

WASC EDUCATIONAL EFFECTIVENESS REVIEW EXECUTIVE SUMMARY



“The institution evidences clear and appropriate educational objectives and design at the institutional and program level. The institution employs processes of review, including the collection and use of data, that assure delivery of programs and learner accomplishments at a level of performance appropriate for the degree or certificate awarded.”

WASC 2001 Handbook of Accreditation

The essays and exhibits in this site constitute UC Santa Cruz’s report for the Educational Effectiveness stage of its re-accreditation review by the Western Association of Schools and Colleges (WASC). In this report, we discuss our institutional alignment with WASC’s core commitment to educational effectiveness:

“The institution evidences clear and appropriate educational objectives and design at the institutional and program level. The institution employs processes of review, including the collection and use of data, that assure delivery of programs and learner accomplishments at a level of performance appropriate for the degree or certificate awarded.”¹

The evidentiary exhibits provide data and analysis as background and support for the discussion within the report proper, which is divided into three sections:

Educational Effectiveness Approach

The first essay surveys the types of data and analysis used by UC Santa Cruz to monitor its educational effectiveness at the institutional level as well as for individual programs. Through a substantial program of institutional research, UC Santa Cruz monitors its institutional performance and the success of its individual programs in supporting undergraduate education. We are currently improving our ability to provide similar analysis and support for our graduate programs. The protocols for conducting regular external reviews of departments and degree programs have been revised to insure that programs can base their

self-studies on relevant data and that reviewers engage questions of program success in achieving their objectives for student learning.

Analytical Essays

Following the Institutional Proposal submitted to WASC in 2002, this review has focused on two themes drawn from on-going institutional self-reflection: (1) Enhancing undergraduate academic engagement and (2) Expanding and improving graduate programs.

1. Undergraduate Engagement

The essay reviews existing data on undergraduate academic engagement at UC Santa Cruz, including results from the National Survey of Student Engagement and the UC Undergraduate Experiences Survey as well as the outcomes of reviews by internal committees and surveys of graduating surveys. The data confirm the high levels of student engagement in a challenging undergraduate program with many enriching educational experiences.

Particular attention is devoted to recent reviews and initiatives in the following areas: capstone and senior comprehensive requirements, lower division seminars with research faculty, participation in research and internship experiences, and academic advising.

2. Graduate Growth

The essay surveys the several motivations for the campus’s priority for substantially increasing the proportion of graduate students on campus. It reviews the available and desirable data on graduate programs and graduate student experience at UC Santa Cruz. It clarifies strategies for graduate

¹ WASC Handbook of Accreditation/2001, p. 5.

growth tied to both to allocation of potential resources and academic planning goals.

Integrative Essay

The concluding essay addresses our strategy for achieving the goals of growing graduate education while preserving—and potentially enhancing—the quality of undergraduate education at UC Santa Cruz. Outcomes of the review and proposed next steps in planning and resolving issues raised in the review are summarized..

WASC EDUCATIONAL EFFECTIVENESS REVIEW EDUCATIONAL EFFECTIVENESS APPROACH



UC Santa Cruz ... ranked as one of the rising universities leading in the 21st century!

Diamond and Graham, *The Rise of American Research Universities*, 1997

Since it opened in 1965, the University of California, Santa Cruz has received national attention. UC Santa Cruz has been acknowledged not only for the excellence of many of its programs but also for the innovative posture of the entire institution.¹ The team that visited UC Santa Cruz in February 2004 recognized that UC Santa Cruz has achieved much in a relatively short time and with fewer material resources than some of its sister campuses in the UC system.

UC Santa Cruz is now at a critical point in its evolution. Enrollments have increased rapidly in the last decade (see Exhibit A) and are likely to continue to increase, though at a much slower pace. Through this period of growth, we have sought to maintain the high quality of our undergraduate education. We also seek to continue growth in existing graduate programs and the development of graduate programs in new areas. But we are mindful that we must do this in a very challenging economic climate. To meet California's historical commitment to its citizens, articulated in the Master Plan for Higher Education, UC Santa Cruz must continue to do its share to accommodate the growing number of undergraduate students eligible for enrollment in the University of California, while meeting our parallel responsibilities in graduate education. These goals can be successfully accomplished only if we give serious attention to substantive issues of academic planning and resource management.

UC Santa Cruz welcomes the involvement of WASC in our planning. Believing that the review process should "serve institutional priorities in

tandem with accreditation requirements" (WASC Handbook, p. 4), the administration and faculty of UC Santa Cruz welcome the process of self scrutiny facilitated by WASC. We consider the review a genuine opportunity for institutional self-reflection, learning, and development aligned with our institutional priorities and future directions. The review reinforces processes already underway. The background of recent campus strategic planning discussions is presented in Exhibit B.

The present report addresses UC Santa Cruz's core commitment to educational effectiveness. Throughout the report we develop themes that were first identified in our Institutional Proposal and our Preparatory Review. While focusing on effectiveness in assessing student learning, we seek to be responsive to the concerns and advice articulated by the visiting team and the WASC Commission in the action letter of June 28, 2004 by attending to the framework of institutional review and planning within which we address the educational effectiveness of our programs. In our evidentiary exhibits, we elaborate and substantiate the points that we make in the essays.

Following the format prescribed by WASC, the Educational Effectiveness report is divided into three parts: this introductory section ("Educational Effectiveness Approach"), an in-depth analytic section (which consists of two essays entitled "Undergraduate Engagement" and "Graduate Growth"), and an integrative conclusion (the "Integrative Essay"). A theme that runs throughout the four essays concerns our increasing commitment to what WASC would call "a culture of evidence." One positive outcome of this review process is the increased attention devoted to the issue of how we can most effectively gather and disseminate data about our students, our courses, and our programs to assure continued and enhanced educational vitality.

¹ Diamond, Nancy, and Hugh Davis Graham. *The Rise of American Research Universities*. Baltimore, Maryland: The Johns Hopkins University Press, 1997.

OUR APPROACH TO THE WASC REVIEW

Building on the earlier stages of the WASC review, we have continued to seek broad engagement with the WASC process among the faculty and staff. After the receipt of the visiting team's report, the WASC Steering Committee created several working groups to develop material to explore the areas indicated by the 2002 proposal: graduate education, program review, and the subtopics in undergraduate academic engagement (first year experience, undergraduate research and internships, capstone experiences, and academic advising). Numerous people at UC Santa Cruz have been involved in the creation of the Education Effectiveness Report. The current Vice Provost and Dean of Undergraduate Education (VPDUE) has served as the Accreditation Liaison Officer (ALO) and led the development of this report. Since June 2004, Interim VPDUE William A. Ladusaw and the Vice Chair of the Academic Senate, Prof. Faye J. Crosby, have served as co-chairs of the campus WASC steering committee. Many members of the administration and of the Academic Senate faculty have served on the steering committee and have contributed to writing portions of the text and portions of the accompanying exhibits. Exhibit C contains a roster of the members of the work groups and steering committee.

During the Fall, 2004, a draft of the report was submitted to the Academic Senate and to all the principal officers of the university for discussion. Following a formal consultative process, seven standing Senate committees provided feedback (as documented in Exhibit D). Comments and further research were provided from administrative officers and staff. The report was then revised and approved by the steering committee. The report as transmitted to WASC was provided to the campus at large to stimulate further discussion in the period leading up to the February 2005 visit by the review committee.

We do not see the WASC review process as a closed or discrete one. It has effectively consolidated debates that arose in reviewing on-going planning processes and stimulated new questions for consideration. We hope that the campus will continue to discuss many of the ideas

put forward in the report even after the review team has visited the campus. From the visiting committee we hope to gain valuable perspectives on our goals and some useful suggestions about how to achieve them given our challenging financial realities. We are especially open to suggestions about how we might preserve the best aspects of our pedagogical traditions – including our attention to undergraduate instruction and research and our dedication to diversity and innovation – as we continue to evolve as a first-class research university.

TYPES OF DATA

This review has stimulated a systematic inventory of our institutional research and practices of review relevant to assessing how effectively our programs support student learning.

Inferences about educational effectiveness can be made on the basis of indirect or direct data. Systematic monitoring of retention and graduation rates constitutes indirect indicators of how well we educate our students. UC Santa Cruz annually publishes its graduation and retention rates for undergraduate students. We have routinely tracked these data for various subpopulations. Special attention is given to monitoring retention and graduation rates for the subpopulations of students defined by ethnicity as well as by indices related to admissions eligibility and selection. Entering freshman as well as junior transfer populations are monitored. Our goal is to insure that the retention rates of these subpopulations remain in line with campus averages by providing appropriate learning support and development programs. The annual report has not been able until now to track data on individual programs. After the first phase of implementation of our new academic information system is complete in January 2005, we believe that we will be able to provide academic programs with improved indicators of their success in retaining and graduating their affiliated students. Over the period since our last WASC review, our retention and graduation rates have improved steadily and the rates for minority students have stayed comparable to those for the campus as a whole. Retention and graduation rates are only an indirect measure of educational effectiveness – low rates of retention or graduation signal that the system is not effective, but high rates do not necessarily mean that the system

functions well. It is conceivable, after all, that a school could produce many poorly educated graduates.

More direct indicators of educational effectiveness are those that document good outcomes and/or good procedures. Specifically, we can consider the performance of our graduating students on exit examinations (or their substitutes) and can consider the placement of our graduates as outcome measures. The better the outcome, the more certain we are that we are in fact educating our students.

Considering undergraduate programs, outcome indicators are well developed and well disseminated to relevant campus constituencies. All degree-granting undergraduate programs have a senior comprehensive requirement. Each program develops a format for its comprehensive requirement that ensures that its graduates achieve its objectives at an acceptable level. In many cases the comprehensive requirement is satisfied through a capstone seminar, studio, research project or performance. In other cases the students are required to score at an acceptable level on a departmental comprehensive exam or national examination (usually a GRE subject exam in the major area). In most cases, satisfaction of the comprehensive requirement is judged by the faculty of the program independently of the students' grades in courses. In other cases, the achievement of the capstone expectations is incorporated into curricular requirements through a senior seminar course.

Exhibit E contains the required WASC Inventory of Educational Effectiveness Indicators, including a description of each undergraduate degree-granting program's senior exit requirement as an example of an indicator used to determine that graduates have achieved the appropriate outcomes for the degree. The contribution of the senior comprehensive requirement to program educational effectiveness has been reviewed by the Academic Senate's Committee on Educational Policy (CEP). That review is discussed below in the analytical essay on undergraduate academic engagement. An outcome of this review is that all programs have been asked to provide formulations of the educational objectives assessed by their comprehensive requirements.

Other components of the undergraduate program use systematic examinations to assess the outcomes of student learning independently of their course grades or as components of multi-section course sequences.

Notable among these is the approach to assessing satisfaction of the University's Entry Level Writing Requirement (ELWR). UC administers a statewide writing examination each spring for entering freshmen that is scored by a standard rubric to determine placement in lower-division writing. All entering freshmen at UC Santa Cruz enroll in writing seminars delivered through the residential colleges. Students who have not satisfied the ELWR upon entrance sit for the exam again at the end of their first term to assess the improvement in their writing independently of their grade in the seminar. Historically, the pass rate has ranged between 85 to 90 percent. (Students who do not achieve the outcomes at this stage enroll in supplemental course work that is assessed by portfolio review.) In addition, standard examinations are given in Chemistry, Mathematics, Biology, and the languages to insure that students are placed in foundation courses appropriately or to document their satisfaction of pre-major requirements.

Instruction in courses is routinely assessed through course evaluation forms distributed to the class at the end of each term. Course evaluations are mandatory. Sponsoring departments track the percentage of return for each class. Departments may design their own evaluations or adapt standard models provided by the Academic Senate's Committee on Teaching through the Center for Teaching Excellence. Course evaluations solicit student assessments of the effectiveness of the course design, instructor performance, as well as their own accomplishments. Data from course evaluations are routinely used in faculty personnel evaluations. They have so far played less of a role in assessing a department's curriculum, an issue raised by both the Committee on Teaching and the Committee on Educational Policy.

Another way to gauge educational effectiveness is to note what happens to students who receive a UC Santa Cruz education. For our undergraduate alumni, several data sets exist. A comprehensive survey of graduates was published in 1999, covering graduates of 1995 to 1997. It indicated overall satisfaction with their undergraduate education

among the 1816 respondents, of whom one in eight were enrolled in a post baccalaureate educational program.

Even taking UC figures as a benchmark, we interpret the relatively high percentage of UC Santa Cruz undergraduates who continue into graduate and professional schools as an indicator of effectiveness. In the most recent comparative study of UC campuses and AAU institutions on the percentage of undergraduate alumni who go on to earn academic doctorates, UC Santa Cruz ranked just behind UC Berkeley (8.5 percent vs. 8.3 percent) and above all other UC campuses. A recent survey of graduating seniors reported that 13 percent had already been accepted to graduate school for the following year and that an additional 34 percent intended to enter graduate school within the next five years. Computer Engineering and Electrical Engineering routinely track the placement of their all of alumni as measures of program effectiveness. UC Santa Cruz's Alumni Association has recently improved its ability to track alumni, making it possible for programs to draw more systematically on data about their success.

