the effort in that department. A joint Academic Senate-Administration faculty advisory committee provides shared oversight for the initiative. The USLI represents an unprecedented opportunity to work with individual departments to support curricular change that will allow us to achieve our common goals for undergraduates. One of the most important of these, spotlighted in our WASC Educational Effectiveness Report, is to equip students with undergraduate research skills and prepare them to undertake successful capstone research projects.

- As an outgrowth of interest expressed during Mellon meetings, an Undergraduate Research Experience Working Group was formed to explore the viability of developing a non-traditional course that would introduce all entering undergraduate students (both freshmen and community college transfers) to the culture of the research university, facilitate the transition to college-level work, and motivate students to participate in undergraduate research opportunities.

Cumulative Activities and Impacts

Considering both the 2002-2004 pilot grant and this 2004-2007 grant, 44 distinct Mellon courses across a broad range of disciplines were redesigned to incorporate information competencies, research skills, and the use of the Library's print and digital collections as integral components. Three had not yet been offered as of December 2007. Thirty of these courses were taught more than once during this period. Twenty-nine of the Mellon courses were lower division offerings and fifty-nine initial and repeat courses had enrollments exceeding 100 students. In all, the project-sponsored courses reached 12,576 distinct undergraduates, approximately one-third of Berkeley's undergraduate population.

This section summarizes elements of the activities and impacts of the 2004-2007 grant organized around the project's core objectives, complementing the Interim Reports dated 31 January 2005, 31 January 2006 and 31 January 2007.

Strengthen the community of faculty committed to creating undergraduate research opportunities

ENGAGING MULTIPLE FELLOWS & DISCIPLINES

From 2004 to 2007, we welcomed 35 Mellon Faculty Fellows to the Mellon Project and the Institute, broadening the project's reach to include representatives from the departments of African-American Studies, Architecture, Art Practice, Chemistry, College Writing, Earth and Planetary Sciences, Environmental Studies, Geography, German, History, International and Area Studies, Law and Legal Studies, Linguistics, Near Eastern Studies, Nutritional Sciences, Peace and Conflict Studies, Political Science, Sociology, Statistics, and Women's Studies. We continued to build "mini-cohorts" of Faculty Fellows initially created during the Pilot Project in Engineering, Ethnic Studies, Landscape Architecture, and Public Health.

SUPPORT THROUGH THE INSTITUTE

From 2004 to 2006, we offered three annual Institutes. The Fellows reported being either “extremely satisfied” or “very satisfied” with their Institute experiences and found the support provided to them to be of significant value. Among the most notable experiences were those characterized by Fellows as involving personal observation, and those described as practical and customized to their individual needs. These included viewing videos (related to the library and student learning) and sessions that invited faculty to observe Berkeley students critiquing research assignments and demonstrating how they would go about approaching research assignments. Fellows valued presentations by previous Mellon Faculty Fellows who shared the particulars of how they integrated the development of student information literacy skills into course design and assignments. They also repeatedly mentioned preferences for personalized, one-on-one feedback, whether gained through working with their Implementation Teams (I-Teams) or discussions with faculty peers.

Over the years, Faculty participants most appreciated the questions and insights from colleagues from different disciplines; interaction with the Institute Facilitators, Library Partners, and I-Teams; building a community around teaching; and time to reflect on undergraduate learning. At the end of each year’s Institute, the Fellows were invited to contribute suggestions for improving the Institute. Based on their suggestions, the Steering Committee made the following improvements to the annual Institute over the course of the project:

- Shortened the duration of the Institute from nine days to five days;
- Eliminated tangential topics;
- Reduced the amount of required reading and homework assignments;
- Provided more opportunities for discussion among faculty peers;
- Provided more personalized, one-on-one consultation and feedback on syllabi and assignments;
- Reduced the number of lectures; and
- Linked technology discussions to the participants’ individual needs.

