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Mellon Library/Faculty Fellowship for Undergraduate Research
Report on the Assessment of Student Learning Project

Summary

In 2004, the Assessment Consultant was appointed to explore models for assessing student learning within the context of the project. The major challenge was to identify models for information literacy assessment that would incorporate good practices for assessing student learning in higher education, accommodate the strong culture of faculty autonomy at the University of California – Berkeley, and be portable to courses in a variety of disciplines and levels. The responsibilities of the Assessment Consultant, appointed from within the Library, included facilitating assessment-related segments of the summer institute, developing instruments for use across courses, working intensively with selected faculty to develop assessments of student learning within the context of their redesigned courses, and serving as a resource person for any assessment questions.

The goals of the assessment of student learning project were as follows:

- Assist faculty in assessment of student learning, focusing on research skills and abilities, in order to make ongoing improvements to research assignment and course.
- Learn about student skills and abilities related to the research process, use of library collections and services, and attitudes in redesigned courses.
- Develop models for assessment of student learning appropriate to campus culture of a large and decentralized research university.

The Assessment Consultant worked intensively with selected courses each year. For these courses, the Assessment Consultant collaborated with the Faculty Fellow and Implementation Team to set clear goals for student learning, focusing on research skills and abilities; create a research assignment that provided learning experiences that led to and evidenced the learning outcomes; and articulate clear criteria for evaluating student performance. Overall, the assessment approaches used and support provided in these "assessment focus courses" seemed to provide a robust framework for the process of research assignment design and enable significant progress during the fellowship year. At the culmination of the fellowship year, faculty with assessment focus courses were equipped with products such as written assignments, rubrics, and surveys that they could continue to refine independently in order to make ongoing improvements to their courses. Many of the assessment approaches developed could also be adapted for use in subsequent courses.

The initial goal of conducting performance-based, direct assessments across courses in order to collect data on student skills and abilities related to the research process was much more difficult to realize. While there was consensus among faculty that information literacy was an important outcome for Berkeley graduates, faculty redesigning individual courses were primarily interested in developing student skills and content knowledge in the context of their own disciplines. Because of the strong culture of faculty autonomy, it did not seem appropriate or desirable to impose assessments across courses. Because each Fellow created a unique research assignment appropriate to their course, it was also difficult to develop a single set of criteria for evaluation that could be applied to student work across courses, although there is some potential to take on a

study of sample student work in the future. A variety of indirect assessments of student learning were developed over the course of the grant and administered in the culminating year in collaboration with the Evaluation Consultant. Together with the assessments developed for individual courses, these approaches provide a fuller picture of student learning across Mellon courses.

The primary benefits of the assessment project were as follows:

- A structured assessment process provided a clear framework for the redesign of research assignments in the context of individual courses.
- The dedicated Assessment Consultant was able to provide sustained support to create products that furthered the course redesigns and was positioned to bring lessons from previous years' courses to bear in each subsequent course redesigns.

The most significant challenges of the assessment project were as follows:

- In keeping with good assessment practices for higher education, Faculty Fellows had authority over assignment design and assessment approaches, making it challenging to develop common approaches across courses.
- While the assessment project focused on information literacy, assessment approaches needed to be consistent within a course and address a full range of goals for student learning.
- Initially, there was no one unit or expert on campus that could support the assessment of student learning project that was laid out for the grant; models and expertise had to be developed for the project.
- It was difficult to frame critical content related to assessment of student learning in a way that engaged faculty at the institute.

Overview of Assessment Activities, 2004-2007

In order to develop assessments of student learning that suited a range of research assignment designs, disciplines, student populations, and teaching styles, a variety of approaches were piloted. Often, multiple approaches were used simultaneously in a single course to develop a fuller picture of student learning. Some approaches such as surveys were used across courses and in multiple years, and later refined for the project evaluation in collaboration with the Evaluation Consultant.

Student Questionnaires:

- Student Survey. Intended to gather information about student attitudes, behaviors, self-report of research skills, and feedback to inform ongoing improvements to the assignment. A student survey was first piloted in fall 2004, with the development culminating in a spring 2007 student survey administered in all Mellon courses.
- Pre- and Post- questionnaires. Pre- and Post- questionnaires were implemented in a few courses to gather data on students' self-reported skills, behaviors, and attitudes before and after the project.
- Mid-semester evaluations. Mid-semester evaluations gathered student feedback about the research assignment, lectures, and other aspects of the course.

