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ABSTRACT

This report presents findings from an assessment of the four cluster courses offered during the 1998-1999 academic year at the University of California, Los Angeles (UCLA). These courses represented an innovative approach to education for freshmen. During academic year 1998-1999, nearly 500 UCLA freshmen enrolled in the clusters, which shared a broad interdisciplinary theme. The cluster courses were team taught and used activities aimed at building academic community. The courses were evaluated though surveys of 465 and 444 students, interviews with 29 students who did not continue in the cluster courses in the second semester, focus groups attended by 16 teaching assistants, and an informal faculty assessment through staff meetings. The cluster courses attracted the best prepared freshmen and exposed them to a variety of "best practices" in undergraduate education. Students experienced their cluster workloads as heavy, but thought that their skills improved as a result of taking the cluster course. Teaching assistants thought that they had to spend more time preparing for cluster classes, but that the benefits outweighed the advantages, especially through opportunities to develop skills and knowledge. Faculty recognized many challenges in teaching cluster courses, but they believed in the value of interdisciplinary general education for freshmen students. (SLD)

ASSESSMENT OF THE GENERAL EDUCATION CLUSTER COURSE EXPERIENCE

A Pilot Program of The College of Letters and Science

YEAR ONE OF A FIVE YEAR STUDY

The Student Perspective • The Graduate Student Instructor Perspective • The Faculty Perspective

COLLEGE OF LETTERS AND SCIENCE
UCLA

JANUARY 2000

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Many individuals contributed to this assessment. The General Education (GE) Assessment Advisory Committee (members listed below) identified the key assessment questions, developed an assessment plan, and carefully reviewed the student survey questionnaire. Eric J. Splaver and Boyne J. Chin of the College of Letters and Science Information Services developed and continue to maintain a freshman student database, which is foundational to the assessment.

The GE staff made numerous contributions to this assessment. Arianne Walker designed and conducted the TA focus groups and conducted all data analysis for the assessment. Greg Kendrick and Lucy Blackmar conducted interviews with faculty coordinators. Data from these interviews were analyzed by Greg Kendrick and Marc Levis. Arianne, Greg, and Marc also make important contributions to report preparation, co-authoring the chapters that present their analyses. Christopher Campbell, Grace Angus, and Angie Hamner offered helpful suggestions and assistance in designing, conducting, and presenting the assessment. Throughout the entire process, Lucy Blackmar and Judi Smith kept us on track and focused on our goals, and provided invaluable guidance and counsel.

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EXECUTIVE SUMMARY

This report presents findings from an assessment of the four cluster courses offered during the 1998-1999 academic year (AY). These courses represent an innovative approach to general education that was recommended by a faculty-student workgroup in 1997, after two years of study and campus-wide discussion. During AY 1998-1999, nearly five hundred UCLA freshmen elected to enroll in the clusters, which shared the following characteristics:

- A broad, interdisciplinary theme.
- Teaching teams comprised of ladder faculty from two or more academic departments and disciplines.
- A three-quarter sequence of courses, including two quarters of lectures with discussion sections followed by a seminar.
- Activities aimed at building an academic community of faculty, graduate student teaching fellows, and students.

Part of a five-year study, this assessment was designed to describe the advantages and disadvantages of participation in a cluster for three groups: students; faculty; and graduate student instructors. Findings are based on data derived from a student database, student surveys, and interviews with students, faculty, and graduate teaching fellows. These methods do not enable one to draw causal conclusions about the effects of the cluster courses, but they do offer a rich description of participants' experiences and perceptions.

Eight Primary Findings Related to the Experience of Cluster Freshmen

1) Cluster courses attracted UCLA's best-prepared freshmen, based on high school grades and SAT scores. Over half the students in cluster courses were accepted into College Honors.

2) Cluster courses exposed students to a wide variety of "best practices" in undergraduate education, such as extensive writing, working in teams with diverse peers, using technology, and interacting with instructors.

3) Students experienced their cluster course workload as heavier than the workload for other courses taken during their freshman year. Compared to other courses, clusters required more work and more time. Most students found that the cluster course content was more difficult to master.

4) Students believed their skills improved as a result of taking a cluster course. Over two thirds reported improvements in their writing and analytic abilities. Over half reported improvements in library research skills, understanding of current events, and quantitative skills.

5) Students believed that the cluster course increased their engagement in learning. Over half reported that the cluster offered more intellectual stimulation, was of

greater overall value, taught them more, and generated more enthusiasm than other courses they had taken as freshmen.

6) The clusters fostered the development of academic community. Students reported high levels of satisfaction with opportunities the cluster provided for interaction with peers and instructors.

7) Over three-quarters of students completing the sequence would recommend the cluster to a friend.

8) Students emphasized the need for greater coherence and integration of course material.

Four Primary Findings Related to the Experience of Cluster Graduate Instructors

1) TAs were attracted to clusters by the opportunities to obtain funding for the entire academic year; teach their own seminar; enhance their career development; and participate in an interdisciplinary program.

2) Compared to traditional GE courses, clusters required the TAs to spend more time preparing for teaching.

3) TAs wanted more involvement in course planning and design. Similarly, they felt a need for more information about the course prior to the beginning of the sequence.

4) TAs believed the benefits of participation in a cluster outweighed the disadvantages. They especially benefited from opportunities that clusters offered to develop their intellectual skills and knowledge and to gain teaching experience.

Three Primary Findings Related to the Experience of Cluster Faculty Coordinators

1) Distinguished ladder faculty were attracted to teaching a cluster course because they believed in the value of interdisciplinary general education for freshmen students.

2) Cluster teaching posed many challenges for the faculty; these included designing an integrated interdisciplinary course for freshman students, and taking advantage of a three-quarter sequence (rather than seeing each quarter as an end into itself). In general, course development required more time than most faculty estimated.

3) The coordinators encountered challenges in building community and fostering team spirit among faculty and TAs. They recommended an earlier start on the planning process and regular meetings as foundational to team building. Some coordinators suggested further involvement of TAs in course planning.

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THE GENERAL EDUCATION CLUSTER COURSE INITIATIVE

Background: 1994-1997

In 1994-95, the Provost of the College of Letters and Science, Brian Copenhaver appointed a faculty-student workgroup to examine the general education curriculum at UCLA. After two years of deliberation, which included a campus-wide Hewlett Foundation sponsored Forum on General Education, as well as extensive consultation with students, faculty, chairs, deans and others, this committee submitted, in June 1997, a proposal for curricular reform entitled *General Education at UCLA: A Proposal for Change*. This document recommended that UCLA undertake a fundamental change of its general education (GE) curriculum by making its GE requirements "simpler, fewer, more coherent, and clearer in purpose than is currently the case."

The centerpiece of the general education curricular reform effort outlined in the *Proposal for Change* was the First-Year Cluster, a yearlong, team-taught, interdisciplinary series of courses that would be available only to entering freshman students. As envisioned in the Proposal, incoming students would choose one cluster from among ten or more that would be offered in a given year. Each of these clusters would be devoted to a broad topic such as the "global environment" or "the history of social thought" and would be grounded in a set of intellectual principles that emphasized the importance of general knowledge, integrative learning, citizenship, cultural diversity, primary works, and basic skills. During the fall and winter quarters, clusters would consist of lecture courses taught by ladder faculty, in concert with discussion sections supervised by graduate student teaching fellows. In the spring, each student would have the option of enrolling in one of a number of small satellite seminars, whose topics were related to the overall cluster theme.

The proposal for a cluster-based general education curriculum generated considerable discussion within the campus community. Faculty from the departments of the College of Letters and Science, as well as the members of the College's Faculty Executive Committee (FEC), reviewed the proposal and offered thoughtful comments on it. Input on the proposal was also solicited from the FECs of the other schools that enroll undergraduates at UCLA, e.g. Arts and Architecture; Theater, Film, and Television; Engineering and Applied Sciences. Out of this campus-wide discussion, a consensus emerged that the cluster model outlined in the *Proposal for Change* warranted a pilot program aimed at testing its viability in the College over a five-year period. This decision was made late in the Spring of 1997 and led to the offering of an inaugural cluster course for 1997-1998 and three additional cluster courses for freshman students in Academic Year 1998-99.

General Education Cluster Course Development, 1997-1998

The first pilot cluster course to be modeled on the proposal put forward by the Workgroup on General Education was a joint venture by the College of Letters and Science and the Institute of the Environment entitled *The Global Environment: A*

Multidisciplinary Perspective. Approved by the Undergraduate Council of the Academic Senate in the Spring of 1997, 121 freshmen enrolled in *The Global Environment* in Fall, 1997. This pilot class was not assessed. A second version of this pilot course, offered the following year, was included in the assessment of the 1998-99 cluster series.

The College of Letters and Science solicited proposals during 1998 for a series of cluster courses to be offered in the following academic year. Faculty submitted twelve proposals, and after careful review by the GE Governance Committee, with input from the Deans, three were selected for development. The Undergraduate Council approved these new cluster courses in Spring 1998, and a series of four cluster courses were offered to incoming freshmen in the Fall of 1998:

- ***Culture, Politics, and Society: The History of Social Thought.*** This course was developed and taught by faculty who were largely drawn from the Sociology and English departments. Designed as a kind of "great books" course, this cluster introduced students to key problems in the humanities and social sciences through an in-depth analysis of the writings of the prominent social theorists of the past four centuries.
- ***Evolution of the Cosmos and Life.*** Designed and organized by faculty in Geology, Geochemistry, Astronomy, and Paleobiology, this cluster addressed the theme of evolution within the context of the creation and development of the universe.
- ***Interracial Dynamics in American Literature, Culture, and Society.*** This course was organized, developed and taught by faculty from English, Asian American Studies, African American Studies, History, and the School of Law. The aim was to introduce students to the nature and meaning of race in American society through a study of history, literature, and the law.
- ***The Global Environment: A Multidisciplinary Perspective.*** Designed and organized by faculty from Civil Engineering, Geography, Atmospheric Sciences, History, and Biology, this course introduces students to ways in which different disciplines address a common problem, e.g., the environmental degradation that has resulted from the world's rapidly growing human population.

The cluster courses were available only to entering freshmen, spanned three quarters (with a 5-unit course each quarter), were interdisciplinary in nature, and were taught by teams of faculty and experienced graduate student instructors. In keeping with the cluster course format proposed by the Workgroup on General Education, these courses also required a considerable amount of reading, writing, and discussion. And in an effort to foster a sense of academic community among cluster students and teaching teams, two of these courses, *The History of Social Thought* and the *Evolution of the Cosmos and Life*, were taught in the students' on-campus residential environment.

