



Survey of Undergraduate Education Activities

September 1995

Association of American Universities

Introduction

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In 1994, the Association of American Universities, which at that time represented 58 leading North American research universities (the membership has since grown to 60), asked its member institutions for information about current undergraduate education efforts on their campuses.

Fifty-three institutions responded to this request. The document that follows is a summary of the information provided in those responses.

It must be emphasized that this was not a formal survey and there was no attempt made to gather quantifiable data. Rather, member universities were simply asked to "provide [the AAU with] information on programs and activities that enhance undergraduate education, including any new initiatives to focus additional resources and attention on this area."

Therefore, the document that follows is not intended to be, and should not be taken as, a definitive catalog of all the undergraduate programs, activities, and initiatives that were underway during 1994 at the universities surveyed. Some campuses put much more time and effort into their responses than others, and some limited their responses to include only new initiatives. All in all, many campuses no doubt failed to mention programs, initiatives, and other activities that they did, in fact, have in place.

Nevertheless, the document that follows clearly demonstrates that a considerable amount of attention was being directed to undergraduate education on AAU-member campuses. The document also helps illustrate the wide variety of programs and opportunities available to undergraduates on these campuses.

The AAU conducted a similar informal survey in 1990. In general, the latest survey indicates that efforts to bolster undergraduate education have increased substantially at AAU institutions over the last few years, and that many new programs and initiatives are now in place on many campuses. In particular, it appears that much more attention is being paid to evaluating teaching performance; to giving greater weight to teaching in hiring, tenure, promotion, and salary decisions; to providing undergraduates with more opportunities for personalized, small-group instruction and involvement in research; and

to strengthening orientation, advising, counseling, and mentoring activities.

Summary

One-third (18) of the 53 universities that responded to the survey said they had undertaken administrative reorganizations aimed at focusing resources and attention on undergraduate education, or were in the process of doing so.

Eleven of these universities had established new administrative positions (usually a Vice Provost or Vice President/Vice Chancellor) with specific responsibilities for coordinating and improving undergraduate education. Others said they had established faculty councils or task forces to accomplish the same ends.

More than half (29) said they had undertaken comprehensive reviews of undergraduate education on their campuses, or were already in the process of developing or implementing plans for improvement of undergraduate education.

For example, the University of Michigan said its College of Literature, Science and the Arts had undertaken an Undergraduate Initiative aimed at increasing faculty-student contact, particularly during the freshman and sophomore years, and at replacing large, impersonal lectures with small classes. The University of Texas at Austin said it was in the process of carrying out the recommendations of a campuswide Committee on the Undergraduate Experience, which had developed a comprehensive strategy for improving undergraduate education.

More than two-thirds (36) said they had strengthened their undergraduate curriculum.

Many said they had revised their undergraduate curriculum extensively since the late 1980s. Many said they had instituted a new core curriculum for all undergraduates. Many also cited efforts to strengthen the undergraduate curriculum of specific departments.

More than half (27) said they had recently taken steps to ensure more rigorous evaluation of teaching performance.

The University of Minnesota said it had instituted uniform student evaluation of teaching and a new program of peer review of teaching. The University of Nebraska, Lincoln, said over 35 of its academic departments were now involved in the evaluation of instruction through teaching portfolios and other mechanisms. The University of Pittsburgh said it had just completed implementation of a policy that mandates peer and student evaluation of teaching for all faculty who have primary instructional responsibility for a given course.

Nearly half (24) said they were giving greater weight to teaching in hiring, tenure, promotion, and salary decisions.

Brown University said its Dean of the Faculty had required that the quality of teaching be evaluated and given equal weight with research accomplishments in the yearly review process of faculty performance. The University of Iowa said faculty seeking promotion and tenure in the College of Liberal Arts were now expected to submit actual teaching evaluations by students and peers, rather than general summaries, and to submit evaluations that are recent; in addition, new faculty in the College were now being advised that tenure or promotion would not be recommended without the demonstration of a record of effective teaching. Cornell University said its Provost had encouraged the deans of the university's schools and colleges to reexamine tenure guidelines so they include a rigorous examination of teaching.

More than a third (21) said they had put an emphasis on having regular, full-time faculty teach undergraduate courses.

The University of Arizona said it had increased significantly the number of lecture classes taught by senior faculty, especially at lower-division levels. The University of Southern California said it allows only regular, full-time faculty to teach general courses required of all undergraduates, except freshman writing and beginning foreign language classes. Washington University in St. Louis said it requires that virtually all undergraduate courses, with the exception of freshman English, be taught by regular, full-time faculty.

About 15 percent (9) said they had taken steps to curb or eliminate the practice of reducing teaching loads to attract or retain faculty.

Columbia University said it no longer offers course relief to prospective new faculty to attract them to the university. Northwestern University said it does not hire any faculty with the promise of no teaching and it regularly monitors teaching loads across its schools to detect any significant changes. Ohio State University said it opposes the practice of reducing teaching loads to attract or retain faculty and rarely allows departments to do this.

Nearly two-thirds (32) said they had established teaching centers or special programs that concentrate on upgrading teaching efforts of regular faculty and teaching assistants.

The University of Colorado at Boulder said over 2,000 faculty had been served through a Faculty Teaching Excellence Program designed to raise faculty consciousness about good teaching practices and to increase the range and level of teaching schools. Harvard University said it had recently established a Center for Teaching and Learning that

employs a professional staff of nine experienced teacher-counselors and provides orientation programs for teaching fellows and teaching assistants, as well as individualized counseling for regular faculty. The State University of New York at Buffalo said it had established an Office of Teaching Effectiveness, which reports to a new Vice Provost for Faculty Development, and which offers pedagogical workshops and seminars for both regular faculty and teaching assistants.

More than two-thirds (36) said they had established special programs for teaching assistants.

All of these universities said they were now providing orientation and training for their teaching assistants. Seven said this orientation and training is required of all teaching assistants. Twenty-one said they maintained special programs for foreign teaching assistants. Twelve said they required all foreign teaching assistants to meet oral English proficiency standards before teaching.

More than three-quarters (41) said they were using a variety of other incentives and mechanisms to emphasize teaching.

Several universities, including Columbia, Northwestern, and Tulane, said they had established endowed positions for faculty members with especially strong commitments to undergraduate teaching. Many universities said they offered teaching awards, but several offered awards that were especially substantial. The University of Florida said it had initiated a Teaching Improvement Program that gave base-level salary increases of \$5,000 to 165 faculty who were rated as the best and most productive undergraduate teachers. Vanderbilt University said it had established a program that each year gives one or two outstanding teachers a \$10,000 annual salary supplement for three years. The University of Colorado at Boulder said it had initiated a Presidential Teaching Scholars Program that not only provides awards of \$12,000 to tenured faculty who are outstanding teachers, but also engages these faculty in mentoring junior faculty.

More than three-quarters (41) said they had taken steps to enhance teaching through new information technology.

Many universities said they were making major efforts to encourage and facilitate the use of new information technology in instruction and to give all students easy access to on-line information services and resources. The California Institute of Technology said it was developing computer-based instructional and visual tools to enhance instruction in a wide variety of fields. The University of North Carolina, Chapel Hill, said it was allocating \$200,000 annually to outfit classrooms with the most technologically advanced instructional equipment. The Massachusetts Institute of Technology said it had developed a large-scale distributed computing system that provides students,

faculty, and staff with workstations that give free access to a wide range of services, such as network services, commercial software, courseware developed specifically for MIT subjects, and a common file system.

More than half (29) said they maintain grant programs to underwrite faculty proposals for developing new undergraduate courses, course materials, and teaching methods.

The University of Maryland, College Park, said it provides 18 to 20 grants of up to \$5,000 annually for the development of new courses or the enhancement of existing courses. The University of California, Los Angeles, said it provides over \$600,000 annually for these purposes. The University of Oregon said it uses strategic planning funds to complement a private endowment specifically designed to encourage the development of new courses and teaching methods.

More than a third (19) said they had initiated creative or novel education programs intended to enliven and energize the academic experience for undergraduates.

Pennsylvania State University said its College of Earth and Mineral Sciences maintains a Center for Advanced Undergraduate Studies and Experience that gives undergraduates access to courses and facilities not available at the departmental level. Rutgers University said it was expanding a program to support the development of courses that integrate community service activities with academic subject matter in a wide range of disciplines. Syracuse University said its Maxwell School of Citizenship and Public Affairs was expanding its internship and service learning opportunities for undergraduates.

More than half (30) said they offer undergraduate seminar courses, in which small groups of students are taught by senior faculty.

Clark University said it has offered first-year seminars in nearly all departments since the mid-1980s. The University of Washington said all its freshman seminars are limited to no more than 12 students and are taught by senior faculty. Duke University said it offers entering freshmen a cluster of interrelated seminars drawn around such common themes as "Medieval and Renaissance Studies" and "Twentieth Century America."

More than half (29) said they offer undergraduate honors programs that allow students to work closely with senior faculty in various kinds of special courses, research opportunities, and independent studies.

The University of California, San Diego, said each of its five colleges offers a freshman honors program, and there are also honors programs for upper-division students. Iowa State University said it offers both freshman and upper-division honors programs and

makes available to honors students a special Mentor Program, in which students are matched with faculty doing research in areas of common interest. The University of Pennsylvania said it maintains a universitywide undergraduate honors program that gives students access to special advising, as well as special opportunities for research and independent study with senior faculty.

More than 40 percent (22) said they give undergraduates opportunities for individualized, independent study.

The University of Kansas said it allows any well-prepared undergraduate to work on an independent-study basis with senior faculty, with the approval of the faculty member. Michigan State University said independent study options are broadly available to its undergraduates. The University of California, Los Angeles, said it had over 2,500 undergraduates participating in its tutorial/independent study program during the 1993-94 school year.

About a third (17) said they give undergraduates opportunities to participate in advanced courses and obtain advanced degrees on an accelerated basis.

Catholic University said its School of Arts and Sciences offers B.A./M.A. degrees in Economics and Business, English, History, and Politics; in addition, qualified undergraduates can complete a B.A./J.D. program in six years. The University of Rochester said it allows undergraduates to take many graduate courses, and it also offers a series of programs that allow undergraduates to begin work during their undergraduate years on master's degrees and to earn both degrees in five years. Carnegie Mellon University said its departments have a series of courses that are available to both undergraduates and graduate students, and many departments allow undergraduates to take an M.A. or M.S. on an accelerated basis.

More than 40 percent (21) said they offer undergraduates opportunities for interdisciplinary, interdepartmental study.

Stanford University said it offers 14 interdisciplinary degree programs, as well as an interdisciplinary honors program that allows undergraduates to supplement a regular degree program with advanced study supervised by faculty in another discipline. Case Western Reserve University said its undergraduates can combine majors in such fields as management and theater, engineering and music, and computers and art; approximately 12 percent of the university's baccalaureate graduates annually pursue double majors or dual degrees. The University of Wisconsin, Madison, said it gives undergraduates access to a wide range of interdisciplinary and interdepartmental programs, some of which offer related courses in as many as 20 departments.

Over 90 percent (49) said they give undergraduates opportunities to conduct research of their own under faculty supervision, as well as opportunities to work with faculty on research or teaching for credit, pay, or as a volunteer.

Johns Hopkins University said most of its faculty research projects include undergraduate assistants on the research team, and undergraduates who provide research assistance to faculty on a long-term basis are often cited as coauthors of published works. The University of Illinois, Urbana-Champaign, said it offers undergraduates opportunities to participate in research and development projects with scientific and technical staff, as well as with eight Fortune 500 companies at the university's National Center for Supercomputing applications. Princeton University said it provides a two-month summer research program for 85 students in molecular biology, including some from other institutions that lack extensive research programs.

Nearly half (24) said they had instituted special residential programs and other programs intended to provide a small-college experience in the context of a large university.

Rice University said it maintains a system of eight residential colleges where students and faculty live, dine, and socialize together; each college has about 220 students in residence and another 100 students as off-campus members. In all, nearly 200 Rice faculty and staff participate in this system. The University of Virginia said it had established two residential colleges since 1986 and was in the process of planning a third. New York University said it has established a program that regularly sponsors activities intended to bring students and faculty together for educational interaction outside the traditional classroom setting, such as informal dinners.

More than two-thirds (38) said they had enlarged and strengthened student orientation, advising, counseling, and faculty mentoring activities, and had instituted special programs to help new students make the transition from high school to college.

The University of Nebraska, Lincoln, said it used specially trained upper-level students to follow up with new students and offer support. The University of California, Berkeley, said it had established residence-hall academic centers where students can have access to computer equipment, get tutoring from upper-division or graduate students, and generally seek advice on study and learning habits and academic matters. The University of Michigan said it had initiated a universitywide mentorship program that links first-year students with members of the faculty and staff; students who enroll are matched by academic or career interests with a mentor and three other first-year students.

More than half (28) said they had established programs and centers specifically aimed at assisting undergraduates in developing reading, writing, and study skills.

The University of North Carolina at Chapel Hill said it had established a number of programs and centers to support undergraduate education, including a Learning Skills Center, a Writing Center, and a Learning Disabilities Center. The University of Missouri said it maintains a universitywide writing program that also assists with speaking, reading, and study skills. Yale University said it strongly emphasizes writing across its undergraduate curriculum and offers a special series of writing-intensive courses each year; special writing tutors are also always available in the university's student residences to help students develop their writing skills.