BUILDING ASSESSMENT EXPERTISE

During the Pilot Project, we learned that we needed to separate the assessment of student learning from the overall program evaluation. Mellon Fellows required individual consultation to help with classroom assessment and assessment of student learning. In the absence of a campus unit responsible for these areas, we chose to develop an individual from one of the Project Partner units.

In 2004-2005, we identified a librarian on staff to serve as the Assessment Consultant who would work with selected Fellows and I-Teams in the assessment of student learning. This responsibility became part of the librarian’s primary assignment in an effort to work towards long-term sustainability of this important role.

Beginning in 2005, three Faculty Fellows were selected each year for a year-long focus on assessment of student learning. These faculty committed to integrating authentic assessment strategies into their assignments, providing data on student learning outcomes related to library research, and administering questionnaires about undergraduate research in their courses. A number of assessment approaches

were undertaken including end-of-semester questionnaires completed by both undergraduates and Graduate Student Instructors, grade norming sessions for research assignments, focus groups, rubrics for evaluating student research projects, and peer evaluation activities. The goal of experimenting with so many approaches was to identify elements that could be effective with other courses with similar characteristics.

IMPLEMENTATION TEAMS

In order to build a faculty-centered support structure of expertise, we created Implementation Teams (I-Teams) to continue to work with each Fellow after the conclusion of the Institute to redesign syllabi and create assignments. The teams were composed of staff from the Library, GSI Teaching and Resource Center, Student Learning Center, and Educational Technology Services. The American Cultures Center and Office of Educational Development staff provided assistance as needed. I-Teams were responsible for assisting the fellows in implementing the changes they developed in their courses and assignments during the Institute. The Assessment Consultant worked with selected I-Teams as well.

LIBRARIAN FELLOWS

During the earlier years of the project the Library sponsored a series of pre-Institute training sessions for librarians designated to serve as Library Partners. We later realized the need to focus more attention on each librarian involved in the project to develop deeper skills related to instructional design, instructional technologies, and pedagogical issues. As a result, in 2004 we introduced a year-long Mellon Fellowship for librarians, parallel to that offered to faculty. A competitive process was introduced that resulted in the selection of three Librarian Fellows each year who received targeted professional development and stipends equivalent to those granted to the Faculty Fellows. These Librarian Fellows were partnered with two or more Faculty Fellows and with other academic staff to design instructional materials and techniques that could serve as models of good practices for other Library staff. This component of the project has been a successful approach to developing deeper skills for librarians involved and therefore increasing the library's potential for sustainability.

MELLON SALONS

The semi-annual program of Mellon Salons, first introduced in fall 2004, allowed Faculty Fellows to reconnect with members of their individual cohort, to meet with subsequent cohorts and to share their experiences, best practices and strategies for advancing research opportunities in undergraduate education. It also strengthened both personal and professional connections among members of the Mellon community. Because of scheduling conflicts, Mellon Faculty Salons were not held in 2006. Instead, Fellows were invited to attend the Library's Undergraduate Research Prize Awards Reception. The Prize recognizes excellence in undergraduate research projects demonstrating significant inquiry using the library and its resources. A number of prize winning undergraduates have been mentored by Mellon Fellows. From spring 2004 to spring 2007, five out of 28 Library Prize winners and honorable mentions were mentored by Mellon Fellows.

CAMPUS-WIDE SYMPOSIUM

The work of the Faculty Fellows was shared more widely with the campus teaching and learning community through the April 12, 2005 e-Berkeley Symposium entitled,

"Teaching and Learning in the Point and Click Age." The symposium served as a forum for sharing faculty expertise and exploring ways to scale up innovations across the campus. Faculty from a range of disciplines convened to share their teaching experiences and widen the impact of instructional innovations on the campus by participating in breakout discussions devoted to harnessing technology to address the challenges of large enrollment courses, designing assignments for these courses that require the use of a wide range of information sources, and preparing undergraduates for research-based capstone experiences. Courses which have been successfully redesigned and implemented through collaborations among faculty, graduate student instructors (GSIs), and Project Partners were showcased throughout the e-Berkeley program. The e-Berkeley Director remarked, "We're taking an integrated approach by involving everyone -- instructors, GSIs, students, and academic support staff. By giving our instructors better resources and tools, I think we'll be able to provide better learning experiences for our students."