Complementing the data on outcomes are data on the educational process itself. Periodically, external reviews are conducted of every academic department and degree program. Integral to each external review is a visit by a team of well-respected scholars from other institutions who are provided with a detailed self-study by the program or department under review. Observations about staffing, curriculum, and educational support all provide data relevant to program success. In addition, class evaluations, curriculum analyses, and student surveys of satisfaction provide additional information about how well the educational process works in each program. As will be elaborated below, the external review process is becoming increasingly systematic in providing programs with relevant data from institutional research to support their self-studies as well as directing the attention of reviewers to assessing the educational objectives of the programs and their success in monitoring the achievements of their graduates.

Surveys of student experiences and perceptions provide additional data about the educational

process. UC Santa Cruz participated in National Survey of Student Engagement (NSSE) in 2000 and 2001, in order to get more direct evidence about the undergraduate student experience. In 2002 and 2003 we participated instead in the newly developed University of California Undergraduate Experience Survey (UCUES), an instrument designed to measure many of the same aspects of undergraduate student engagement specifically within UC. Where possible, we interpreted these data by comparing UC Santa Cruz's performance to two different benchmarks:

1. A comparable average measure for UC's eight undergraduate campuses; and
2. An average for institutions in our Carnegie classification (Doctoral/Research Universities – Extensive).

The first benchmark compares UC Santa Cruz's students within a population that meets UC's uniform standards of eligibility for admission. Using a national benchmark provides a comparison to a wider range of institutions and can help distinguish effects due to the general admission selectivity of the UC system from those that reflect the relative selectivity of UC Santa Cruz within the UC system.

Our experience with the NSSE and UCUES surveys encouraged us to develop a routine survey of graduating seniors in 2003. The content of the survey changes each year to reflect attention to different aspects of the undergraduate program. Data from the spring 2003 survey on advising is discussed below in the undergraduate essay. The results of the spring 2004 survey on satisfaction with major programs are still under analysis.

The data that UC Santa Cruz has collected on its graduate programs has been less extensive and less systematic than that for the undergraduate programs. The analysis of data for individual programs, which is the most meaningful kind, is necessarily based on much smaller populations. Institutional analysis at the graduate level has concentrated primarily on recruitment and yield in graduate program admissions and on planning for graduate student support. One outcome of this review is the realization that we need to develop a suitable inventory of indicators and measures of effectiveness of graduate education, both at the

institutional level and at the level of individual programs. As will be discussed in the essay on graduate growth, we have begun to catalog the kinds of information that we already have and consider measures that will help us make efficient use of our resources as we increase the quantity and quality of graduate programs. Revisions in our external review process, discussed below, have already moved in the direction of assembling and disseminating useful data.

Exhibit F provides an overview of the various measures that have been used in the past or are under development for both the undergraduate and graduate populations.

EXTERNAL REVIEW OF PROGRAMS

UC Santa Cruz has long been committed to external reviews of its academic departments. Working in close collaboration with the Academic Senate and with the departments under review, the office of the Vice Provost for Academic Affairs conducts periodic rigorous and comprehensive external reviews of academic departments and programs. Details of the current goals and procedures for external reviews, together with two recent case studies, are provided in Exhibit G.

Because the review process is oriented toward degree programs and departmental units, it does not include regular review of the academic programs of the residential colleges or the campus general education requirements for the undergraduate program. These are under the purview of the Academic Senate's Committee on Educational Policy (CEP).

The improved current process is more consistent than our earlier process with the emphasis on "a culture of evidence." Standardization should facilitate the genuine involvement of key Senate committees, especially the Committee on Educational Policy, the Graduate Council, and the Committee on Planning and Budget. Each committee contributes both to the charge for the review and to the interpretation of the outcomes.

The current procedure improves on prior practice in several ways:

- The process is more timely than before. It allows only one academic year to move

from self-study to review closure, ensuring immediate attention to issues.

- Institutional research now provides a standard set of historical, quantitative data on the characteristics of the department to be used in preparing its self study.
- Reviews now incorporate student surveys. Undergraduate and graduate students are asked a wide variety of questions about the quality of their learning experience. During their visit, the review team is required to speak to a representative group of undergraduate majors and to a representative group of graduate students.
- Comparisons across departments and over time are easier now than before due to the standardization of topics to be addressed (scholarship, undergraduate, graduate, and resource issues) and to the standardization of information provided to the program for its self study and gathered through the external review.

The WASC Commission's action letter (p. 5) has brought to our attention the potential of this improved review process to stimulate programs to attend explicitly to educational effectiveness and assess learning outcomes. This has been incorporated into the proposed standard charge for the external committee. Because of the improvements that have been made to date, we now are poised to ensure that "learning outcomes are incorporated in program review" and that there are "clear institutional processes to identify data needs and quality indicators to support the assessment of student learning." Of course, without effective publicizing of the results of the assessments, including self assessments, the newly revised procedures will have little effect; but one happy consequence of comparative data is that they invite open discussions.

SUMMARY

In this section we have surveyed UC Santa Cruz's baseline for assessing educational effectiveness at both the institutional and program level. We have omitted discussion of a good deal of institutional research and Senate review devoted to issues such as

admissions selectivity (at both the graduate and undergraduate level) and enrollment management, and assessing the effectiveness of campus strategic academic planning and resource management. This narrow focus has been beneficial in showing us where we have opportunities to improve institutional research and to tighten the feedback loops between what that research shows, and how faculty are guided in the management and development of their programs.

While generally lauding UC Santa Cruz as an institution and complimenting the thoroughness of the Preparatory Report, the WASC Commission's June 2004 action letter recommends that we make clear the evidence on which we base our conclusions and assertions. It also encourages us to forge strong connections between academic planning and budgeting as we explore the balance between undergraduate and graduate education. This encouragement has been reinforced by the Academic Senate consultation. In this introductory essay, we have attempted to specify the evidentiary basis of our reasoning about how we examine the effectiveness of our programs in stimulating and assessing student learning. In the next section, where we deeply engage the issues of educational effectiveness at the undergraduate and graduate levels, we attempt to show some of the links between educational effectiveness and resource management as well.

WASC EDUCATIONAL EFFECTIVENESS REVIEW UNDERGRADUATE ENGAGEMENT



“UCSC must be an outstanding research university with an uncommon commitment to high-quality undergraduate education.”

UCSC at a Crossroads: Advisory Report of the Millennium Committee, 1998

As numerous planning documents make clear, including the Millennium Report (September 1998) and our WASC Preparatory Report, at UC Santa Cruz we like to think of ourselves as a research university with an “uncommon commitment” to undergraduate education. We do not imagine that we have at every moment and in every way fulfilled our ambition to provide a first-rate education to undergraduate students. Yet, we are gratified at the recognition given by the visiting committee and by the WASC commission to both our sincere efforts and our actual successes.

Continuing through Periods of Change

Maintaining our excellence in undergraduate education has required effort. Enrollment pressures have been great, and, as we outlined in the first essay, the number of undergraduate students served at UC Santa Cruz has dramatically increased since the last WASC review. Between 1992-93 and 2002-03, undergraduate enrollment grew by 55 percent, transforming UC Santa Cruz from a small to a medium-size campus. Fall freshman enrollment in 2003 represented a 62 percent increase over the freshman enrollment of 1997-98. Enrollment growth was concentrated in the period 1997-2002, as shown in Exhibit H.

Along with an increase in the size of the undergraduate student body there have been substantial programmatic changes. The Baskin School of Engineering was created in 1997. Substantial growth occurred in the Arts and Social Sciences, and new major programs have been developed in Physical and Biological Sciences. Enrollments did not grow as rapidly in the Humanities as in other divisions. Exhibit H presents a historical view of the growth and

development of undergraduate majors during this period.

Another change for UC Santa Cruz has been a shift in the way student course work is evaluated. A distinctive feature of UC Santa Cruz’s early undergraduate programs was the reliance on narrative evaluations, rather than on summary letter grades, as the principal means by which faculty reported their assessments of student learning. UC Santa Cruz had been granted a variance from UC academic policy to allow students to take all of their classes – rather than just one-third of them – in the ‘Pass/No Pass’ (P/NP) grading system. As a result, no UC Santa Cruz undergraduate student had a traditional Grade Point Average (GPA). Academic standing for undergraduate students was defined in terms of minimum progress toward the degree – a measure of the rate at which they earned credits.

In 1996, a review of the campus’s undergraduate grading policy by the Academic Senate resulted in the decision that students should have the option of earning traditional letter grades in all of their classes in addition to receiving narrative evaluations of their work. Beginning with the entering class of 1997, students who elected letter grades in at least two thirds of their credits had a UC Santa Cruz GPA based upon their letter grades. (Students who elected letter grades in less than two-thirds did not have a GPA.) The percentage of students requesting letter grades and GPAs rose steadily after this policy was adopted.

With continued growth in undergraduate enrollment, many lower division courses grew substantially in size, making it difficult for faculty to provide personalized narrative evaluations of student work in large courses. In 1999, the faculty revisited the assessment policy in a campus-wide debate about the role of the campus grading policy in perceptions of the academic rigor of our undergraduate program

and the value of the narrative evaluation system. The result was a revision of the grading policy and a reaffirmation of the narrative evaluation system, reframed as a performance evaluation system. Performance evaluations now provide context for the summary letter grade and give supplemental information deemed relevant by the faculty for the particular course. Beginning with the entering class of 2001, undergraduates have by default received letter grades in all courses. The option for requesting P/NP grades has been limited to one-quarter of a student's credits, and some majors impose lower limits. As a result, nearly all of the current students have both term and cumulative GPAs defined in the traditional way. At the same time, the standard UC academic standing regulations were adopted for these students.

In contrast to positive changes in the academic culture of UC Santa Cruz, there is concern that the quality of undergraduate education has been strained by enrollment growth and budget cuts. In 2003-04, shortfalls in state support for the university led to a 13 percent cut to the permanent budget of the campus. Academic support programs and other campus units received cuts of this magnitude, though the central administration managed to limit the immediate effect on direct instructional programs to an average of three percent at the cost of severely reducing flexibility for future growth. As a result, we face a budgetary future very different from the one in which we began the WASC process.

Two questions

The present essay is organized to address two questions – one briefly and one in depth. First, we ask: do the data indicate that recent enrollment pressures and resource limitations have eroded the excellence of UC Santa Cruz's undergraduate education? Given the amount of change in recent years, one may worry about possible erosion in our ability to maintain our pedagogical traditions. Because the Preparatory Report devoted substantial attention to the question of our continued excellence, we touch only briefly on it. The second question, and the one that preoccupies us, centers around the mechanisms for preserving the excellence of our undergraduate programs, with an eye to preserving the students' active engagement in learning.

HAVE WE MAINTAINED EXCELLENCE?

Several indicators suggest that UC Santa Cruz has managed to come through the period of rapid growth and of diminished resources with its ability to deliver an excellent undergraduate education still intact. For example, a visit to the office of the Vice Provost for Academic Affairs would show that the large majority of external reviews conducted over the past ten years have praised the undergraduate educations delivered by different programs. For department after department, teams of visiting experts note the outstanding programs offered to undergraduates.

Student opinions

The laudatory opinions of visiting experts are by and large echoed by our own students. Student opinions, taken by themselves, do not necessarily insure quality; but considered in concert with other data, they do provide the basis for strong inferences. Furthermore, when the opinions are gathered by varying methodologies, inferences become increasingly plausible.

One source of student opinion concerns the assessment of individual professors and courses. UC Santa Cruz regularly collects information through mandatory course evaluation. While we have not yet been able to make systematic use of aggregated data from course surveys in program assessments, informal inspection of data shows that, by and large, UC Santa Cruz students appreciate their professors and their courses.

A second source of student opinion comes from the surveys of graduating seniors mentioned in the previous essay on the campus's educational effectiveness approach. The most relevant data on this point are from the survey of 2004 graduating seniors, which asked students to comment on their experience in their major programs of study. This data is under analysis and can be discussed during the February team visit.

A third source of data about student opinion is the University of California Student Experience Survey (UCUES) administered on the UC Santa Cruz campus since 2002. As seen in the UCUES materials contained in Exhibit I, for most of the questions regarding frequency of contact and

satisfaction with the accessibility of faculty, including for career advising and other non-academic matters, UC Santa Cruz students score above the general UC average. We anticipate UCUES will continue to provide a way to monitor these indicators of effectiveness.

A final source of data about student opinion derives from the National Survey of Student Engagement (NSSE), administered to groups of first year and senior students in the winters of 2000 and 2001. The responses to individual questions were averaged by the organization administering the survey to provide scores on five factors relevant to student engagement: 1) level of academic challenge; 2) active and collaborative learning; 3) student interactions with faculty members; 4) enriching educational experiences; and 5) supportive campus environment. For each factor, composite scores were calculated separately for first year students and for seniors.

The NSSE data, summarized in Table 1 of Exhibit I, show that, in 19 out of 20 cases, UC Santa Cruz undergraduates express more satisfaction with their education than do students at other research-intensive institutions. Furthermore, in terms of the level of academic challenge and supportive campus environment, freshmen and seniors in both 2000 and 2001 are all more satisfied than one would predict on the basis of UC Santa Cruz's institutional profile. Senior (but not first year) students in 2000 and 2001 were also above the expected value in their satisfaction with active and collaborative learning.

Applications

Students are notorious for voting with their feet as well as with their voices. At the time of the last review, the campus was worried about decreasing enrollments and about a concern among applicants about the academic rigor of UC Santa Cruz. Today, despite nearly doubling our undergraduate enrollment to roughly 14,000 students, we are unable to offer places to all UC eligible applicants. Yield rates for admission have remained stable, but applications to our campus have increased more rapidly than to the UC system as a whole.