More than half (28) said they offered their undergraduates experiences and training not likely to be found at many other kinds of institutions.

Case Western Reserve University said its art history majors take classes at the Cleveland Museum of Art, which is rated among the nation's finest, and its music students receive training at the Cleveland Institute of Music, whose faculty includes members of the Cleveland Symphony Orchestra. The University of Colorado at Boulder said the Colorado Space Grant Consortium, which is headquartered on the campus, gives undergraduates the opportunity to design space experiments that have been launched on the space shuttle and other NASA launch vehicles. The University of Southern California said it offers the only screenwriting program in the nation for undergraduates, through its School of Cinema-Television; the school's production division also offers an undergraduate program, and it is the only one in the nation that funds student projects.

Specific Institutional Responses are grouped under the following categories:

Administrative reorganizations aimed at focusing resources and attention on undergraduat education

Comprehensive reviews of undergraduate education; plans for improvement of undergraduate education

Strengthened undergraduate curricula

Steps to ensure more rigorous evaluation of teaching performance

Greater weight to teaching in hiring, tenure, promotion, and salary decisions

Emphasis on having regular, full-time faculty teach undergraduate courses

Steps to curb or eliminate the practice of reducing teaching loads to attract or retain faculty

Teaching centers and special programs that concentrate on upgrading teaching efforts of regular faculty and teaching assistants

Special programs for teaching assistants

Other incentives and mechanisms to emphasize teaching

Steps to enhance teaching through new information technology

Grant programs to underwrite faculty proposals for developing new undergraduate courses, course materials, and teaching methods

Creative or novel education programs intended to enliven and energize the academic experience for undergraduates.

Undergraduate seminar courses

Undergraduate honors programs

Opportunities for individualized, independent study

Opportunities to participate in advanced courses and obtain advanced degrees on an accelerated basis Opportunities for interdisciplinary, interdepartmental study

Opportunities to conduct research or to work with faculty on research or teaching

Special residential programs and other programs intended to provide a small-college experience in the context of a large university

Student orientation, advising, counseling, and faculty mentoring activities; special programs to help new students make the transition from high school to college

Programs and centers aimed at developing reading, writing, and study skills

Experiences and training not likely to be found at many other kinds of institutions

Administrative reorganizations aimed at focusing resources and attention on undergraduate education

- University of Arizona: Has established a senior administrative position, Vice Provost for Undergraduate Academic Affairs, dedicated to improving

campuswide undergraduate education. The Vice Provost's responsibilities include directing the development of a universitywide general education program, coordinating services that support undergraduate education, and representing the needs of undergraduate education.

- University of California, Berkeley: In 1990, created a new position of Special Assistant to the Vice Chancellor. One of the charges of this position is to convene the top administrators in a Council on Undergraduate Education, which discusses, monitors, and generates ideas about undergraduate education.
- Carnegie Mellon University: In 1991, appointed a Vice Provost for Education, who was charged with establishing a Commission on Undergraduate Education. The Commission, in turn, led to the creation of a series of task forces. Task force recommendations are ongoing, and have led to a variety of changes intended to improve undergraduate education. Central advising offices in each of the colleges have been augmented and reorganized and departmental advising programs have been strengthened and standardized.
- Columbia University: Has focused major new attention on undergraduate education by developing closer collaboration between the Dean of Columbia College and the Vice President for Arts and Sciences.
- University of Illinois, Urbana-Champaign: In 1988, established an associate vice chancellor position with specific responsibility for undergraduate education.
- University of Maryland at College Park: In 1994, the campus reorganized the Academic Affairs division and in so doing created the senior administrative position of Associate Provost for Academic Affairs and Dean for Undergraduate Studies. The Undergraduate Studies unit was expanded to include academic service units that previously were not the responsibility of the dean. The university says this reorganization is expected to improve undergraduate education by providing students with more integrated services and by permitting more efficient allocations of resources to the most pressing concerns.
- Michigan State University: Has established an Assistant Provost for Undergraduate Education.
- University of Minnesota: A President's Initiative for Excellence in Undergraduate Education, announced in 1990, remains a major, ongoing effort to improve the undergraduate experience in seven key areas: enrollment, admissions, and recruiting; curriculum; advising and counseling; teaching; learning environment; community; and assessment.

- State University of New York at Buffalo: In May of 1994, formed a Council of Arts and Science Deans to focus attention on problems of undergraduate education in the arts and sciences and to coordinate the efforts of the different faculties in this area. Council members include the Deans of Arts and Letters, Social Sciences, and Natural Sciences and Mathematics, as well as the Vice Provost for Undergraduate Education. The Council is working on a number of issues including faculty advising, access to undergraduate major programs, transfer and articulation problems, and general education.
- University of Oregon: In 1993, as an outgrowth of a strategic planning initiative, the faculty established a new Undergraduate Education Policy Coordinating Council. Made up of faculty and administrators from each of the university's colleges and schools, the Council is charged with coordinating all policies relating to undergraduate education. Work within this council has so far focused on coordinating programs in order to speed student progress toward degrees.
- Pennsylvania State University: An Undergraduate Academic Program Assessment Team has been formed to stimulate and support academic program assessment activities across the university aimed at the improvement of academic programs in all the colleges. The theme of virtually all of the assessment approaches is promoting greater amounts of feedback from students and recent alumni to improve learning and teaching processes.
- Rutgers University: In 1992, created a position of Vice President for Undergraduate Education to develop a cohesive university strategy for enhancing undergraduate programs. Has also formed an Undergraduate Education Advisory Council made up of executives of New Jersey corporations that are major employers of the university's graduates. The Council will keep the university apprised of the job performance of its graduates and provide information on marketplace and industry changes that may have curricular implications.
- University of Southern California: In 1994, created the position of Vice Provost for Undergraduate Studies.
- Stanford University: In October 1994, following the recommendation of a special Commission on Undergraduate Education (see below), created a new Vice Provost for Undergraduate Education. The Vice Provost's responsibilities include monitoring the system of incentives and rewards directly related to teaching and the supervision of curricular programs required of all undergraduates.
- The University of Texas at Austin: In 1989, appointed a Vice Provost with

responsibility for undergraduate teaching and advising. In 1992, developed from the Department of English a new Division of Rhetoric and Composition, with its own faculty, to concentrate on the teaching of writing courses, especially to freshman students.

- University of Toronto: In 1989, established a position of Provost's Advisor on Undergraduate Education; the Advisor is responsible for encouraging creative initiatives in faculty development and curriculum renewal. The university has modified its budget guidelines and established an Academic Priorities Fund that is reallocating and redistributing support to such areas as instructional development, program development, student academic support, quality and performance reviews, and the linkage of teaching and research. Has also established a Provostial Advisory Committee on Teaching Development.
- University of Washington: In 1993, formed a President's Task Force intended to improve the quality of undergraduate education delivery.
- University of Wisconsin, Madison: In 1991, reorganized the position of Associate Vice Chancellor for Academic Affairs to enlarge and focus responsibility on initiatives to improve undergraduate education.

Comprehensive reviews of undergraduate education; plans for improvement of undergraduate education

- University of Arizona: Has completed a rigorous, universitywide review of all undergraduate programs using consistent indicators of quality and priority, with the goal of focusing on those programs of greatest centrality and quality. As a result, some programs have merged, some are being phased out, and some have been recommended for elimination. Has developed plans to restructure general education requirements for all undergraduates. Has agreed with Board of Regents on specific student-centered campus goals and objectives.
- Brown University: In 1990, the Dean of the College completed a comprehensive review (which included a twenty-year retrospective) of the Brown curriculum. The report considered the philosophy of the curriculum, its implementation, and specifically, how students were using it. Since then, Brown has undertaken a number of broad reviews of the way students structure their education, and the way concentration programs are structured to provide for sequence, depth, and synthesis.
- University of California, Los Angeles: Building on initiatives of the 1980s, has undertaken a major review of undergraduate education. In 1991, a 35-member

Concilium on Undergraduate Education was established as the main campus forum for discussion of undergraduate education among students, faculty, senate leaders, and administrators. The Concilium, chaired by the Provost of the College of Letters and Science, has established work groups in the following areas: general education; undergraduate teaching in science, mathematics and engineering; evaluation of teaching and learning; scale and delivery of instruction; and new instructional technologies. In addition, support from the Hewlett Foundation is enabling the Concilium to sponsor a three-quarter general education symposium intended to enrich the inquiry into general education issues.

- Carnegie Mellon University: Following on the reports of a series of task forces and of advisory boards for each department, the university's president has appointed a Committee on Undergraduate Initiatives, as part of a major strategic planning process, to examine which recommendations have been implemented and what more needs to be done.
- Clark University: Following a comprehensive planning effort that identified strengthening undergraduate education as a major goal, the university established a Commission on Undergraduate Education in October 1993. The commission was charged with undertaking "a holistic, searching assessment of undergraduate education at Clark" and with producing concrete recommendations to strengthen undergraduate education. The Commission has completed a draft report, and a final report will be brought to the Faculty Assembly for approval early in 1995.

Meanwhile, for the past two years, an Undergraduate Academic Board that includes students as well as faculty and administrators, has been systematically reviewing the university's 28 undergraduate majors. The goal of the review is to ensure that each major is providing a structured, in-depth, challenging education for students, including opportunities for advanced study and capstone courses or individual or small-group projects that involve them in research with faculty. A preliminary review of each major was completed in the Spring of 1994 and departments have submitted responses. A final report on each major, with recommendations for improvements, will be sent to departments and the academic administration by the end of the 1994-95 academic year.

- University of Colorado at Boulder: In 1987, adopted a new strategic plan that included strengthening of undergraduate education as a major goal.
- Columbia University: A Committee on Undergraduate Education, which includes tenured faculty, has been formed to improve various aspects of undergraduate education. The committee has been working with several

departments to improve the majors and the second two years of undergraduate education. It has also been examining ways to improve the university's undergraduate writing program.

- University of Illinois, Urbana-Champaign: In 1987, established a Council on Undergraduate Education, made up of faculty and student representatives, to recommend ways to strengthen the undergraduate experience. Many council recommendations have been implemented, including:
 - an expanded orientation program for new students and their parents
 - changes in the language of campus guidelines for promotion and tenure in order to emphasize the importance of teaching
 - establishment of an Educational Technologies Board aimed at improving computer-assisted learning.
- University of Iowa: In 1992, at the request of the state board of regents developed a set of strategies that called for increasing the involvement of tenured and tenure-track faculty in undergraduate education, augmenting incentives for excellent teaching, and ensuring that faculty development programs fully contribute to the university's academic programs. Results so far have included the following:
 - The percentage of faculty-taught classes in the College of Business has increased markedly.
 - The College of Liberal Arts has established a policy that departments may not assign teaching assistants to upper-division courses without explicit authorization.
 - In the College of Liberal Arts, those seeking promotion and tenure are now expected to submit actual teaching evaluations by students and peers, rather than general summaries, and to submit evaluations that are recent.
 - New faculty in the College of Liberal Arts are now advised that tenure or promotion will not be recommended without the demonstration of a record of effective teaching.
- Iowa State University: In 1992, developed a plan that set specific goals for enhancing faculty productivity and effectiveness. The plan was developed at the request of the state board of regents, but it is an integral part of the university's

strategic planning efforts and will be continuously reviewed and updated on campus. The plan addresses numerous issues; goals that relate directly to undergraduate education include the following:

- Increase student retention and graduation rates. The goal is to increase the one-year and two-year retention rates of the entering 1994-95 undergraduate class to 90 percent and 80 percent, respectively. The one-year retention rate for the 1989-90 entering class was 81.4 percent, while the two-year retention rate was 71.9 percent.
- Increase the percentage of tenured and tenure-track faculty who are teaching undergraduate level courses. The goal is 95 percent by the 1995-96 academic year. In 1992-93, approximately 84 percent of these faculty were teaching undergraduate courses. The ultimate goal is to involve all faculty in undergraduate teaching, with the most gifted faculty teaching introductory courses.
- The Johns Hopkins University: In January 1992, the Dean of the School of Arts and Sciences appointed a committee of six students and six faculty to evaluate undergraduate education at the university. The committee's report has been circulated among the faculty, the student council, and other groups, and the committee is currently working with the university's Development Office to turn its proposed initiatives into fundable recommendations. In November 1992, the president and the provost chartered a committee to "undertake an imaginative inquiry into the university's underlying health, prospects, and strategic directions and to recommend ways in which Hopkins can remain at the forefront of higher education through the year 2000 and beyond." As part of this effort, a strategic study group is focusing specifically on the university's undergraduate program.
- University of Kansas: In September 1993, the Vice Chancellor for Academic Affairs appointed a universitywide task force to study the freshman and sophomore academic experience. The task force is examining the university's progress toward stated goals for undergraduate education.
- University of Maryland at College Park: The Campus Senate commissioned a review of undergraduate education at the end of the 1980s. The review led to a report entitled "Promises to Keep: the College Park Plan for Undergraduate Education," which stressed active learning, writing, and critical thinking skills. The report led directly to the adoption of new minimum general education requirements that every undergraduate student must fulfill as a condition for earning the baccalaureate degree. Currently the Undergraduate Studies Office and other campus units are working with a strategic planning process designing

better ways to organize the planning and implementation of present and future undergraduate education efforts.