Supporting faculty to serve as change agents within the academy

Individual stipends of \$2,000 were awarded to Fellows for their participation in the Institute and the contributions of their restructured syllabus and/or assignments. For each year of the project, the Library made available an additional \$2,000 per Fellow to purchase new library resources or digitize existing library collections in support of specific instructional objectives. Fellows were also eligible to apply for an additional \$1,000 in Instructional Technology Funds as well as, in later years, Innovation Funds.

INNOVATION FUNDING

In 2004, we provided incentive funds to courses from selected departments which offered the most promise for sustainability. In 2005, departmental funds were renamed "Innovation Funds" and were earmarked to support best practices or key innovations that were scalable or portable, adaptable to other courses or departments, had a wider campus impact, or that led to sustainable curricular changes. Renaming these funds and restructuring their allocation encouraged Fellows to collaborate more extensively with faculty from other departments and staff in academic support units, and gave all Fellows equal opportunity to receive these additional funds. Examples of funded proposals included:

- a portable audio recording studio available to undergraduates who may store and publish files (such as field interviews) via webcast, podcast, instructor web sites, or other learning spaces;
- a half-day colloquium for all instructors of Reading and Composition courses related to integrating research into writing-intensive courses;
- a discussion of methods for teaching with digitized visual artifacts as modeled by a course in American architecture;
- a collaboratively-developed workshop to assist campus faculty in identifying needed interventions with students and Graduate Student Instructors to insure the success of undergraduate research projects;
- the purchase of a networked video server for multiple uses across the Art Practice and New Media curriculum allowing faculty and students to collaboratively develop and evaluate content for research projects;
- a series of workshops to help science and engineering faculty plan directed student research projects;

- modification of a capstone exercise that require students to research different topics in lab sections using the library's resources; and
- a wiki-based research site to which students and faculty from several courses and departments collectively contributed and evaluated data, primary sources, and other documents.

Impacts of these investments included a strengthening of collaborations among the Fellows and Academic Partners, the dissemination of the Mellon message and methods across a range of faculty, lecturers, and Graduate Student Instructors situated across the campus; and the development of research collections and tools useful for the 21st century undergraduate scholar/researcher.

NATIONAL & INTERNATIONAL PRESENTATIONS

Throughout the course of the project, Berkeley's Vice Provost for Undergraduate Education, the Project Director and Project Manager, Members of the Steering Committee, and Mellon Fellows made fourteen presentations at campus, regional, national and international conferences, sharing various aspects of the project with other library professionals, faculty, and members of the academy. Presentation themes included improving student learning through resource-based educational activities, developing critical thinking by incorporating the use of library and information resources into assignments, evaluation and assessment strategies, and models of academic support and collaboration. See Appendix D.

OUTREACH TO THE ACADEMY

Over the years, the members of the Steering Committee and project participants have hosted visits from the academic personnel of the Universities of Bremen and Konstanz (Germany), Leiden University (Netherlands), as well as the California State University (CSU) at San Luis Obispo, CSU San Jose, and Cornell University, all of whom were interested in learning from Berkeley's Mellon experiences. Cornell University in particular is very interested in following Berkeley's model of the Library partnering with other campus units around undergraduate research and information literacy. Subsequent to the Cornell visit, the Project Director and Project Manager were invited to visit Cornell in 2006 to talk with librarians, faculty, and staff at Cornell University about Berkeley's Mellon Project. Berkeley has agreed to host a group of campus partners from Cornell in March 2008 to share lessons learned from the experience and project evaluation as Cornell prepares to launch their first institute this summer. By sharing our model, materials, and advice with other research institutions we hope to spark similar projects nationally and thus widen the impact of Berkeley's Mellon Project among research universities with a similar goal.