Retention and Graduation

Our retention and graduation rates are also improving. While UC Santa Cruz's most recent

first to-second year freshman retention rates (86 to 87 percent) and most recent four year (48.6 percent) and six-year (65.4 percent) graduation rates remain below the mean for the UC system, they are well above the national mean for comparable institutions. (For example, UC Santa Cruz's 1996 cohort six-year graduation rate was 67 percent compared to 59 percent for NCAA Division I schools.) See the recently completed Retention and Graduation Update for 2003-04.

Diversity

A significant indicator of excellence is the diversity of our student body. Since 1994, the percentage of racial and ethnic minority students enrolled at UCSC has increased steadily. Several factors may contribute to UC Santa Cruz's ability to attract ethnic minority students. One factor is the changing demographics of the State of California. Additionally, under the leadership of Vice Chancellor for Student Affairs Francisco Hernandez, UC Santa Cruz has implemented early academic preparation programs to help increase the pool of UC eligible students from under-represented groups as well as aggressively recruiting applicants from these groups. The development of new major programs (e.g., engineering majors and Biomolecular Engineering) has likely had a positive effect on admissions yield from these groups. (The ending of many formal affirmative action programs across UC in 1996 has probably also contributed to the increase in diversity on our campus as students who previously would have been admitted to the most selective campuses [UCB and UCLA] have found places at other campuses, including UC Santa Cruz.) We currently have several programs in place to provide financial and mentoring support to underrepresented minorities in our undergraduate programs. One example is the UCLEADS (University of California Leadership Excellence through Advanced Degrees) program. UC Leads is a two-year research and mentor program to prepare disadvantaged undergraduates in the sciences for graduate school. Finally, UC Santa Cruz's successful efforts to attract and retain a diverse faculty¹ and to incorporate issues of diversity into its

¹ UC Santa Cruz's permanent faculty is approximately 35 percent female and 24 percent minority. While these rates fall below potential utilization given the availability of Ph.D.s in all academic divisions, it places our faculty among the most diverse in the UC system. UC Santa Cruz has for many years followed

curriculum may also contribute to its reputation as a campus that welcomes students from many different backgrounds. An indication of success in incorporating the value of diversity into the educational program at UC Santa Cruz in the results of the NSSE survey, which revealed that UC Santa Cruz students scored very high on the NSSE measure of “conversations across difference”.

HOW CAN WE MAINTAIN EXCELLENCE?

The principle of “shared governance” in the University of California dictates that the Academic Senate has jurisdiction over the criteria for admission, the curriculum, and the criteria for graduation, while the administration has jurisdiction over resources, human and otherwise. At UC Santa Cruz the practice of shared governance is stronger than at many other UC campuses. In the past the UC Santa Cruz administration and Senate have often attempted to work collaboratively toward the goal of assuring educational effectiveness. Currently, working very closely together, the VPDUE and specific Senate committees have identified five specific foci, attention to which should maintain the excellence and integrity of undergraduate education. Specifically, over the next 18 to 24 months, we should: a) increase opportunities for research and internships; b) increase opportunities for early faculty-student interactions; c) continue to reflect on the senior exit requirements, including the capstone experience; d) reconsider how to best review and improve the effectiveness of the General Educational Requirements that all undergraduates must satisfy; and e) improve academic advising to insure that undergraduates develop meaningful academic goals and achieve them at UC Santa Cruz.

Increased opportunities for research and internships

The 2003 UC Taskforce on Instructional Activities reflected (p. 6):

best practices in attracting and retaining a diverse faculty and taking steps to increase the pipeline of Ph.D.s from under-represented groups.

“[T]he hallmark of a research university education at any level is the experience offered students to participate with faculty in inquiry-based learning – that is, the ability to put the knowledge and skills learned in the classroom to use through research, scholarship and creative discovery...Accomplishing instructional activities in these settings is both a science and an art. Though the tools for research, scholarship and creative discovery can often be taught in a straightforward manner, the thought processes that one uses to address these challenges are ones that cannot be so easily codified. Rather, the needed skills, attitudes and approaches must be developed through mentoring within intense and highly-interactive small-group settings involving faculty and students, often in one on one intellectual exchanges.”

What the taskforce noted for research opportunities applies with equal force to internships and field study. Indeed, it is often difficult to make distinctions between the activities pursued under the rubrics of ‘research project’, ‘field study’, and ‘internship’. All can serve the educational objectives of engagement with inquiry-based learning, application of knowledge and skills in new contexts, and integration of previous work. Some can also serve the personal and institutional mission of community service, and provide students with skills and experience useful in their post-graduate careers.

Since its founding, UC Santa Cruz has actively encouraged its undergraduates to participate in research and internships. The relative scarcity of graduate programs in the campus’s first two decades of existence combined with the faculty’s philosophical commitment to the development of undergraduate talent, with the result that there were many opportunities for UC Santa Cruz undergraduates to conduct research with faculty – opportunities that were usually reserved elsewhere for graduate students. Although UC Santa Cruz has now significantly expanded its graduate programs, the institution’s commitment to undergraduates remains high. Indeed, it is assumed in several programs that effective laboratories include a mix of undergraduate students, graduate students, and faculty and perhaps some post doctoral scholars, with the graduate students participating in the training of undergraduates and the undergraduates supporting the research of graduate students (and

often post doctoral students) as well as of faculty. Currently every academic department offers course credit for research that undergraduate students conduct with and under the supervision of professors as well as course credit for internships and field studies. The UC undergraduate deans are currently developing guidelines for classifying such courses to allow institutional research to better report on the distribution of student credits earned in these types of experiences.

Several departments have highly developed field-study programs. Within the Social Sciences Division, the Community Studies Department requires all of its undergraduate majors to undertake a full-time, six-month internship with a community organization, as part of its core curriculum. Each year the Field Studies Coordinator in the Psychology Department helps place psychology majors in schools, law enforcement agencies, corporations, and research organizations, arranging for each intern to have both a field supervisor and an academic supervisor. As Exhibit J shows, there are numerous similar opportunities, such as the “Marine Ecology Quarter”, available to students in the Physical and Biological Sciences. In addition, in a program that is administered by one of the residential colleges, the Writing Program places both lower and upper division students in internships with magazines, newspapers, publishing houses, and civic organizations.

Today’s undergraduate students make extensive use of the many opportunities for research with faculty and for internships. From the NSSE and UCUES surveys, and from the 2003 Survey of Graduating Seniors, it is clear that our undergraduates have a strong interest in research and internship experiences. Over 1400 students participate each year in UC Santa Cruz’s field programs, and it is estimated that UC Santa Cruz students provide a million person hours a year to organizations in Santa Cruz and elsewhere.

While there is no question about the number of undergraduate students who wish to take part in research and fieldwork, there are also strong indicators, but no certainty, of the high impact of the experiences on student learning. Unlike most institutions, UC Santa Cruz organizes many of its internships within academic departments rather

than within student services. The supervision of internships within the departments means that our programs tend to include the characteristics that are currently thought by the faculty to enhance the academic value of internships and research experiences for undergraduates [Cf. the report in Exhibit J].

The literature on experiential education indicates that the academic value of internships and research experiences increases when they meet the following criteria:

- There is structured preparation for the experience before the students undertake the work.
- The students have structured opportunities for reflection on their experience.
- There is faculty supervision of the work.

An outcome of this review is our realization that we need to assess more precisely than we currently do the effectiveness of our field studies programs in this regard, by asking every department and program to describe the ways in which its research and field opportunities conform to the three criteria above. We should also ask departments to document their successes and failures in terms of research and internship opportunities as part of their periodic external reviews. We are also seeking to regularly incorporate questions about participation in, and satisfaction with, research and field placement in the annual Graduating Senior Survey. Data on participation and evaluation of the research experience of the 2003 graduates is included in Exhibit I.

Hand-in-hand with improved accountability goes improved coordination. We have identified three ways to improve coordination. First, some group on campus needs to undertake an annual analysis of the data provided by the Graduating Senior Surveys and by the departments. Comparative statistics might help individual departments sustain their accomplishments even as support services become more taxed. Exactly what group would undertake the task is not yet clear; perhaps the Office of Institutional Research would be appropriate, or an ad hoc group of field studies coordinators. Second, we would like to see research and field courses systematically categorized by numbering or other designations across departments to enable students,

faculty, and administrators to track opportunities more easily. Finally, we recommend that the Senate Committee on Educational Policy work closely with the administration to develop a system whereby research and field placements arranged through the Career Center could easily be sorted to identify those that ought to be granted academic credit. At present, such determinations are made on a case-by-case basis. Now that UC Santa Cruz has increased its undergraduate enrollments in these experiences, it is time to systematize the process.

Increase opportunities for early faculty-student interactions

While research and internship opportunities allow advanced undergraduate students to have close individual contact with faculty members, other strategies are needed to ensure that the beginning students have personal access to faculty members. A natural consequence of the growth in undergraduate enrollment has been an increase in the size of many lower-division courses. Although increases have been limited by constraints imposed by our classrooms, most of the classes taken by first-year students are large-lecture format courses.

Three strategies help ensure first-year students contact with individual faculty and staff. Two of the strategies have been in place for a long time. One is new.

First, most freshman and many sophomores at UC Santa Cruz live in the residential colleges. One of the goals of the residential colleges is to facilitate informal interaction between the faculty and students. The faculty who serve as college provosts devote a good deal of time to interacting with the students in their colleges. College programming has also included events which bring students together with faculty in informal settings: in discussion groups after lectures in the college; having students invite faculty into their residence halls for informal discussion; organizing discipline-based “roundtables” where faculty have dinner with a group of students to discuss their research and career paths; and working to include faculty and their families in “College Night” dinners. One outcome of this review is an invitation to the Council of Provosts to review past

efforts and to identify effective tactics for bringing faculty and students together.

Second, all entering freshman are assured of at least one small seminar course in their first year. The required college writing seminars (the “core courses”) in their first term are limited to seminar sections of 20-24 students. While these courses clearly contribute to the engagement measured by NSSE for the first-year students, they are primarily taught by lecturers with expertise in this type of course and not by permanent research faculty. In addition, by design, the non-disciplinary character of these classes does not reflect the character of the programs in which students will eventually do their major work.

Beginning in 2003-04, UC Santa Cruz adopted a third strategy: the Freshman Discovery Seminar. Modeled on successful programs at UCB and UCLA, the seminars at UC Santa Cruz provide one or two units of credit and are taught by research faculty. The objectives of the program are to enable lower-division students to get earlier exposure to the research conducted by our permanent faculty in a seminar setting. In 2002-03, 30 such seminars were offered, and in 2003-04, 37 were offered. An overview of the program is provided in Exhibit K.

In 2004-5, these seminars will be offered again as part of the pilot program. We anticipate that CEP will review the pilot program this year. The interim Campus Provost/Executive Vice Chancellor will strongly encourage the inclusion of such courses in routine curriculum planning by all division to meet obligations placed on all campuses by UCOP.

Continue to reflect on the senior exit requirements, including the capstone experience

All undergraduate major programs at UC Santa Cruz are required by Academic Senate regulations to administer a comprehensive examination or senior thesis requirement for their students. The current catalog tells students: “Typically, in your senior year you must satisfy the comprehensive requirement for your major by satisfactorily completing a comprehensive examination or an equivalent body of work ... [that] reflects comprehensive understanding of subject matter may be accepted in the place of a comprehensive examination” (p. 33).

Originally the senior comprehensive requirement was established to determine that graduates have

achieved the program's outcomes in the absence of a GPA based on letter grades in course work. In other words, the historical motivation for senior exit requirements was "quality assurance." Only those students who showed that they had mastered the material of their discipline were allowed to graduate. And, presumably, pass rates on the comprehensive requirement would be a measure of the program's educational effectiveness.

Almost immediately, however, the senior exit requirement also evolved into something that was meant to contribute to the student's education as much as to assess it. The Boyer report on undergraduate education in the research university recommended that an undergraduate degree should culminate with a "capstone experience". It provides the following characterization of this notion, now a standard part of the degree program at many research universities:

1. Senior seminars or other capstone courses appropriate to the discipline need to be part of every undergraduate program. Ideally the capstone course should bring together faculty members, graduate students, and senior undergraduates in shared or mutually reinforcing projects.
2. The capstone course should prepare undergraduates for the expectations and standards of graduate work and of the professional workplace.
3. The course should be the culmination of the inquiry-based learning of earlier course work, broadening, deepening, and integrating the total experience of the major.
4. The major project may well develop from a previous research experience or internship.
5. Whenever possible, capstone courses need to allow for collaborative efforts among the baccalaureate students.

During 2003-04, as part of the WASC review process, the Committee on Educational Policy conducted a review of the Comprehensive/Senior Exit Requirement in every academic program. Their review drew on the data from the 2003 graduating student survey as well as comments

solicited from every department. Their report and an inventory of the ways in which the requirements may be satisfied in each program constitute Exhibit L.

The report shows heterogeneity in the senior exit requirement. Faculty-supervised senior theses and individual projects are available in all programs and are often used to satisfy the senior exit requirement. However, written comprehensive examinations – and eventually GRE subject exams – have become a common way for students to satisfy the requirements in programs with large undergraduate enrollments. The CEP review was, in fact, triggered by requests from some departments who sought to eliminate it as part of a strategy for coping with balancing the resource demands of increased undergraduate enrollments with graduate education.