- University of Michigan: The university's College of Literature, Science and the Arts has undertaken an Undergraduate Initiative aimed at increasing faculty-student contact, particularly during the freshman and sophomore years, and at replacing large, impersonal lectures with small classes.
- University of Minnesota: A President's Committee on Teaching and Learning is in the process of making recommendations for action in five key areas: communicating the importance and value of teaching; reviewing the reward system to ensure proper recognition of teaching and advising; exploring various teaching strategies, including new uses of technology; fostering faculty-student interaction in and out of the classroom; and assisting faculty and departments to focus on creative approaches to teaching in a major-university setting. A final report was to be presented to the president in December 1994.
- State University of New York at Buffalo: Has appointed an Arts and Sciences Curriculum and Program Committee charged with reviewing all aspects of the undergraduate program in the arts and sciences, with an initial emphasis on general education. The Committee consists of senior faculty and reports directly to the Council of Arts and Sciences Deans.
- University of North Carolina at Chapel Hill: The Steering Committee of the University's institutional reaccreditation by the Southeastern Association of Colleges and Schools voted unanimously to make teaching the dominant focus of its two-year (1994-95) project. The university says the reaccreditation study will take an "unflinching" look at all forms of teaching throughout the university and make recommendations to help faculty teach more effectively and achieve higher levels of success.
- Northwestern University: In 1987, a student-faculty-administration Task Force on the Undergraduate Experience conducted a comprehensive review of the educational and cocurricular opportunities available to Northwestern undergraduates. The report of the Task Force included numerous recommendations for the enhancement of academic and extracurricular opportunities available to undergraduates. Nearly all of those recommendations have been implemented. In addition, every undergraduate program is systematically reviewed as part of the institution's regular program review process. Specific action plans are developed for strengthening programs that are found to be in need of attention.

- University of Oregon: In the fall of 1994 began, through its Undergraduate Education Coordinating Council, a comprehensive review of its undergraduate curriculum and program.
- University of Pennsylvania: The new president of the university, who took office in 1994, has made the reorganization of undergraduate education her highest priority. Supported by a donation from an alumnus, a process of redesign has begun with the appointment of a committee of faculty and students who will spearhead the effort.
- University of Pittsburgh: Has completed the first phase of a long-range planning process; several of the most important goals address the improvement of teaching and learning, including a particular focus on undergraduate education. Has also implemented procedures for the ongoing review of both undergraduate and graduate programs. This review process includes self-studies, internal review teams, and external review teams.
- Rutgers University: In 1992, initiated a universitywide review of its undergraduate curriculum. The process has to date yielded a draft set of universitywide learning goals for students. These goals delineate expectations for the university community concerning skills and competencies that should be developed in all students regardless of their major field of study. In the fall of 1993, a Pilot Grants program was initiated to support faculty projects focused on developing new programs that are linked to these universitywide learning goals. Projects funded in the 1993-94 academic year focused on improving student competence in oral and written communication, information and computer literacy, mathematical competence, multicultural understanding, citizenship, and critical thinking.
- University of Southern California: Established in the fall of 1988 a President's Commission on Undergraduate Education, which has been reviewing all aspects of the undergraduate experience at the university and recommending both short- and long-term improvements. The Commission's recommendations to date have given strong emphasis to the importance of giving teaching and teaching-related activities greater weight "throughout faculty evaluation processes at all levels, from departmental to presidential decisions, from merit salary increases to promotions." In 1993-1994, launched committees to reform general education and to foster curricular collaborations between the College of Letters, Arts, and Sciences and the professional schools.
- Stanford University: A Commission on Undergraduate Education, charged in 1993 to "articulate the educational goals of Stanford's undergraduate program,"

recommended a number of specific proposals to increase the "rigor, coherence, and clarity" of the university's undergraduate program. The recommended steps included the creation of a new core requirement in science, mathematics, and technology for nonscientists; redefinition of core requirements in the social sciences and humanities; the strengthening of writing and foreign language requirements; and the development of a universitywide review process for major programs. The Commission also recommended enhancing the position of undergraduate education in the administrative structure through the creation of a new Vice Provost for Undergraduate Education.

- The University of Texas at Austin: In 1990, appointed a campuswide Committee on the Undergraduate Experience to develop a coherent and comprehensive strategy for improving undergraduate education. The Committee's recommendations are now being acted upon.
- University of Toronto: "Planning for 2000, a Provostial White Paper on University Objectives," now in final draft, emphasizes the importance of undergraduate education and the nexus between teaching and research at the university. The plan's specific goals and strategies include ensuring that all faculty are engaged in both undergraduate and graduate teaching, providing opportunities in all divisions for both undergraduate and graduate students to participate in faculty research projects with faculty members, and governing hiring, tenure and promotion decisions by the expectation of full engagement in teaching and research.
- University of Virginia: As part of a reaccreditation self-study, a faculty committee on Improvement of Teaching has been established and charged with expanding the role of the university's Teaching Resource Center, strengthening incentives for superior teaching, reviewing evaluation procedures, and developing school and universitywide programs for enhancing the quality of apprenticeship teaching and the effectiveness of the learning experience of both undergraduate and graduate students.
- Washington University in St. Louis: A committee on undergraduate education recently completed a study of the freshman year. A series of recommendations has been adopted and is being implemented.
- University of Wisconsin, Madison: Drawing upon a 1988 institutional self-study, the university identified the strengthening of undergraduate education as one of its major directions for the future. Recommendations addressing such issues as undergraduate enrollment, the importance of teaching, and an enhanced undergraduate curriculum provided the groundwork for broad undergraduate education improvement initiatives that began in the 1991-92 academic year.

Strengthened undergraduate curricula

- University of Arizona: Is developing plans to restructure general education requirements for all undergraduates with CORE curriculum. Has increased involvement of undergraduates in research. Has focused college deans' attention on reducing the number of very-low-enrollment courses in order to reallocate resources to better meet students' curricular needs.
- Brown University: Specific initiatives to strengthen the curriculum have included developing a program of University Courses to provide a framework to help students and their advisors in planning a program of study consistent with the goals of a liberal education as outlined in Brown's Guide to Liberal Learning; reviewing all concentration programs; initiating a Parallax Program of courses that intersect the sciences and humanities; initiating a program in foreign languages across the curriculum; and initiating a program for women and minorities in science which involves faculty in ongoing seminars and opportunities for course development.
- University of California, Los Angeles: Has developed two comprehensive programs-a Revolution in the Physical Sciences Program and a Biomedical Education Initiative-that are aimed at increasing the quality of undergraduate science education and improving its delivery in the classroom and the laboratory. These programs include direct mentoring by faculty, individual research projects, personal research training, and interactive computing laboratories. Is redesigning the lower-division undergraduate curriculum for Life Science students. A new, four-course Life Science core curriculum will be administered by four departments and taught by interdepartmental teams. Changes in the content of introductory chemistry, physics, and mathematics courses for Life Science students will accompany the new core curriculum.
- University of California, San Diego: Has repeatedly reviewed and revised its general education programs over the last decade. The Theater Department has revised its program to increase the performance activities of undergraduates and to shift the balance of faculty teaching toward undergraduates. The Music Department has begun to devote the winter term of its weekly departmental seminar (attended by all faculty, graduate students and undergraduates) to creative undergraduate projects to encourage undergraduates to join in the creative life of the department.
- Carnegie Mellon University: The College of Humanities and Social Sciences has redesigned its general education program, a structured set of designated courses and electives, from which the students of all the colleges on campus derive their

general education courses. That same college is also planning a set of freshman seminars. The College of Engineering has designed a new approach to engineering education by developing a set of introductory courses to the various engineering disciplines, from which each freshman must choose two. The Graduate School of Industrial Administration and the School of Computer Science have each assumed ownership of the undergraduate programs in their subjects and instituted new curricula. In the Mellon College of Science, where a curriculum review is in process, new courses have been installed in physics for science students and for engineering students, and the Department of Mathematics is devising new approaches to the basic calculus course. At the university level, an expanded Office of International Education and new exchange programs have expanded opportunities for undergraduates from all colleges to study abroad.

- Case Western Reserve University: Has involved sophomore engineering majors in the development of a new freshman engineering course designed to help students develop the team-building skills they will need in the workplace.
- Catholic University: The School of Arts and Sciences is in the process of creating a coordinated freshmen year with special emphasis on thinking, writing, and language skills. If this curriculum proves successful, consideration will be given to including freshmen in the four professional schools at the university.
- Clark University: In 1991, after a review of the university's general education requirements, the faculty approved a recommendation that these requirements be broadened to include a course in Scientific Perspectives and a Language course. A number of new courses have subsequently been developed to strengthen the science offerings that satisfy the Scientific Perspective requirement, including an innovative new "Discovering Physics" course that replaces the traditional lecture and lab format with hands-on, learning-by-doing experiences. Faculty legislation passed several years ago, mandated a standard level of mathematical proficiency for all students. Beginning in the Fall of 1995, entering students will need to demonstrate their proficiency through a placement test, and those who do not meet the minimum standard will be required to take a newly created course, "Foundations of Quantitative Thinking." The university has also recently increased the number of interdisciplinary and departmental minors it offers, to expand opportunities for undergraduates to pursue organized, structured programs of study in disciplines other than their majors.
- University of Colorado at Boulder: The core curriculum of the College of Arts and Sciences has been reorganized into two major components: skills acquisition and content areas of study. The College of Business has adopted this core curriculum for its students as well.

- Columbia University: Core and major cultures requirements have undergone significant improvements.
- Cornell University: With support from the Andrew W. Mellon Foundation, faculty are designing new courses to enhance the undergraduate learning experience. One new course helps students in any discipline understand the processes scientists use to discover the chemistry that underlies various aspects of life. Other courses have been designed in Physics, Science and Ethics, and Cultural Studies. The School of Industrial and Labor Relations is offering new courses and programs to increase global awareness of labor issues.
- Harvard University: Through a newly created Educational Policy Committee, the university is systematically reviewing the structure and content of its departmental concentrations (fields of study). The review is designed to ensure that students in each field have adequate opportunities for participatory small-group instruction; that the system of academic advising meets student needs; that the course requirements within each field build on a coherent conceptual "spine"; and that students have an appropriate "capstone" experience in their major field of study (such as a thesis and/or a general examination).
- University of Illinois, Urbana-Champaign: In 1989, the Campus Senate adopted a plan to enrich the general education portion of all undergraduate education programs through the implementation of a new, campuswide, general education program. Incremental costs of this new program are being funded through reallocation. Components of the program are being implemented in stages through FY 1996.
- Iowa State University: The College of Agriculture has added a requirement of credit in courses involving human relations and critical thinking. Introductory biology courses have been redesigned thoroughly, supported by a grant from the Howard Hughes Foundation.
- University of Kansas: Reviewed its undergraduate curriculum extensively in the 1980s and established a core curriculum in the College of Liberal Arts and Sciences, the central school for virtually all freshmen and sophomores. The curriculum includes distribution courses, Eastern and Western civilization, foreign language, English and mathematics requirements. It also requires early and continuous enrollment in math and English for all incoming students until the requirements are met. The university's Writing Center maintains a Writing Across the Curriculum program, in which staff work with faculty to incorporate writing assignments in all undergraduate programs.

- University of Maryland at College Park: The introduction of a new Core Liberal Arts and Sciences Studies Program in the fall 1990 semester has been the most significant campuswide initiative to improve the undergraduate curriculum. In addition to fundamental competency requirements, the program includes required exploration in broad areas of learning in the first two years in humanities, arts, sciences, mathematics, social sciences, and history. The program includes advance studies requirements that may include a senior thesis or senior capstone course.

- Massachusetts Institute of Technology: The Physics Department has developed a new, optional version of first-term freshman physics, whose duration extends past the normal December end-of-term into a January Independent Activities Period. This option provides students with weaker backgrounds in either mathematics or physics an additional month to complete the material. In addition, during the first month of classes, substantial emphasis is given to reviewing and strengthening precalculus math, basic physics concepts, and problem-solving skills. This program also involves intensive use of course tutors: each student must spend an hour with a tutor each week. The Physics Department also is in the process of revising the teaching methodology of Physics I, a subject required of all undergraduates, to distribute teaching responsibility more broadly among the department's faculty and to emphasize interactive classroom learning. The revision will replace a three-lecture, two-recitation section format with small classes of no more than 16 students, plus a single plenary lecture each week that emphasizes demonstrations and a general outline of the week's material. This revision will also involve weekly formal tutoring sessions attended by teaching assistants and faculty the night before weekly quizzes, weekly staff meetings of course instructors, and intensive use of study guides in conjunction with a text.

- University of Michigan: In the 1989-90 year, the Department of Chemistry undertook a major revision of its introductory curriculum by inaugurating a new introductory sequence for students with good high school preparations. This sequence, which enrolls about 2,000 students a year (about one-third of the students taking introductory chemistry), is a "lean, lab-rich curriculum." The Mathematics department has initiated a New Wave Calculus program that utilizes imaginative new teaching materials and methods. Components of the program include smaller-sized classes, a greater emphasis on collaborative learning, greater emphasis on critical thinking and analysis, and emphasis on articulation of problem-solving strategies. When fully implemented, this reform will constitute a major commitment of resources to undergraduate education, because it will require additional faculty, additional teaching assistants, expanded faculty and teaching assistant training, continued evaluation, and a

significant reallocation of faculty teaching effort from upper-level to lower-level courses. The university says this reform has already provided a catalyst for change in faculty attitudes regarding the nature of effective teaching throughout the mathematics curriculum. A number of departments are moving to integrate language study with substantive academic learning to make such study a more integral component of the undergraduate education process.