Strengthening collaboration among campus partners

Following the Institute, the Project Partners provided ways for the Fellows to work closely with librarians, educational technologists, pedagogical experts, and other academic staff to implement their redesigned courses and conduct classroom assessments. The Partners also provided venues – actual and virtual – for the Mellon Fellows to share their experiences with colleagues and disseminate the results of their individual projects on the campus and across the nation.

IMPLEMENTATION TEAMS

The circle of collaboration among the Project Partners was widened to include not only the director level of the Project Partners, but line staff as well. As a result, staff

at many levels of the Project Partners' units contributed to the goals of the Fellowship and met project objectives. The Project Partners also deepened their collaboration as they continued to work together over an increasingly sustained period of time, thus moving the campus toward a greater commitment to the project's overarching goals.

EDUCATIONAL TECHNOLOGY

Staff from the Library and Educational Technology Services (ETS) formed a working group to collaborate on integrating library services and collections into bSpace, Berkeley's implementation of the open source Sakai learning environment. Since both the Library and ETS are original members of the Mellon Steering Committee, we expect that there will be some promising new directions for features or modules related to library services and resources connecting undergraduate research with the campus' learning management system.

INSTITUTE COURSE SITE DEVELOPMENT

To further facilitate collaboration among all those involved in the project and in support of the Fellows, course sites were created for the Faculty Institutes, first using Blackboard course management software, and later the new campus course learning environment, bSpace. These sites were designed to provide the Fellows with an opportunity to experience a course management system from a student's perspective and to foster ongoing communication among the I-Team members and the fellows and to provide them with all of the needed information to succeed in their new roles and responsibilities.

Influencing the curriculum & instruction

Beginning in 2004-2005, the Fellows recruitment strategy focused narrowly on high impact departments, programs and courses. A member of the Steering Committee completed a comprehensive review of the course catalog, identifying high impact programs and courses.

- The Vice Provost for Undergraduate Education and the Mellon Project Director met with the corresponding Deans and Department Chairs, encouraging them to identify faculty and instructors who taught targeted courses and to urge them to apply for the Fellowship. Special invitations to apply were extended faculty from English, Economics, Environmental Sciences, Policy, and Management, Ethnic Studies, History, Landscape Architecture, Legal Studies, Mass Communications, Music, Physics, Psychology, Public Health, Sociology, Southeast Asian Studies, Statistics. In tandem, the Vice Provost sent a campus wide email to all Academic Senate faculty using the campus' CalMail system announcing this opportunity, explaining its relationship to other current campus priorities, and inviting participation.
- Special efforts were also made to reach out to faculty teaching American Cultures (AC) courses or courses that are strong candidates for the AC designation. AC courses, the only campus wide requirement for graduation, offer the best means for ensuring that all Berkeley graduates are exposed to information literacy competencies. By emphasizing AC courses, we intended to build a sustainable set of courses that are regularly offered by departments

to fulfill this single university-wide curriculum requirement. Thirty percent of the Mellon redesigned courses were American Cultures courses.

All of this was done in order to build scalability and sustainability into the project and to increase the program's impact by reaching the maximum number of undergraduates during the course of their studies at the University.

Personnel Changes and Consultants

- Elizabeth Dupuis replaced Patricia Iannuzzi as Project Director in 2005.
- Victoria Robinson, Director of the American Cultures Program (and a member of the first Mellon Faculty Fellows cohort), formally joined the Mellon Steering Committee in 2005, increasing the breadth of the campus collaboration.
- Sarah McDaniel was named Assessment Consultant to the project and joined the Mellon Steering Committee in 2004.
- Dr. Nana Lowell from the University of Washington was brought to campus to review components of our work related to assessment and evaluation, including survey design and data analysis, and offer advice. Dr. Lowell provided valuable feedback on strategies for managing and manipulating the data being collected, as well as proposing possible directions for the assessment of student learning from 2005 to 2007.
- Dr. Mary Sue Ammon was hired in March 2006 as the project's Evaluation Consultant to assist in the analysis of the qualitative and quantitative data that had been collected to date, to work with the Project Director and Assessment Consultant to focus on key aspects of the project, to gather further data on priority areas, and to analyze the complete set of data as part of the overall project evaluation.