Based upon their review of student and faculty satisfaction with particular forms of comprehensive/senior exit requirements, CEP reached a clear conclusion: comprehensive examinations are the least effective implementations of the senior exit requirement, while course-based capstone requirements and senior theses were highly valued by both the students and the faculty. CEP recommends that departments who use comprehensive examinations consider shifting to some other form of exit requirement. They further insist that the senior exit requirement be examined in the regular reviews of major programs as part of external reviews of departments. Two programs so far have changed or are changing their assessment mechanism.

Participation by advanced undergraduates in the graduate curriculum of a related program provides another effective way of enhancing undergraduate capstone experiences.

Preparation of the required Inventory of Educational Effectiveness Indicators (Exhibit E) for the WASC review has permitted us to continue along the lines of the CEP inquiry. The inventory asks two basic questions:

- Have formal learning outcomes been developed?
- Other than GPA, what measures/indicators are used to determine that graduates have achieved the stated outcomes for the degree

(e.g. capstone course, portfolio review, licensure examination)?

In the UC Santa Cruz situation, the senior comprehensive requirement provides a ready response to the second question, at least for undergraduate degree programs. The chairs of these programs have been requested to respond to the first question to provide explicit formulations of the objectives implicit in the design of their degree requirements and senior comprehensive requirements. An outcome of our reflection in this review, however, has given rise to some additional questions as we saw a tension between the use of these assessments as measures of program effectiveness and as assessments of individual students' learning:

- How can programs provide capstone experiences in ways that both enrich the students' educational experiences and serve as valid assessments of program success?
- What are the most cost-effective ways to assess student competence in different disciplines that can also enhance the students' perceptions of educational value?

We intend to engage the UC Santa Cruz community in meaningful discussions about the value of articulating educational outcomes in overall assessment of learning. We will begin by examining the outcomes assessed by the various senior comprehensive requirements. With respect to providing rich capstone experiences, we would like to explore ways in which advanced graduate students might be enlisted to be further involved in the undergraduate learning process, to the benefit of both the undergraduate and the graduate student's training.

With respect to developing assessable educational objectives and outcomes, the VPDUE has identified several specific steps for consultation aimed at getting departmental and program faculty to provide brief summaries of the educational objectives for their programs. The goal is that all programs could achieve something like the level of explicitness already attained by the Departments of Computer Engineering and of Electrical Engineering as part of their ABET (Accreditation Board for Engineering and Technology) accreditation process. VPAA George

Brown working with the Academic Senate has proposed to incorporate attention to these objectives in the program review process. The review process could then lead to the development of more concrete measures of the outcomes associated with these objectives, as faculty understand the benefits of collecting data on outcome measures of educational effectiveness.

Currently, we know that 13 percent of UC Santa Cruz undergraduates go on to advanced degree programs within 6 months of graduation, and that about half of our graduates eventually go on to professional or graduate school. We also know that we would rank 15th among the more than 60 institutions in the Association of American Universities survey in terms of the percentage of our undergraduates who went on to earn doctoral degrees between 1991 and 1995. At present we have little systematic data about these trends measures for individual divisions or departments.

Monitor General Education requirements

The current campus General Education requirements were adopted in 1985. They insure that each undergraduate student completes some work in each of the major areas of the curriculum (Arts & Humanities, Sciences & Engineering, and Social Sciences) while achieving objectives in writing and mathematical skill and engagement with ethnic studies and the arts. A summary of their objectives is given in Exhibit M. In 1998, a committee of the Academic Senate recommended revisions that would allow students more freedom to develop focal clusters within the current framework, and would clarify the role of the college core courses as part of the lower division writing sequence. This revision was narrowly defeated by the entire Academic Senate, apparently due to two concerns. The flexibility introduced by the revision would have diminished the required level of exposure to the sciences relative to the current system. For some impacted majors, there was also concern that the Writing Intensive (W) requirement, intended to ensure that all students received writing instruction in their major disciplines, was not sustainable.

Since that time, the Senate's Committee on Educational Policy (CEP) has pursued an evolutionary strategy for renewal by reviewing and renewing individual components of the GE program. They have clarified the objectives of the Ethnic

Studies requirement and reviewed the courses that carry the designation. They altered the relation between the “Writing in the Disciplines” requirement (W) and the lower-division writing curriculum following a review of the capacity of the courses that carried the designation. Most recently, the Academic Senate has approved their revision of the general education requirements in lower-division writing that improves the articulation between the first writing seminar delivered through the residential colleges (the “core courses”) and the second writing course provided by the Writing Program. Under an instructional improvement grant provided by the Committee on Teaching, the Council of Provosts and the Writing Program are developing educational objectives for courses and an improved placement process that will insure that students get instruction in writing appropriate to their initial level of skill in college writing.

CEP is currently reviewing the objectives of the mathematics (Q) requirement and how the courses that carry that designation incorporate those objectives. These preparatory steps provide a foundation for deciding whether to undertake another comprehensive review of the role of GE. The Center for Studies in Higher Education at UC Berkeley has recently formed a task force to examine the role of General Education at the UC level. The work of that taskforce (in which two UC Santa Cruz faculty will participate) will likely provide further stimulus for CEP to return to the question of reviewing the objectives of the general education requirements and assessing their role in undergraduate degree requirements.

Improve Academic Advising

The 1994 WASC Accreditation review pointed out the need for UC Santa Cruz to address several issues of coordination in academic advising. They made six specific recommendations:

- Clarify the goals and purposes of academic advising at all levels of the undergraduate experience.
- Define the different roles of staff, faculty, and peer advisors ... in both the Colleges and the [departments] with respect to the undergraduate curriculum.

- Develop a consistent campus policy for the recruitment, selection, and training of staff advisers and preceptors.
- Coordinate all academic advising, including that which takes place in the various first-year and transfer orientations....
- Develop an advising brochure or expanded section in *The Navigator* that provides a clear road map to campus advising services.
- Analyze the technical support needed to facilitate effective academic advising campus-wide, and allocate appropriate resources to achieve those ends.

The review acknowledged that there were many competent and committed people involved in academic advising in various campus units. The effectiveness of their efforts had been diminished by lack of coordination among those units and poor technical support for the processes. Since that review several steps were taken to improve the situation. The current implementation of the new campus academic information system has provided the opportunity to fully address the concerns.

The essay, *Academic Advising at UC Santa Cruz*, contained in Exhibit N, provides an analysis of the campus academic advising system and outlines the agenda for improvement in several areas: improved campus coordination; increased training and development for staff advisors; and improved technical support for advising. We discuss each in turn.

1. Improved Coordination

Since 1994 clarification of roles and coordination has been improved. The college academic preceptors have worked in their regular council meetings to ensure that there is uniform practice in policy enforcement across all the colleges and systematic interaction with staff from other advising units. The departmental advisors have developed their own advisory group to play a similar role. The Admissions Office has coordinated the development of a summer orientation program, along with fall and winter orientations.

In 1999 the VPDUE conducted a search for a campus advising coordinator. The coordinator, who came from outside the UC system, began an inventory of the campus advising staff and

background research on advising models. She also convened a cross campus advising forum, which was well attended by advising staff. However the coordinator position became vacant in 2001.

During 2002-4, the VPDUE agreed to appoint a team of college academic preceptors to undertake three projects as part of their assigned duties:

- Development of a campus-wide annual advising forum and regular informal opportunities for individual staff development.
- Improved coordination between college-based lower division advising and departmental faculty and staff advising mediated by the “advising cluster” model (see below).
- Formal liaison with the Academic Information System implementation team (see below).

In June 2004, budget reductions eliminated funding for this team of coordinating academic preceptors. The current VPDUE has appointed two of those preceptors to on-going positions to facilitate advising coordination and technical support.

2. Increase training and development for staff advisors

For the last two years, the VPDUE has sponsored an all-campus advisors forum, at which staff from all advising units came together for development workshops and sessions in which issues were developed for the campus agenda for advising coordination. In addition, a regular series of “bag lunch” development meetings began in 2003-04 and were well attended. These activities will continue in the coming year, supported directly from the VPDUE’s office.

The Council of Provosts has increased support for college advisors who wish to attend either the annual UC Advisors conference or a regional meeting of National Academic Advising Association (NACADA). Support for departmental advisors to attend these conferences has varied from program to program.

Advising and support services provided for specific populations of students, such as students

in the Educational Opportunity Program and transfer and re-entry students play an important role in supporting the success of our undergraduates. Good practice in academic advising is to insure that special purpose advising services like these are well integrated with general academic advisors and staff and faculty advisors in specific academic programs. In addition, the advising system should effectively integrate services provided through the Career Center. All of these aspects of advising can benefit from general coordination, despite their relative independence of supervision within different academic and student affairs divisions. Policy development and assessment managed from the VPDUE’s office can insure that resources devoted to advising are efficiently used to achieve their intended outcomes for students’ academic planning and success.

3. Improved technical support for advising

UC Santa Cruz has just upgraded its academic information system (AIS) to provide web portal access to student records. As we revise old paper-based undergraduate academic business processes to take advantage of the new system, we use four guiding principles.

- Students (and advisors) should be able to do the majority of their required work via web-based self-service functions.
- Information about requirements, curriculum, policies, and opportunities for enrichment should be provided through well organized portal web sites.
- The advising system should encourage students to connect with their (prospective) major program advisors, particularly the faculty, early in their careers at UC Santa Cruz.
- Advising appointments should be able to concentrate on proactive developmental planning, rather than reactive problem solving.

We anticipate that the new system will improve the technical support for academic advising by:

- Providing students and advisors with self-service automated degree progress checks of degree requirements.

- Allowing faculty and staff advisors to communicate more efficiently with their prospective and admitted students.
- Improving our ability to monitor student progress and provide proactive interventions.
- Supporting advisors with a portal-based workbench of tools for training, reference, and reporting.
- • Improving articulation of transfer course work to UC Santa Cruz requirements.

An overview of initiatives currently underway is included in Exhibit N.

We expect our efforts in this area to result in improvements in our ability to track student progress effectively to allow timely proactive advising interventions. We will also be able to improve analysis of the various “student streams” to assist curriculum planning and scheduling that insures that we offer the appropriate courses (with the right capacity) to enable students to achieve their degrees in a timely manner.

4. Assessing the Effectiveness of Academic Advising

It seems reasonable to assume that the overall effectiveness of our efforts to improve advising should be reflected by further positive increases in the rates of retention and graduation as well as time to degree. Our previous student information system made it difficult to do analysis of these outcomes for particular groups of students. Given the need for us to focus in the near term on reconstructing academic advising within the new AIS, we defer development of a more finely tuned assessment system for a year or two. However we are committed to defining measures of effectiveness to guide the further development of academic advising for undergraduates.

CLOSING THOUGHTS

Our preparation for this review supports the judgment that UC Santa Cruz’s undergraduate program provides its students with an experience that meets or exceeds UC and national benchmarks for student engagement, particularly

in the level of academic challenge, opportunities for enriching educational experiences, and the accessibility of its faculty. We do not find here any reason to consider substantial alteration of current practice.

We have, however, found areas in which effectiveness can be improved by review and refinement of aspects of our current program. We have improved our ability to use institutional research to support this work. We have also gained an appreciation of the need to routinely provide the faculty who supervise the various programs with the results of that research.

We do not perceive the goal of further development of graduate education at UC Santa Cruz to be at odds with our commitment to sustaining and enhancing undergraduate education. An outcome of this review has revealed specific ways in which graduate students in programs related to our undergraduate programs can enhance undergraduate engagement with the research and creative activities of the campus. Expansion of graduate education can provide undergraduates in programs that currently do not have graduate components with senior colleagues who can assist the faculty in sustaining their commitment to excellent undergraduate education in a research environment.

More generally, it is clear that graduate programs contribute to the reputation of the campus in ways that attract undergraduate students who can most benefit from the type of challenging undergraduate programs that UC Santa Cruz offers.

WASC EDUCATIONAL EFFECTIVENESS REVIEW

GRADUATE GROWTH



“California’s future strength depends on investing now in graduate education. California’s economy depends upon it.”

Commission on the Growth and Support of Graduate Education, September 2001

UC Santa Cruz, in the words of the February 2004 WASC Visiting Team (p. 2), “has had an interesting history. Originally conceived as a campus that would place particular emphasis on undergraduate education, UC Santa Cruz has developed into an accomplished research university with highly regarded graduate programs.” The evolution of UC Santa Cruz as a research university has been integrally tied to the growth of its graduate programs.

The present essay focuses on graduate growth. The essay falls into five parts. In the first, we present a series of snapshots of graduate education on the UC Santa Cruz campus. The second part of the essay sets forth campus goals and the justifications for the goals. The next three parts of the essay consider three linked strategies for reaching our goals. In parts three, four and five of the essay, we are ever mindful of the difficulties – financial and otherwise – of augmenting graduate and professional programs, especially in the present California budget climate. Yet we remain hopeful that careful and coordinated planning can enhance our chances for success.