Reviews of Student Work:

- Readings of student work. Faculty, Implementation Teams, and GSIs for some courses were convened for facilitated readings of selected student work.

- Peer Evaluations: Students were asked to provide structured feedback on other students' work, at midpoints in the research process or as part of final presentations of research projects.
- Performance-based pre-test. Students were asked to work on an authentic problem early in the semester to assess prior knowledge, skills and abilities.
- Performance-based post-test. Students were asked to answer questions at the end of the semester that measured their mastery of targeted research skills.
- Research worksheets and exercises. In some cases, project staff worked with faculty to assign worksheets or other exercises to evaluate specific skills and abilities related to the research project as a basis for instruction.
- Performance-based assessment. Research projects were structured to evidence skills and abilities related to the research process. Faculty articulated evaluation criteria for these areas that facilitated feedback to students, effective grading, and in some cases data collection and analysis for the class as a whole.
- Random Sampling. In 2006/2007, a random sample of student work for all stages of the research project in every Mellon class was collected for possible future study.

Faculty and GSI Surveys:

- GSI Survey. GSI surveys were intended to gather GSI feedback about student behaviors, attitudes, and skills and abilities related to the research process; the impact of the research project on these areas; and recommended revisions to the assignment and course.
- GSI Focus Groups. Groups of GSIs were convened at the end of the semester to discuss potential improvements to assignment design and assessment.
- Faculty Surveys and Interviews – conducted by other project personnel.

Assessment Focus Courses

When the Assessment Consultant was appointed in summer 2004, it was decided that three "assessment focus" courses would be selected each year. By focusing on a small set of courses from a range of disciplines, course levels, and instructor characteristics, the Assessment Consultant could begin to develop and refine approaches for application across classes. In 2004/5, project personnel selected "high impact" courses: those with over 100 students that were requirements or gateway courses in a major, for assessment focus. In subsequent years, the selection was based on the following faculty characteristics that seemed to enable successful collaborations around assessment.

Faculty member:

- has prior knowledge of or interest in pedagogical issues and a desire to develop research and other transferable "learning skills," rather than focusing primarily on disciplinary content.
- would like to learn more about student skills, behaviors, and attitudes.
- articulates clear expectations for and maintains a high level of communication with GSIs.
- is interested in sustained collaboration with support staff in order to work through multiple iterations of assignments and supporting materials prior to the start of the semester.
- buys into key principles regarding the value of assessment, feedback, and grading; is open to trying new approaches.
- is grounded in a department or discipline that values pedagogy and assessment.

Over a three-year period, the Assessment Consultant worked intensively with the following courses to develop assessments of student learning.

2004/2005	Chemistry 1A (Douskey)
	Sociology 3AC (Powers)
2005/2006	International and Area Studies 45 (Karras)
	Political Science 1AC (Lee)
	Political Science 120A (Gurowitz)
	Sociology 3AC (Kelsey)
2006/2007	African American Studies 5A (Catanese and Raiford)
	Asian American Studies 20A (Choy)
	Public Health 150E (Satariano)

Fellows whose courses were selected for assessment focus committed to implementing performance-based assessment through the research assignment and administering surveys. Findings from each course were reviewed to make ongoing improvements to the course and assignment, as well as to study the impact of the Mellon model across courses.

Assessment Process

In 2004, the Assessment Consultant developed a structured process for working with assessment focus courses that was sustained for the duration of the grant. The following principles guided the development of the performance assessment process:

- Faculty set curriculum, learning goals and outcomes, and criteria for evaluation. The Assessment Consultant supports the faculty member by providing a framework, models, drafts, and support for the development, implementation, and refinement of assessment approaches.
- Assessment approaches should allow the faculty member to learn more about what students know and are able to do, as well as provide opportunities for feedback to students, without introducing "busywork" for students, faculty, and GSIs.
- Assessment consultation culminates in the development of materials and approaches that faculty can use and revise independently in future teaching.
- Information from the assessment process should ideally be shared with GSIs and Implementation Team members to inform ongoing improvements, but should only be shared with the explicit permission of the faculty member.

The following elements were developed for each assessment focus course:

1. Assessment Plan

Based on project management models, the plan listed goals for the assessment process, sequence of tasks to be completed for each goal, and responsibility and deadlines for completing each task. Goals were customized based on assignment structure and instructor interests, but generally included articulation of learning outcomes, revision of the assignment, articulation of criteria for evaluation, surveys, and analysis of information gathered. Responsibility and deadlines included everyone involved in the course, including Faculty Fellow, GSIs, Assessment Consultant, and Implementation Team members. The broad elements of the assessment process were discussed as part of the institute curriculum and with selected faculty members within the invitation to participate email (Appendix I). The Assessment Consultant tracked completion of the tasks and facilitated discussion of the assessment-related products and progress in meetings.