A total of 17 faculty taught in the cluster series, typically four to five faculty members taught each cluster. In addition, 18 graduate student instructors (graduate students and post-doctoral scholars) participated as teaching assistants in the fall and winter quarters

and as seminar instructors in the spring.[1] Table 1 gives a profile of the number of freshmen, TAs, and faculty involved with the 1998-1999 cluster courses.

Table 1. Profile of 1998-99 Cluster Courses

	The Global Environment	*Interracial Dynamics*	*History of Social Thought*	*Evolution of Cosmos & Life*
Enrollment*	105	120	154	143
# of faculty	5	4	4	4
# of TAs	3	4	7**	4
Disciplines Represented	Engineering, Geography, Atmospheric Sciences, History, Biology	English, Asian American Studies, Law, African American Studies, History	Sociology, English	Geology, Geochemistry, Astronomy, Paleobiology

* As of third week of Fall Quarter, 1998; includes Winter Bruins and non-Letters and Science students
**Some Graduate Student Instructors in this cluster were hired at 25% not 50%.

Given that the clusters were organized around an interdisciplinary theme and taught by ladder faculty, two hallmarks of College Honors classes, all clusters in the initial series were approved for Honors credit. Furthermore, upon completion of an entire year-long cluster, students also received credit for four general education courses in pre-determined GE areas, thus allowing them to complete this part of their course requirements in a more efficient manner.

General Education Cluster Course Development, 1999-Present

All four cluster courses offered in 1998-1999 are being offered again in 1999-2000. While the content of these courses remains largely unchanged, all are entering the new academic year with at least some faculty turnover. Halfway through the Summer Orientation sessions all clusters were fully enrolled, with a total of 520 freshmen students.

Aside from the cluster courses now being offered, the College of Letters and Science, in tandem with the Office of Instructional Development, is providing support to two faculty affinity groups[2] with the goal of developing two new cluster courses for 2000-2001. These cluster courses will be organized around the following topics: *America 1963-1973: Culture and Counterculture;* and *Making "Sense" of the World: Perception, Illusion, and Reality.*

[1] Note one additional TA from Biology was added to one of the clusters for a winter quarter only and is not included in the assessment analyses.
[2] Small groups of faculty who are interested in lower division interdisciplinary teaching, and who also share a common interest in a specific research topic.

The College of Letters and Science has also received funding from the William and Flora Hewlett Foundation to organize a number of faculty affinity groups, workshops, and a large retreat, for the purpose of affording interested faculty members the opportunity to become more engaged in the GE cluster course initiative. These cluster course development activities are intended to allow the College to offer the incoming freshman class of 2001-2002 up to ten clusters, each with an enrollment of 120–160 students. This would enable up to half of all entering freshmen to enroll in a cluster course.

General Education Cluster Administration

Administration of GE cluster courses occurs at three levels: (1) the cluster itself; (2) the GE Governance Committee and Undergraduate Council; and (3) the Vice-Provost for Undergraduate Education and the GE Cluster staff.

Each cluster course is managed by a designated faculty coordinator. The coordinators provide intellectual leadership for the cluster. They are also responsible for identifying and recruiting cluster faculty and graduate teaching instructors. Finally, they serve as liaison to the College on all budgetary and logistical matters related to the course.

The General Education Governance Committee provides policy direction for GE reform from UCLA faculty. It advises the Undergraduate Council, Provost, and Vice Provost on all matters pertaining to general education at UCLA. The committee also engages in long-range planning concerning general education and supervises the implementation and evaluation of GE courses and programs.

Vice Provost for Undergraduate Education Judith Smith is the Academic Administrator to whom the GE staff reports. This group includes two full-time staff members and two part-time graduate research assistants. Duties of the GE staff include:

- Budget and personnel management
- Assistance to faculty in course development
- Staff support to the GE Governance Committee
- Organization of orientation and training for cluster course TAs
- General education assessment
- Logistical management (e.g., scheduling, recruitment, grade rosters, catalog copy)
- Pedagogical links to student services (e.g., university libraries, residential life, counseling, writing programs, etc.)
- Future cluster planning and development
- Communications –websites, brochures, catalogs

Total cost of the 1998-99 GE pilot cluster courses, including administration, was $730,000. Nearly 80% of the budget directly supported faculty (course release and summer ninths) and graduate student instructors. The remainder covered administrative expenses, including staff salaries, supplies and expenses, special programs, and TA training. The primary source of support for the GE clusters are funds made available to the College specifically for the cluster initiative. In 1998-99, these funds included $650,000 earmarked for the 1998-99 GE cluster pilot initiative, and $80,000 from: (1) the

Law School (to support legal instruction for the Interracial Dynamics cluster); (2) the Office of Instructional Development (to support cluster development); (3) the Institute of the Environment (to provide teaching release for some of their faculty); and (4) Winter Bruins (to provide salary for the equivalent of one TA for the two sections composed of freshmen enrolled in the Winter Bruin program).

SECTION 2
ASSESSMENT OF THE CLUSTER EXPERIENCE

Recognizing the need to assess the effectiveness of the cluster courses, Vice Provost Smith established a Workgroup on General Education Assessment in Spring, 1998, and charged it with developing an assessment plan for the four pilot clusters. The workgroup included faculty representatives from each cluster and from the Undergraduate Council of the Academic Senate as well as staff from the Office of Instructional Development, the Library, and the Vice-Provost's office. Vice Provost Smith appointed Special Assistant to the Executive Vice Chancellor Maryann Gray to chair the committee and serve as project director for 1998-1999. In addition to experience in evaluation and institutional research at UCLA, Dr. Gray has designed and led several national studies of innovative higher-education programs and pedagogies.

Careful evaluation of the cluster courses is needed to inform two questions: 1) do the benefits of the cluster courses justify the effort invested? 2) If so, what can we learn from this assessment about how to design and implement high quality cluster courses? The evaluation will continue through 2003. The 1998-99 assessment—the focus of this report—was in itself a pilot effort, in which different methodologies and instruments were tested. This assessment is descriptive, exploratory, and formative. It was not designed for formal hypothesis testing and cannot support causal conclusions about the effects of the cluster courses on students, faculty, and graduate teaching fellows. As the assessment continues, its design will be refined and the scope of issues examined will expand.

Assessment Framework

The Workgroup identified the primary goals of the assessment as determining the advantages and disadvantages of participation in a cluster for students, faculty, and graduate student instructors. For each group, the workgroup identified seven questions that the assessment should address:

1) Incentives
2) Workload
3) Intellectual development
4) Community
5) Productivity, progress, and achievement
6) Enthusiasm and intellectual excitement
7) Recognition and external rewards

In addition, the assessment set out to describe the students, TAs, and faculty who participate in clusters and their experiences in cluster courses. Table 2 provides a comprehensive summary of the assessment framework.

Table 2. GE Cluster Assessment Framework

	Students	*Faculty & TAs*
Incentives	Why do students enroll in clusters? Are their expectations fulfilled?	Why do faculty and TAs choose to teach cluster courses? Are their expectations fulfilled?
Workload	Are cluster courses more or less demanding and rigorous than other GE courses? How many hours per week do students devote to the cluster vs. other GE courses?	What are the perceived effects of teaching a cluster on other responsibilities, including research, service, and teaching upper division and graduate students?
Intellectual development	What is the effect of the cluster on students' skills and knowledge? Do students learn new ways of thinking as opposed to memorizing facts? Are the course themes clear? Can students link the course to current events or their own lives? Does the course use "good practices" in GE?	How do faculty and TAs perceive the effects of teaching a cluster course on their own intellectual development? How if at all has the cluster affected their research and other teaching?
Community	Does the course promote a sense of community? Does it produce stronger relations with peers, TAs, and faculty?	Does the course promote a sense of community? How does it affect relations among instructors and students?
Productivity, progress and achievement	Do cluster students differ from non-cluster students in average units per quarter; retention or graduation rates; or time to degree?	How if at all does teaching a cluster affect TAs' progress to degree? How if at all does teaching a cluster affect faculty career advancement?
Enthusiasm and intellectual excitement	Does the course generate enthusiasm and intellectual excitement? Are students engaged in the course?	Is the experience intellectually stimulating and personally rewarding? Would they teach a cluster course again?
Recognition and external rewards	Is the distribution of grades in cluster courses about the same as other GE courses?	Do faculty and TAs receive recognition from their departments for teaching a cluster course? Does teaching a cluster facilitate or hinder career progress?

Methods

Two principles guided the choice of methods for the assessment. First, wherever possible, multiple methods were used to increase the clarity of findings and derive the benefits of both qualitative and quantitative methods. Similarly, insofar as possible, the assessment sought to validate student and instructor self-reports by other methods (e.g., direct observation, analyses of existing databases). Second, the assessment was designed to minimize burden for students, faculty, TAs and staff. Lengthy questionnaires or other time consuming data collection procedures were avoided.

The assessment was structured to enable investigators to follow the cohort of students, graduate student instructors, and faculty involved in cluster courses from initial enrollment through the end of the cluster and beyond. Although this preliminary assessment did not include a structured comparison group, limited comparisons were made between cluster and non-cluster freshmen, to determine if cluster students are distinguishable from other freshmen in their demographic characteristics, academic backgrounds, and achievements.

The primary data sources for the assessment were a freshman student database, student surveys, and individual or group interviews with students, faculty, graduate student instructors, and staff. Information drawn from course syllabi and course evaluation results supplement these data.

Student Database and Survey

Analyses of existing student data can indicate how the demographic characteristics and academic backgrounds of cluster students differ from non-cluster students. These data also enable comparison of the academic progress and achievement of cluster and non-cluster students, both in their freshman year and beyond. Thus, the cornerstone of the first year assessment was development of a freshman database that includes both cluster and non-cluster students. The database combines data from several different sources to include demographic and background information about students; UCLA GPA; retention; degree progress; major; the cluster course, if any, in which students enroll; and their grades in these cluster courses. The database is updated on a quarterly basis, enabling investigators to track the students' progress over time. The database captures information only about Letters and Science Students. Data about Winter Bruins and non-Letters and Science students (about 8% of the cluster enrollment) was not included.

A survey administered to students enrolled in cluster courses provided standardized information about their reasons for selecting a cluster, experiences during the cluster and perceived outcomes or effects of the cluster experience on their intellectual skills, sense of community, and educational aspirations. The survey enabled comparisons across subgroups of students and over time. During the 1998-99 academic year, the survey was administered twice. The first survey was administered early in the winter quarter and collected information about students' fall quarter experiences. The second survey was administered during the eighth week of the spring quarter and collected information about students' year-long experiences.