- Michigan State University: As part of a recent transition from a quarter system to a semester system, a new general education curriculum was adopted and every undergraduate academic program was reviewed, with most undergoing revision. Specific changes included the following:
 - A new, universitywide mathematics requirement
 - A revised writing program featuring a freshman writing course that involves small (25-student) sections taught by regular faculty
 - Capstone courses in major subjects
 - Refined and increased use of technology in classroom delivery and student learning.

Michigan State is also emphasizing more small classes for freshmen, as well as more small discussion sections in large introductory courses.

- University of Minnesota: Has reviewed large introductory courses in a variety of fields. Has adopted a new Liberal Education Agenda that revises the liberal education requirements for all undergraduates at the university's Twin Cities campus. Specific changes include a diversified core curriculum structured around discipline-based and interdisciplinary fields of knowledge; new sets of courses based around specific themes, such as citizenship and public ethics; and new opportunities for development of writing skills through writing-intensive courses.
- University of Missouri, Columbia: Is in the process of implementing a thoroughly redesigned general education program.
- The University of Nebraska, Lincoln: A universitywide General Education Planning Committee was appointed to develop a plan for a general education program applicable to all nine undergraduate colleges. The resulting plan has been approved by all the undergraduate colleges and a new general education program will be required of all first-year students beginning with the fall semester of 1995. The new program has three components: (1) Essential Studies,

which consist of distribution courses in nine areas; (2) Integrative Studies, which include courses that focus special attention on pedagogy (all students will take ten courses that include such components as critical thinking and oral and written communication); (3) a half-semester, one-credit course in Information Discovery/Retrieval, which will be taught by library faculty. The university has also been focusing attention on improving curricular offerings (as well as scholarships and other opportunities) for high-ability students.

- New York University: Following five years of universitywide self-study and development, has recently instituted a pilot core curriculum intended to build a common base of essential skills. The curriculum includes a four-course sequence in the humanities and social sciences and a three-course sequence in mathematics and natural sciences; students are provided a unifying thread through each course sequence and similar overall goals. Parallel with these courses, students take a year-long expository writing course and a quantitative reasoning course.
- State University of New York at Buffalo: Has implemented a major revision of its undergraduate general education curriculum in the arts and sciences. Components of this revision include an intermediate proficiency language requirement and an extensive new curriculum in science for students not majoring in science.
- Northwestern University: In response to the recommendations of a 1987 Task Force on the Undergraduate Experience and the recommendations of departmental program reviews, numerous enhancements of the undergraduate curriculum have been implemented. Examples include increased offerings in written and oral communication; the institution of a Center for the Writing Arts (bringing together strengths found in such areas as journalism, screen writing, and English); the introduction of new courses in mathematics and science for the nonspecialist; the provision of additional opportunities for independent research and small seminar courses with senior faculty; and the establishment of an Integrated Arts Program for the nonspecialist. In addition, curricular requirements in engineering have been revised to incorporate more courses in the humanities and social sciences, the College of Arts and Sciences has implemented a program that permits minor courses of study, and interdisciplinary undergraduate programs in Environmental Studies and Business Institutions have been created.
- The Ohio State University: Closely examined and revised its entire undergraduate curriculum in the late 1980s and implemented a new General Education curriculum in 1990. This curriculum provides a liberal arts background for all undergraduate students regardless of major. Efforts are currently underway to revise major programs to facilitate student progress

toward the degree.

- University of Oregon: Has restructured its undergraduate curriculum to encourage students to take fewer and more intensive courses.
- University of Pennsylvania: In the fall of 1987, adopted new undergraduate course distribution requirements in the College of Arts and Sciences. The new requirements are intended to ensure that students receive a broad, liberal arts education base and do not specialize too early; students must take ten courses in six thematic areas before choosing a major. Also has initiated a new freshman writing requirement, expanded liberal arts requirements in its three undergraduate professional schools (business, engineering, and nursing), and now requires that all undergraduates, except those in engineering, demonstrate proficiency in a foreign language.
- Pennsylvania State University: The Leonhard Center for the Enhancement of Engineering Education, in the College of Engineering, is designed to improve the quality and relevancy of undergraduate engineering education. The Center supports faculty innovators, enhances existing programs, explores new techniques and equipment, generates ideas, and integrates successful ideas into the broader curriculum. In the College of Earth and Mineral Sciences, research activities feed directly into the undergraduate educational program through the promotion of new courses. Faculty in this College developed the first interdisciplinary general education course on the earth system; this course has served as a model for numerous universities across the country. In the College of Arts and Architecture, the Department of Landscape Architecture has established a reading/seminar parallel course with design studios to give undergraduates a deeper understanding of design theory and contemporary design issues during the early years of their study.
- University of Pittsburgh: The College of Arts and Sciences has revised its writing requirement to put a greater emphasis on writing-intensive courses within regular departmental curricula. The College is also revising its foreign culture requirement to emphasize comparative study of cultures and greater proficiency in geography. Within the College, the departments of Biological Sciences, Geology and Planetary Science, Physics and Astronomy, and Computer Science have initiated significant changes in their undergraduate curricula, and the departments of Mathematics and Theater Arts are currently working on revisions. Within the School of Engineering, the Department of Chemical Engineering has completely revised its curricula in the past four years, expanding faculty-student contact in its core courses; and the Department of Electrical Engineering has implemented a curriculum change that adds new laboratory courses and provides students with more elective flexibility. The School of Pharmacy is in the process of a major curricular revision. The College of General

Studies has adopted a new curriculum requiring two courses with international perspectives.

- Princeton University: Has made a priority of improving scientific literacy among undergraduates who are not science majors; under the auspices of a Council on Science and Technology, faculty members in the sciences and engineering have been designing new courses and renovating existing ones to achieve this goal. Faculty are also developing upper-level courses that address cultural and societal issues in science and technology.
- University of Toronto: Is intensifying curriculum renewal initiatives in all academic divisions. This renewal effort has already led to significant additions to the undergraduate Arts and Science curriculum. In Medicine and other health sciences, renewal has resulted in a shift from didactic teaching to problem-based learning.
- University of Virginia: In the last two years, the College of Arts and Sciences has expanded its area requirements to include an additional course in Natural Science and Mathematics (for a total of four courses in that area), an additional course in Historical Studies, and a course in Non-Western Perspectives. These are new additions to the core curriculum, which also includes two courses in Social Sciences, two courses in the Humanities and Fine Arts, two years of a foreign language, and two courses in composition and writing.
- Washington University in St. Louis: The undergraduate curriculum has been recently evaluated and improved in many areas of the university. For example, the undergraduate business curriculum was changed in the 1993-94 year to allow more flexibility for students to choose courses outside their major.
- University of Washington: In 1988, initiated a new College Studies program through which undergraduates take sequences of related courses to fulfill their general education requirement, rather than picking and choosing from courses that may be unrelated. In 1994, changed undergraduate general education requirements, making course selection less restrictive.
- University of Wisconsin, Madison: Undergraduate education initiatives that began in the 1991-92 academic year are focused on freshmen-related improvements as the foundation of increased opportunities for academic achievement by higher-level undergraduates. For example, academic departments are being given additional funding to develop rigorous honors-level freshmen and sophomore courses to encourage these students' transition to similarly demanding junior and senior honors courses in the major. Other new

courses are aimed at providing freshmen with faculty-taught, small-class, active learning experiences.

Based on an in-depth assessment of the undergraduate program, the Faculty Senate has approved a new core curriculum that will require new freshmen and new transfers entering in the fall 1995 semester to take a set of ten courses designed to ensure proficiency in writing and composition, mathematics, science, and the arts. The new core curriculum includes one selection from social studies; two selections from the humanities, literature and art; two natural science courses, of which one should have a laboratory component; one selection from mathematics, statistics, computer science, or formal logic, followed by a course in data, analytical techniques, and other advanced forms of quantitative reasoning; and one selection from composition, followed by a second course in advanced writing and other forms of communication.

Building upon these freshmen-centered improvements, the university is also focusing on curricula improvements for higher-level undergraduates.

Steps to ensure more rigorous evaluation of teaching performance

- University of Arizona: Has increased use of student assessments of teaching and course evaluations. Has developed a proposal for a new merit system for faculty.
- University of California, Los Angeles: As part of a comprehensive review of undergraduate education, a special work group has been charged with guiding the future direction of teaching evaluation and assessment of undergraduate learning.
- California Institute of Technology: In the mid-1980s, established a universitywide teaching evaluation and feedback program that includes a questionnaire system to evaluate classes at the end of each term and a rapid feedback system designed to correct immediate problems.
- Carnegie Mellon University: A Committee on Undergraduate Initiatives is now considering proposals for methods to evaluate teaching that will be reported as part of all casebooks in promotion and tenure consideration.
- Catholic University: In the spring of 1993, established universitywide student course evaluations, which replaced a previous, less reliable evaluation system. The instrument has a national data base. Course evaluation reports are used for assessment and improvement of teaching, for promotion and tenure, and for salary increases. An automated version of the report is available to undergraduate

students campuswide.

- Clark University: In the 1992-93 academic year, developed a universitywide teaching evaluation form that is now uniformly administered in all courses each semester. The results provide individual faculty and their department chairs with regular feedback on teaching effectiveness. Evaluation results are also reviewed annually by the Dean of the College and department chairs, with an eye toward identifying any patterns of problems that may be apparent over time. The Dean and the Undergraduate Academic Board are currently exploring additional ways of assessing teaching effectiveness, such as teaching portfolios and peer review.
- Harvard University: Maintains a rigorous course evaluation program for all courses with enrollments greater than 15 students. The program is run by students with faculty supervision. Results are published annually in a course evaluation guide.
- University of Maryland at College Park: An increasing number of colleges and departments have improved the evaluation of teaching within their units by such means as more structured peer observations and reviews and through better utilization of student evaluations. A universitywide evaluation system is currently being discussed.
- Massachusetts Institute of Technology: A student-run course evaluation guide, published twice yearly, provides feedback to students, faculty, and departments on individual subjects and teachers. Evaluation data are also turned back to departments for their own use. The university says this evaluation effort has received increasing support and recognition from senior administrators as well as individual departments over the last ten years; it says there are clear signs that departments and schools are paying attention to the evaluations of subjects and instructors, and that much positive change has resulted.
- Michigan State University: A special committee has recently conducted a thorough review of current evaluation procedures. A program funded by the Lilly Foundation has sponsored several workshops each semester over the last two years on teaching evaluation. These workshops have included sessions on teaching portfolios, peer evaluation, and in-class assessment. Performance appraisal workshops for new administrators are also emphasizing teaching evaluation.
- University of Minnesota: Has instituted uniform student evaluation of teaching and a new program of peer review of teaching to facilitate teaching evaluation for purposes of promotion and tenure decisions.

- The Johns Hopkins University: In the 1994-95 academic year, the School of Arts and Sciences will institute a new, more comprehensive system for evaluating faculty teaching. Mandatory teaching evaluations are being introduced in the School of Engineering in 1994; teaching performance, of which student evaluations are one aspect, is being given increased attention in promotion decisions there. In the School of Nursing, undergraduates are asked to evaluate each course as it is completed; this information is used by a curriculum committee as an important data source for curricular decisions and for identification of problems or areas of concern. The School of Continuing Studies implemented an automated course/instructor evaluation process in 1993, permitting more reliability in the evaluation process and more timely feedback to faculty. The university's Peabody Conservatory also has an evaluation system in place.
- McGill University: Implemented a mandatory course evaluation policy in 1980. The method of evaluation and disposition of results are left to the discretion of departments. In 1992, approved a related policy that provides for public access to certain core items from course evaluations.
- University of Nebraska, Lincoln: Over 35 academic departments are now involved in the evaluation of instruction through teaching portfolios and other mechanisms. The university is also one of twelve universities participating in an American Association of Higher Education project on teaching evaluation; the departments of English, Mathematics and Statistics, and Psychology are participating in this program for the 1994-95 year, along with the School of Music.
- New York University: Following a review of course evaluation models from different NYU schools and other universities, a faculty committee chose one model for further review and testing in 40 classrooms in the fall of 1994.
- Northwestern University: To enhance the credibility of a centrally administered course and teaching evaluation program, a thorough psychometric review of the current evaluation instrument was conducted. The review demonstrated the validity and reliability of a number of core items on the instrument; the university hopes that those items will be included in the instruments of schools not using the centrally administered forms, so that summative judgments of teaching quality can be made more easily. Also, some schools are including class visitations by colleagues and, in some cases, the dean, to assess teaching.
- The Ohio State University: Is in the process of adopting a new and more effective instrument for student evaluation of teaching and is encouraging peer

review of teaching.