Development of graduate programs at UC Santa Cruz

UC Santa Cruz was founded in 1965 with an entering class of 650 undergraduate students and no graduate students, though graduate education was part of the campus academic plan from the beginning. The following year, three Ph.D. programs opened with an entering cohort of 26 students. After five years, the campus had opened 10 Ph.D. programs: three in Humanities, six in Natural Sciences, and one in Social Sciences. In the 15 years following the initial period, two additional Ph.D. programs were developed and

several Master’s and Certificate programs were added.

The current state of graduate programs at UC Santa Cruz results from the effects of this development, steady progress in expanding graduated education interrupted periodically by downturns in the state budget. An overview of this development is presented in Exhibit O and supports the following observations about graduate education at UC Santa Cruz:

- The development of new graduate programs is linked to state budget cycles, and has therefore not been continuous. The initial burst of graduate program development was followed by a long period in which few Ph.D. programs were developed and graduate degree production reached a plateau. New program approvals have come in three small clusters: one around 1980-82; another around 1988-90; and a more steady development beginning in 1998-99 and projected to continue into the future.
- Graduate programs have developed to take advantage of clusters of faculty expertise and as a result have been distributed unevenly across the academic departments and divisions. From the earliest period, the faculty in the former division of Natural Sciences (now corresponding to either Physical and Biological Sciences or part of the School of Engineering) were well-connected with graduate education. The distribution within the Humanities and Arts was more uneven. In Social Sciences, after the early foundation of a Ph.D. program in Psychology graduate education spread slowly through the division.

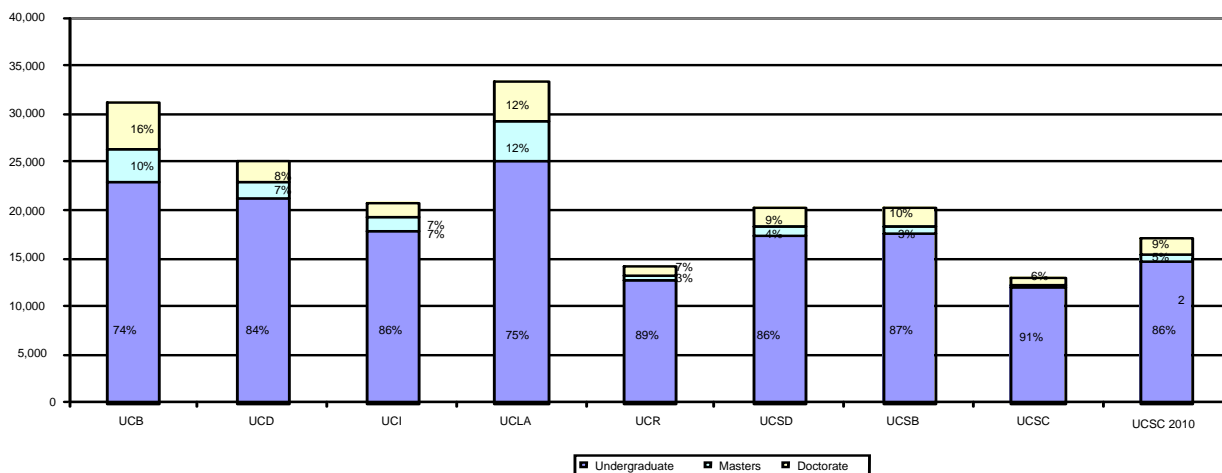
- From the beginning, faculty in graduate programs collaborated across traditional disciplinary lines. The founding program in Humanities was a graduate-only program in History of Consciousness. Within the natural sciences, graduate programs developed as a natural result of building critical mass in new areas.
- Of the nine Ph.D. programs created since the last WASC review, three include faculty who worked in previously existing graduate programs (Environmental Toxicology, Ocean Sciences, and Education); three others have developed in departments whose faculty had little previous connection with graduate education (Environmental Studies, Philosophy, Politics); two were created with all-new faculty.
- Total graduate enrollment for the campus has grown in proportion to the increase in the number of graduate programs. That is, most graduate programs have taken a few years to reach a steady state size in enrollment and then have remained at that level.

enrollment figures and including a representation of our goal for 2010. The increases in graduate admissions since that time have been substantial, allowing graduate enrollment to keep pace with the growth in undergraduate enrollment. The impression of an under-developed graduate student presence is further confirmed by the comparative data presented in Exhibit P, which shows the percentages of graduate students at UC Santa Cruz and other research doctorate universities. The relative underdevelopment of graduate studies at UC Santa Cruz was noted by the WASC team that visited the campus in February 2004.

During the period of rapid growth in undergraduate enrollment, the proportion of students who are graduate students declined slightly despite steady increases in the number of graduate students. As Exhibit A shows, at the time of the last WASC review (1992-93), the graduate student enrollment on campus was 968 students (11 percent of a total population of 8989). Over the next decade, graduate enrollment grew by 26 percent. But during the same period the undergraduate enrollment grew by 46 percent. As a result, percentage of graduate students in the total campus enrollment declined from 11 percent to 9 percent. In 2003-04, UC Santa Cruz had 1,286 graduate students enrolled in 31 graduate programs (Ph.D., Masters, and Certificates). Recent growth has been faster and allowed the campus to achieve – but not advance beyond – the earlier proportions.

At present, UC Santa Cruz has the lowest percentage of graduate enrollment of any UC campus. The chart below¹ presents the situation in dramatic visual form based on Fall 2001

Fall 2001



¹ The data in this chart have not been adjusted to indicate the difference among the campuses in their specialized schools.

Nor is UC Santa Cruz overcrowded by postdoctoral scholars. In 2003-04, UC Santa Cruz had 165 post doctoral fellows in residence. Policies have only recently been put in place to standardize their pay, benefits, and working conditions across academic divisions.

GOALS AND THEIR JUSTIFICATION

For a number of years, the Academic Senate has been pushing for increased graduate enrollment. In March 2002 the Senate passed a resolution endorsing the goal of increasing graduate and professional student enrollments until they comprised 15 percent of the total student body. As our Preparatory Report makes clear, UC Santa Cruz's administration has joined the faculty in embracing the twin goals of (1) increasing the proportion of graduate and professional students on campus, and (2) enhancing the quality of graduate education. Several documents, including the Senate Committee on Planning and Budget's 2002-03 Annual Report, its 2003-04 Annual Report, and its 2004 Report on the Strategic Futures Committee/Long Range Development Plan Process and the Future of Enrollment Growth at UCSC, show why we are convinced that the future character and quality of our institution are linked to the further development of our graduate students and postdoctoral researchers.

There are several reasons why the campus is dedicated to increasing the quantity and quality of graduate education at UC Santa Cruz.

First, we wish to do our part to serve the needs of the state of California. As the 2001 report from the UC Commission on the Growth and Support of Graduate Education notes (p. 8), "California's future strength depends on investing now in graduate education. California's economy depends upon it."

Second, the presence of good graduate students is crucial to attracting and retaining excellent faculty. All areas of our faculty deserve the benefits of engagement in graduate education. Graduate students and postdocs are also essential to building capacity to carry out faculty research projects. In a few instances, the capacity of our faculty to develop extramural support for their research has

exceeded their ability to locate graduate students and postdocs to carry out the projects.

Third, graduate students enhance the intellectual excitement of the university in ways that are important for both researchers and other students, including undergraduates. Especially in the sciences and engineering, the presence of graduate students enlarges the number of laboratory research opportunities that are open to undergraduate students. Generally, able undergraduate students are attracted to institutions that are intellectually vibrant; and everywhere graduate students contribute to the liveliness of scholarship.

Finally, graduate students are essential to providing quality undergraduate education in many areas by serving as teaching assistants, teaching fellows, and mentors in research projects.

Realism about how to reach the goals

While we have achieved consensus on our goals, we are still reviewing the strategies by which we can achieve them. We have decided to use this review as a stimulus to a prolonged and deep community engagement with questions about how to intelligently grow graduate programs on our campus over the next five to ten years. One factor that makes the discussions especially complicated is the near certainty that we will continue to face economic challenges during the next few years. Indeed, we fear that we may be facing such challenges for more than a few years. Another factor that adds a challenging dimension to the discussions is our commitment to UC Santa Cruz's historically distinctive character. We prefer to increase the quantity and quality of our graduate programs in ways that do not detract from, and ideally further enhance, our excellence as an undergraduate institution.

Campuswide discussions that have occurred subsequent to the dissemination of the visiting team's report and of the Commission's June 2004 action letter have already resulted in agreement about three basic observations concerning the strategies by which we hope to achieve our goals. First, the faculty and administration are in agreement that our goal of increasing the quantity of graduate students must go hand in hand with our goal of increasing quality, both in measurements of the preparedness of enrolled graduate students for

pursuing graduate study, and in our effectiveness in bringing those students to appropriate outcomes in their programs. It does not seem sensible to attempt to increase the absolute number and percentage of graduate students and postdoctoral scholars at UC Santa Cruz without also improving the quality of their experiences here.

Second, the faculty and the administration agree that diversity and excellence can be mutually enhancing goals. Indeed, one of the hallmarks of UC Santa Cruz is its dedication to innovation and diversity. We would ill meet the mandate of a great public university if we were to forsake our traditional commitment to increasing the representation of populations in academia that have in the past been underrepresented. We currently have several programs in place to provide financial and mentoring support to underrepresented minorities in our graduate programs. We have awarded 20 dissertation-year fellowships and 123 Cota-Robles Fellowships (each of two years duration) as ten AGEP (Alliance for Graduate Education of the Professoriate) to our graduate students.

Finally, the faculty and administration at UC Santa Cruz concur that there are three general strategies that we must employ to meet the twin goals of quantity and quality. First, we must begin the improvement process by immediately improving our measures of accountability. We must, in other words, eschew a *laissez faire* attitude toward graduate studies, and systematically use our data about current programs to guide our future planning and resource allocations in accord with campus priorities for graduate growth. Second, we must, as our own Preparatory Review portfolio hints, make better use of the resources that we already possess. The third and final strategy is one noted in the visiting team's report – we must increase the resources that support graduate education at UC Santa Cruz.

FIRST STRATEGY: ACCOUNTABILITY

What specifically do we envision as ways to increase accountability? Working closely together, the Graduate Council of the Academic Senate, the office of the Vice Chancellor for

Research/Dean of Graduate Studies, and the Office of Institutional Research have identified several steps that will provide a sound view of the current situation and allow us to identify the barriers to increased capacity and actual growth in graduate education. Through careful attention to data, we hope to learn how to move effectively toward achieving our objectives.

Agenda for Improved Assessment

In order to plan for growth, we want to know more than we do at present about our current graduate students. To assess our progress towards the objectives of expanding the graduate student population while enhancing quality, furthermore, UC Santa Cruz will have to develop appropriate measures and implement systematic data collection. These measures should address three aspects of the graduate experience: the Outreach, Recruitment and Admission Process; the Quality of Graduate Experience; and Career Paths.

1. Outreach, Recruitment and Admission Process

We need to systematize our data on the demographics of applicants, admits, and enrolled students by graduate program. For each of these populations, we will track scores on the general GRE or other program-relevant measure. Analysis should reveal the strength of the applicant pools and relative success of programs in yielding enrollments from the higher end of those pools.

We will conduct a survey of admits. This survey will parallel a similar survey that is conducted annually by Institutional Research to determine the decision factors for undergraduate students who attend UC Santa Cruz, as well as those who elected to attend elsewhere. During the summer of 2004, Student Affairs Research and the Office of Planning and Budget developed a prototype of the survey using an on-line survey tool and pilot-tested the instrument with graduate applicants for fall 2004. The response rate has been gratifying. We will develop program specific definitions of quality applicants. What criteria do programs employ in selecting graduate admits? Are those criteria clearly enunciated to potential applicants and effectively incorporated into admissions processes? Have programs given consideration to the question of who

will thrive in UC Santa Cruz's distinctive academic culture?

Where feasible, we will develop standard reports of application overlap and yield. To identify the institutions with whom we compete, we should track the overlap between applicants to UC Santa Cruz and other institutions, and compare the yield rates for those overlapping applicants at both institutions. The graduate admissions directors in each program can provide an assessment of the institutions with which they compete for admissions yield. The College Board might also be useful in reporting other institutions to which applicants send their GRE scores.

2. Graduate Student Life

A comprehensive assessment of graduate student life – both by program and for the institution as a whole – is important to understanding the pattern of admissions yield and retention. It is also fundamental to clarifying measures of educational effectiveness in graduate education. The revised external review protocols require departments under review to survey their graduate students. The first surveys have been conducted for the Departments of Math, Environmental Studies, and Physics. Review of these first steps will help guide future revisions. Already it is clear that every department and program that serves graduate students needs to include in its self-study a listing of the professional accomplishments of its graduate students and post doctoral scholars, citing publications, papers delivered at professional meetings, and so on, as a measure of research productivity. It is clear that much relevant information already exists; however effort is needed to insure that it is systematically accessible to both the administration, graduate division, and the programs involved.

The Graduate Student Association has identified a list of concerns crucial to our effectiveness in recruiting and retaining graduate students. We believe that we must analyze and disseminate existing and new data on a number of topics to the relevant programs:

- Financial Support Packages at Competing Institutions. To assess UC Santa Cruz's competitive advantage or disadvantage, we will review our existing data on financial

assistance available at competing institutions as a basis for comparison to support at UC Santa Cruz. A good deal of analysis of data about the sources of graduate support at UC Santa Cruz has been completed. We need to improve annual support from year to year.