2. Goals and Learning Outcomes Related to the Research Process

During the Institute, faculty became familiar with the *Information Literacy Competency Standards for Higher Education* and were asked to identify some research skills that they were interested in developing via the research assignment. While a few faculty elected to select specific items from the Standards, most elected to articulate goals and outcomes for the assignment as a whole, incorporating research skills, communication skills, disciplinary methodologies, and content mastery. As a group, faculty were initially interested in addressing a broad spectrum of research skills and abilities, such as articulation and refinement of a research question, identification, location, and evaluation of sources, analysis of scholarly readings, synthesis of ideas from multiple viewpoints, and incorporation of research results into a final product. When asked to prioritize learning goals and outcomes to focus the assignment, many faculty focused on higher-order skills of analysis and synthesis, and relied on the Implementation Team to address the lower-order skills students needed to develop to complete the assignment.

The role of the Assessment Consultant was to assure that the faculty member settled on a list of learning outcomes that included outcomes related to the research process, rather than just to the final products of research. Support provided to reach this goal included:

- Mining materials prepared by the faculty member (course description, institute homework and assignment drafts), information literacy standards (general and discipline-specific), and the literature to create a preliminary list of potential learning outcomes.
- Working with Implementation Team members to develop a comprehensive list of skills and abilities students must develop to successfully complete the assignment.
- Developing drafts to work toward a final, manageable list of learning outcomes.

3. Assignment Revised to Provide a Performance Assessment for Key Learning Outcomes

Major revisions to the assignment were typically necessary to assure that students would create products that evidenced their mastery of learning outcomes related to the research process. Intermediate check-in points provided targeted learning activities, opportunities for feedback, and opportunities for assessment of research skills. Instructions to students were often also revised significantly and augmented by supporting materials such as models and check-sheets in order to assure that student products would evidence the learning outcomes.

Approaches employed to reach this goal included:

- Working closely with other Implementation Team members to propose revisions to the assignment in the form of written proposals, annotated drafts and menus of options for revision.
- Setting deadlines and meetings for review of the revised assignment.

4. Criteria for Evaluating Student Performance

Many faculty had not previously used a grading rubric to articulate explicit and detailed criteria for evaluating student performance. Such criteria were critical for the following reasons:

- To assure that students received feedback and were evaluated on the process as well as the products of research.
- To assure that expectations for students' use of the library's research collections were clear.

- To allow the analysis of data on discrete outcomes targeted by the assignment.
- To assure efficient and equitable grading of research assignments in large courses.

The topic of evaluation criteria generated discussion and controversy during the institute. Many faculty were satisfied with the practice of assigning a single letter grade supported by written comment. The initial assessment project goal of articulating detailed grading criteria arranged around learning outcomes and describing multiple levels of performance for each criterion had to be modified for each course to facilitate effective grading that took into account faculty preferences, disciplinary conventions, class size, and other factors.

The following approaches were employed to support the articulation of criteria for evaluation:

- Facilitating reviews of previous student work, where available, to identify potential criteria and distinctions between levels of performance.
- Developing draft criteria mined from the written research assignment and available examples.
- Providing examples of different rubric styles.
- Facilitating discussions about specific approaches for using a rubric in assigning grades and communicating expectations and feedback to students.
- Preparing drafts of products such as rubrics for use in grading and check sheets for providing feedback to students.

5. Surveys of Students and GSIs

A student survey was developed in 2004 to gather feedback on research assignments and supporting materials, self-assessments of research skills, and information on attitudes and behaviors. The survey was customized for assessment focus courses and other interested faculty until spring 2006, when a new version was developed in collaboration with the Evaluation Consultant. The new version, which was used in the final project evaluation, facilitated comparison of student self-reported behaviors and skills to select items in UCUES.

A GSI survey was also piloted in 2004 to gather GSIs' feedback on research assignment and supporting materials, as well as GSIs' perceptions of student skills. In 2006/7, the GSI survey was revised to focus on eliciting feedback to inform improvements to the research assignment.