- University of Pittsburgh: In December 1994, completed implementation of a policy that mandates peer and student evaluation of teaching for all faculty who have primary instructional responsibility for a given course.
- Rutgers University: Consistent use of student input in evaluating teaching was increased in the spring of 1993 when a universitywide student rating form was implemented. Academic units have been directed to expand the teaching evaluation process to include a variety of methods in addition to student ratings: some units are developing peer observation systems; administrators and faculty are experimenting with the use of teaching portfolios. In the fall of 1993, a Teaching Evaluation Development Grant Program was established to provide academic units with funds for developing comprehensive, multimethod processes for evaluating teaching.
- Stanford University: A subcommittee of the Faculty Senate is scheduled to report in 1994-95 on recommendations for a comprehensive reform of the processes for the evaluation of teaching.
- Syracuse University: Extensive discussions, led by a 36-member Faculty Advisory Panel and a 13-member University Task Force on Assessment, resulted in a formal proposal to establish a teaching assessment program. This proposal was adopted and funded by the Chancellor's Fund for Innovation. Projects selected to date have focused on important questions related to students' learning and development. This ongoing effort is supported by seminars, periodic reports, and a newsletter published by an Assessment Coordinating Committee that manages the program. The College of Engineering and Computer Science has instituted a policy that requires both mid-semester and end-of-semester teaching evaluations for every undergraduate and graduate course. The College is developing a "best practices" teaching portfolio and, in addition, requires each department to present teaching evaluation data in an annual report that discusses the progress made in improving teaching quality. The university is one of four private research universities participating in a Faculty Peer Review of Teaching project sponsored by the Pew and Hewlett foundations, and directed by Professor Schulman of Stanford University. This project is aimed at greater understanding of teaching as a public act which, like the presentation of research, is subject to peer review.
- The University of Texas at Austin: By action of the University Council in 1991, each college or school is required to develop a procedure for mandatory evaluations. By action taken in 1994, the results of these evaluations will be available electronically to registered students.

- University of Toronto: In 1992, launched a new, facultywide teaching evaluation program in the Division of Arts and Science. The program uses a student opinion survey developed by a faculty-student committee after a thorough review of of evaluation methods within the university and elsewhere.
- Vanderbilt University: In the late 1980s, an Ad Hoc Committee on Evaluating Teaching and Learning was charged with the development of an evaluation system that would (1) prove credible to faculty, (2) augment anonymous student evaluations with other approaches to evaluation, (3) recognize attempts to challenge students intellectually, and (4) assess the value of the total university experience. A number of changes in the process of evaluating teaching resulted from that report, including the current practice of making course evaluations available to students over the campus computer network.
- University of Virginia: At the end of each semester, students are asked to complete evaluation forms that grade the teaching performance of all faculty whose courses they have taken. In the promotion and tenure process, the information gathered from these student evaluations is supplemented by selected interviews of students about their classroom experiences, and by the attendance of classes by members of the reviewing committee.
- Washington University in St. Louis: Has used student focus groups to help faculty better understand the strengths and weaknesses of various educational programs.
- University of Wisconsin, Madison: In 1993, the university began conducting undergraduate surveys as an addition to its long-established practice of departmentally administered faculty and course evaluations by students. The surveys are intended to measure student satisfaction with all, not just classroom, aspects of the undergraduate experience; the university says they are proving invaluable in identifying areas for policy development and improvement.

Greater weight to teaching in hiring, tenure, promotion, and salary decisions

- University of Arizona: Promotion and tenure decisions are more closely scrutinized for evidence of commitment to, and excellence in, teaching. Absent such evidence, a negative decision is presumed, unless evidence to the contrary is presented. Announcements of annual faculty performance reviews, promotion and tenure, and sabbatical requests processes emphasize the necessity of documenting the extent and quality of teaching. Sabbaticals for improving teaching as well as research are now explicitly permitted and encouraged.

- **Brown University:** The Dean of the Faculty has required in the yearly review process of faculty performance that the quality of teaching be evaluated and given equal weight with research accomplishments. This is a change from past reviews where the focus was mostly on research accomplishments, and there was no attempt to evaluate the actual quality of teaching.
- **Catholic University:** Documentation of effective teaching is required for tenure. Annual increases in faculty salaries are based on explicit ratings of teaching effectiveness.
- **Clark University:** Since spring 1993, the results of a new, regular teaching evaluation program have been incorporated in tenure, promotion, and annual performance reviews, which all affect salary decisions. For the past two years, teaching ability has also been weighed heavily in the hiring of new faculty. Whenever possible, candidates who are brought to campus for an interview are also asked to teach a class, and the search committee solicits feedback from students and other faculty who attend the class.
- **Columbia University:** The Arts and Sciences Planning and Budget Committee now insists that any dossiers for tenure include teaching evaluations.
- **Cornell University:** The Provost, the university's highest ranking academic officer, has encouraged the deans of the university's schools and colleges to reexamine tenure guidelines so that they include a rigorous examination of teaching. A universitywide report, "Evaluation and Recognition of Teaching," called for such changes in tenure decisions.
- **University of Iowa:** In the College of Liberal Arts, those seeking promotion and tenure are now expected to submit actual teaching evaluations by students and peers, rather than general summaries, and to submit evaluations that are recent. New faculty in the College of Liberal Arts are now advised that tenure or promotion will not be recommended without the demonstration of a record of effective teaching.
- **Iowa State University:** The Provost has established an expectation that a significant portion of senior faculty will be involved in teaching non-skills-acquisition introductory courses. During the 1993-94 academic year, the College of Education reported that 100 percent of these types of introductory courses were taught by senior faculty; the College of Liberal Arts and Sciences reported that senior faculty taught 69 percent of these courses in its curriculum and the College of Design reported that senior faculty taught 63 percent of these courses.

- University of Maryland at College Park: The university is giving more consideration to teaching in the hiring and promotion processes, and requiring more substantiated documentation of teaching proficiency at all levels of the promotion process. There is more discussion of teaching performance in the evaluation of faculty. The university says it is doubtful that any professor could be promoted to tenure there now without a demonstration of teaching competence.
- McGill University: Every academic unit is reviewed on a seven-year cycle; the teaching quality of the unit is an important aspect of these reviews. In 1994, adopted a policy that requires a teaching portfolio to be included in dossiers for reappointment, tenure, and promotion. The policy standardizes the kinds of information to be included: a statement of teaching responsibilities, evidence of teaching effectiveness, and teaching development.
- Michigan State University: A Committee on Improvement, Evaluation, and Rewards for Teaching has issued a series of recommendations that include emphasizing the importance of teaching in the hiring process, developing unit guidelines for effective teaching as a basis for determination of rewards, developing more systematic and peer-oriented evaluation techniques, providing mentoring and more formal opportunities for continuing professional development across the career span, creating more public opportunities for conversations about teaching, and fostering scholarship on teaching.
- University of Minnesota: Several colleges now require a "teaching narrative" as part of the promotion and tenure dossier. In these narratives, candidates describe their approach to teaching and document the types of courses they teach.
- University of North Carolina at Chapel Hill: In November 1993, every department and curriculum in the College of Arts and Sciences reported to the Dean on its compliance with recommended revisions to tenure and promotion policies. In the College, departmental guidelines must now promote the use of teaching mission statements to record undergraduate teaching goals and strategies. Guidelines also call for peer teaching evaluations that document the quality of teaching style and instructional materials. To ensure more rigorous evaluation of teaching performance throughout the division of Academic Affairs, the Provost has asked all units to revise their policies and procedures for teaching evaluation and tenure. The revisions must provide for peer observation of tenured and untenured faculty and teaching evaluations by students.
- Northwestern University: Now requires that all tenure and promotion materials address the quality of and commitment to teaching, incorporating course

evaluations, syllabi, teaching portfolio statements, and other such evidence. All deans are directed to ensure that salary recommendations include teaching, and the university says there are clear cases in which individuals who have made a greater commitment to teaching than to research are being rewarded. Previously, the university says, such research-inactive faculty would have been penalized in their salary raises.

- The Ohio State University: Is reexamining all guidelines for hiring, tenure, promotion, and salary decisions in order to place a greater emphasis on quality teaching.
- University of Pennsylvania: In recent years, the Provost has made it clear that teaching carries significant weight in all tenure and promotion decisions. The university's faculty handbook states that, for faculty to obtain tenure and promotion, "a high degree of excellence is expected in both research and teaching."
- University of Pittsburgh: In the College of Arts and Sciences, explicit evidence of teaching performance is now required of all faculty; the College says decisions on faculty hiring, promotion, tenure, and salary are being affected directly by this requirement. In the School of Engineering, the Department of Chemical Engineering says that teaching is a significant component in faculty evaluation, and that teaching quality and quantity both count heavily; the department has a formal procedure for peer evaluation, and these evaluations affect the annual raise of each faculty member. Satisfactory teaching in undergraduate courses is a requirement for tenure in the Department of Mechanical Engineering.
- Rutgers University: Since 1990, departments have been required to submit evaluations of teaching of the candidates whom they recommend for hiring. In 1993, the format of tenure and promotion packets was changed to require more detailed information about teaching activities and the evaluation of teaching.
- Syracuse University: In 1993, each school and college submitted a major report that outlined its plans to modify or improve methods for evaluating and rewarding faculty performance. Each of these plans was drafted incorporating the following criteria:
 - an increased emphasis on teaching, academic advising, and integrating research into teaching
 - an improved set of procedures (such as self-review, student evaluations,

peer review, and teaching portfolio review) for both formative and summative evaluation of teaching and advising

- annual evaluation of both tenured and untenured faculty in the areas of teaching and advising
- an appropriate balancing of emphasis on teaching, research, and service, with teaching accorded at least equal emphasis with research, scholarship, and creative professional activity
- an explicit response to an expanded definition of research, including the relative weighting of the scholarships of discovery, application, teaching, and-where appropriate-creative professional activity.

Some of the major strengths of these reports were a broad consensus that teaching should be given an increased emphasis in evaluation and promotion, that there is work well underway to expand the methods of evaluation, that both tenured and untenured faculty should be evaluated, and that there is widespread acceptance of the equality of teaching and research with acknowledgments of individual differences among faculty members.

- The University of Texas at Austin: Teaching evaluations for the past three years are required universitywide for consideration of promotion or tenure. The College of Liberal Arts also requires a teaching portfolio and peer evaluations of teaching.
- Tulane University: Teaching portfolios are now required for tenure and promotion reviews. Faculty members must demonstrate independent effectiveness in teaching and in research in order to attain tenure.
- University of Virginia: Annual evaluations of teaching performance and effectiveness are required at the departmental and decanal (deans') level.
- Washington University in St. Louis: Every tenure recommendation requires evaluation of teaching; these evaluations are reviewed by a committee of the Board of Trustees.
- University of Wisconsin, Madison: Is in the process of implementing a new, posttenure faculty review program that will include a review of faculty members' contributions to undergraduate education. Teaching evaluation procedures are being strengthened, and the results of these evaluations are to be more systematically considered in personnel decisions. Teaching evaluation is also

being tied to faculty and instructional development programs.

Emphasis on having regular, full-time faculty teach undergraduate courses

- University of Arizona: Has increased significantly the number of lecture classes taught by senior faculty, especially at lower-division levels. Plans to restructure general education with regular faculty teaching core curriculum.
- Brown University: Says it is fully committed to a policy of having full-time faculty teach undergraduate courses. This policy was reaffirmed in 1993 in an Academic Directions Committee Report written by a team of faculty and administrators working under the Provost.
- University of California, San Diego: Most departments assign ladder-rank faculty (rather than advanced graduate students or temporary faculty) the responsibility for covering core lower and upper division undergraduate courses.
- Carnegie Mellon University: The university says it has always expected its faculty to teach, both at the undergraduate and graduate levels.
- Clark University: All full-time, regular faculty members teach undergraduates. The university makes no distinction between undergraduate and graduate faculty, and it has no faculty in regular, tenure-track positions who are concentrating solely on research.
- Columbia University: In the last five years the number of faculty teaching in the core undergraduate curriculum has increased from 71 to 97. Currently, all faculty, both senior and junior, teach at least half their courses to undergraduates.
- University of Iowa: In the College of Business, over the past two years the proportion of lower-division undergraduate courses taught by faculty has increased from 33 percent to 65 percent, and the proportion of upper-division courses taught by faculty has increased from 82 percent to 100 percent.
- Massachusetts Institute of Technology: Says a very high percentage of undergraduate instruction is undertaken by full-time faculty. All first-year science core subjects, which are required of all students, are taught by highly regarded senior faculty in those disciplines. Many of the recitation sections in these subjects, particularly in the two-term Physics sequence, are staffed by senior and junior faculty members as well. Virtually all faculty participate in undergraduate research activities, including most senior faculty.