To encourage student participation and openness, the surveys were administered anonymously during discussion sections. Students needed about 15 minutes to complete each survey. Table 3 presents response rates. The high response rates increase confidence that results are representative of the total population of students enrolled in the cluster courses. In addition, the characteristics of students responding to the fall survey questionnaires closely match the characteristics of the cluster course population. [3]

Table 3. Survey Response Rates for Two Surveys

	# Cluster Students	*# Surveys Completed*	*Response Rate*
Fall Quarter *	465	371	80%
*Academic Year***	444	386	87%

* This survey focused on the fall quarter experience and was administered in early Winter, 1999
**This survey focused on the academic year and was administered in late Spring, 1999

The most important limitation of the survey is its reliance on student self-reports, because students' beliefs about the effects of the course may be inaccurate. Another concern is that those students who felt most alienated from the cluster may have been least likely to complete the survey, either because they dropped the cluster course or did not attend class when the survey was administered. To address this possible problem, a third component of the assessment included interviews with students who dropped out of the cluster.

Interviews with Students who Dropped the Cluster Course

Telephone interviews were completed with 29 of 62 students who enrolled in the cluster course in fall but did not continue in the winter quarter. Respondents were asked to describe (1) why they enrolled in the cluster; (2) why they chose not to continue in the winter; (3) how the cluster courses compared to other UCLA courses they had taken; and (4) whether the course met their expectations.

Significant caveats apply to this type of assessment. Most important is that students may have been reluctant to disclose some reasons for leaving the cluster course, e.g., they may have been embarrassed to admit that they were unable to understand the course material or were disappointed in their grade. Non-response bias is a second potential problem. Finally, in order to secure student cooperation and work within our resources, the interviews were necessarily brief.

Graduate Student Instructor Focus Groups

Between February 23, 1999 and March 8, 1999, the general education staff, with two graduate students from UCLA's Higher Education and Organizational Change program, conducted four focus groups with the graduate student instructors (TAs) who had

[3] Although this assessment focuses on students in the College of Letters and Science, a small number of survey respondents were enrolled in majors outside of the College of Letters & Science. This explains the small differences between the survey sample and freshman database.

participated in the four 1998-1999 general education cluster courses.[4] Separate focus groups were held for each cluster. Sixteen (16) of 18 TAs participated in this part of the assessment. In addition to the focus groups, nine TAs kept track of their work hours over a two-week period and four provided e-mail comments in response to a year-end request for feedback.

Focus groups provide opportunities to learn the range and variety of participants' experiences and perceptions. They also enable in-depth exploration of important issues. However, results cannot be generalized to a larger population and should not be quantified. In addition, the group dynamic may create social desirability or other forms of bias in results. Finally, the results describe TAs' *beliefs* about the effectiveness and impact of the cluster courses.

Faculty Interviews

Preliminary assessment plans to interview all cluster faculty were modified in response to early feedback about the heavy faculty workload related to the cluster courses. Although the procedures used were consistent with the assessment principle of not imposing heavy burdens on students, faculty, and TAs associated with data collection, next year, the assessment will be expanded to include all participating faculty.

In place of interviews with each faculty, the first year faculty assessment is based on meetings that GE staff held with the academic coordinators twice during the 1998-99 academic year - once in mid-Fall Quarter 1998 (five weeks into the cluster program), and again in the Spring Quarter 1999 (three weeks before the end of the cluster program). These meetings were loosely structured and were not designed to address the assessment framework. They did, however, elicit a valuable body of information and feedback about faculty experiences, much of which corresponds to the framework. Issues explored include reasons for participation, workload, academic community, perceived benefits and problems of participation in a cluster, and suggestions for improvement.

Data Analysis and Caveats

Both descriptive and inferential statistics were used to analyze quantitative data (surveys and freshman database), while simple methods of content analysis were applied to qualitative data (individual and group interviews). Statistics included frequencies, cross-tabulations, chi-square analysis, and one-way ANOVA. Cronbach's Alpha was also employed to test the reliability of some scales. These simple, largely descriptive, analyses are consistent with the exploratory nature of this assessment. In addition to aggregate analyses based on all cluster courses, data were analyzed separately for each cluster course. Additional stratification variables, including gender and level of preparation for UCLA, were used in the data analysis. These comparisons did not produce significant differences among subgroups beyond those that would be expected by chance.

[4] One TA who was unable to participate in the scheduled discussions was interviewed separately; two TAs did not participate.

In addition to the limitations of specific data sources, important caveats apply to the overall assessment. First, this assessment is not designed to compare the learning outcomes of cluster courses with the learning outcomes of other general education courses. In addition to the technical challenges and cost that such comparisons would entail, the Workgroup on General Education Assessment felt that such comparisons were premature and largely uninterpretable. For example, even if we could statistically control for pre-existing differences between cluster and non-cluster students, we would be unable to determine which specific aspects of the cluster course are responsible for observed outcomes.

Second, this assessment depends largely (although not exclusively) on participants' subjective beliefs and self-reports, rather than on objective tests or measures. Such perceptions may be skewed or inaccurate. By combining responses from a variety of respondent populations, however, we partially correct this problem.

Third, this assessment does not enable us to draw causal conclusions about the cluster courses. (To do so, we would need to design a true experiment, in which students were randomly assigned to cluster and non-cluster conditions; with valid and reliable measurements administered both before and after the courses.) It will, however, indicate individual characteristics and outcome factors that are *associated* with cluster courses, which can be further investigated in future research. It also provides a rich description of the *perceived* effects of the clusters.

In short, the assessment is more formative than summative in nature. It is not designed to resolve fundamental questions about the effectiveness and impacts of cluster courses at UCLA. It does however, offer structured feedback on important questions, with the intent of informing discussion and stimulating improvement.

SECTION 3

RESULTS: THE CLUSTER EXPERIENCE OF FRESHMEN

In all, 523 students elected to enroll in a cluster course during Fall Quarter 1998. Of these, 480 (92%) were freshmen in the College of Letters and Science (L&S). This means that more than one in every ten L&S freshmen (13%) enrolled in a cluster.

As shown in Table 4, 79 freshmen who enrolled in a cluster course did not complete the entire three-quarter sequence, for a 15% attrition rate. More students dropped between fall and winter than between winter and spring. When the analysis is restricted only to L&S students, similar patterns emerge.

Table 4. Enrollment in the Clusters, by Quarter

	The Global Environment	*Interracial Dynamic*	*History of Social Thought*	*Evolution of the Cosmos and Life*	*Total*
Fall 1998					
*L&S **	103	120	134	122	480
*Other***	2	0	20	21	43
Total	105	120	154	143	523
Winter 1999					
*L&S **	85	109	120	112	426
*Other***	1	0	19	19	39
Total	86	109	139	131	465
Spring 1999					
*L&S **	87	96	117	106	406
*Other***	1	0	19	18	38
Total	88	96	136	124	444
# Dropped					
*L&S **	16	24	18	16	74
*Other***	1	0	1	3	5
Total	17	24	19	19	79
Attrition-rate					
*L&S**	16%	20%	13%	13%	15%
*Other***	50%	N/A	5%	14%	12%
Total	16%	20%	12%	13%	15%

* Enrollment as of the 3rd week of the quarter. Winter Bruins not included.

** Enrollment as of the 3rd week of the quarter. Includes Winter Bruins and non-L&S students.

Cluster Student Characteristics

The L&S freshmen student database provides additional descriptive information about cluster participants and dropouts, although this analysis excludes the 39 Winter Bruins and 4 non L&S students who enrolled in a cluster course.

Fall Quarter Cluster Students

Comparisons between freshmen enrolled in clusters and freshmen who did not enroll in clusters indicate that the clusters attracted some of the best of UCLA's incoming students. As shown in Table 5, cluster freshmen showed higher levels of preparation for college than their counterparts who did not enroll in a cluster. For example:

- Average high school grade point average for freshmen in a cluster was 4.17, compared to 4.06 for non-cluster freshmen.
- Combined math and verbal SAT scores for cluster course freshmen averaged 1303, compared to 1249 for non-cluster freshmen.
- The cluster course students were more likely than non-cluster freshmen to have satisfied UCLA's Subject A and Quantitative Reasoning requirements upon entry to UCLA.
- Over half (52%) of freshmen enrolled in a cluster course were in College Honors at entry to UCLA, compared to only 28% of freshmen who did not enroll in a cluster course.

These differences reflect the manner in which the clusters were presented to students during Orientation. For example, clusters were recommended to College Honors students, and counselors advised students who had not passed the Subject A exam against enrolling in a cluster course. The two groups of students also differed in other ways, as summarized in Table 5.

The characteristics of students *within* the four different cluster courses also differed in some important respects, particularly with regard to major. Only 2% of the students in science clusters were majoring in the life and physical sciences, compared to over 40% of the students in the non-science clusters.

Table 5. Characteristics of Cluster and Non-Cluster L&S Freshmen in Fall, 1998

Characteristic	*Science Cluster freshmen (N=232)*	*Non-science Cluster freshmen (N=254)*	*All Cluster freshmen (N=486)*	*Non-Cluster freshmen (N=3,177)*
% Female	64.4	65.5	64.8	60.9
Mean age	18.3	18.3	18.3	18.3
Race/ethnicity				
% African American	2.1	2.0	2.1	4.0
% Asian	32.7	48.4	40.7	37.6
% Chicano/Latino/a	6.9	10.3	8.6	12.3
%White (non-Hispanic)	39.4	27.9	33.7	31.6
% Other or unknown	18.9	11.4	14.8	14.5
Mean HS GPA	4.14	4.19	4.17	4.06
Mean SAT-math	652	667	659	638
Mean SAT-verbal	651	637	644	611
*% Passed Subject A**	95.2	97.0	96.1	73.2
% Passed quantitative reasoning requirement.	89.3	91.8	90.6	72.3
% Attended orientation sessions 1, 2, or 3	59.1	59.2	59.1	18.5
*% In College Honors**	47.1	56.7	52.4	28.0
Major				
% Humanities	9.5	2.0	6.0	7.0
% Social Science	27.0	12.5	19.0	18.0
% Physical Science	0.5	11.0	6.0	9.0
% Life Science	1.5	31.5	17.0	21.0
% Undeclared	61.5	43.5	52.0	45.0

* At time of entry to UCLA

Cluster Attrition

The L&S freshman database allows us to compare students who dropped out of the cluster sequence with those who persisted. With Winter Bruins excluded from the analysis, few significant differences between groups emerged. For example, Table 6 displays the factors that distinguish those who enrolled in fall or winter from those enrolled in fall only.

Those who dropped out of the cluster course sequence compared to their peers who continued received lower fall quarter grades in the cluster course, lower overall fall quarter grades, and lower SAT verbal scores.

These findings indicate an association between achievement and persistence in the cluster courses. More research is needed, however, to determine why these students did not persist in the cluster course.