The Assessment Consultant provided the following support for survey development and administration:

- Draft survey, gather feedback, and revise, customizing as needed for each course.
- Communicate survey purpose, schedule and plans for sharing results to faculty.
- Attend each class to administer survey, assuring adherence to IRB requirements.
- Supervise data entry of survey results and work with project staff to compile analysis.
- Facilitate meeting with Fellow, GSIs and Implementation Team to discuss key findings.

6. Review of Data on Student Performance

Most assessment courses culminated in one or more meetings where assessment findings were reviewed to inform future revisions to the assignment and course. These meetings were intended to provide a venue for review of data and observations about student learning in the course, as well as to provide faculty member, GSIs and Implementation Team with opportunity for reflection about potential improvements and changes. The following topics were addressed:

- Review of key findings from student and GSI surveys
- Review of overall student performance (e.g. grade-book exports) or facilitated analyses of student performance such as group readings of sample work with a shared rubric.
- Planning revisions to learning goals and outcomes, assignment instructions and timing, grading criteria, or instructions to GSIs in order to improve student learning

Factors that Influenced the Success of the Assessment Project in Focus Courses

Certain faculty characteristics seemed to enable success in sustaining revised research assignments over time. Faculty who had some prior knowledge of pedagogical issues and interest in developing student skills were quickest to incorporate innovations into their own practice. These faculty were often already considering iterative improvements to their courses and assessing the effectiveness of innovations, even prior to their participation in the Mellon project. These individuals had an easier time engaging in collaborative course development and bringing their own opinions and ideas about approaches piloted. They tended to be extremely organized and willing to fully commit to planning and sustaining innovation.

The obstacles that prevented faculty and project staff from implementing effective assessments of students' research and information seeking skills were more diverse and included:

- Lack of availability for work on course or limited commitment to assessment process. In these cases, innovations were limited or not sustained.
- Fears about increased workload for faculty and GSIs resulted in unwillingness to commit to robust assessments.
- Overly ambitious assessment plans resulted in uneven implementation. Really robust assessment for a single assignment took a huge amount of time but often paid off with a smooth implementation and a wealth of interesting data about student learning. Despite discussion of scaling back in other areas, research assignments and assessment goals were occasionally pushed aside by competing innovations and course content.
- Unclear decision-making structures or poor communication within Implementation Team. Occasionally, Implementation Team members (including the Assessment Consultant) failed to delineate clear responsibility for products or tasks. This was a particularly challenging issue in the area of assessment, which intersected with the responsibilities and expertise of many members of the teams.

Reflections on the Assessment Consultant Role

The Assessment Consultant piloted a number of approaches over the course of the grant, working with faculty from a variety of disciplines; courses of varying size, level, and placement in the curriculum; and support staff from units across campus. In testing a variety of approaches, some approaches to assignment design and the consultation process seemed particularly effective from the point of view of the Assessment Consultant.

Approaches to Assignment Design

1. Faculty prefer customized performance assessment via the research assignment. It was critical to customize approaches to the characteristics of the course and assignment. While the initial goal was to identify commonalties, customization was the most critical factor for faculty buy-in.

2. Faculty have ultimate say over their course. Learning outcomes, assignment design, and criteria for evaluation are developed at the discretion of the faculty member. While others contribute expertise to assure that products reflect good practices in pedagogy and assessment, it was important to acknowledge that faculty have ultimate responsibility for what occurs in their course.

3. Course redesign is documented via the syllabus, written assignment and rubric. The work of redesign occurred in drafts, as well as via email and other informal communications. The syllabus, written research assignment, and rubric are the products faculty return to when they design future iterations of the course. Any improvements not incorporated into those primary documents are unlikely to be sustained or built on.

4. Rationale for research assignment is clearly articulated in the syllabus and written assignment. Broad learning goals and rationale for the research assignment motivated students and assured clear communication between the members of the instructional team (faculty, GSIs, staff). Learning goals and outcomes were often articulated with different levels of specificity or with different language for different audiences.

5. Assignment schedule incorporates sufficient time for effective assessment. It was critical to assure that the timeline for the assignment included realistic due dates for students and sufficient time for GSIs and faculty to provide feedback at each stage of the assignment.

6. Plans for grading and feedback are clearly articulated. After developing criteria for evaluation, it was important to discuss how faculty and GSIs would use the criteria in grading. For example, would they refer to the rubric to determine a grade and write written comments, would they provide feedback to each student in the form of a rubric or check sheet, or would they use some other approach? Documents such as cover sheets needed to be provided to GSIs well in advance, and ideally GSIs should be involved in early decision-making about how such products should be used.