- University of Maryland at College Park: The university says it feels strongly that faculty at all levels and ranks have a responsibility for teaching undergraduate courses. Examples of regular, full-time faculty teaching undergraduate courses include, but are not limited to, tenured or tenure-track faculty teaching most core general education courses, and senior engineering faculty teaching the entry-level freshman engineering design course. Beginning in the fall of 1993, all freshmen were eligible to enroll in a seminar taught by a full-time faculty member.
- McGill University: All regular, full-time faculty, including very senior professors, teach undergraduate courses.
- Michigan State University: Has generally engaged a large proportion of its faculty in undergraduate teaching. The university's revised general education program draws on regular faculty from across the disciplines to teach lower-division undergraduates. Recently adopted Guiding Principles call upon all faculty to contribute in some way to the education of undergraduates, whether in the classroom, by sharing research experiences in their laboratories, or by sharing their interests and expertise with students in informal settings.
- University of Minnesota: The Council on Liberal Education, which approves all courses for the core curriculum, specifies that courses admitted to satisfy lower-division liberal education requirements must be taught by faculty. Exceptions are granted, but departments must make a special case for those courses.
- New York University: Says senior professors and some of the university's most productive faculty researchers are committed to teaching undergraduate courses. Among these faculty members are the university's President, the Dean of the School of Law, and the Chairs of Cinema Studies and Performance Studies at the university's Tisch School of the Arts.
- Northwestern University: Regularly monitors the degree to which full professors teach undergraduate courses, and regularly finds that approximately 85 to 90 percent do each year. Only 6 percent of courses are taught by graduate assistants, and these are principally in languages.
- University of Pittsburgh: Regular, full-time faculty members teach 95 percent of all undergraduate mechanical engineering classes and 95 percent of all undergraduate nursing classes.
- Rice University: Faculty members teach 95 percent of undergraduate courses; when graduate students do teach undergraduates, they do so under the close

supervision of faculty. Comprehensive foundation courses in math and science, the humanities, and the social sciences are taught by teams of full-time faculty.

- University of Southern California: Allows only regular, full-time faculty to teach general courses required of all undergraduates, except freshman writing and beginning foreign language classes.
- The University of Texas at Austin: A proposal is being prepared that would offer incentives to departments that increase the proportion of lower-division courses taught by tenured or tenure-track faculty.
- University of Virginia: Over the last two years, schools and departments have increased faculty teaching time available to undergraduates by adding new courses, transferring staff from graduate to undergraduate programs, and eliminating underenrolled classes. (In many cases, increased undergraduate enrollment has thus been handled in departments with little or no increase in faculty.) In the sciences, all undergraduate lecture courses and seminars are taught by full-time faculty; teaching assistants handle laboratory and discussion sessions only.
- Washington University in St. Louis: Requires that virtually all undergraduate courses, with the exception of freshman English, be taught by regular, full-time faculty.
- University of Wisconsin, Madison: The University of Wisconsin Board of Regents recently adopted an educational workload policy that includes a set of measures to be reported annually by the University of Wisconsin System. This information will allow monitoring the full-time faculty's share in undergraduate teaching. An accountability system has been developed to strengthen the capability of the University of Wisconsin System to be "answerable for the effective discharge of [its] mission." In the process, delivering a high-quality undergraduate education was identified as the top priority within the University of Wisconsin System mission.

Steps to curb or eliminate the practice of reducing teaching loads to attract or retain faculty

- University of Arizona: The Provost in the fall of 1993 urged academic units to tell prospective faculty that teaching is expected of all faculty, to tell them that undergraduate teaching is expected in most departments, and to inform them of the typical teaching load in their department. Letters of appointment now

obligatorily include a statement about the expectation of undergraduate teaching.

- Brown University: New faculty are expected to assume a normal teaching load. Requests by other faculty to reduce teaching loads are reviewed by the Dean of the Faculty and the Provost on a case-by-case basis.
- Clark University: Has not used reduced teaching loads to attract or retain faculty. A few departments offer new junior faculty a one-course reduction in their first year to devote more time to preparing their courses and getting their research programs established. From time to time, some faculty members engaged in large-scale research projects use grant funds to hire replacements while reducing their teaching loads by a course or two.
- Columbia University: Faculty are no longer given course relief to attract them to the university.
- Northwestern University: Does not hire any faculty with the promise of no teaching. Regularly monitors teaching loads across the schools to detect any significant changes; this effort includes providing reports to deans and chairs about each faculty member's teaching effort, by course, level, and enrollments. (The university cites the example of a case where it refused to make a teaching-load counteroffer to a distinguished humanities professor who had been promised a zero teaching load for five years by another university; it says the professor left and went to the other university.)
- Syracuse University: The reduction of teaching loads to attract and retain faculty was not widely practiced in the past and is not practiced at all in the present; the university now does not hire any "research faculty" in tenure track positions. (The university notes that one distinguished professor in the philosophy department, who was brought in under this strategy, is now teaching a freshman survey course; the university says this professor observed that "the public had a point," and said he wanted to "make a contribution.")
- The Ohio State University: In principle, opposes the practice of reducing teaching loads to attract or retain faculty, and rarely allows departments to do this.
- The University of Texas at Austin: Reduction of teaching loads to attract and retain faculty is not a practice. Faculty in their first year of teaching are given a reduced load to allow more time for class preparation.
- University of Wisconsin, Madison: A new educational workload policy recently

adopted by the University of Wisconsin Board of Regents clearly indicates to the faculty and institutions within the University of Wisconsin System that undergraduate teaching is integral to faculty responsibility.

Teaching centers and special programs that concentrate on upgrading teaching efforts of regular faculty and teaching assistants

- University of Arizona: In 1987, revamped its office of Instructional Research and Development into a University Teaching Center to support instruction through workshops for faculty and teaching assistants, faculty grants, processing student teaching evaluation forms, and purchase and distribution of audiovisual equipment. The university recently allocated greater resources to the Center to enable it to supply and analyze evaluation forms free of charge to instructional units.
- Brown University: All faculty, regardless of rank, are eligible to participate in the activities of a Center for the Advancement of College Teaching, and to access its resources. These resources include workshops, observation, videotaping analysis, and literature on teaching techniques. New faculty and teaching assistants can earn a teaching certificate from the center and take advantage of various orientations and microteaching sessions.
- Carnegie Mellon University: Established a Teaching Center 12 years ago. Last year, it added a professional to the Center to assist in faculty development and to help teaching assistants improve their teaching skills.
- Clark University: Planning is underway for a Center for Teaching Excellence that will provide individual assistance to faculty and teaching assistants and offer workshops on new approaches to teaching and learning.
- University of Colorado at Boulder: Has a Faculty Teaching Excellence Program designed to raise faculty consciousness about good teaching practice and to increase the range and level of teaching skills. The program includes a voluntary consultation system for faculty, instructional workshops and symposia, and the publication of a series on good teaching practices. Over 2,000 faculty have been served through this program.
- Harvard University: A recently established Derek Bok Center for Teaching and Learning employs a professional staff of nine experienced teacher-counselors and provides orientation programs for teaching fellows and teaching assistants, as well as individualized counseling for regular faculty. Its programs include videotaping and close critiquing of classroom presentations.

- University of Illinois, Urbana-Champaign: First established an Office of Instructional Resources in 1964. In its current configuration, the OIR provides orientation and training for teaching assistants and seminars for faculty development, sponsored by colleges and departments across campus. In 1990, the university initiated a campuswide Writing Across the Curriculum Program that assists faculty and teaching assistants in implementing new writing courses and in improving the quality of writing instruction. The program offers individual and departmental consultations as well as seminars and workshops.
- Iowa State University: In 1993, established a Center for Teaching Excellence to provide support and resources for faculty members who want to improve their teaching skills and experiment with new teaching ideas. The center's services include workshops and seminars at the college and department level, monthly faculty forums, individual consultations, guidance with writing tests, and a library of materials related to teaching and professional development.
- The Johns Hopkins University: The School of Continuing Studies offers faculty development seminars to all of its faculty two or three times a year. Topics include such subjects as collaborative learning strategies and interactive teaching strategies.
- University of Maryland at College Park: The university established a Center for Teaching Excellence in 1990. The Center provides leadership in promoting and developing excellence in teaching, as well as assistance to colleges, departments, individual faculty members, and teaching assistants. The Center's services include campuswide workshops and dialogues, electronic forums on teaching, a broadly distributed newsletter, teaching assistant training at the campus and department levels, individual faculty consultations, a small grant program for instructional improvement, and specific projects in response to needs and requests.
- Massachusetts Institute of Technology: Holds a universitywide orientation workshop for all new faculty and graduate teaching staff, followed closely by a seminar series on a range of teaching topics. It also offers classroom videotaping and consultation to all faculty and to many graduate teaching assistants. A number of individual departments have begun to expect or require all new faculty members to have their classes taped and to review those tapes with a consultant or colleague.

In the 1993-94 year, MIT initiated a voluntary "resource liaison" program that links new faculty to staff members in the Office of Undergraduate Academic

Affairs. The goal is to give new faculty an individual contact who can provide information about educational resources, policies and procedures, or anything else that might concern a new member of the teaching community.

The university is in the process of forming a faculty/staff working group on improving teaching effectiveness. The principal charge of the group will be to help advance the goals of improving teaching and to address such issues as professional teaching experience for graduate students, English language policies for teachers among departments, integration of departmental and institutional teaching expectations, and establishing an even more effective system of teaching evaluation.

The university says individual departments are becoming much more active in strengthening their expectations of and support for good teaching. The Chemistry Department has taken the lead in offering a model orientation program for its new graduate students. The departments of Biology, Physics, and Mathematics have undertaken similar programs that include videotaping, classroom visits, workshops, and the like. The entire School of Engineering has a long-standing tradition of emphasizing the importance of the role of the faculty member as a teacher: senior faculty observe the performance of new teachers, videotaping is strongly encouraged, and course evaluations play an integral role in deliberations about promotion and tenure cases. Individual department efforts are supported and encouraged by a centralized Teaching and Faculty Development program that has produced a popular guide for recitation instructors, maintains a video and text library, and is beginning to develop a program to assist international teachers in their adjustment to the American classroom.

- McGill University: A Centre for University Teaching and Learning, established in 1969, has four academic staff members, who are cross-appointed to the Faculty of Education, and three administrative/support staff. The Centre carries out instructional development activities for individual professors (confidential consultation services), departments and faculties (workshops developed on request), and the university at large (new faculty orientation, teaching assistant orientation, teaching portfolio workshops, course design and teaching workshops, and special workshops). The Centre's members also conduct funded research on the improvement of teaching and learning in higher education. In 1989, the Academic Policy and Planning Committee established a Subcommittee on University Teaching and Learning, chaired by the Academic Vice Principal, to study the university's needs for improvement in teaching and learning and to make recommendations on meeting these needs.
- Michigan State University: An Assistant to the Provost for Faculty Development and Diversity encourages and coordinates central and decentralized teaching

improvement programs for the faculty.

- University of Minnesota: Has two major faculty development programs: one focuses on mentoring for junior faculty and on enhancing diversity in teaching; a second offers customized workshops in departments on a wide variety of topics ranging from grading to cooperative learning.
- University of Missouri, Columbia: Has established a campuswide instructional development program for faculty. The program includes orientation sessions and seminars for new faculty, teaching renewal conferences for all faculty, and periodic training sessions on evaluating teaching.
- The University of Nebraska-Lincoln: A Teaching and Learning Center provides workshops and development sessions throughout the year for faculty and teaching assistants, and a resource handbook for all instructors. Teachers of large lecture classes have formed a "Century Club" (classes of over 100 students) to share techniques of successful large-group instruction. Since writing is an important component of the university's new general education program, workshops are also being offered to assist faculty in teaching writing and in increasing the amount of writing in large lecture courses.
- New York University: A Video Committee assists and advises in teachers' taping of their own classroom presentations for use in self-evaluation. The videotaping is supported by the university library's Video Production Center; in reviewing their performance, teachers may call upon consultants supplied by the Committee.
- State University of New York at Buffalo: Has established an Office of Teaching Effectiveness, which reports to a new Vice Provost for Faculty Development, and which offers pedagogical workshops and seminars for regular faculty and teaching assistants.
- University of North Carolina at Chapel Hill: In 1993, the university's Center for Teaching and Learning was given resources to expand its staff, facilities, and programs. The Center provides mandatory training for all new teaching assistants, instructional and assessment services, and teaching resource guides.
- Northwestern University: Maintains a Center for Teaching Excellence, with a full-time staff of three. The Center conducts workshops and provides consultations to individual faculty.
- The Ohio State University: As a result of university restructuring, new emphasis

has been given to the Office of Faculty and Teaching Assistant Development, which now has a reporting line to the Office of Academic Affairs.

- University of Oregon: In 1989, established a universitywide Teaching Effectiveness Program that offers videotaping of classroom sessions, with review and consultation by Program professionals, seminars and presentations on various aspects of effective teaching, orientation and consultations for graduate teaching fellows, and a print and video library of teaching resources. Individual colleges and departments have also launched initiatives of their own that are coordinated with this universitywide program. For example, the College of Business Administration sponsors its own workshops and seminars, the law school videotapes its faculty at their request, and the Sociology Department and the History Department have developed model lectures and colloquia directed at the teaching of specific topics that exemplify or address the very best treatments of themes within those disciplines.
- University of Pennsylvania: Faculty in the College of Arts and Sciences have access to facilities for videotaping their teaching and for critique and analysis. In addition, the Faculty Development Committee of the School of Nursing holds scheduled workshops by experienced faculty members on classroom and clinical teaching skills. These workshops are open to all standing faculty and academic support staff.
- Purdue University: Maintains a Center for Instructional Services that conducts teaching workshops and provides other services to regular faculty and teaching assistants.
- Rutgers University: In 1992, established Teaching Excellence Centers on its three campuses. These centers provide support programs for faculty members in the form of workshops, seminars, consultation, and small grants focusing on improving teaching and implementing innovative teaching methods and curriculum ideas.
- University of Southern California: In 1990, established a Center for Excellence in Teaching to facilitate faculty efforts "to integrate first-rate scholarship and teaching excellence; to assist departments to develop discipline-based teaching assistant training programs to complement the universitywide programs; and to ensure appropriate evaluation of and recognition for teaching."
- The University of Texas at Austin: For nearly twenty years, has supported a Center for Teaching Effectiveness, which conducts annual workshops for both new and experienced faculty, conducts orientations for International Teaching

Assistants, videotapes teaching assistants and faculty, and counsels individual teaching assistants and faculty.