Table 6. Comparison of L&S Students Who Dropped Out of Versus Continued in the Cluster Sequence between Fall and Winter Quarters

	*Students who Dropped out (N=62)**	*Students who Continued (N=424)*
Fall Quarter Cluster Course Grade	2.7	3.2
Fall Quarter Overall GPA	3.0	3.2
Mean SAT-Verbal	629	647
Mean SAT-Math	667	658

*Students who dropped a cluster course between the 3rd week of Fall Quarter, 1998 and the end of Winter Quarter, 1999.

Incentives: Students' Reasons for Enrolling in a Cluster Course

Information about students' reasons for selecting a cluster course is important for two reasons. First, student interest is critical to the success of the clusters. Previous innovative educational programs at UCLA have failed because students were reluctant to enroll. Second, students' expectations upon enrolling in the course undoubtedly influence their satisfaction. If students receive accurate information about the course in advance, they can make informed decisions about whether it fits their goals and interests.

The survey questionnaire administered early in Winter Quarter, 1999, asked students to indicate their reasons for enrolling in the cluster course in both fall and winter. Table 7 displays findings. Almost all students wanted the GE credit that a cluster course provides. About three-quarters also selected a cluster because they thought it would interest them. A majority of respondents cited counselor recommendations and the opportunities to obtain Honors credit and an extra unit as reasons for selecting a cluster course.

Table 7. Survey Respondents' Reasons for Enrolling in a Cluster Course

	% citing various reasons for enrolling in a cluster for...	
Reasons	**Fall quarter**	**Winter quarter**
I wanted the GE credit	85	80
I thought it would be interesting	73	49
A counselor recommended it	62	N/A
I wanted Honors credit	55	52
I wanted the extra unit	52	50
I liked its interdisciplinary nature	38	34
It fit my schedule	31	41
I liked the 3-quarter sequence	29	33
I thought I would do well	22	37
I wanted a team-taught course	19	22
My friends were taking it	11	18
A friend recommended it	6	N/A
I thought it was required	N/A	20
Other	8	14

Note: Because most students cited multiple reasons, columns sum to over 100%.

Relatively few students cited the unique characteristics of cluster courses as their primary reason for enrolling. Slightly over one third (38%) selected a cluster because of its interdisciplinary nature, 29% selected a cluster for the three-quarter sequence of courses, and only 19% sought a team-taught course.

To determine how students' high school experiences influenced their decisions, the analysis compared the reasons for enrolling in a cluster between students who had interdisciplinary or team-taught courses in high school and those who had not experienced these types of courses. Results from fall quarter indicated that 41% of students who had interdisciplinary courses in high school selected a cluster course for its interdisciplinary nature, compared to 35% of those who did not have interdisciplinary courses in high school. Similarly, 23% of those who had team-taught courses in high school selected a cluster course because it included team teaching, compared to 19% of students who did not have team-taught courses in high school. Although these findings show a positive association between high school exposure to interdisciplinary and team-taught courses and a desire for such experiences during college, these comparisons did not obtain statistical significance.

This pattern of responses largely applied to students' decision-making about the winter quarter as well. The opportunities for GE credit, Honors credit, and an extra unit were students' most common reasons for re-enrolling in the cluster sequence during winter. Additionally, about one in five respondents believed that they were required to continue the cluster in the winter quarter.

Because the survey questionnaire, upon which the fall quarter responses in Table 7 are based, was actually administered in the winter quarter, it does not include the responses of students who dropped out of the cluster sequence between fall and winter. Interviews with a sample of these students indicate that they enrolled in a cluster for much the same reasons as their counterparts who continued – they wanted the general education credit, were interested in the subject matter, and were attracted to the tangible benefits the cluster offered.

A separate component of the assessment explored whether students' expectations and beliefs about the course when they enrolled proved accurate. Students' open-ended comments on the questionnaires confirm that the tangible benefits that motivated students to enroll in the clusters continued to be perceived as highly valuable. For example:

> *[The best aspect of the class was] the fact that I get an extra unit and honors credit.*
>
> *[The best aspect of this course is] that the work is all worth it in the end – I'm going to walk out of here at the end of the year having to take just one more science course! And it's in a really convenient location!*

The results also suggest, however, that many students had false expectations about the course. First, only 34% of the respondents to the fall quarter survey indicated that the course fully met expectations; another 57% indicated that the course partly met expectations; and 8% indicated that the course did not at all live up to expectations. Only 45% of the students who dropped out of the cluster between fall and winter indicated that the course partly or fully met expectations; while 55% indicated that the course largely failed to meet the students' expectations.

Open-ended comments, especially from students in the science clusters, confirm that some students had false expectations. Sample comments include:

> *Students should be fully informed before they sign up for the course about how it is to be run and what is expected.*
>
> *I was told the class would have a liberal arts focus on science. The class has been valuable, just different from my expectations.*
>
> *I thought this class would be geared toward non-science majors.*
>
> *It's more difficult than my orientation counselor made it out to be.*

This gap between expectations and reality may affect students' satisfaction with and adjustment to a cluster course.

Students' Experiences in the Cluster Courses

To understand the nature of the cluster courses better, the survey asked students to indicate the frequency with which they engaged in various activities, most of which are associated with "best practices" in undergraduate education. Table 8 displays students' descriptions of their experiences.

Results indicate that, by the end of the academic year, cluster students responding to the survey had been exposed to a wide range of best practices. These include active participation in class discussions (primarily during discussion sections), writing and re-writing papers, engaging in joint projects with other students, and interacting with professors or graduate student instructors outside of class (either in-person or via e-mail).

The results also indicate that the richness and variety of students' experiences increased by the end of the academic year. For example, at the end of fall quarter, only about one quarter (27%) of survey respondents had attended a professor's office hours; by the end of spring quarter, this had doubled. Large gains were also observed for e-mail contact with faculty, use of the library for research, participating in class discussions during lecture, and e-mail contact with other students in the course[5].

Students' experiences varied across the four cluster courses. For example, the percentage of students who rewrote a paper after receiving feedback ranged from 25% to 81%. Use of the library ranged from 50% to 96%. The percentage attending a professor's office hours ranged from 34% to 82%. These and other differences are reflective of the specific goals or design of each course.

[5] Differences between the fall and academic-year surveys may result from many different factors, including selective attrition from the cluster sequence, student maturation, and the tendency among students to assess seminars more favorably than lecture courses. Caution is therefore called for in interpreting findings. In this case, the observed gains are unlikely to be the result of attrition alone.

Table 8. Students' Experiences at the End of Fall and Year-end

How often students had various experiences	*% that had the experience...*		
	at least once in fall	*at least once all year*	*6 or more times all year*
Class participation			
during lecture	39	54	16
during discussion section	99	99	85
Contact with faculty			
Attend office hours in person	27	54	6
Exchange e-mail	35	66	13
Contact with TAs			
Attend office hours	66	84	19
Exchange e-mail	79	94	44
Contact with peers			
Participate in activities in the residence halls related to the course	26	38	2
Exchange e-mail with other students in the course	49	74	23
Carry out course assignments in small groups or teams	77	89	29
Study with other students enrolled in cluster	84	87	39
Work with students from a different culture, race, or socioeconomic background	93	96	61
Talk outside of class about cluster	98	99	71
Assignments			
Re-write a paper after receiving comments	40	53	6
Go to the library to find materials related to the course	48	80	16
Write a paper that involved library research	54	79	6
Write a paper more than 5 pages long	55	79	3
Use the WWW or Internet as part of the course	71	86	40
Write a paper of 1-5 pages in length	96	99	8

Cluster Workload

Cluster courses are intended to establish high expectations for students and offer a rigorous academic experience. At the same time, the clusters must avoid overwhelming entering students, many of whom are unaccustomed to the demands of undergraduate coursework. To address these issues, the survey questionnaires asked students to compare their cluster course to other courses they had taken at UCLA on three dimensions of workload: the amount of work required for the course; the time devoted to the course; and students' difficulty understanding course content. As shown in Table 9, most respondents perceived the fall quarter cluster course workload as significantly heavier than the workload for other courses. By the end of the academic year, however, respondents were less likely to rate the cluster workload as heavier than the workload for other courses. For example, two thirds of respondents rated the cluster course as requiring more time than other courses at the end of the fall quarter, but only half did so at the end of spring.

Table 9. Student Ratings of Cluster Course Workload in Comparison to Other Courses

	% responding that...		
Workload dimensions	*Cluster has less than other courses*	*Cluster is about the same as others*	*Cluster has more than other courses*
Amount of work			
fall quarter	5	28	67
academic year	10	41	49
Time devoted			
fall quarter	12	27	60
academic year	17	39	45
Difficulty understanding content			
fall quarter	13	32	55
academic year	16	42	42

Several reasons may account for this change. Students experiencing the greatest difficulty with the cluster course workload may have dropped out the sequence. Alternatively, students may have found it easier to focus on a single instructor during the spring quarter than the multiple instructors of fall and winter quarters. Other possibilities are that instructors may have moderated workload in response to student feedback, or that students may have modified their judgements of the cluster course after experiencing more demanding (non-cluster) courses in winter and spring than in fall.

Some variations in workload were observed across the four clusters. For example, the percentage of respondents reporting that the cluster course workload was heavier than that of other courses ranged from 32% in one cluster course to 61% in another. Also, students distinguished between amount of work and difficulty of work. The cluster with the lowest

volume of assigned work was perceived as presenting students with the most difficult material to master.

Students' open-ended comments registered concern about workload, especially in the two science-oriented clusters; for example:

> *I worked very hard and struggled all quarter. I could have taken an easier class and gotten an A. The class consumed more time than the prerequisites for my major.*
>
> *[There was] too much reading and writing at times, so it becomes very mind boggling [and] hard to separate/dissect ideas.*
>
> *For non-science people, this class may be too difficult and fast paced.*

Intellectual Development

An essential goal of the cluster courses is to promote students' intellectual development. This exploratory study did not attempt to objectively measure or test students' gains or to compare the skills of cluster students against non-cluster students. The student surveys did, however, ask respondents to indicate how they believed participation in a cluster course affected various skills: writing, analysis, library research, understanding current events, quantitative reasoning, and understanding those different from oneself.

Students rated their intellectual development on both the fall quarter and year-end surveys. Table 10 presents results. Over two thirds of respondents believed that the cluster course had a positive impact on their writing and analytic skills. Over half believed that their library research skills and understanding of current events had increased.

Of course, each cluster focused on a different subset of skills. Table 10 provides aggregate results, but differences among the four clusters were pronounced in this area. For example, the percentage of respondents reporting improvements in writing skills ranged from 18% in one cluster to 90% in another; the percentage reporting improvements in analytic abilities ranged from 43% to 91%; and the percentage reporting improvements in their library skills ranged from 26% to 90%.