- Student Budgets. To understand student finances, we should prepare several prototype budgets, by division or program, enumerating their likely sources of income (RAs, TAs, stipends, grants, loans, family resources, personal resources) compared to typical expenses (such as tuition and fees, books, room, food, insurance). How do out-of-pocket expenses at UC Santa Cruz compare to those at competing institutions?
- Survey of graduate student life. Though we have a complete set of surveys assessing many aspects of the undergraduate experience, we do not routinely survey graduate students. Many academic departments have a good sense of the well-being of their own students, but we do not have a systematic tool for assessing the overall graduate experience, or for comparing the experience across departments or with comparable programs at other universities. We might pattern a graduate survey after UCUES (the UC system undergraduate survey), adapting it to the goals and activities of graduate students. Such a survey should provide data on a range of aspects that influence graduate student success – parking, transportation, cost of living, disposable income, health care, counseling, housing, child care, etc. It should also monitor working conditions of TAs and RAs, satisfaction with instruction and mentoring, ease of establishing thesis committees, functionality of dissertation process, and preparation for career (practice teaching, resume writing).
- Exit surveys or interviews. Exiting students can reveal a lot about the strengths and weaknesses of programs. We need to learn more about when students elect to leave, what impediments they may have encountered here, and their levels of

satisfaction or dissatisfaction when they make their decisions to leave.

- Retention and Graduation Statistics. We need to complete the production of a standard report for graduate students, tracing their progress towards degrees and completion rates. Like the undergraduate reports, it will allow us to monitor subpopulations of various types, both institutionally and by program. Institutional Research is nearing completion of this report.
- Comparable programs. While standardization of measures for our graduate programs is a useful tool in bringing academic planning and resource management together, in graduate education it should not be assumed that “one size fits all”. Internally derived institutional benchmarks are likely to be less helpful in interpreting the data across programs than well-constructed benchmarks based on discipline and program type. For each of UC’s graduate programs, we need to develop an inventory of comparable programs at other UC campuses, as well as a group of ‘aspirational peers’ outside the UC system.

3. Career Paths

To understand the career paths of our graduate students, we need to develop more complete profiles of the careers of students who have graduated. Each department will be encouraged to keep in touch with its graduate alumni so as to be able to ask how well and in what ways their UC Santa Cruz experience prepared them for success in academia, industry, or other careers. Departments will be expected to regularly share the data that they have with their divisions and with the Graduate Council.

We believe that it is a realistic goal to complete the agenda of improved assessment and institutional research over the next three years. Exhibit Q gives a detailed timeline of the aspirations of the Associate Dean of Graduate Studies, and shows why we think our plans for improving assessment are realistic. As we proceed, campus administration will need to assess

the priorities for research, to make sure that data are routinely shared with the program faculty, and that the external review process is attentive to how departments make use of the data they are given. The academic planning process and resource management must also engage in focused consideration of how the priorities articulated in departmental plans are related to realistic strategies for achieving the goals of graduate growth and improved effectiveness.

As we make increased use of various assessments over the next decade, we must remember that the data do not in and of themselves dictate policy. Although system-wide policies and practices will certainly affect the development of UC Santa Cruz’s graduate programs, we will need to be especially mindful that a strategy of replicating the pattern of graduate education at older institutions may not be the best path toward effective graduate education at UC Santa Cruz. There are many respects in which anticipation of a period of substantial growth in graduate education provides novel opportunities for success in spite of the practical challenges, a point made by the visiting team for the Preparatory Review.

SECOND STRATEGY: ENHANCED USE OF EXISTING RESOURCES

If improving our culture of evidence is a strategy for increasing graduate enrollments and enhancing the quality of our graduate students’ experience, then the culture of evidence must also be put in service of a second strategy: To make optimal use of existing campus resources. This strategy is similarly amenable to systematic research that will enable us to determine how best to deploy available resources in ways that will benefit graduate education and serve institutional priorities.

We consider, in turn, assessing support services for graduate students, the administrative structures that provide them, and faculty resources.

Support services

Which services and experiences are most essential to attracting and retaining quality graduate students, and which are less essential? Which do the most to enhance graduate students’ education, prepare them for productive careers, and help them actually enter

those careers? What evidence do we now have that will help us assess effectiveness and prioritize our investments in various services and experiences?

The Graduate Council conducted a survey of graduate student opinion, reported in the 1999 *Report of the Task Force for a Graduate College and Graduate Life*. This survey that was useful in identifying support services (e.g., medical services, career counseling, housing) that students found critical to both their well being and progress toward a degree. However, the survey did not generate data on actual student use of these services, on their degree of satisfaction with those services, or on the efficiency of the delivery of those services. The survey's emphasis was on students' desire for more service rather than for more efficient service. It did not investigate the priorities or the trade-offs students would be willing to make in order to gain more from some services – e.g., affordable housing – if such gains meant cut-backs in other services. And it did not attempt systematically to identify other services and experiences, particularly expanded orientation or additional skill enhancement services similar to those currently offered by the Center for Teaching Excellence, that students might find important enough in terms of their education and career planning to warrant the reduction of some services.

Developing an analogue of the UCUES undergraduate survey for our graduate students would provide a way of assessing utilization of, and satisfaction with, various services. Because of the considerable consultation required with graduate students, graduate programs, the Graduate Division, the Academic Senate, Student Affairs, various campus administrators, and the campus's institutional research unit in the Office of Planning and Budget, in order to develop a genuinely useful assessment instrument, we anticipate that it will take the campus a year to develop and inaugurate this review process. Simultaneously we need to develop an analysis of costs that would be involved in the improvement of current services or the addition of others that would enable the campus to prioritize its deployment of support resources. We must also be mindful that carrying out such a research

program will itself absorb resources and attention and prioritize such projects accordingly.

A published study of mentoring experiences among UC Santa Cruz graduate students² has already revealed divisional differences, and we might expect further differences to be revealed.

We will be particularly interested in expanding some of the existing campus services. Some divisions, like the School of Engineering, and some organizations like the Center for Teaching Excellence, have well-developed orientation sessions for incoming graduate students. These orientation sessions could be expanded and elaborated or extended to unserved populations. For example, there might be special orientations for international students, and review of departmental orientations. A review may well show that the current situation provides effective efforts in this area; but we should be confident that this is true.

Other potential expansions in support services include:

- Development of mini-courses focused on enhancing students' research and teaching skills that would be available to students in all programs. These could include workshops on uses of the web, course development, lecturing and discussion-leading skills, grant writing and fellowship seeking, efficient time management, and job-searching strategies. Such workshops are already available to undergraduate students through the Coalition for Student Academic Success. UC Santa Barbara offers graduate students in any program the opportunity to gain a certificate in teaching, and we might consider providing the same opportunity.
- Introductions for graduate students to the institutional aspects of higher education: governance structures; the funding and deployment of university budgets; the development of academic policy and protocol; internal and external political dynamics; and the "cultures" of higher education.

² Tenenbaum, H., F. Crosby, and M. Gliner. Mentoring Relationships in Graduate School. *Journal of Vocational Behavior* (2001) 59: 1-16.

- A program of panels and lectures by prominent Ph.D.s who have found productive non-academic careers.
- Support for writing at the graduate level. Dissertation writing support structures both within and across departments are needed. But support should not be deferred to the time of the dissertation. All programs should attend to developing their students' fluency in the idiom of their discipline. Graduate students may be unfamiliar with the writing conventions of their field. International students in particular may benefit from attention in this area, as they currently do in special preparation workshops for their service as teaching assistants.
- Systematization of oversight of the training of TAs. At UC Santa Cruz, TA and Teaching Fellow training is generally considered to be the responsibility of the individual department. We think that it may be useful to expand the ability of the Center for Teaching Excellence so that it could monitor the departments and coordinate support for the training of TAs. This would require increasing the staff and budgeting for the CTE.

We anticipate that discussions within the Graduate Council and among graduate program representatives and graduate students during 2004-05 will identify other possible services and experiences that can be further assessed in the comprehensive review discussed above.

As a part of the review, we should also assess the effectiveness and efficiency of the campus's present delivery structures for support services to graduate students. Are the present structures efficiently organized to provide these services? Are the service assignments distributed appropriately among them? If new services are added, where should they be administered? How should they be funded? Are other structures needed? Beyond the Graduate Division, the academic departments and their respective divisions/schools, and the Division of Student Affairs, we should examine the current and potential role of the Center for Teaching

Excellence, the University Library, and University Extension.

The assessment will also include a further examination of the potential of a "graduate college" discussed in our Preparatory Report to both coordinate existing services to graduate students and provide additional services at minimal cost. To date the campus has not discussed the notion of a graduate college in enough detail to decide whether or not the 'college' would exist in some physical space or would be merely an administrative structure for unifying and delivering services to graduate students. Present budgetary constraints may realistically delay serious discussion of the concept of a graduate college. However many of the initiatives suggested above could be organized so that they would reinforce a desired sense of campus-wide community among graduate students.

Administration

The office of Vice Chancellor of Research (Robert Miller) and the Associate Dean of Graduate Studies (Lisa Sloan), working with the Academic Senate's Graduate Council and the graduate directors of each program, are responsible for managing graduate education and the role of postdoctoral scholars. They have already begun an enhanced data collection process through the newly redesigned program reviews instituted by the Vice Provost for Academic Affairs (George Brown) and described in the introductory section of this report. As shown in Exhibit G, the reviews of the Departments of Economics and of Environmental Studies have been conducted under the revised program review process, including augmented information about graduate studies in those programs. The essay on program review includes description of new data requirements, especially graduate student surveys on their satisfaction with their major program as well as historical data on graduate admissions selectivity and enrollment yield. Improved reporting capabilities will allow routine production of yield data for programs.

UC Santa Cruz has recently invested in improving the technical support for the graduate admissions process. In 2002 we adopted an on-line application package and improved web based presentations for our graduate programs. In 2004 we implemented a supplemental system for Graduate Application Review (GARP), an on-line application system that

not only processes graduate applications but also provides secure electronic access to student application information and admissions decisions. With GARP we are accelerating and streamlining the application process, as well as reducing admission workload per application. As the campus implements its new academic information system (AIS), we are working to integrate these systems both to support graduate outreach and admissions and to improve our ability to communicate with the graduate student population. Through GARP, we will be able to automatically collect systematic data about our graduate applicant pool. For each department, starting in 2005, we will know: (a) how many applicants there are; (b) the percentage of applicants admitted; (c) the yield of admitted applicants; and (d) the GRE scores of applicants, of admitted applicants, and of those admitted applicants who enroll. Using simple additions to the GARP programming, we will also know (e) percentage of applicants, admits, and acceptances who did their undergraduate work at the University of California, at a California State University, at a land-grant university other than the University of California (e.g., the University of Michigan or University of Texas) or at a private institution. We anticipate that within two years, GARP can be modified to support our agenda of improved research on graduate admissions. This time line is related to the ongoing development of GARP and its incorporation into AIS.

Faculty Resources

Many of the interesting developments arising from the current academic enterprise are emerging from the points of contact between traditionally distinct fields. An institution that can move itself beyond the sometimes narrow perspectives held by entrenched disciplines is at a relative advantage in conceiving of and implementing new programs that attract high quality graduate students. UC Santa Cruz has a successful track record of developing graduate programs that bridge divides between traditional departments and, increasingly, between the separate academic divisions. The program in the History of Consciousness, one of the founding graduate programs of the campus, is a highly regarded program that explores the development and nature of expression and social action over the full range of human intellectual

endeavor. The Ph.D. programs in Environmental Studies, Ocean Sciences, and Environmental Toxicology have effectively drawn on faculty from several disciplines across departmental lines. More recently, two more inter-divisional graduate programs have been approved by the systemwide Academic Senate and are now engaging students. Digital Arts and the New Media brings together faculty and students from the School of Engineering and from the Division of the Arts, and Bioinformatics draws on the expertise of faculty from the School of Engineering and from the Division of Physical and Biological Sciences. The administrative structure for the implementation of an inter-divisional program depends on a charter that clearly delineates the nature and degree of responsibility for resources and participation, and establishes one academic division as both the fiscal and academic lead. While individual faculty are evaluated within their home departments, the responsibility for the oversight of the status and progress of the program rests with the dean of the lead unit. This 'single chain of command' structure establishes a clear organizational structure for the program, and avoids the ambiguity of separate and sometimes conflicting expectations from the participating divisions.

With a successful and well-formulated model already in place, UC Santa Cruz is in an excellent position to exploit new interdisciplinary and inter-divisional opportunities as they arise, either through administrative initiative or through the inspiration of its dynamic faculty. Real and imagined obstacles present themselves whenever scarce resources are to be allocated among different disciplines, but the administration will continue to facilitate interdisciplinary research opportunities. In particular, the growing School of Engineering and the nascent Silicon Valley Center present great potential for the inter-divisional growth of graduate programs at UC Santa Cruz. It is even possible that careful and strategic thinking might develop a way to include University Extension, UC Santa Cruz's current most visible face in Silicon Valley, in plans for inter-divisional programs.