- University of Toronto: Established a Teaching and Learning Resource Centre in 1993. It is diversifying and expanding faculty development programs in undergraduate divisions, particularly the Arts and Science division, which now sponsors a comprehensive series of seminars and workshops designed and presented by faculty for faculty, with the active support of the Dean. The Arts and Sciences division also sponsors an annual teaching forum designed primarily for recently appointed faculty.
- Vanderbilt University: Maintains a Center for Teaching that has conducted a number of programs to expose faculty to innovative teaching methods. Examples of these programs include interactive lectures, directed discussion, cooperative learning, collaborative problem-solving, team learning, the case method, and teaching and learning with technology. Other examples of activities conducted through the Center include lectures and seminars on improving teaching, a three-day workshop on teaching large classes, and a new faculty orientation program held each fall.
- University of Virginia: In 1990, established a Teaching Resource Center with minimal start-up funds from the state and the university. Currently, reallocations have been made from other areas of the university budget to continue and expand the services offered by the Center. The Center sponsors presentations and workshops throughout the academic year and is of particular support to graduate teaching assistants and junior faculty. More than 600 faculty members and teaching assistants have participated in Center activities over the past academic year.
- Washington University in St. Louis: Has established a Teaching Center headed by a widely respected faculty member. The center is available to faculty and to graduate students.
- University of Wisconsin, Madison: In December 1993, the Faculty Senate approved the creation of a Teaching Academy as "a gathering place for UW-Madison's excellent teaching scholars," and as a forum for discussion of complex issues unique to a large research university. A series of colloquia is planned to discuss such topics as innovations in instructional technology, instructional preparation for new and veteran teachers, curriculum content, peer review and student evaluations, and identifying what "teaching" really is. The university says these discussions are expected to result in systematic efforts to look even more critically at these issues.

A Center for Learning through Evaluation, Assessment, and Dissemination (LEAD) is also being developed as a cross-college resource to facilitate faculty creativity and assist them toward greater effectiveness and efficiency in teaching and learning. The LEAD Center's primary activities will focus on supporting faculty-initiated evaluation of innovative teaching methods and classroom assessment. Based on evaluation and assessment results, the LEAD Center will disseminate information about innovative teaching methods to faculty at the university, as well as other teaching institutions.

The university says numerous department-based initiatives to improve and enhance teaching quality include colloquia, workshops, and working seminars. For example, the Educational Psychology Department offered in June 1994 a two-week colloquium on Enhancing Teaching Quality.

Special programs for teaching assistants

- University of Arizona: Requires all teaching assistants to undergo universitywide and departmental training prior to beginning teaching assignments. Foreign teaching assistants are required to meet proficiency standards on a test of spoken English and to participate in additional training.
- Brown University: The university's Center for the Advancement of College Teaching provides teaching assistants with information literature, including a teaching handbook, a departmental New Teaching Assistant Pilot Program that includes group and individual work (forums, micro-teaching), individual consultation via filmed and in-class observation, and an opportunity to earn a teaching certificate. The Center also evaluates nonnative, English-speaking, graduate Teaching Assistants for language proficiency before they are eligible to teach. Those whose English skills are deemed insufficient may not be assigned to classroom responsibilities and are required to take a class in English as a Foreign Language, which emphasizes pronunciation, communication strategies, and relevant cultural information. Upon successfully completing this course, these students are certified for classroom instruction.
- University of California, Los Angeles: Established a comprehensive orientation and training program for teaching assistants more than 20 years ago. The program is centrally administered but departmentally based, and offers publications, workshops, consultants, videotaping, and formal coursework. Departmental peer consultants work with faculty advisers to present methodology courses, support pedagogical and instructional efforts, and provide evaluation. Proficiency standards for spoken English have been established by

the Graduate Division, and language programs and additional resources to assist foreign teaching assistants have been provided since 1986. Over 95 percent of all teaching assistants participate in training activities.

- Carnegie Mellon University: Teaching Assistants can now earn a Certificate of Competence through the university's teaching center by completing a series of specially designed seminars and workshops. An Intercultural Communications Center provides special seminars and workshops for nonnative speakers to qualify them to serve as teaching assistants. Certification programs are also available.
- Case Western Reserve University: Has developed a mandatory program of special training activities for new graduate students who will be teaching undergraduates. The training includes required oral-language proficiency testing for all new international graduate students whose native language is not English. Teaching assistants in several engineering departments are working with English Department faculty to improve their effectiveness in written communication.
- Catholic University: In 1989, initiated an orientation program for teaching assistants that consists of a two-day workshop at the beginning of the fall term and four colloquia during the academic year; the workshop and the colloquia focus on teaching skills. All new teaching assistants are required to attend the workshop and two of the four colloquia, and continuing teaching assistants and junior faculty have also attended. In the fall of 1994, the university began testing the English communication skills of foreign students and offered a special remedial communication-skills course for these students; this course will be required of all foreign students who need it beginning in the fall of 1995. In the fall of 1994, Catholic joined Howard University and two other Washington metropolitan area institutions in a Future Professorate Project funded by FIPSE and the Pew Charitable Trusts. The goal is to integrate teaching preparation of new teaching assistants into the overall graduate experience. The project offers a series of Faculty Teaching Mentors seminars; a higher level, predoctoral teaching appointment entitled the "Teaching Associateship"; and a Certificate in University Teaching awarded jointly by the Graduate School and academic departments.
- Clark University: In recent years, the Dean of Graduate Studies has included sessions on teaching as part of the orientation program for new graduate students. Some departments also conduct workshops of their own for teaching assistants; others rely on individual faculty to train them. Last year, the Dean of the College and the Dean of Graduate Studies jointly asked all departments to develop procedures to monitor and assess the performance of all teaching assistants on a regular basis, and the university's Undergraduate Academic Board

has included the issue of teaching assistant training and evaluation in its review of all undergraduate majors. Graduate students do not teach any courses on their own at the university; they only assist faculty members, most typically with labs and discussion groups.

- University of Colorado at Boulder: Has a Graduate Teacher Program that provides training for new graduate students who will be teaching undergraduates or assisting senior faculty in the classroom. Workshops and the use of videotapes assist students in presentation skills, lecture planning, and teaching techniques. Currently, 80 percent of graduate assistants participate in the program. The goal is to have all graduate assistants participating within two years.
- University of Florida: Requires that all teaching assistants attend a series of 11 workshops that include such topics as presentation skills, lecture planning, and teaching techniques.
- Harvard University: The Derek Bok Center for Teaching and Learning, with a professional staff of nine teaching consultants, provides orientation and training for Harvard's more than 1,000 teaching fellows, both through its own orientation and consulting services and through cooperative programs with the majority of Arts and Sciences departments. Course evaluation ratings for teaching fellows have increased markedly since the establishment of the Center in the 1980s.
- University of Illinois, Urbana-Champaign: All foreign teaching assistants whose native language is not English must pass an English proficiency test before being assigned instructional responsibilities. Those who fail the test or are preparing to take it attend workshops held by the Office of Instructional Resources. New foreign teaching assistants also participate in a special three-day orientation program, which is offered in addition to the regular orientation program for all teaching assistants. Since 1991, the university has provided a special, week-long training program for all teaching assistants who will be providing instruction in basic written composition courses (English, Speech Communication, and English as an International Language).
- Iowa State University: Since 1990 has held a series of workshops for all new teaching assistants, led by faculty and 15 experienced teaching assistants who have been recognized for exceptional skills. Sessions cover teaching, grading, testing, and student interactions. Also maintains one of the first programs in the nation for providing foreign graduate students with language and teaching skills. Foreign graduate students must pass tests in both areas before they can assume full classroom teaching responsibilities.

- The Johns Hopkins University: Each fall, conducts a teaching assistant orientation program that covers such topics as teaching skills, classroom strategies, academic policies, and ethics. In addition, the Writing Seminars Department in the School of Arts and Sciences sponsors a rigorous, required orientation program for new teaching assistants who will be teaching creative writing, and the Language Teaching Center offers a course in English as a Second Language for foreign teaching assistants. In the School of Engineering, all graduate teaching assistants whose native language is not English are reviewed by their departments for participation in a special communication strategies program; only after a review of the recommendations provided at the end of this course are they allowed to participate in engineering classroom assistance.
- University of Kansas: Requires all foreign-born teachers to pass a proficiency test in spoken English; an Applied English Center offers special educational programs for foreign graduate students, as well as foreign undergraduates.
- University of Maryland at College Park: Before the start of each semester, comprehensive teaching orientation sessions are now conducted for teaching assistants who are new to the campus. Currently these sessions are recommended strongly; the plan for the future is that they will be mandatory. Complementing sessions are conducted at college and department levels.
- McGill University: In 1991, introduced a teaching assistant orientation program that includes a general session to familiarize new teaching assistants with teaching and the resources available to them, as well as a week of workshops and seminars on specific teaching-related topics. Both new and experienced teaching assistants register for sessions of their choice; some departments require participation in two sessions. In 1993, the university initiated a TA Forum, an electronic teaching assistant discussion group. The Department of Educational and Counselling Psychology offers a three-credit course designed to give teaching assistants practice with course design and teaching skills.
- Michigan State University: Initiated mandatory orientation for all teaching assistants in the 1993-94 year, following several years of providing orientation for foreign teaching assistants only. Departments are being urged to add teaching workshops for teaching assistants in their individual disciplines. An electronic bulletin board network gives teaching assistants regular access to information about facilities and assistance for teaching, and also serves as a medium for communication about pedagogical problems in selected areas. In the fall of 1994, a handbook for teaching assistants was developed and distributed. Foreign teaching assistants are required to take a language proficiency test before being cleared for teaching assignments.

- University of Minnesota: Has established a Teaching Assistant Development Program that gives 150 graduate students from up to 15 different departments and programs the opportunity to take a course in pedagogy, receive individualized instruction from teaching specialists, and participate in teaching workshops. The university also has established a Teaching Assistant English Program that works with non-native-English-speaking teaching assistants on their linguistic, cultural, and teaching skills. University policy requires departments to refer all non-native-English-speaking TAs to this program for screening before hiring them for any position requiring any type of instructional contact with undergraduates.
- University of Missouri, Columbia: Has established a screening program to assess the oral proficiency of new foreign teaching assistants, along with an intensive summer training program for all new foreign teaching assistants. The university has also established a campuswide instructional development program for all teaching assistants; this program includes workshops at the beginning of each semester and ongoing departmental training and workshops.
- The University of Nebraska, Lincoln: The university's Teaching and Learning Center offers three-day teaching skill workshops and consultation services for all teaching assistants, as well as consultation services for those who supervise teaching assistants. Some departments also sponsor their own teaching assistant workshops. The Center also maintains an International Teaching Assistants program that offers intensive workshops twice each year to assist foreign graduate students in gaining language proficiency and teaching skills. International students must pass a review panel to establish comprehensibility in a teaching setting before they are permitted to teach any courses.
- New York University: In 1993, professors in the College of Arts and Sciences, the School of Education, and the Tisch School of the Arts began a teaching assistant training program that featured presemester workshops. The organizers are working to extend teaching-assistant training into a year-long program within the academic departments.
- State University of New York at Buffalo: Has organized an orientation program for teaching assistants, which is offered jointly by the university's Office of Teaching Effectiveness and the Graduate School. The university requires foreign teaching assistants to demonstrate English language competence, and offers special English language courses for teaching assistants whose English language skills require improvement.

- University of North Carolina at Chapel Hill: Requires mandatory training for all new teaching assistants.
- Northwestern University: Working with various departments, the Searle Center for Teaching Excellence provides special programs for teaching assistants. The programs are tailored to the specific responsibilities of teaching assistants in those departments. Advanced graduate students who have distinguished themselves as teaching assistants serve as peer consultants.
- University of Oregon: A Teaching Effectiveness Program provides teaching orientation and training for all graduate teaching fellows, as well as a mechanism for subsequent training within individual departments and consultations on an individual or departmental basis. The university requires foreign teaching assistants to pass a spoken-English language test, and it offers programs to assist them in developing increased proficiency in English.
- University of Pennsylvania: At the start of each academic year, the College of Arts and Sciences presents a Teaching Assistant Training Program. This program is designed to supplement departmental orientation programs with a series of workshops and issue-oriented sessions.
- University of Pittsburgh: The College of Arts and Sciences requires all teaching assistants to participate in a teaching evaluation and training program, and it requires all foreign teaching assistants to take an English proficiency test before being assigned instructional responsibilities. The Department of Chemical Engineering and the School of Library and Information Science maintain their own teaching-assistant evaluation and training programs.
- Princeton University: Is expanding and improving programs to develop and strengthen teaching skills of graduate students.
- Purdue University: In 1987, established an Oral English Proficiency Program that requires foreign teaching assistants to meet proficiency standards before they can teach. Has formed a Committee for the Education of Teaching Assistants, which is reviewing teaching assistant programs throughout the university.
- Rutgers University: Teaching assistants participate in a teaching assistant training program that includes an orientation, ongoing workshops and seminars, videotaping and feedback, and a teaching assistant "help-line."
- University of Southern California: Has language competency requirements and English-language instruction programs for foreign teaching assistants. Offers a

special, month-long summer course to help teaching assistants prepare for the language competency test and approach their teaching assignments with greater skill and confidence; although the course is not mandatory, some departments may require certain teaching assistants to take it. In the summer of 1990, the university initiated a universitywide general training program for all teaching assistants, intended to supplement existing departmental programs.