Conclusion

The Mellon project has helped to demonstrate that the best way to effect change in the culture of teaching at Berkeley, both with individual faculty and at the departmental level, has been to bring small groups of faculty together across departments to discuss common concerns and pursue a common agenda. Mellon Fellows have taken what they have learned back to their departments and shared it with the campus, helping to create a critical mass to leverage change within Berkeley's culture of teaching.

The Mellon grant continued as a catalyst for introspection about the future role of the University Library at Berkeley. While the University Library, like other research libraries, has traditionally cited its extensive collections and range of subject librarian experts as hallmarks of success and stature, it must continue to re-envision and strengthen the educational role of the library and librarians on the campus in the coming years. The challenge continues to lie in developing staff that are well versed in syllabus and assignment design, able to collaborate in the curriculum design process, and capable of performing these functions on a scalable and sustainable level. A cultural change of this magnitude will take years to accomplish. To develop

a culture of instruction within the library will require the redesign of communication structures between areas of subject expertise and instructional expertise, the creation and support for related professional development for library staff, and the ongoing articulation of an overarching vision for all instructional activities within the University Library. In 2008, an Educational Initiatives Council will be formed to advise the Associate University Librarian for Educational Initiatives on policies, programs, and resources related to advancing the Library's educational and outreach role. The Educational Initiatives Council will provide an important communication link necessary for coordination, collaboration, and continuing education across libraries and disciplines on all issues related to teaching and learning, including ongoing partnerships with other academic support units.

Project activities over the past four years have all focused on the integration of the research and teaching mission of the campus through research-based education, identifying learning objectives and incorporating the assessment of student learning into courses, engaging students in complex problems that draw from multiple fields of inquiry, and promoting the development of information literacy and undergraduate research competencies.

These strategies were designed to create a common vision of what the campus wishes to achieve in undergraduate education. We continue to be grateful for the support of the Andrew W. Mellon Foundation which has enabled us to experiment with a Berkeley campus strategy to forge a collaboration of academic partners who have served as catalysts for change, working to provide support and create a teaching and learning infrastructure for faculty and other instructors and, at the same time, developing a cohort of instructors who have become change agents within the university.

Appendix A: Budget Summary

	Expenditures	Balance
1. Awards to Faculty and Librarian Fellows	70,000	20,000
2. Academic Enrichment Support for Departments	32,200	57,800
3. Web Manager/Clerical	0	24,000
4. Project Manager	158,393	0
5. Project Evaluation Consultant	39,900	0
6. Institute/campus Events Costs	24,234	5,766
7. Support for Academic Partners		
a. Educational Technology Services	10,750	34,250
b. Graduate Student Instructor Teaching & Resource Center	57,000	0
c. Office of Educational Development (OED)	48,189	0
d. OED Student Assistants (.5 FTE)	45,000	0
e. Library Assessment Consultant	72,704	1,285
8. Fringe Benefits	34,647	12,881
9. Librarian Fellows Stipends	14,000	0
 BUDGET BALANCE (TOTAL)		 155,982

Appendix B: Presentations, Publications & Media

Presentations

- "From Theory to Practice: Insights into Faculty Learning from the Mellon Library/Faculty Fellowship for Undergraduate Research." Pat Davitt Maughan. Konstanz Workshop on Information Literacy, Konstanz, Germany, November 7-9, 2007.
- "Mellon Fellowship for Undergraduate Research: Ideas, Innovations, and Impacts." Elizabeth Dupuis. EDUcause Learning Initiative Fall Forum. Boulder, CO, August 15-16, 2007.
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Media & Other Resources