Interdisciplinary graduate programs contribute to our goals of increasing the quality and quantity of graduate education at UC Santa Cruz. As examples of distinctive approaches to new research, they can attract highly qualified graduate students. They also

represent an effective way of building capacity in graduate education with relatively small marginal increases in faculty resources. By locating existing clusters of faculty expertise that cut across administrative units, interdisciplinary programs can find advocates and intellectual leadership locally, and can connect faculty who would not otherwise be involved in graduate education to both new colleagues and to the opportunity to guide graduate student research. For instance, within the Humanities Division, the proposed Ph.D. programs in Comparative U.S. Studies and Feminist Studies would involve the collaboration of faculty in American Studies and Women's Studies (departments currently without graduate programs), with faculty in other departments with well established graduate programs (e.g. Anthropology, Sociology, Literature, History, etc.) to support new graduate curricula.

Prioritization of Resource Use

Growth in graduate education at UC Santa Cruz will require resources of several kinds. Graduate student support, and its relation to the practical aspects of graduate student life, is clearly connected both to the number of graduate students who can be supported and to the quality of the students yielded from the graduate admissions processes in existing programs. Faculty resources are also required, both for their scholarly expertise and for their ability to mount curricula appropriate for graduate students. Extramural support for research is an important parameter of capacity in graduate education, one with variable potential across disciplinary areas.

In order to make the most effective use of existing resources, we need to analyze critically the potential of existing programs and initiatives to locate opportunities for improvement. Critical analyses require that the campus as a whole work to develop a consensus on priorities. We will need to engage in some difficult questions within our academic planning and resource management, questions that will entail some 'zero sum' trade-offs.

One place to begin could be to examine growth patterns of current graduate programs. Which programs currently show growth trends, and which have reached a stable state of enrollment? To what extent does current size of a graduate

program represent a "right sizing", given the available faculty and realistic placement rates for graduates? Where have faculty resources already been invested with expectations of future growth? To what extent does the current size of a program represent limitations imposed by resources for graduate student support, separate from the investment in faculty and curricula? To what extent does it reflect the limitations of the program's success in developing appropriate application pools or yield rates of suitable students?

In some cases, it may be that additional graduate student support for existing programs that have underutilized capacity would be a more efficient way of achieving the campus goal of growth than the development of new programs. In other situations, concentrating existing graduate support to improve the competitiveness of offers could improve the quality of the student yielded by the admissions processes, at a cost of yielding fewer students.

It is also possible that developing new interdisciplinary programs could be more effective than attempting to improve the size or the quality of the yield for existing departmental programs. New programs give the university access to new pools of potential graduate students. New initiatives, however, generally require elaboration of graduate curricula, which can put strains on existing graduate programs and on the undergraduate curricula. Finally, in other cases, the effectiveness of existing undergraduate programs could be improved by integration with related graduate programs.

During the discussions triggered by this review, we have seen the value of attending to the distinction between Ph.D. program enrollments as a proportion of the graduate enrollments. Current enrollment measures track Ph.D. and Masters/Certificate programs separately, though reports of degrees granted do not routinely separate terminal Masters degrees from those granted during progress toward the Ph.D.

The development of inter-divisional graduate programs is one indication that campus academic planning, which depends heavily on the development of separate plans from the various schools and divisions, has not been an insurmountable barrier to strategic planning.

However it seems clear that the administration and the Academic Senate have more work to do to develop a consensus on the priorities and strategies for the campus level academic planning and resource allocation needed to achieve our general goals. One outcome of this review has been the realization that consensus on a goal of graduate growth – whether in absolute terms or expressed as a percentage of enrollment – does not resolve these questions. Clarification of these alternatives and assessing their priorities to the institution is a prerequisite for effective action in deploying new resources, whether they come from reassignment of existing resources or the allocation of newly developed resources.

THIRD STRATEGY: INCREASING RESOURCES

Enhancing graduate education at UC Santa Cruz by increasing the resources that support graduate education presupposes that there are resources that might, in fact, be increased. What, then, are some resources that could be augmented? Where and how can UC Santa Cruz obtain new funds to augment the quantity and quality of graduate studies?

Five main sources can be identified. First, there are the general funds that originate with the state of California and come to the campus each year via the Office of the President of the University of California (UCOP). Second, there are state funds that are available through UCOP that are earmarked for special purposes. Third are funds that come from student fees and tuition. Fourth are funds that come from contracts and grants from the federal or state government, from private foundations and individuals, and from industry. Grants and contracts generate direct payments (stipends) and also generate revenue through indirect costs. (Indirect costs are distributed to UCOP, the central administration at UC Santa Cruz, and the specific division in which the grants are housed according to a strict but intricate formula.) Finally, gifts and endowments from many sources can provide support for both faculty and students.

General funds from the state are sometimes categorized as belonging to the base budget or to

the growth budget. Under the state's Master Plan for Higher Education, the University of California provides spaces in undergraduate education for the top 12.5 percent of students graduating from high schools in the state. As a result, undergraduate enrollments at UC are driven by the demographics of the state. As the population of high school graduates increases, the University must create new capacity in undergraduate education, and UC Santa Cruz will be expected to absorb a fair share of this growth.

Enrollment growth funds are therefore one potential source of money to support graduate education, although the actual costs of educating a graduate student are generally assumed to exceed the costs of educating an undergraduate student. Consequently, relying on growth funds to support increases in the proportion of graduate students on campus will require us to develop ways of absorbing increased undergraduate enrollment without using all of the resulting growth funds only for undergraduate education – thereby enabling us to ensure that where possible all growth funds contribute to both undergraduate and graduate education.

It is also possible to imagine that UC Santa Cruz might obtain special one-time funding from UCOP for some aspects of the growth in graduate studies. Under the leadership of former Chancellor M.R.C. Greenwood, and continuing under the strong leadership of Acting Chancellor Chemers, UC Santa Cruz explored the possibility of developing a presence in Silicon Valley through targeted funding. It is possible that some programs in Silicon Valley could include a disproportionate number of graduate students or could house new graduate programs. UC Santa Cruz might explore with UCOP ways in which such initiatives could benefit from special funding, either in connection with specific initiatives or as a permanent adjustment to our base budget. Former Chancellor Greenwood also hoped that UC Santa Cruz might work closely with UCOP to bring to reality the dream of a graduate college, housed in one or more new buildings on the UC Santa Cruz campus. However, the realities of the state's current budget mean that such dreams might best be put on hold for a few years, at least until we have solid data about how effective a strategy this might be.

Because graduate support packages generally include payment of fees and tuition, funds generated through student fees are not really a viable source of

revenue for enhancement of current graduate studies at UC Santa Cruz. Truly self-supporting graduate professional programs would be a means of increasing graduate enrollment through student fees. However the campus must be clear about how such programs are related to its institutional priorities.

Funds that come from sources external to UC and external to students include primarily grants and contracts. Currently, we generate about \$91m annually from grants and contracts. As noted in the visiting committee's report, one might expect the highly productive and well recognized faculty of UC Santa Cruz to be able to continue to increase external funding for themselves and their students. Similarly, some graduate programs might be linked more closely than they are at present to industry, in ways that leverage campus investments to provide well trained professionals into targeted workforces.

Clarity about the sources of revenue can help campus discussions move beyond platitudes about enhanced graduate education to the point of laying the material foundation for substantial increases in the proportion of UC Santa Cruz enrollments in graduate programs. But clarity about the sources of revenue, while necessary for productive colloquy, is not sufficient. We must engage in the difficult work of identifying the most efficient ways to utilize resources, and relate the value of those initiatives to the priorities of the campus for graduate enhancement.

Once the campus has reached agreement about funding sources and efficient ways of utilizing resources, we can and must squarely face a number of interlocking questions about the direction of our university. Preliminary conversations within the Academic Senate, and between the Senate and the administration, have already surfaced a number of queries, phrased at various levels of generality. We have, for example, wondered whether to expand existing programs uniformly (the "blow up the balloon" option) or to be more selective in the programs that we encourage. The attraction to the creation of one or more additional professional schools and our desire to spawn more interdisciplinary programs has decreased the popularity of the "balloon" option. But, as yet, there is no clear

campus understanding about which programs and departments should be targeted to receive any new resources. Nor have we fully confronted the issue of how to re deploy or re-distribute existing resources if and when growth funds cease to be available.

Another closely related question involves the issue of uniformity. Do we expect different divisions to all follow the same models? External funding is less available for the Arts and for Humanities than for the School of Engineering, the Division of Physical and Biological Sciences, and the Division of Social Sciences. If some programs prioritize increasing the quality of their graduate students (e.g., a goal of increasing the GRE scores of the students yielded), should all other departments be expected to have the same goal? How can we best assist graduate programs and departments to obtain increased external funding for their students in ways that are tailored to their own disciplines?

A recurrent theme in recent discussions about graduate growth is the relative balance between Ph.D. programs and (terminal) Masters and Certificate programs. A variant of this theme examines the possible growth of future professional schools at UC Santa Cruz. Ph.D. students are not the only 'graduate' students, but they have a distinct profile in resource utilization, placement possibilities, and effect on external assessments of the quality of graduate education at UC Santa Cruz (such as the NRC rankings of programs). One advantage to increasing the proportion of graduate students who are seeking professional master's degrees is that those students are expected to primarily fund their education, allowing the campus to concentrate its resources on support for Ph.D. students. Terminal Masters programs can also be effective in developing ways for faculty not currently engaged in graduate education to work with graduate students.

Similar questions arise about the proportion of graduate growth allocated to the creation of professional schools, which would have different fee and support structures. As the campus resolves these issues, the office of the Vice Chancellor for Research will be seeking to expand non-state funds for graduate study. One mechanism that is not presently used, and that may yield opportunities for students to engage in research while providing overhead dollars to the campus, is to encourage the

submission of grants through UC Santa Cruz by principal investigators (PIs) who are not ladder-faculty. The Vice Chancellor for Research is empowered to award exceptions to the PI policy to departments and Organized Research Units that wish to obtain permission for qualified scholars to generate grant funding through the university. In a related development, the Office of Research is implementing new strategies for the creation of Affiliates Programs, which provide corporate consortium opportunities (including graduate support) to particular university programs.

Another related mechanism, already used in a preliminary way, is to encourage the institution (as distinct from specific individuals) to bid on grants and contracts. Two examples of this approach show how additional funds can come along with additional opportunities for graduate students.

The first example is the University Affiliated Research Center (UARC), a collaborative effort between UC and NASA Ames, which is overseen by UC Santa Cruz's Vice Chancellor of Research (VCR). This project has the potential to create four sources of funding that could be used to support graduate students at UC Santa Cruz. The first source is that of "task orders," mission-oriented projects that, under contract, include graduate student participation. (The graduate student stipends are directly charged to the UARC.) The second source of possible funds arises from indirect costs. Task orders managed by UC Santa Cruz generate indirect cost funds that are at standard rates (depending on whether the work is done on campus or off). A significant fraction of the indirect costs come to the UC Santa Cruz Vice Chancellor for Research as the responsible officer and PI on the UARC. These funds have significant flexibility with respect to graduate student support. The third source provides Chancellor's Award funds that can be used for graduate student support, and the fourth possible source of funds is the aligned research fund. This can be used to support research projects at UC Santa Cruz which are aligned with the Research Mission of NASA Ames.

The second example is a recently established NSF Science and Technology Center, the Center for Adaptive Optics (CfAO). The CfAO has generated indirect costs for the university to

support construction of its facilities, has supported world-class graduate research, and has increased the visibility of the university. It has also led to the subsequent award of another large grant associated with this work from the Moore Foundation.

In keeping with our desire to use the WASC review process to assist the campus in grappling with issues of importance to UC Santa Cruz, in the final integrative section of this report we continue the theme of how to enhance the quality of graduate education while increasing the proportion of UC Santa Cruz students who are graduate students. The challenge for us centers on the effective integration of our thrust toward graduate education with our historical commitment to undergraduate education.

WASC EDUCATIONAL EFFECTIVENESS REVIEW INTEGRATIVE ESSAY



Research, graduate education, and undergraduate education “are intertwined. Vigorous research activities are integral to developing a quality graduate program. And a mature graduate program is essential to the quality of undergraduate education, which is enhanced by the work of inspiring young scholars in the undergraduate classrooms and laboratories.”

UC Santa Cruz ... Leading in the New Millennium, Autumn Convocation 2001

At UC Santa Cruz, there is no shortage of ambition. Our immodest aspiration, articulated in numerous public documents, is to achieve first-rank as a research university while remaining devoted to excellence in undergraduate education. And we hope to accomplish our goals even as we are caught in an historical moment when every UC campus is being asked to accommodate increased enrollments on diminished budgets.

The WASC review process has helped us make progress toward our goals. We have crafted our Educational Effectiveness Report in a fashion that is intended to foster dialogue on the campus. It is for that reason that our in-depth essays have sought not to hide the challenges we face but rather to expose them. At present many in the administration and the Academic Senate feel that our internal dialogues are more likely to bear fruit because of this process. Almost universally, administrators and faculty at UC Santa Cruz are grateful for the feedback of the WASC visiting team and of the WASC Commission given at the end of the Preparatory phase. We anticipate – and will value – further advice during the closing stage of the review.

The present brief essay aims to rehearse again some of the major themes of our self-study and to analyze the implications of our analyses. The essay progresses in three sections. First, we summarize the major themes of our review. We then pause briefly to situate our present concerns within an historical context. We conclude by outlining some potential consequences of the analysis we have conducted.

CENTRAL THEMES

Improving both Undergraduate and Graduate Education

How can we grow our graduate programs while maintaining our traditions of close attention to undergraduate education? This question is at the core of our Institutional Proposal, our Preparatory Report, and our Educational Effectiveness Report. The team that visited UC Santa Cruz in February 2004 apparently found the question to be a compelling one.