7. Where assignments were staged to include intermediate products that evidenced skills related to the research process and provided opportunities for feedback, intermediate products needed to clearly lead toward the desired final product.

8. Where assignments were staged to include intermediate products, it was critical that instructions for those products be clear, that points and deadlines be assigned to each intermediate product, and that timely feedback be provided to students. In large classes, the most effective approach was a worksheet or short written product that incorporated clear structures for feedback to students.

9. Assignments that culminated in an individual product that was handed in for evaluation were most successful, at least in the first year of a course redesign. Group projects were difficult to evaluate systematically for evidence of content mastery or skill development, seemingly because they require additional communication regarding expectations and grading criteria that was difficult to develop in the initial implementation.

10. Presentations can provide an opportunity for students to explore the collaborative nature of the research process. These activities were most effective when students were required to actively participate in a structured way, for example, by completing a checklist to provide feedback to their peers.

Approaches to working with faculty

1. Provide a clear framework. A clearly articulated framework creates shared accountability for the creation of assessment products.

2. Create a realistic work plan. During the institute, faculty became energized and excited about a variety of ideas and approaches. Seeing an assessment plan with a sequence of tasks for reaching each goal was a useful tool in prioritizing short-term and longer-term improvements.

3. Recognize faculty development as a primary goal of the assessment process. While initially the Assessment Consultant had an ambitious agenda for what should be achieved in each course, achievements were meaningful only if the faculty member bought into the creation of assessment products and adapted them to his or her own teaching style.

4. Articulate clear decision-making processes. At all stages of the assignment design, faculty learned more and were more amenable to collaboration when they knew that they would have final decision-making authority about their course and any data generated by the assessment process. When decision points were laid out, faculty were well equipped to move forward even in areas that were unfamiliar.

5. Provide models created by peers. Examples were useful when there was a commonalty such as similar learning outcomes, course size, or assignment structure.

6. Provide discipline-specific models. While the literature about research assignment design is somewhat limited in many disciplines, it was useful to review available assignments, guides, worksheets, standards, or rubrics from the discipline.

7. Keep communication timely and concise. Faculty were appreciative when they received clear and timely reminders that included current drafts and all relevant information in a single message. They also appreciated receiving materials to discuss with GSIs, talking points, and other materials that helped them prepare and progress more efficiently.

8. Address administrative support. Faculty were more willing to try new approaches when they knew that administrative support such as copying and data entry would be provided.

9. Prepare concrete drafts. While faculty were willing to try out new ideas, developing drafts that incorporated unfamiliar approaches required a lot of their time. It was helpful to create initial drafts as starting points, as well as to incorporate agreed-upon changes into drafts for faculty review.

10. Don't be afraid to propose some directions. It was not effective to leave the faculty to decide the elements of the course redesign independently. With so many possibilities presented at the institute, most faculty were receptive to suggestions.

Expertise Needed for the Assessment Consultant Role

No one individual or unit on campus was available to provide the expertise needed to develop the assessment of student learning outlined in the original grant. Ideally, the knowledge, skills, and abilities needed to provide the assessment expertise for this project seemed to be the following:

- In-depth understanding of information literacy as a framework for assessing student learning.
- Familiarity with pedagogical issues such as learning outcomes and good practices for working with large courses.
- Experience with assignment design, structure, and pacing, as well as diverse models for research assignments.
- Familiarity with effective grading practices, including the articulation of evaluation criteria, feedback and grading.
- Effective project management skills, including ability to plan projects, facilitate meetings, and document decisions.
- Ability to communicate effectively with diverse campus groups such as librarians, faculty, GSIs, and students.
- Familiarity with protocols for securing IRB approvals and permissions for reuse of faculty and student work.
- Experience creating, administering, and revising surveys and conducting focus groups.
- Some statistical knowledge

Over the course of the grant, various approaches were piloted for the participation of the Assessment Consultant in the Implementation Team. Because assessment plans were very structured, they demanded the participation of all team members, sometimes conflicting with how other members saw their roles. In addition, the assessment process required sustained communication with faculty and GSIs, occasionally conflicting with other communication structures that were put into place. In cases where assessment intersected with other unit's areas of responsibility, team members often presented competing or overlapping products rather than working toward integrated products to present to faculty. Many of these issues were worked through over the course of the grant. With the recognition that assessment was inseparable from other elements of the assignment design, communication improved. Ideally, the assessment process culminated in data on student learning that could facilitate reflection and analysis by the team as a whole and a framework for each team member to provide expertise and recommendations for ongoing improvements to the assignment.