Table 10. Self-Rated Effects of Participation in a Cluster Course on Skills: Ratings Provided at the End of the Academic Year

	% rating their skills as...		
Student skills	***Weaker***	***Unchanged***	***Stronger***
Writing skills	2	37	62
Analytic skills	1	30	69
Library skills	1	38	61
Understanding current events	1	42	57
Quantitative skills	1	49	50
Understanding those different from you	1	60	39

Respondents' open-ended comments on the questionnaires confirmed that many credited the clusters with contributions to their intellectual development. For example:

> *The writing assignments were good practice in grasping concepts from journal articles, developing a thesis and structuring an argument.*
>
> *[The best aspect of the course was] learning how to do research and write.*
>
> *[The best aspect of the course was] learning about things that pertained to life here and other places – understanding what was going on in the world.*
>
> *[The best aspect of the course was] getting to know people from different background and their ideas.*
>
> *[The course] helped me look at issues more critically.*
>
> *[The best aspect of the course was] the authors we read and discussed. I learned new things in this class, whereas my other courses were basically a review of things I had learned in high school.*
>
> *[The best aspect of the course was] the fact that I learned about society not through reading a text book, but through reading primary texts and analyzing it myself.*
>
> *I did learn a lot about many different aspects of science. Any one course offered at this school could not provide that opportunity.*

Community-Building

Cluster courses strive to promote development of an academic community through which students feel more connected to each other, to their instructors, and to the broader academic enterprise at UCLA. By the end of fall quarter – a critical time for community building – over three quarters of cluster course students had carried out assignments in small groups, studied with other students in the course, worked with students of a different background from their own, and talked with students outside of class about the course (See Table 8). By the end of the academic year, a majority had also exchanged e-mail with other students in the course, and about one third had participated in residence hall activities related to the course.

Cluster students also reported high levels of contact with teaching assistants. By the end of the fall quarter, over three quarters had exchanged e-mail with their TA, and two thirds had attended TA office hours. Over the course of the year, the number of students interacting in these ways with graduate student instructors increased, so that, by year-end, 94% had exchanged e-mail with a TA and 84% had attended office hours.

Contact with faculty was substantially lower. Only 27% of respondents attended faculty office hours during the fall quarter; this percentage increased to 54% by year-end. Additionally, 35% of respondents exchanged e-mail with faculty in the fall; by year-end, this had increased to about 66%.

In light of these activities, it is not surprising that students rated the cluster course as conducive to community-building. As shown in Table 11, most reported high levels of satisfaction with the community-building aspects of their cluster, particularly for interaction with teaching assistants and peers. Furthermore, when students were asked to compare the sense of community in their cluster course to other courses they had taken at UCLA, the cluster courses emerged as friendlier settings. Table 12 displays results.

These aggregate findings mask some important differences across the four cluster courses. For example, participation in residence hall extracurricular activities related to a cluster ranged from 12% of students in one cluster to 60% of students in another. The percentage of students reporting that their cluster course provided more contact with faculty than did other courses ranged from 34% to 64%. All of the clusters, however, were characterized by relatively high levels of contact with TAs and peers.

Table 11. Student Satisfaction with Opportunities for Interaction in Cluster Courses

Opportunities for interaction	*% of respondents who were...*		
	Dissatisfied	*Neutral*	*Satisfied*
With faculty			
Fall quarter	9	34	57
Academic year	5	28	67
With TAs			
Fall quarter	5	16	80
Academic year	1	13	86
With peers			
Fall quarter	5	22	73
Academic year	2	18	80

Table 12. Survey Respondents' Comparisons of Community in Cluster Course Versus Other UCLA Courses

Course characteristics	*% responding that...*		
	Cluster has less than other courses	*Cluster is about the same as others*	*Cluster has more than other courses*
Sense of community			
fall quarter	11	36	53
academic year	6	27	67
Contact with faculty			
fall quarter	21	50	29
academic year	14	38	48
Contact with TAs			
fall quarter	5	27	68
academic year	3	17	80

Those students who did experience a sense of community with students and faculty in the cluster considered this among the most valuable aspects of the course. Some sample open-ended comments follow.

> *I loved the encouragement to interact with professors.*
>
> *[The best aspect of the course was] its great interactions with students, TAs and the professors.*

[The best aspect of the course was] that it was all freshmen... and they were all eager to make friends. [it has a] good social atmosphere – but that involved a lot of bashing of the course.

I felt right at home [in this course]. There was good interaction.

The professors and TAs made it clear that they're here to help us and that they'd make time for us.

[The best aspect of the course was] the professors' accessibility and...getting to know other freshmen who are as lost as I am.

Enthusiasm and Intellectual Stimulation

Another important goal of the cluster courses is to promote students' engagement or involvement in the learning process. The cluster courses sought to challenge students, instill enthusiasm for active learning and inquiry, and foster their curiosity and desire to learn more about the course subject matter. Such attitudes and experiences are positively associated with a variety of important outcomes, including retention, achievement, and development of intellectual skills.

Several items on the survey questionnaires therefore asked students to rate the effectiveness of the cluster in offering intellectual stimulation and challenge. First, students were asked whether their experience in the cluster course increased, decreased, or had no impact on their desire to learn more about the subject matter of the course. By the end of spring quarter, fully 67% of survey respondents wanted to learn more about the subject matter of the course, while 8% had lost interest and 24% reported no change in their level of interest in the subject matter. The percentage of those who want to learn more may be inflated by the fact that those least interested or engaged were most likely to withdraw from the cluster sequence (and therefore could not complete a questionnaire). If we assume that *all* students who dropped the cluster had lost interest in the subject matter (a highly conservative assumption), the survey results indicate that 50% of the 520 students who enrolled in a cluster course in fall quarter wanted to learn more about the subject matter at the end of the academic year.

Second, survey respondents were asked to rate their level of satisfaction with the intellectual stimulation and challenge offered by the cluster course. At year-end, only 6% of respondents indicated dissatisfaction with this aspect of the course, while 19% were neutral and 75% satisfied. Fall quarter ratings were essentially the same. Thus, the majority of students were challenged by the cluster courses throughout the year.

Finally, survey respondents compared their cluster course to other courses they had taken on five dimensions: amount learned, degree to which professors and TAs challenged students to think critically; intellectual stimulation; and students' level of enthusiasm about the course. Table 13 displays findings for data collected at the end of fall quarter and at the end of the academic year. At both times, cluster courses were perceived as especially effective in promoting critical thinking. Most students rated the cluster courses as more valuable and stimulating than other courses.

Table 13. Comparison of Students' Involvement in Cluster Courses Versus Other Courses

Types of engagement	*% responding that cluster offered...*		
	Less than other courses	*About the same as other courses*	*More than other courses*
Intellectual stimulation			
fall quarter	13	28	59
academic year	10	33	56
Overall value of the course			
fall quarter	15	29	56
academic year	11	28	61
Amount you learned			
fall quarter	12	35	53
academic year	8	36	55
Your enthusiasm about the course	21	27	52
fall quarter	28	29	42
academic year	21	27	52
Degree to which TAs challenged you to think critically			
*fall quarter**	7	25	68
Degree to which professors challenged you to think critically			
*fall quarter**	10	25	65
Degree to which instructors challenged you to think critically			
*academic year***	5	33	61

* Not asked on year-end survey.
** Not asked on fall quarter survey.

Differences among the four cluster courses emerged for all of the items included in this aspect of the assessment. In general, students were most engaged in and challenged by the non-science clusters. As just one example, over two thirds of respondents in the non-science clusters were more enthusiastic about their cluster course than other courses they had taken during the academic year, compared to under half of those in science clusters. Similar patterns apply to the other items in Table 13.

Students' open-ended comments are consistent with this pattern. For example, students in non-science clusters offered comments such as the following:

This course made me think, formulate ideas, and I learned more about myself.

I think the intellectual stimulation is unparalleled.

On the other hand, students in the science clusters showed greater diversity of opinion about the course. For example:

I felt the grading difficult, the course unstimulating, and at times boring. I had no motivation to be at any of the lectures and often dreaded going.

I think this course challenges your mind a little more than science for non-science major classes.

Progress and Achievement

In addition to promoting students' involvement in learning, helping them to develop their intellectual skills, and building a sense of community and belonging, the cluster courses are intended to promote academic success for students, as manifested by average grades, retention rates, and progress toward degree. The freshman database enables us to track these outcomes over time, for both cluster and non-cluster students. Table 14 presents differences between cluster and non-cluster freshmen at the end of the 1998-1999 academic year.[6]

Table 14. Student Outcomes for Cluster and Non-Cluster Freshmen (AY 1998-99)

Student Outcomes	*Cluster Students*	*Non-Cluster Freshmen*
Mean UCLA GPA	3.36	3.05
Mean Units Completed	43.9	40.2

Since cluster courses carry five units rather than four, it is unsurprising that cluster students completed more units, on average, than non-cluster students. Cluster students averaged 15 units per quarter, compared to 13 units for non-cluster students.

Cluster students also reported higher grade point averages than non-cluster students. This finding is consistent with the cluster students' higher levels of preparation at entry to UCLA and cannot be attributed to the effects of participation in a cluster course. Further analysis is needed to determine if participation in a cluster increases achievement beyond the levels that would be expected based on students' background characteristics.

A possible explanation for cluster students' higher GPAs is that the cluster courses themselves may be graded more leniently than other courses, thereby inflating overall grade point averages. To test this hypothesis, investigators compared students' average grade in the cluster courses against their average quarterly grade point average. Table 15

[6] About 97% of freshmen who entered UCLA in Fall 1999 continued at UCLA in Fall 2000. Given this high rate of retention, no differences emerged between cluster and non-cluster students. The assessment will continue to track retention to determine if differences appear in subsequent years.

shows the results. These findings indicate that students received about the same grades in their cluster courses as in other courses during fall and winter.

Table 15. Cluster Course Grades in Relation to Overall GPA for Each Quarter

Quarter	*Mean Cluster Grade*	*Mean GPA for Quarter*
Fall	3.15	3.18
Winter	3.33	3.28
Spring	3.50	3.36

The increase in mean cluster grades over time may reflect a number of factors, including increases in students' skills and knowledge, or attrition, since students at the lowest end of the academic spectrum were most likely to drop out of the cluster sequence. In addition, these results are consistent with the observation that students achieve at higher levels in small seminars than large lectures.

Overall Satisfaction

In addition to the six elements of the course that constituted the assessment framework, the survey questionnaires asked students several broad questions about their satisfaction with the cluster experience. Consistent with other findings, most students reported satisfaction with the cluster experience. Table 16 displays satisfaction ratings on the year-end survey.

Although the items in Table 16 appear to address different aspects of the cluster courses, data analysis indicates a very high degree of association, or inter-correlation, among the items. In other words, students satisfied with any one aspect of the cluster course tended to be satisfied with the other aspects as well.