- "Bears in the Library: Cal students talk about research" video focuses on experiences of students engaged in research on the Berkeley campus. Highlights the limited library research skills of typical undergraduates as well as the positive impact of courses that explicitly develop these skills. (http://teles.berkeley.edu:8080/ramgen/2002/special_events/lib/mellonresearch.rm)
- Short clips from student and faculty interviews relating to key themes and the impact of the Mellon grant. (http://library.berkeley.edu/MellonInstitute/video_gallery.htm)
- "Teaching and Learning in the Point and Click Age" video produced in conjunction with the 2005 e-Berkeley Symposium. Students explain the challenges they face researching in an information-rich world. Faculty Fellows describe the ways in which their experimentation with research-based learning facilitates undergraduates' critical thinking and evaluative skills.
- The GSI Teaching & Resource Center began development of an online handbook for Graduate Student Instructors focused on teaching undergraduates how to conduct research within the framework of a particular course. One section of the handbook will be devoted to case study narratives, including a selection from several Faculty Fellows' experiences.

Appendix C: 2004-2007 Re-designed Courses

MELLON COURSE SUMMARY | Fall 2004 — Spring 2007

No. of instructors	35
No. of courses	31
No. of courses with enrollments >100	25
No. of distinct students	11,201

Lower Division

African Studies 5 | *African American Life & Culture*
Architecture X * | *American Architecture as American Culture*
Art 23 AC | *Foundations of American Cybercultures*
Asian American Studies 20A | *Introduction to the History of Asians
the United States*
Chemistry 1A | *General Chemistry*
College Writing R1B | *Reading, Comprehension & Research*
Earth & Planetary Science 8 | *Climates of the Past*
Education 75 | *Introduction to Sports and Higher Education*
Environmental Sciences 10 | *Introduction to Environmental
Sciences*
Ethnic Studies 10B | *Theories of Race & Ethnicity*
Ethnic Studies 10B AC | *Theories of Race & Ethnicity*
Geography 10 | *World Regions, Peoples & States*
German 55 | *The World of Yesterday: Vienna & the Hapsburg Empire
ca. 1900*
History 8B | *Modern Latin America*
International and Area Studies 45 | *Survey of World History*
Legal Studies X * | *Introduction to Law & Society*
Legal Studies X AC | *Race, Culture, and the Law*
Near Eastern Studies 18 | *Introduction to Ancient Egypt*
Nutritional Sciences 10 | *Introduction to Human Nutrition*
Political Science 1 AC | *Introduction to American Politics*
Sociology 3 AC | *Principles of Sociology*
Statistics 21 | *Introductory Probability & Statistics for Business*

Upper Division

Agricultural & Resource Economics 161 AC | *Advanced Topics
in Environmental & Resource Economics*
Engineering IDS 110 | *Introduction to Computers*
History 100 AC | *Slavery in American Life: From the Revolution
to the Civil War*
History 139 AC | *Civil Rights & Social Movements in U.S. History:
Struggles for Racial Equality in Comparative Perspective, 1940-
present Learning from the Visual Record: Primary Resources at
the Environmental Design Archives*
Linguistics 155 AC | *Native America Meets the European*
Peace & Conflict Studies 125 AC | *War, Culture, and Society*
Political Science 118 AC | *Three American Cultures*
Political Science 120A | *Introduction to International Relations*
Public Health 150e | *Introduction to Health and Social Behavior*

Appendix D: Evaluation Summary

- Attachment 1: Evaluation Framework: Key Questions
- Attachment 2: Faculty Fellows Interview Protocol
- Attachment 3: Academic Partner Interview Protocol
- Attachment 4: Mellon Faculty Fellow Retrospective Survey
- Attachment 5: GSI Questionnaire about Undergraduate Research Assignments
- Attachment 6: Faculty Colleague Questionnaire

Appendix E: Report on the Assessment of Student Learning Project

- Appendix E-1: Letter of Invitation
- Appendix E-2: Chem 1A Poster Grading – Fall 2006
- Appendix E-3: African American Studies 5A – Library Research Assignment – Fall 2006
- Appendix E-4: PH150E Assignment 2