Assessment Focus Class Cases

Three class cases were written to represent the wide range of assessment approaches and instruments that were developed over the course of the grant. Each of the cases was shaped to focus on a particular successful avenue for course redesign, but in reality each course was complex and had a number of significant aspects not discussed in the short cases.

Assessment Case #1: Deep Collaboration of Faculty and I-Team
Chemistry 1A, Dr. Michelle Douskey

Chemistry 1A is UC Berkeley's introductory general chemistry course for non-chemistry majors. Each year over 2000 students enroll in the semester-long class. The course consists of three hours of lecture and one four-hour lab session per week. There are normally two or three principal instructors for the course, two for the lecture and one for the laboratory. The laboratory instructor supervises the graduate student instructors (GSIs) who are responsible for leading the laboratory sections. In a typical year, Chemistry 1A employs seventy-five GSIs. The course has a well-developed infrastructure that includes a structured curriculum, an online course management system, and weekly GSI meetings.

The Chemistry 1A Research Project requires students to move through the entire process of scientific inquiry. Working in pairs, students choose a topic related to principles taught in Chemistry 1A, articulate a hypothesis to explain the phenomenon, and brainstorm a list of supporting questions they will need to answer to support or refute the hypothesis. The students also conduct research to support or refute their hypothesis, including examination of the literature and in some cases experimentation. Each pair prepares a poster to communicate its findings and presents the poster during the last laboratory session.

Assessment Products

- Assessment Plan. Assessment goals were incorporated into a broader Implementation Plan for all activities related to the course redesign.
- Learning Outcomes. The instructor identified an initial list of outcomes from the *Information Literacy Competency Standards for Higher Education*.
- Assignment Design. The assignment was revised to incorporate three stages that evidence student research skills and provide opportunities for feedback: a hypothesis worksheet, a source evaluation worksheet, and the final poster.
- Criteria for Evaluation. An analytic rubric was developed describing multiple levels of performance for each element of the project. The rubric was significantly reorganized and revised in subsequent semesters to clarify distinctions between levels of performance and improve grading efficiency. Evaluation criteria for the two worksheets were moved to the worksheets themselves. All criteria for evaluation were shared with GSIs and students.
- Student and GSI surveys. Questions about research skills were incorporated into beginning- and end-of-semester questionnaires. A student survey to gather more extensive feedback from students was also administered. In the second semester, a performance-based post-test was administered. A GSI survey and focus group were also used to gather information.
- Analyzing data on student learning. A robust collaboration continued in the second semester of the fellowship year, culminating in ongoing refinement of the assignment.

Implementation Team Collaboration

The I-team included two librarians, the consultant from the GSI Teaching and Resource Center, the Assessment Consultant, and a consultant from Educational Technology Services. All members of the team collaborated closely on all products needed to support the assignment in this large course.

Because the faculty member articulated a set of learning outcomes related to the research process, work began immediately on revising the assignment to elicit the desired performances. The group met to discuss what types of intermediate products would allow students to demonstrate valued skills and receive feedback while making process toward the final poster. It was agreed that the instructor and GSI consultant would work on a worksheet and in-class activity about hypothesis formation, while the librarians would draft instructional materials and a worksheet that would address skills related to locating and evaluating information sources. The group as a whole met to review and refine these materials, considering their alignment with learning outcomes and evaluation criteria.

The I-Team and faculty member also met to review an earlier set of posters to study areas where expectations needed refinement, where students needed to develop additional skills, and to distinguish between different levels of performance. Based on this review and an early rubric, the assessment consultant met with the faculty member to draft a new analytic rubric.

The faculty member had a robust infrastructure in place for working with GSIs, who were responsible for several in-class activities around the project and evaluating student work. In the first semester of the implementation, I-Team members worked closely with the faculty member to implement a series of training sessions about the research assignment that addressed in-class activities, research strategies, feedback and grading. The culminating session had GSIs use the draft rubric to evaluate posters from the previous session, and then participate in a facilitated discussion of the rubric that informed additional changes.

The faculty member also worked closely with the Assessment Consultant to develop and pilot student and GSI surveys. In subsequent semesters, the faculty member continued to pilot additional surveys and assessments. The feedback gathered informed ongoing improvements to the assignment and assessment products.