The ratings indicate that students were most satisfied with the spring quarter seminars. Students' open-ended comments were consistent with these ratings. When asked to describe the best aspect of the cluster, many students responded "the spring seminar." For example, one student wrote, "My seminar...is absolutely wonderful, and it is even fun."

Respondents in non-science clusters were more satisfied with their experience than their counterparts in science clusters. These differences were especially pronounced early in the academic year. As just one example, among students who completed the three-quarter sequence, the percentage satisfied with the fall lectures ranged from 26% in one science cluster to 84% in a non-science cluster. By spring, however, this gap had narrowed, and the percentage satisfied with the seminars ranged from 88% to 98%.

Because students who dropped the cluster did not have an opportunity to complete the survey questionnaire, these satisfaction ratings may be inflated. Thus, a sample of students who dropped the cluster were asked to comment on the course. About one quarter indicated that they left the sequence because the course was boring or uninteresting. Most, however, indicated satisfaction with the cluster and reported

dropping the sequence for other reasons such as scheduling conflicts, or no longer needing the GE credit.

Table 16. Student Satisfaction with Cluster Course at Year-end

	*% respondents**		
Course characteristics	*Dissatisfied*	*Neutral*	*Satisfied*
Overall quality of the cluster	13	11	76
Integration of material from different professors	18	16	66
Clarity of course themes	14	16	69
Availability of help when needed	5	18	77
Fall quarter lectures	25	17	58
Fall discussion section	25	14	61
Winter quarter lectures	22	20	58
Winter discussion section	11	11	78
Spring seminar	3	3	93
Extent to which fall and winter prepared for spring	7	28	65

*Respondents rated satisfaction on five point scales, with 1=very dissatisfied, 2=dissatisfied, 3=neutral, 4=satisfied, and 5=very satisfied.

When asked to describe the best aspects of their cluster course, survey respondents cited a variety of factors. The most frequent responses addressed the quality of the faculty, the quality of and concern shown by teaching assistants, discussions with peers, course substance, special benefits (extra units and honors credit), and intellectual stimulation and challenge.

Some students provided glowing testimonials on their survey questionnaires. While these remarks are not representative of all cluster students (indeed, some were highly critical), they do indicate that the clusters achieved their promise for some students. For example:

> *I knew [the course] would inform me about the world, but I feel more than informed... [I feel] educated so I can help make a change.*
>
> *I have gained more from this class than any other class I've taken (here or in high school).*
>
> *It is really a high quality course that challenges you to work hard all the time.*

It is a great chance to get the most out of UCLA. Also, the material is very challenging and the environment is competitive. It helps students adjust to the college experience.

The course is a really good transition from high school to college. Although the level of work and the amount are college level, the sense of community and continuity make it easier to adapt coming out of high school to this big UC.

Student comments were reviewed for insight into special aspects of the cluster courses, including its interdisciplinary nature, team-teaching, and three-quarter sequence. Relatively few students commented directly on the interdisciplinary nature of the course, although all of those who did so were positive.

Because it's three quarters long and interdisciplinary, the depth of analysis and the breadth of concepts results in unparalleled opportunity for holistic education and intellectual stimulation.

[The best aspect of the course is] having four different perspectives from four different fields.

Some respondents felt that the interdisciplinary course content was inadequately integrated.

It seems that there is no coherence between subjects presented.

[The] transition between themes [is] bumpy.

I was expecting it to integrate ideas and issues from all areas... I thought the material would be better integrated.

Collaborative teaching also received mixed reviews from the students. Of those students who commented on this aspect of the clusters, most considered it a plus. A smaller number found team teaching inefficient or confusing.

[The best aspect of the course was] that there is more than one professor lecturing, so we won't get bored [with] one.

I like the idea of having multiple professors.

A little more cooperation among the professors would allow for a little more congruence in the way the material is presented.

I personally don't like the team teaching. Just as I got used to one professor, another one came in.

Comments also reflect a wide range of opinion about the three-quarter length of the cluster courses.

You get honors credit, an extra unit, and a sense of security being involved in class with the same students throughout the whole year.

Three quarters of the same class is sort of undesirable ... [You're] more or less locked into the class and [have to] fit it into your schedule...

Students offered numerous suggestions for improving the cluster courses. Some of these suggestions are of questionable pedagogical value. These include such recommendations as "no research paper," "give more honors credit," "shorter lectures and discussion sections," "try easier grading," and "scale [it] down to a more elementary level." Similarly, about equal numbers recommended that courses be held earlier and later in the day. Of these types of comments, suggestions to reduce the length of the discussion section were particularly common, and many students felt they "dragged."

Other recommendations are more substantive. Many students expressed concerns about workload and grading practices. Others wanted clearer lectures with fuller explanation of foundational concepts, especially in the sciences. Another common recommendation was to increase the coherence and integration of course material. The combination of interdisciplinary material and team teaching apparently led to a sense of fragmentation, so that, for many students, the clusters failed to provide clear themes and a logical progression of ideas and concepts. For example:

> *[The course needs] more fluid connections between topics/professors. [Build] more links between the lab and lecture.*
>
> *The themes were unclear and scattered, and the discussions and labs often seemed unrelated to the lectures.*
>
> *Integrate the material better. Make sure that all the material is more relevant to the course as a whole.*

Despite these concerns, a majority of respondents in each cluster would recommend the course to a friend. Overall, three quarters of students responding to the year-end survey would recommend the course to other students. And if we assume that all students who dropped the course would *not* recommend it (a highly conservative assumption), we would conclude that 56% of the 520 students who began a cluster would recommend the course to other students.

Most students had a positive experience in their cluster course. They found the material challenging and believe the course contributed to their intellectual development. They also enjoyed interacting with faculty, graduate student instructors, and students and experienced the cluster as a community. Most (75%) considered the cluster a more rewarding experience than other courses they took during their freshman year.

SECTION 4

RESULTS: THE CLUSTER EXPERIENCE OF GRADUATE INSTRUCTORS

Introduction

Role of Graduate Student Instructors in Cluster Courses

Graduate student instructors (TAs) play a major pedagogical role in the general education clusters. During the 1998-99 academic year, each graduate student instructor was responsible for leading one or two discussion sections and/or labs during the fall and winter quarters. These sections meet for two hours each week and were limited to approximately twenty students. In these small-group learning environments, graduate instructors provided their students with the opportunity to conduct scientific experiments, read important texts, and discuss ideas and issues raised by cluster faculty in their lectures. Cluster graduate student instructors also worked extensively with their students on writing and carried considerable responsibility for the grading of student tests and papers.

Under the supervision of the cluster faculty, graduate student instructors also developed, organized and taught their own seminars during the spring quarter. All of these third-quarter seminars were organized around topics related to the cluster themes and were designed to allow their participants to engage in intensive research, collaborative work, and discussion and debate. The graduate student instructors also worked intensively with their students in these seminars on the development of their writing, critical thinking, quantitative reasoning, and logical argumentation skills.

In order to assist the cluster graduate student instructors with the many challenges that are posed by an interdisciplinary yearlong course open only to freshmen, the general education staff offered a cluster orientation workshop in late September and a series of seminar development workshops during the winter quarter. The cluster orientation workshop was offered during the week prior to the beginning of the fall quarter and provided cluster teaching fellows with information about incoming freshmen students, the cluster evaluation process, and the many instructional support services that are available to them on campus. During the winter quarter, cluster graduate instructors participated in a series of workshops to assist them in developing their seminar syllabus.

Characteristics of TAs in the Cluster Courses

Given their extensive responsibilities in the clusters, and the time that this particular kind of collaborative teaching required, graduate students selected for cluster teaching were to rank among the university's best graduate student instructors. Most of the graduate instructors in these courses had been advanced to candidacy and had at least six quarters of teaching experience.

A total of 18 TAs participated in the 1998-99 cluster courses. As shown in Table 17, most were graduate students but some were post-doctoral scholars. Across clusters, 38% of the TAs were female and 88% were full-time graduate students. Ten different departments/disciplines were represented by the 18 TAs. The TAs who were still graduate

students had been enrolled an average of five years at UCLA when the cluster course began.

Table 17. Demographics of Graduate Student Instructors

	The Global Environment (N=3)	*Evolution of the Cosmos (N=4)*	*History of Social Thought (N= 7)*	*Interracial Dynamics (N=4)*
Female	2	1	1	3
Post-docs	0	0	3	0
Disciplines/ Departments Represented	Geography, Environmental Health, Urban Planning	Geology, Physics & Astronomy, Geochemistry	Sociology, History, Film, English	English
Mean years as a UCLA graduate student *	6.5 years	5.3 years	4.5 years	3.7 years

* Post-docs not included

Role of TAs in Cluster Course Assessment

A consideration of the experiences of TAs in the cluster course assessment is needed for at least three reasons. First, the TA is an academic apprentice role and it is important to determine if the clusters are promoting the professional and intellectual development of the graduate students and post-docs participating as TAs. Second, the long-term success of the clusters requires the continued availability of talented teaching fellows. If TAs in these pilot clusters believe that the benefits of participation outweigh the disadvantages, positive word of mouth will facilitate the task of recruiting and retaining excellent TAs for future clusters. Finally, TAs are well-positioned to observe the clusters and gain insight into the factors that contribute to a successful course. The assessment can capture "lessons learned" and apply them to future clusters.

Results

Incentives

TAs were asked why they chose to participate in a cluster rather than a traditional course. This is an important issue for future recruitment of TAs. In addition, a better understanding of TAs' reasons for participating can aid in designing jobs that are responsive to their goals. Because the TAs are among UCLA's most talented instructors and young scholars, most chose the cluster assignment over other employment options or fellowship options available to them. Factors attracting TAs to the clusters include:

- Funding for the year – the three-quarter duration of the clusters provided TAs with employment for a full academic year and eliminated the need to seek new teaching assignments each quarter.

- Course development – many TAs were especially attracted to the opportunity to design and teach their own seminar. For example, one TA described the spring seminar as "a crowning experience in designing curriculum" that provided "the opportunity to see how a course gets put together."
- Career development – TAs noted that participation in a cluster would "look good on my vitae" or be a "good career move."
- Finally, several TAs were attracted to the special characteristics of the cluster, especially its interdisciplinary nature.

Workload

An important question is whether TAs are able to accomplish their work responsibilities within twenty hours per week. To address this question, TAs were asked to keep track of the hours they worked in a two-week period during fall quarter. Only half responded. The results indicated that, on average, TAs were working more than twenty hours per week (mean = 27.5 hours per week). The individual hours per week ranged from 13.5 hours to 43 hours (the latter included a nine-hour fieldtrip). More research is needed to determine if these weeks are representative of the overall TA workload. If these findings hold, TA responsibilities will need to be reduced in the future.