Preparation of the Educational Effectiveness Report has precipitated extensive dialogue on the campus about the question of balancing graduate and undergraduate education. From the discussions, three principles have emerged that:

- In setting priorities for resource allocation, long-term assessments of educational effectiveness, broadly construed, must be considered.
- In setting priorities for growth in graduate programs, advantages and disadvantages of various alternatives for the undergraduate program must be considered.
- In setting priorities for continued excellence in undergraduate programs, advantages and disadvantages of various alternatives for support of the graduate program must be considered.

Many in the Academic Senate and in the administration recognize potential synergies between undergraduate and graduate education. There are myriad ways in which graduate students contribute

to the education of undergraduates. In the physical & biological sciences, the social sciences, engineering, and the arts, graduate students function as helpful mentors to undergraduates in both laboratory and classroom settings. The nature of scholarship in the humanities, where it is rarer to speak of laboratories or studios, does not as easily lend itself to “vertical teams” in which more advanced students work side by side with less senior students. But even in the humanities it is possible to conceive how graduate students might interact with and contribute to the learning of undergraduates in ways that enhance the educational outcomes of traditional faculty-student interactions. Graduate students in all disciplines, for example, might be more effective advisors to undergraduates than are some faculty.

Just as graduate students can be seen as bringing benefits to the undergraduates, so can undergraduates be seen as benefiting graduate students. Throughout the social sciences, the physical & biological sciences, and engineering, many of our advanced undergraduates serve as assistants to graduate students as the latter undertake research independently or in collaboration with faculty. In addition, graduate students benefit in a number of ways by having the opportunity to assist in teaching, and experience themselves the benefits of working with our most engaged undergraduates. Graduate students require the income that comes with being a teaching fellow, and enjoy having an opportunity to engage in university teaching, for many of our graduates will go into teaching careers. They also benefit from the intellectual discipline of explaining to others the fundamentals of their disciplines. Finally, anecdotal evidence shows that our most engaged undergraduate students are as adept at providing challenging stimulation for graduate students as they are for the faculty.

Mutual benefits notwithstanding, there are potential pitfalls inherent in attempting, in the current resource climate, to expand graduate education without damaging undergraduate education. These must be acknowledged and monitored as part of academic planning and resource allocation. In what ways might the growth of graduate programs be detrimental to undergraduate education? At a basic level, the

answer involves two things: money and faculty attention. For every new student whom the university takes, we receive from the state of California, via the Office of the President of the University of California (UCOP), approximately \$7,700. No distinction in growth funding is made between graduate and undergraduate students. Yet, graduate students are, at least presumably, more expensive to educate than undergraduates, primarily because of the faculty time they absorb and the costs of student support. The campus must be both clever and realistic if it is to insure that future growth in undergraduate enrollment does not absorb a disproportionate share of the marginal increases in state support. In this area, attention to educational effectiveness should guide our assessment of how efficiently we use our resources in both undergraduate and graduate education.

Culture of Evidence

In the process of crafting the Educational Effectiveness Report, laying out for ourselves and for the WASC commission the decisions that we face as a campus, we have come to appreciate that our campus has not uniformly mustered good information about important topics. Until recently, the central administration had not standardized the range of data that they require from the academic divisions. We have, furthermore, only recently begun to regularize the transmission of existing data to all who might benefit in a manner that makes its value clear. Too often, useful reports prepared by the Office of Institutional Research have not found their way to receptive audiences who might benefit from their work.

Our resolutions to collect and utilize data are evident in our in-depth essays. Especially with respect to advising, we need good data to preserve our excellence in undergraduate education. Exhibit E makes very clear that we also need to learn from programs and departments what they envision as the educational outcomes they seek for their undergraduate students. Currently, every program publishes a mission statement. But only two of our programs (computer engineering and electrical engineering) have fully articulated their educational objectives with learning outcomes. Yet, until programs articulate their objectives, it is hard to determine if programs meet their objectives.

Similarly, as is clear from our in depth analysis concerning graduate programs, we see that the first step in sensible growth is to collect specific types of data. If we are to make the best and most efficient use of our limited resources, we need to systematize basic information about the recruitment of students and about the quality of their lives on campus.

As we become increasingly invested in information technology, we will be able to collect better data in cost effective ways. Both the Graduate Admissions Review Process (GARP) and the Academic Information System (AIS) hold out the promise of permitting large amounts of data collection and analysis. Nonetheless, it takes resources to collect data. Campus discussions have made it evident that we need to continue to be thoughtful about which data we seek to find and disseminate in order to insure that valuable time and attention are not devoted to research and data collection which do not then get used effectively to resolve questions and support thoughtful planning at all levels.

IN HISTORICAL CONTEXT

In 1994, UC Santa Cruz went through its last re-accreditation. The WASC visiting team at that time wrote a long report on the state of the campus. Within the report were numerous specific suggestions intended to improve the institution.

Scrutiny of the 1994 report reveals that many of our current issues were anticipated ten years ago. In 1994, UC Santa Cruz was struggling with the question of how to increase the percentage of students who were graduate students. Acknowledging the high cost of living in Santa Cruz and also noting the sense of isolation that can come from the physical challenges of our beautiful campus, UC Santa Cruz and the WASC visiting team brainstormed about ways to ameliorate the living conditions of graduate students. At the same time, the campus was seeking to make changes in the delivery of its undergraduate curriculum – and specifically to enlarge class sizes – in such a way as to preserve what was felt to be a distinctive approach to undergraduate education.

Issues of diversity were of critical importance. An overhaul of the advising system seemed not just advisable but imperative. The 1994 WASC visiting team repeatedly marveled at how the faculty at UC Santa Cruz were able to accomplish so much in terms of teaching and research on such constrained resources. Suggestions were made about the advisability of finding extramural grants and other funds to decrease the campus's reliance on shrinking state funds. The visiting committee warned that decentralized decision making without decentralized responsibility for the management of resources would impair the institution's ability to coordinate academic and financial planning.

Although some of our current themes echo the last review, in many ways the campus of today differs profoundly from what WASC visitors found here in 1994. Ten years ago the faculty ranks had been depleted by the Voluntary Early Retirement Incentive Programs. Many of the pioneers of the campus retired, and others who remained on active duty apparently felt somewhat at odds with new recruits. The visiting committee suggested ways to help foster a sense of community among the faculty. The quality of teaching by ladder faculty and by graduate students was reported to be uneven. No word was even whispered about growth. There were no enrollment pressures. No one had conceived of the Silicon Valley Center. The School of Engineering did not exist. The development office was reactive rather than proactive, and the campus had a million fewer assignable square feet of office, classroom, and residential space than it has today.

Examining our central conundrum – how to increase the quantity and quality of graduate programs in ways that also enhance undergraduate education – in the light of the last decade allows us to see that UC Santa Cruz today has begun to solve the dilemma by facing some issues about enrollment management. Ten years ago our enrollments were essentially static. Currently, we are working on a Long Range Development Plan that would allow a campus average FTE enrollment of up to 21,000. The task of managing our enrollments today differs dramatically from the task that faced the campus ten years ago.

IMPLICATIONS

Managing Undergraduate Enrollments

UC Santa Cruz has an ethical responsibility to help educate its portion of the state's youth. In very real material terms, it is also in the university's self interest to educate its share of these students because state dollars flow to the campus as a function of enrollment. But income from enrollment increases must be deployed effectively to provide capacity for educating the students and at the same time contribute to the base budget of the institution. Further, we must be mindful that the recent relatively rapid increases in enrollment – and hence state funding – are not likely to continue in the future.

The WASC review has triggered a set of discussions about one way, potentially, to limit growth in the costs of undergraduate education while meeting our allocated enrollment targets. A key to success in this regard is that our total enrollment is projected to grow much more slowly over the next few years than it has in the past few years. Hence we have an opportunity to realize a larger proportion of that incremental growth as graduate expansion. Continued success in growing graduate enrollments will allow the undergraduate population to grow much more slowly. Further analysis will be needed to make realistic projections of the share of future growth that will be allocated to undergraduate enrollment.

But we can already anticipate the question of how that growth should be divided between freshman and junior transfer admits. It seems possible that by increasing slightly the proportion of transfer students we could well stabilize our entering freshman cohort size, allowing for some much needed breathing room for programs to assess their effectiveness in serving those populations. It would also relieve budget pressures on programs that are formula funded based upon the entering freshman class. It might also enable a certain degree of internal enrollment management since transfer (but not freshmen) admissions can be more selectively directed to programs with underutilized capacity. While this might be possible and desirable in principle, it is clear that current transfer application and yield rates would

not support this strategy and that further analysis is required.

Entering students generate one-time costs and require specialized support. Consequently improved retention has potential positive economic benefits. One outcome of the recent budget reduction exercises and this review is a renewed motivation for developing data to support improved retention as a matter of educational effectiveness as well as resource management.

However it is not realistic to think that UC Santa Cruz could develop enough additional transfer enrollment to meet all of its anticipated undergraduate enrollment growth. The admissions office and the Senate Committee on Admissions and Financial Aid believe that UC Santa Cruz would not be able to yield that many transfer students without vigorous (and costly) intervention and outreach. This is an area in which further research is needed in the short term to resolve the question of whether it would be desirable and if so, feasible. In any event it is clear that the pace of growth at the undergraduate level will slow substantially and so entering freshman cohorts are likely to remain similar to recent levels in the near future.

Our considerations suggest the following recommendation:

- √ In consultation between the Academic Senate and the administration, the campus should examine the possibility of absorbing future mandated enrollment increases primarily in graduate and upper-division transfer enrollment, rather than in freshman admissions.

Managing Graduate Enrollments

Campus-wide discussions related to the WASC review have surfaced different conceptions about the motivation for and character of increased graduate enrollments. Together the Academic Senate and administration need to consider tradeoffs between different models of graduate growth. As a campus, we need to decide whether or not to transform the Department of Education into a School of Education. If such a transformation seems advisable, what should the new school look like? Where are our

special strengths? What aspects of education should we emphasize in our curriculum beyond our current focus on diversity and second language learning? We also need to think about whether other professional schools might be consistent with our mission. Would UC Santa Cruz benefit from developing a School of Public Policy and Resource Management? If so, how might such a school be developed? What about a School of Business or Management? What special opportunities should be pursued in Silicon Valley and elsewhere off campus? In each case, the attractions of new and potentially highly visible extensions of campus programs must be realistically weighed against their start-up costs, the likelihood that their enrollments would generate an appropriate proportion of their operating expenses, and the opportunity costs to existing programs or desirable extensions of them.

This review has stimulated productive discussion on many issues. We believe that it will be sustained as we anticipate the resolution of the search for a permanent Chancellor. We aim at insuring that the incoming administrative leadership will find a campus prepared to move expeditiously in resolving as many of these questions as we can so that we can focus on realizing plans.

Looking Beyond the Divisions

Discussions in the WASC Steering Committee and WASC-related conversations in various committees of the Academic Senate have also brought into high relief an observation that has important implications for educational effectiveness. Several bodies have recognized that narrow conceptions of how to influence educational effectiveness may stifle creative problem solving. The measure of educational effectiveness is student learning, and so it is easy to fall into the trap of imagining that we should assess and influence educational effectiveness simply by looking at classrooms nested in departments. But student learning happens in a number of ways and through a number of processes far removed from the classroom and outside the boundaries of departments (and even divisions). The rich material and web-based resources provided by the University Library, for

example, are critical to graduate and undergraduate students' education in ways that go well beyond the formal curriculum.

As noted by our Senate Committee on Educational Policy, our external review process looks at specific programs and departments with a department internal focus. But it does not as effectively address the context created for it by the academic division that houses the program. Is there value in conducting similar assessments of how effective particular divisions are in supporting the educational effectiveness of their programs? How can academic divisions achieve their missions effectively in the most economical fashion? These are issues that deserve airing in a manner that is productive for the members of the division. A process that parallels that for departments might be helpful in separating healthy programmatic debate from the individual decanal reviews.

Additional factors, well beyond the jurisdiction of divisions, also have important consequences for our educational effectiveness. Right now UC Santa Cruz is undergoing a transformation of its information technology (IT) system. A well-functioning IT system is crucial to nearly all aspects of the university's mission, providing vital access to everything from research and teaching materials to student records, business transactions, budgetary information, and institutional analysis. Like other institutions grappling with both the costs and the challenges of transition in this area, we are currently struggling to find the right strategy for investing in support technology to insure ongoing benefits to the campus enterprises.

Investment in other areas which may seem removed from educational effectiveness must be reconciled with direct investment in instructional and research activities and student support. For example, expanded child care facilities may seem a topic far removed from the classroom. Yet the issue is a critical factor in faculty and student morale. When faculty parents have their young children safe and well cared for, they boost their effectiveness as teachers.

ANTICIPATION

We are eager not to lose the momentum that has come from the broad campus participation in the WASC review process. In the period intervening between the submission of this report and the February visit of the WASC team, the administration will look for opportunities to resolve some of these issues, bringing together the present campus administrative and senate leadership to further discuss openly and honestly the issues that face us.

We look forward to engaging in further discussion with the visiting team. We hope that our strategy in laying out this report will provide many areas for engagement with the members of the team. We look forward to the results both as an opportunity to demonstrate our core commitment to effectiveness and as a way of drawing on informed external advice on these issues.