The Chemistry 1A products that the faculty member has continued to refine have become a campus model for course redesign and effective mentoring of GSIs. While the faculty member's knowledge of pedagogical issues, interest in student skills and experience managing a very large course allowed her to develop excellent products, the highly collaborative work of the Implementation Team facilitated the development of assessment products and supporting materials that are streamlined and integrated into the assignment itself. This deep integration allowed the faculty member to move forward with ongoing refinements and improvements such as a peer-evaluation component and a post-test.

Appendix II: Rubric for Final Research Posters, Spring 2005

Assessment Case #2: Building Blocks of Disciplinary Research and Inquiry
African American Studies 5A, Dr. Brandi Catanese and Dr. Leigh Raiford

African American Studies 5A, "African American Life and Culture," is required for the major and has an enrollment of approximately 80 students. The course aims to introduce students to the study of black life in the United States through the humanities. The course also occupies a pivotal role in a revitalization of the African American Studies Department's undergraduate curriculum, focused on ensuring the consistency of expectations, coherence of the curriculum over the duration of the career of majors, and preparation of students for research-based graduate programs. Two instructors attended the Institute with the intention of rotating the redesigned course with a shared curriculum. The course consists of three hours of lecture and a one-hour discussion section each week.

The AAS 5A research project leads students through a process of critical analysis of primary cultural document (e.g. book, film, sound recording) from the library's research collections. The assignment includes multiple stages: identifying and locating a primary cultural document; creating an annotated bibliography of secondary sources that explain the social, historical, and/or artistic context within which the primary document was produced; writing a brief analysis of one of the secondary sources; and writing a longer (8-10 page) analysis of the primary document that makes a claim for its contributions to African American culture. Throughout the research process students revise their answer the question, "How does my chosen document contribute to the construction of black culture and/or identity in America?" Students were provided with a written assignment including all stages and deadlines, models for products they would create, guides to assist them in locating primary sources and "What to Ask of a Document," a framework for cultural analysis.

Assessment Process and Products

- Learning outcomes. The faculty team came to the institute with clear ideas of the skills students should develop in the course. These ideas were grounded in disciplinary research methodologies and the needs of majors.
- Assignment revision. The assessment work focused on reviewing assignment drafts to assure that the instructions to students and models provided would develop and evidence valued learning outcomes. The staging of the assignment was refined, assuring that skill development would remain a focus and that effective feedback at each stage would move students toward successful final products.
- Evaluation Criteria. Detailed criteria for evaluating student work were developed, and these were used in feedback and grading. Rather than sharing the detailed criteria with students, the faculty member elected to include a short statement at the end of each segment of the assignment listing areas the students would be evaluated on. Attention was given to aligning these statements with the detailed criteria, instructions, and models that were provided to guide students.
- Surveys. Student and GSI surveys were administered.
- Review of data. Remarks from student and GSI surveys, as well as overall impressions of student performance, were discussed in an end-of-semester meeting to inform future iterations of the assignment.

Building Blocks of Disciplinary Research and Inquiry

For this course, two faculty members came to the institute with a clear idea of the role of the course in the revitalized undergraduate curriculum and the skills students should develop through the research assignment. The process of articulating learning goals and outcomes, and aligning assignment and evaluation criteria with the desired outcomes provided a framework for developing an assignment to support faculty goals for the course. These efforts were bolstered by a faculty member who was extremely effective in incorporating assessment-related materials into a final version of the assignment that incorporated learning goals and outcomes, evaluation criteria, clear instructions, and plans for staging. The completeness of the documentation surrounding the assignment and course should allow faculty to make a clear case for the course's role in building disciplinary skills in an introductory course, facilitating effective departmental conversations about skill development and curriculum. The additional support provided (surveys, sampling of student work, evaluation criteria) should provide material to continue to strengthen the assignment in coming semesters.

The focus on skill development in the assignment design process confronted the tension between guiding students through a structured process of inquiry in order to develop key skills and providing freedom for students to pursue their own interests. Often students claim to already have learned skills and resent an assignment that is highly structured, claiming that it is freedom that makes an assignment engaging. In this case, a clearly articulated vision of skills students should develop facilitated the creation of a focused and challenging assignment and high expectations for student performance. Many students felt that being allowed to select their own primary source gave them enough freedom to focus on their own interests within this framework.