The focus groups also suggested that many TAs sometimes spent more than twenty hours per week on cluster-related responsibilities. The TAs also felt that working in a cluster required that they spend their time doing tasks other than teaching and interacting with students, such as attending meeting. On the other hand, the focus group participants pointed out that the clusters had fewer students per section than other lower division courses that use TAs. The smaller section size helped them manage their workload. Factors that differentiated the workload for a cluster course from that for other courses include the following.

- More preparation time – clusters required more preparation time than other courses because TAs must review unfamiliar materials and synthesize material from multiple faculty in multiple disciplines.
- More lecture/meeting time – the course itself, without preparation time, took a lot of time: three hours of lecture, four hours of section, and weekly meetings with the other cluster instructors.
- Burden of bringing course concepts and themes together – the task of building connections among readings, lectures, and assignments fell largely to the TAs in their discussion sections. This added to the TAs' workload. One TA likened this to being given a map of Orange County and being expected to draw the Thomas Guide for it.

Smaller numbers of TAs expressed the following concerns:

- Group meetings – one cluster's TAs were used to teaching courses with much less faculty oversight and supervision. The cluster model required that they spend time working together to determine the week's lesson plans.

- Lack of guidance – another cluster's TAs felt that because the syllabus was not previously established, "we had to start from scratch, pulling ideas from other labs, looking for interesting questions." There was little guidance from the faculty. Although the TAs felt their own intellectual development was enhanced by this task, it did add a substantial burden to their workload in the cluster.

As a result of the heavy cluster course workload, most of the TAs reported that their participation in a cluster slowed their dissertation progress. These findings suggest a need for continued consideration and possible revision of TA responsibilities and duties in cluster courses.

Several TAs offered suggestions for reducing workload. For example, one group of TAs recommended a significant reduction in the amount of reading assigned to students. These TAs felt that this change would enhance student learning by enabling more in-depth study and discussion, while simultaneously creating a more manageable workload for both students and instructors.

Intellectual Development

Participation in a cluster is intended to promote the intellectual development of the TAs, particularly with regard to teaching and learning about interdisciplinary concepts and analyses. The assessment results indicate that TAs believe the clusters largely achieved this goal. In all clusters, the TAs learned about teaching in general, and teaching first-year students in particular. For example, the TAs for the science clusters had prior experience supervising students in laboratory assignments, but now learned to organize and hold discussion sections. All the TAs had prior experience teaching within their disciplines, but the clusters exposed them to interdisciplinary teaching.

In addition, some of the TAs developed skills and knowledge relevant to their research interests and teaching interests. For example:

- New material/ideas – Some TAs said that their cluster course introduced them to new books and articles. Additionally, TAs reported that the clusters gave them new perspectives on their own research and suggested new ideas or directions for future research.
- Top faculty – two of the TAs were pleased to have had the opportunity to listen to distinguished faculty lecture on topics that related to their own research.
- Teaching first-year students – TAs gained insight into the challenges and rewards of teaching freshmen. Most found that their initial expectations were too high. Over time, they gained a better understanding of how to help students develop their critical thinking skills.

Community

The clusters are designed to foster the development of an academic community of undergraduates, graduate students, and faculty. Thus, the focus groups explored the extent to which TAs valued and experienced a sense of community within the cluster. Responses varied widely across clusters. Some TAs experienced a strong sense of community, while others reported almost no sense of community.

TAs expressed the greatest concerns about their relations with cluster faculty. The following themes emerged across all four clusters:

- Information needs – the TAs wanted more information about the cluster organization and content prior to the beginning of each quarter. Such information would have enhanced their preparation and fostered a sense of inclusion and teamwork.
- Course design – Some TAs wanted to be more involved in course design. They felt that the faculty did all the planning and handed the finished products to the TAs without asking for meaningful input. In one cluster, TAs were asked were asked to create labs or other assignments without any input from the faculty. They felt more TA involvement in course design was needed in order to make the course cohesive across lectures and discussion sections/labs.
- Cluster course duration – The TAs believed that the three-quarter duration of the cluster created a richer experience for students and instructors. The length of the course enabled discussions to occur across the quarters. The result was a deeper set of discussions than could be achieved in ten weeks.

Despite the diversity of experience and opinion among the TAs, they provided similar suggestions about how to create a better community, bring the TAs on board earlier in the process and continue to seek out their ideas and opinions throughout the year. In short, when TAs feel involved as valued partners in the design and implementation of clusters, they are more likely to experience a sense of community or belonging. Specific suggestions for building community follow:

- Lectures – to promote a stronger sense of community, TAs would have liked to be included in the lectures, either by actually doing some of the lecturing or by being able to participate in the in-class discussions.
- Number of faculty – Some TAs suggested that the optimal size for a faculty team was two or three. They believed that four faculty led to unclear roles and a diffusion of responsibility, which ultimately hindered the development of a strong community. For example, some faculty in four-person teams did not seem to feel the need to engage as part of an intellectual community of faculty and advanced graduate students – instead, they assumed others would manage the team-building tasks.

Enthusiasm and Intellectual Excitement

All of the TAs participating in the assessment were glad they had participated in the clusters. For example, two focus group participants stated that this had been one of their best experiences in graduate school. One described the cluster as intellectually stimulating and "great development of the mind." Another TA said that the experience had broadened his knowledge and had helped his research; "I have grown as a teacher and a scientist." Some of the other rewards TAs derived are described below.

- Intellectual development – the TAs were exposed to new material which broadened their own thinking: "There've been a lot of things I've never read before."

- Cluster students – contact with the cluster course students was rewarding. One TA said, "These kids are the best I've ever taught." Another said, "My highest morale comes from the students...they are really willing to engage with the material and question their own assumptions."
- Content – the course content was stimulating. One TA said, "I hope it has been as interesting for the students as it has been for the instructors."
- Pedagogy – TAs appreciated the opportunity to develop their teaching skills and knowledge. One said, "It was a spectacular experience for the TAs - discussing pedagogy has been great." Another mentioned, "It was a great experience in teaching - both seeing how different faculty approach a subject as well as their teaching styles."

SECTION 5

RESULTS: THE CLUSTER EXPERIENCE OF FACULTY COORDINATORS

Introduction

The assessment plan for the four pilot clusters focuses on the experiences of students, graduate teaching assistants, and faculty. This section of the report presents findings related to the faculty experience. Several features related to faculty differentiate clusters from traditional general education courses. First, while both non-ladder and ladder faculty teach most traditional GE courses, primarily tenured and tenure-track faculty teach clusters. In addition, cluster faculty work in interdisciplinary teams, while most traditional GE courses are taught by a single instructor.

A total of 17 faculty taught the four cluster courses offered in 1998-99. Table 18 provides a profile of these faculty. One member of each cluster course faculty team served as the cluster coordinator. The coordinator was responsible for all organizational and logistical matters. Each cluster team was responsible for designing the course syllabi and planning all lectures, assignments, and tests. To accomplish these goals, the teams typically met once a week during the Spring and Summer, 1998. Once the course began, each team continued meeting weekly. Each cluster had different teaching arrangements and instruction strategies. Faculty divided up teaching differently. Some clusters offered a "block" of lectures by each faculty member, others rotated lectures, and others occasionally shared class sessions. About half the faculty also taught a spring seminar.

Table 18. Faculty Participation in Clusters

	# Ladder Faculty	# Temporary Faculty	# Faculty in Spring Seminar
Evolution of the Cosmos	4	0	2
History of Social Thought	4	0	2
Interracial Dynamics	4	0	2
The Global Environment	3	1	2

Findings

Incentives and Personal Rewards

The faculty teaching cluster courses in 1998-99 had competed for the opportunity to participate. All were enthusiastic about the opportunity to work in interdisciplinary teams and to introduce freshmen to important concepts, scholarship, and issues. As described in the introduction, faculty incentives were provided, including summer payment and course release. The discussions with cluster coordinators, however, reveal continuing concern about compensation. Given the amount of time that the coordinators committed to their courses, all four suggested that coordinators receive some combination of payment (summer ninth) and course release. One coordinator emphasized that the practice of a full buyout for first time cluster teaching was important. Another recommended that faculty

receive a course release in the spring quarter to plan the cluster syllabus for the following academic year.

Most cluster coordinators derived personal satisfaction from designing and teaching a cluster course. They enjoyed interacting with colleagues, graduate student instructors and lower division students. They also found the interdisciplinary nature of the clusters intellectually stimulating. At the end of the academic year, three of the four coordinators indicated that they would teach a cluster again (the fourth left the university for another faculty appointment).

Despite these benefits, the clusters demanded considerable time from the faculty and confronted them with interpersonal, logistical and pedagogical challenges. At least two coordinators, however, stated that the benefits outweigh the problems (while the other two did not address this issue). Continued assistance in meeting the challenges coupled with stronger incentives or compensation for participation would further reduce the problems or disadvantages, leaving faculty freer to appreciate the benefits of participation in a cluster.

Workload

When asked to discuss cluster course-related workload, two of the four coordinators noted that the course involved much more time than anticipated. They emphasized that the cluster required a far greater commitment of time and energy than a traditional GE course. Areas of the job that required most of the coordinators, time were: (1) constructing a course syllabus, (2) coordinating meetings, lectures, and assignment with cluster faculty, (3) mentoring TAs, (4) administrative work (emails, scheduling meetings), and (5) attending the lectures of other faculty. Several coordinators pointed out that workload would decrease over time because new courses almost always require more faculty time than established courses. However, relatively high rates of cluster faculty turn-over between 1998-99 and 1999-2000 mean that a relatively high proportion of cluster faculty continue to face these challenges.

Community

Each cluster sought to create an academic community of students, teaching fellows, and faculty. Because many faculty were attracted to clusters by the opportunity to work with colleagues, the community-building goal was generally assigned a high priority. At the same time, faculty have little experience in building community within their courses. For example, one cluster coordinator noted that faculty are largely individualistic, have their own teaching styles and don't particularly like being observed by colleagues. Thus, the coordinators devoted considerable attention and effort to team-building among the faculty, between faculty and TAs, and among the entire cluster class.

Faculty interaction and teaching collaboration. Coordinators described relations among faculty as positive and productive. A strong faculty team was perceived as integral to the success of a cluster course. For example, one coordinator noted that a successful cluster requires a tight-knit faculty team that knows the material thoroughly and is committed to teaching undergraduates.

The coordinators identified several factors that affect the sense of community within a cluster. First, the number of faculty can hinder or facilitate the formation of community. In general, the coordinators agreed that three to four faculty was optimal – although at least one felt that two faculty might be effective in some circumstances.