Appendix III: Research Assignment, Fall 2006

Assessment Case #3: GSIs as Assessment Collaborators
Public Health 150E: Dr. William Satariano

Public Health 150E, "Introduction to Community Health and Human Development" is a new course in the recently developed undergraduate health major. Following the Mellon institute, the faculty member sought approval for a revised syllabus that augmented the three hours of lecture per week with four one-hour discussion sections. The course satisfies one of the core requirements for the undergraduate major in public health and enrolled 120 students in its first semester.

Two research assignments followed the same general framework, differing in pacing, skill focus, and content area addressed. The assignments require students to locate and synthesize key information about a health condition from academic sources, locate popular articles on the condition, and compare information and its presentation in the two literatures. The framework was intended to develop information-seeking sources, discovery tools, and skills employed by public health professionals and allow students to engage more deeply with the course material.

Assessment products

- Learning Outcomes. The instructor developed the assignment process around information sources, discovery tools, and skills. The implementation team analyzed the initial assignment to articulate a list of learning outcomes.
- Assignment revision. The team used the list of skills to plan a staged assignment that would allow students to attain learning outcomes and practice them at increased levels of independence and sophistication in a second assignment.
- Criteria for evaluation. Evaluation criteria were developed for each product turned in, with points assigned to each assignment characteristic to facilitate equitable grading across sections.
- Surveys. In addition to student and GSI surveys at the end of the course, a mid-semester evaluation was administered to inform adjustments to the course.
- Review of Data. At the end of the semester, the Implementation Team met with faculty and GSIs to review data gathered and discuss future revisions to the course.

GSI Input and Collaboration

With the addition of discussion sections to the course, the instructor brought the three GSIs to subsequent team meetings and invited the Implementation Team to work with the GSIs in the context of weekly course meetings. Because the faculty member had a vision for making the course he was teaching for the first time interactive in a variety of ways, he had a wide variety of details to attend to beyond the research assignment, the presence of the GSIs served an important function in shaping and refining research assignments over the course of the semester.

Thanks to the culture of the department and discipline, GSIs' prior teaching experience, and GSIs' participation in a 300-level pedagogy course, GSIs were well-informed about assessment and brought a number of ideas to the table. In order to assure equitable, effective, and efficient grading, GSIs recommended blind-grading student work with a fairly detailed rubric and initiated frequent meetings about grading and feedback. The Assessment Consultant reviewed the text of each assignment component to develop a draft set of grading criteria, and then met with faculty and GSIs to revise and align assignment instructions and criteria for evaluation. The GSIs had

input into criteria, structure of the rubric, weighting of different components, and plans for providing feedback to students. For the first assignment, additional meetings were held after student work was received to address problems and assure grading was equitable. While for the first assignment the Assessment Consultant prepared a final draft of the rubric for final approval for the faculty member, for the second assignment GSIs created the final version after the meeting.

GSI concerns about effective assessment also shaped the content of the assignment. For example, because the understandings of the health conditions that were the subject of the assignments are contested, and because it was important for students to attain a sound understanding of the conditions, GSIs felt it was important to assure that all information presented by students from scholarly sources was accurate. For this reason, GSIs requested that the format of the first stage of the assignment, a "fact sheet," be extremely structured and based on a shared source. After reviewing student work, GSIs also compiled their own fact sheet so that students could proceed to the next stage of the assignment with accurate information. Similarly, GSIs contributed to tightening parameters on popular content students could use in order to assure the accuracy of the results.

Having the GSIs integrally involved in creating assessment products was extremely valuable to sustaining the course for several reasons:

- Assured that assessment products fit the culture of the department and discipline
- Assured that assignment structure and rubric were feasible for discipline (e.g. could realistically check facts and assure disciplinary content was correct).
- In first-run course, allowed faculty member to focus time on developing content and conceptual frameworks for assignments.
- Provided GSIs with experience of being an integral part of a support team and designing assignment and course from the bottom up.
- Assured GSI buy-in to grading process
- Gathered feedback early and often from GSIs who have close contact with students and their work.
- Allowed rapid adjustments during semester as problems became apparent.
- Created more robust assessment products that can be modified for use in future iterations of the course.

While involving GSIs so deeply in the work of the team taxed their time, it allowed the Assessment Consultant to move into more of a facilitative and supporting role, preparing drafts, organizing meeting agendas, issues for consideration, materials for review, and drafts. The real team dynamic of the course was also beneficial to the course, and with some of the GSIs returning to the course in the future, should assure that innovations are maintained and continue.

Appendix IV: Research Assignment 2, Spring 2007