Second, the amount of time devoted to planning and team-building has important effects on the development of community. Careful planning provides a strong foundation for community-building (and other positive outcomes); rushed efforts increased the likelihood of conflict. Thus, one coordinator noted that the instructional cohort needs to meet well before the course begins to observe and discuss one another's teaching philosophies, methodologies, and idiosyncrasies. This eventually enables them to put together a team whose members are comfortable with one another and capable of making the compromises necessary for collaborative instruction. Tensions in his group were in part due to a lack of forethought about the ability of its members to collaborate.

Third, differences among faculty teaching styles present a significant challenge to team building. For example, some faculty prepare lectures and assignments well in advance, and others wait until the last minute.

Fourth, faculty also must learn to integrate their different perspectives and disciplines into a coherent whole. One cluster met this challenge through a case study approach, in which different faculty addressed the same topic from the perspectives of their own disciplines and research. Others used a "chronological" approach.

Finally, faculty relations are enhanced by agreement about how to interact with one another in the classroom. Across all four pilot clusters, faculty frequently attended one another's lectures but only rarely interacted during the class sessions (e.g., reacted to one another's comments). One coordinator explained that faculty were uncomfortable with this approach, even though such interaction might be interesting and engaging for the students. In the case of his own teaching team, for example, while the faculty attended most of the lectures, they were there to show solidarity with one another rather than to comment on their colleagues' lectures.

Faculty-TA interaction. Coordinators generally viewed the teaching fellows as a highly dedicated and motivated group of instructors who worked well together despite coming from different departments and disciplines. All the coordinators felt the TAs play an essential role. Those who participated in 1998-99 were perceived as performing at very high levels. In general, the coordinators provided more positive assessments of faculty-TA relations than did the TAs. Both groups, however, agreed that the key to positive relations lies in two factors: (a) regular meetings; (b) involvement of TAs in course planning and decision-making as early as possible in the process. One coordinator noted that the course would have been better served if the faculty and TAs had been able to work together at an earlier stage in planning the cluster. Others suggested that the TAs take a more active role in planning and developing the cluster. For example, a coordinator emphasized that the course readers should be prepared by the faculty in the spring quarter so that the TAs have the summer to familiarize themselves with the material to be covered in the course. Several coordinators also recommended that faculty and TAs meet on a weekly basis and spend more time addressing pedagogical issues.

GE Cluster Administration

Coordinators appreciated the support they received from the general education administrative team. One coordinator suggested that responsibility for administrative arrangements should be transferred from the GE staff to department offices to the greatest extent possible (e.g., hiring, grades, room scheduling). This makes particular sense when most of the teaching team is connected to a single department or program. Another coordinator added that the TAs complained about too many demands on their time from the GE staff for meetings, assessment questions, and training sessions. In this case, the goal of fostering TAs' intellectual development conflicted with the goal of minimizing workload.

SECTION 6
DISCUSSION OF RESULTS

At this early stage in the cluster assessment, caution must be exercised in attempting to answer the major questions that shaped our methods and analyses. The results to date suggest the following *tentative* conclusions. These conclusions are presented to correspond with the assessment framework in Table 2.

Incentives

Why do students enroll in clusters? Why do faculty and TAs choose to teach cluster courses? Are their expectations fulfilled?

Freshmen, TAs, and faculty are drawn to the clusters by a combination of intellectual interest and tangible benefits. For example, students enroll in the clusters because the subject matter interests them and because the cluster offers an efficient means of completing GE and, for many, Honors requirements. TAs and faculty are attracted to the interdisciplinary nature of the cluster as well as the underlying course themes. In addition, TAs value the opportunities for stable employment and teaching; while faculty appreciate the opportunity for summer support and release time.

To date, the incentives appear sufficient to maintain high levels of student enrollment. For three years in a row, Summer Orientation has been successful in attracting students to the clusters, achieving over-enrollment in several instances.

Although students were largely satisfied with their cluster courses, their expectations were not fully met, especially in the science clusters. Specifically, students had expected the science clusters to be geared toward non-science majors and hence much easier and "softer." Some were surprised, even dismayed, by their scientific content and analytic rigor.

Workload

Are cluster courses more or less demanding and rigorous than other GE courses? Do students devote more time to their cluster than to other GE courses? What are the perceived effects of teaching a cluster on other faculty and TA responsibilities, including research, service, and teaching upper division and graduate students?

Students, TAs, and faculty all perceive the cluster course workload as heavier than that associated with other GE courses. Compared to other courses taken as freshmen, students devoted more time to their cluster course, were assigned more work, and found the work more difficult to master. This was especially acute in fall and winter.

Teaching assistants, too, devoted more time to clusters than other courses they had taught. Clusters demanded more preparation, since TAs were required to learn material from several disciplines. The amount of time TAs spent in class and in discussion sections also exceeded other courses. Periodic meetings of TAs and faculty represented another time commitment that many other courses do not require. Finally, designing and teaching their

own spring quarter seminar also represented a considerable investment of time for TAs. Further work is needed to determine how the TA workload can be managed more efficiently.

Faculty also reported heavier-than-expected workloads associated with cluster courses. Compared to designing a new course independently, more time was needed to collaborate and negotiate with colleagues in designing the cluster.

Intellectual Development

> *What is the effect of the cluster on students' skills and knowledge? Do students learn new ways of thinking as opposed to memorizing facts? How do faculty and TAs perceive the effects of teaching a cluster course on their own intellectual development? How, if at all, has the cluster affected their research and other teaching?*

The majority of students and TAs who participated in a cluster in 1998-99 reported that participation increased their intellectual skills and knowledge. This issue was not addressed for faculty.

Half to three quarters of students who completed the cluster sequence reported gains writing, analytic abilities, library research, knowledge of current events, and quantitative skills. Over one third gained an understanding of diversity.

The TAs benefited in at least two ways; first, they gained interdisciplinary perspectives on familiar issues and concepts. Second, they learned about teaching and pedagogy, especially for lower division students.

Although the assessment does not measure objectively gains in students' or TAs' skills and knowledge, these self-reports suggest that the clusters are effective in promoting intellectual development.

Community

> *Does the course promote a sense of community? Does it produce stronger relations with peers, TAs, and faculty?*

The 1998-99 findings suggest that the clusters were effective in fostering a sense of community among students but uneven in building community among TAs and faculty.

Students reported high levels of satisfaction with the community-building aspects of their cluster, particularly for interaction with teaching assistants and peers. When students were asked to compare the sense of community in their cluster course to other courses they had taken at UCLA, the cluster courses emerged as friendlier settings.

Graduate student instructors, however, manifested a range of responses. While some felt that the cluster had developed into a cohesive intellectual community, others felt little sense of community and a few were even alienated from the cluster. To redress this situation, TAs recommended that faculty more fully involve the graduate students and post-docs in course development and planning.

Although faculty were attracted to clusters by the opportunity to work with colleagues, relatively few were experienced in team building. A strong cluster coordinator and tight-knit faculty team were perceived as integral to the success of a cluster course. Factors affecting the sense of community include the number of participating instructors, the amount of time devoted to planning and team-building, degree of variance in faculty teaching styles, and degree of clarity about how faculty are expected to interact with one another in the classroom.

Preliminary assessment findings suggest that team-building requires an investment of time from all participants and hence can exacerbate workload pressures. A challenge for the clusters, then, is how to balance the goals of creating community and managing workload.

Enthusiasm and Intellectual Excitement

Does the course generate enthusiasm and intellectual excitement? Are students engaged in the course? Would faculty and TAs teach a cluster course again?

Students and TAs felt engaged in and enthusiastic about their cluster courses. This issue was not explored in depth for faculty, yet all the coordinators expressed an interest in teaching a cluster in the future. Students reported that the cluster was more effective than other courses in promoting critical thinking and offering intellectual stimulation. Most felt they learned more in the cluster than in other courses they had taken. Fully three quarters considered the cluster a more rewarding experience than other courses taken during the freshmen year.

TAs also reported high levels of engagement in the course and intellectual stimulation. They especially appreciated the opportunities the cluster provided for learning new material, developing their teaching skills, and working with lower division students.

Productivity, Progress and Achievement

Do cluster students differ from non-cluster students in average units per quarter; retention or graduation rates; or time to degree? How if at all does teaching a cluster affect TAs' progress to degree? How if at all does teaching a cluster affect faculty career advancement?

Most of these assessment questions cannot be answered until more time has elapsed. The available data indicate that freshmen who enrolled in a cluster course completed more units, on average, during 1998-99 than freshmen who did not enroll in a cluster course. Follow-up analyses will determine if these differences persist in subsequent years or affect time to degree.

TAs and faculty expressed some concern that the time commitments associated with participation in a cluster slowed their academic or career progress. Again, more time is needed to determine if there is empirical support for this concern.

Recognition and External Rewards

Is the distribution of grades in cluster courses about the same as other GE courses? Do faculty and TAs receive recognition from their departments for teaching a cluster course?

Students received about the same grades in their cluster courses as in other courses during fall and winter. They received slightly higher grades in their cluster course than other courses during spring. Prior to drawing any conclusions about recognition and external rewards, it is necessary to determine if this pattern persists over time.

This issue was not addressed in detail for TAs. However, TAs believed that participation in a cluster would enhance their marketability, especially for academic jobs. This can be explored further as TAs complete their degrees and enter the job market. Finally, this issue was not addressed in detail for faculty.

Some Directions for Future Research

Future research can address a number of issues beyond the scope of this assessment. First, no attempt was made here to objectively measure or test changes in students' skills and knowledge over time, or to compare the skills of cluster students to non-cluster students. Future assessments might consider adding this component to the assessment.

Second, more information is needed about those students who did not complete the sequence. Efforts should be made to gather additional information about their experiences to determine why they dropped out of the cluster course. Additional information about those who received below-average grades in the cluster may indicate some unmet needs for support and assistance. Attention should also be paid to the possibility that attrition from a cluster is an early warning of broader problems in student adjustment to UCLA.

Longitudinal follow-up is also needed to explore how students in clusters differ from others over the course of their college career. For example, future research should determine if cluster course students continue to complete more units than non-cluster students and have a shorter time to degree.

Future assessment of cluster TAs should monitor workload more precisely by tracking not only how much time TAs spends working in clusters, but also how that time is spent. Similarly, future assessments should examine how the graduate students benefited intellectually, personally, and/or professionally. It is not yet known if these benefits persist over time. Follow-up interviews are needed to determine the effects of participation in a cluster on degree completion rates, career outcomes, and research interests.

Finally, more research is needed to better understand the faculty experience. At minimum, interview protocols should be developed to address all aspects of the assessment framework. In addition, interviews should be administered to all cluster faculty, not only the coordinators. Longer-term follow-up with the cluster faculty (e.g., one-year after the course) may reveal other influences or effects of the experience. The preliminary findings described here will aid in shaping these more in-depth and systematic assessments.

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