- Stanford University: The university's Center for Teaching and Learning provides regular training for teaching assistants. In 1991, the university's Centennial year, two additional programs were created to support and recognize teaching assistants: annual Centennial TA awards for graduate students who have made major contributions to the teaching programs in their departments, and competitively awarded Centennial grants for projects to enhance the pedagogical preparation of graduate students as part of their doctoral programs.
- The University of Texas at Austin: For nearly twenty years has offered 398T, a course in college-level pedagogy, in its departments. An annual conference is held for the 398T teachers. The university is also participating in a Preparing Future Faculty program, which brings UT-Austin graduate students to Austin Community College, Huston-Tillotson College, St. Edward's University, and Southwest Texas State University to learn about teaching in different college environments. The university also provides language testing and a three-day orientation for international teaching assistants, and a one-semester course on English use and university culture for those who do not pass the original language assessment. The language assessment is specific for each discipline and requires performance of classroom-related tasks such as pronouncing technical terms, giving a classroom announcement, and explaining the concepts found in a published article or chapter. The orientation requires a videotaped microteaching exercise by each international teaching assistant.
- University of Toronto: All teaching assistants in their first appointment receive training in classroom teaching and assignment grading, and a teaching assistant handbook is provided. A course in teaching at the higher education level is now offered to all graduate students, whether they are serving as teaching assistants or not; the university says this course has proven so popular that it has had to add extra sections.
- University of Virginia: Through the university's Teaching Resource Center, graduate instructors are videotaped in classes for evaluation and critique and given mid-semester evaluations of teaching effectiveness. Graduate courses are offered on effective teaching strategies for particular subjects, such as foreign languages.
- University of Wisconsin, Madison: Has developed an extensive training system

for teaching assistants, based primarily in colleges, schools, and departments. The training is designed to provide teaching assistants with the range of skills necessary for effective teaching. Sessions include formal instruction on effective methods of teaching, student assessment and grading, how students learn, speaking and communication skills, course-specific teaching methods (particularly for chemistry and math), sensitivity to cultural differences and learning styles, tutoring techniques, course structure, teaching assistant responsibilities, group leading skills, counseling, and general university and student services information. Two areas of training are provided centrally: the Office of Human Resources conducts workshops on the prevention of sexual harassment for all new or incoming teaching assistants; and the English Department's English as a Second Language Program conducts a nine-week, no-credit course for international teaching assistants to increase their English proficiency and organizational skills.

Other incentives and mechanisms to emphasize teaching

- University of Arizona: Has established a departmental award program for outstanding achievement in undergraduate education. The program provides one award of \$25,000 for each of three consecutive years and up to three awards of \$5,000 for one year. A new merit system has also been proposed.
- Brown University: Provides Odyssey Fellowships and seminars that are accessed through an Undergraduate Teaching and Research Assistantship program and a Women in Science and Engineering program.
- University of California, Berkeley: Has presented Distinguished Teaching Awards since 1959. In 1992, the university also established an Educational Initiatives Award, which recognizes departments or units that have created outstanding undergraduate education programs or initiatives that could serve as models for other departments.
- University of California, Los Angeles: Offers teaching awards to recognize exceptional performance in teaching. Five faculty awards, three lecturer awards, and five teaching assistant awards are presented annually. Faculty awardees receive \$6,000 each, lecturers \$3,000 each, and teaching assistants \$2,500 each, together with a \$12,500 dissertation-year fellowship.
- University of California, San Diego: Each of the university's five undergraduate colleges has always invited graduating seniors to recognize one outstanding professor at commencement ceremonies. In addition to these awards voted by students, the university's Academic Senate in the 1993-94 year initiated

Distinguished Teaching Awards as a means of emphasizing peer recognition by faculty of outstanding teaching.

- Carnegie Mellon University: Each of the university's colleges awards prizes for excellence in teaching. At the university level, awards for teaching, advising, and long-term service to education are given at an annual Education Convocation. Each year a portion of the money for salary increases to faculty is designated for excellence in teaching.
- Clark University: Since the late 1980s, an annual Outstanding Teaching Award has been given, with the recipient selected by department chairs and members of the senior class. For the past three years, a Junior and Senior Faculty Development Award has been given to recognize and reward outstanding teaching and scholarship.
- University of Colorado at Boulder: A Presidential Teaching Scholars Program provides awards of \$12,000 to tenured faculty for outstanding teaching and scholarship. Award recipients serve as mentors to junior faculty and participate in the university's ongoing Faculty Teaching Excellence Program by participating in workshops and lectures. Funds for these awards come from the proceeds of patents and licenses on university research discoveries.
- Columbia University: In 1989, established two endowed professorships created specifically to enhance undergraduate teaching in the humanities. The chairs are filled by two distinguished senior scholars "committed to inspired teaching," who teach at least two undergraduate courses a year in addition to conducting their scholarly research and graduate instruction.
- Cornell University: A program to reward distinguished teaching provides an award of \$5,000 annually for five years.
- University of Florida: In the 1992-93 year, instituted a Teaching Improvement Program that gave a base-level salary increase of \$5,000 to 165 faculty who were rated as the best and most productive undergraduate teachers. The ratings were based on faculty-committee reviews of teaching portfolios submitted by applicants. The university has enhanced its regular teaching and advising awards program for faculty. It also provides annual cash awards to outstanding graduate teaching assistants; nominations for these awards originate at the department level and are forwarded to the graduate school, with each nominee visited in the classroom by a committee member and on-site performance evaluated and ranked.

- University of Illinois, Urbana-Champaign: Has offered a variety of teaching awards since 1975.
- University of Iowa: Offers a variety of teaching awards.
- Iowa State University: In 1993-94, launched a new faculty mentoring program that links senior faculty members with new faculty in the same department; among other things, the mentors provide guidance in preparing new courses. The university offers teaching awards.
- The Johns Hopkins University: Offers a variety of teaching awards
- University of Kansas: Maintains a total of 22 distinguished teaching professorships for excellent teachers; the first were initiated in 1957. Since 1989, a faculty group, the Teaching Commons Committee, has focused university attention on the improvement of the physical environment of classrooms, has funded special faculty projects designed to strengthen and enhance instruction, and has helped change university policy so that teaching improvement projects are considered appropriate for sabbatical leave applications. The university also offers various teaching awards.
- University of Maryland at College Park: Maintains a nationally recognized, campuswide award program entitled "Celebrating Teaching." Also maintains a Distinguished Scholar-Teacher recognition program that releases several stellar faculty members from part of their regular teaching load so they may prepare and present a special honors course to students in the general University Honors Program. A Lilly Teacher Excellence Program provides a \$3,000 award to each recipient; awardees participate in a biweekly seminar that addresses the improvement of teaching on campus while working concurrently on personal teaching improvement projects. Many college- and department-level activities are also designed to emphasize the important of good teaching.
- Massachusetts Institute of Technology: A Margaret MacVicar Faculty Fellows Program, now in its third year, is intended to recognize and enhance undergraduate education through the selection annually of six to eight faculty who have made significant contributions to undergraduate education. The Fellows hold the award for a period of ten years, yielding ultimately a steady-state group of 70 to 80 faculty who will constitute an academy of the leading contributors to MIT undergraduate education. Tangible benefits are given to the Fellows to advance their scholarly efforts, and there is the expectation of continuing outstanding contributions through the creative efforts of the Fellows independently and cooperatively.

In 1991, MIT held a universitywide colloquium on the topic of "Teaching Within a Research University," followed by departmentally-based workshops. The colloquium was attended by 1,500 faculty, students, and staff. Moderated by former Massachusetts Governor Michael Dukakis, it addressed some of the issues facing MIT and other research universities with regard to the balance of teaching and research. The university says the colloquium and workshops generated much lively debate, raised the general level of sensitivity to this issue, and sparked initiatives that form the nucleus of a small but successful Teaching and Faculty Development program.

The university also conducts a series of 14 seminars each year under the title, "Better Teaching at MIT." The seminars feature prominent faculty and highly rated teaching assistants, and address such matters as improving the style and substance of lectures, and laboratory instruction, and special concerns of foreign faculty and teaching assistants. The university offers a variety of honors and awards for teaching and contributions to innovative curriculum reform.

- McGill University: In 1994, established two Royal Bank Fellowships in University Teaching to encourage research and skill development in teaching. One of these fellowships goes to a graduate student and carries a \$12,000 stipend. The other fellowship goes to a postdoctoral student or regular faculty member and carries a \$6,000 stipend. A Royal Bank Symposium fund also provides a means of communicating results of teaching innovations that have been implemented. All major faculties have one or more awards for distinguished teaching; at the spring 1994 convocation, 15 such awards were presented. Competition for national teaching awards is also encouraged through the office of the Academic Vice Principal.
- University of Michigan: A Thurnau Professorship program emphasizes the importance of undergraduate teaching by providing major awards to tenured faculty with strong teaching records. Thurnau professors hold three-year appointments and receive a \$20,000 grant for this period to support activities associated with enhancing their teaching. Five or six of these appointments are made each year. The College of Literature, Science and the Arts initiated an individual teaching award program in 1991.
- Michigan State University: A regular faculty seminar series has been converted in the last few years into a series on issues in teaching and learning. The university says these seminars have been extremely popular with faculty, indicating a sense of need on the part of faculty for this kind of assistance; teaching assistants are being integrated into the sessions. Awards for teaching include university-sponsored Teacher-Scholar Awards for regular faculty and Excellence-in-Teaching citations for graduate assistants, as well as a number of

externally sponsored awards.

- University of Minnesota: Has developed a workload policy to clarify expectations between each faculty member and the appropriate department, college, and academic unit regarding effort, particularly as it pertains to teaching. In 1993-94, the university initiated a set of presidentially sponsored, universitywide forums on teaching and learning. These forums are held quarterly and all colleges are invited to participate. Sessions have focused on collaborative learning, using the case method in teaching, and bringing technology into the classroom. In addition, teaching awards are given both at the all-university level and in numerous colleges and departments.
- The University of Nebraska, Lincoln: Offers teaching awards to faculty in different disciplines, as well as awards for outstanding scholar/teachers and departmental excellence. It is considering establishing an Academy of Distinguished Teachers to recognize especially outstanding teachers and engage them in efforts to lead other faculty in instructional enhancement.
- New York University: The university's Stern School of Business offers various forms of assistance to new undergraduate teachers, including orientation sessions, workshops, videotaping, and a mentoring program that pairs new teachers with senior faculty.
- University of North Carolina at Chapel Hill: Within the past five years, has increased the number of prestigious term professorships it awards. These professorships honor the best undergraduate teachers, particularly assistant- and associate-level professors, and carry with them a substantial annual stipend. The university has also established a number of other new teaching awards to promote and reward excellent undergraduate teaching, including awards funded by students and awards to honor excellent graduate student teachers.
- Northwestern University: Has established ten endowed, universitywide Professorships of Teaching Excellence, complementing a number of school-based professorships that recognize teaching excellence. The universitywide professorships carry three-year terms; those who hold them receive additional compensation and special funds to support teaching improvements and are appointed as Fellows of the Center for Teaching Excellence. In addition, an endowed position of University Distinguished Lecturer, with a one-year term, has been established to recognize the work of long-serving faculty with the rank of Lecturer or Senior Lecturer. Several schools have also established their own endowed professorships to reward teaching excellence and to foster innovative teaching practices. As it has begun various research and scholarly initiatives, the

university has ensured that these initiatives include an undergraduate component so that undergraduates may benefit from them. Examples include the university's Humanities Institute, its Institute for Learning Sciences, various international initiatives, and environmental programs.

- The Ohio State University: Has formed an Academy of Teaching, which comprises the university's most distinguished teachers. Membership in the Academy is limited to those who have won the Alumni Distinguished Teaching Award, the university's most prestigious teaching award (currently, eight of these awards are given annually; beginning in 1995, ten will be awarded annually). Academy members, who currently number about 100, advise the president and provost on matters related to teaching and participate in a number of mentoring activities. The university has also initiated a new program, administered by the Academy of Teaching, that links outstanding teaching associates with Academy members. This program, called the Provost's Teaching Fellowship, will involve as many as five teaching associates each year in developing innovative and effective teaching methodologies.
- University of Pennsylvania: Has established a new merit pay program that provides bonuses to reward faculty for teaching excellence. The Wharton School has established two \$15,000 annual awards for outstanding teaching. The School of Nursing sponsors annual teaching awards for faculty and teaching assistants.
- Pennsylvania State University: An annual Provost's Award for Collaborative Instruction and Curricular Innovations provides permanent pay increases to faculty who have made outstanding contributions in these areas. In the 1992-93 year, a total of 42 faculty were so recognized.
- University of Pittsburgh: An Office of Faculty Development provides ongoing assistance to faculty who wish to improve their teaching. The university also awards annually five distinguished teaching awards that carry stipends of \$5,000 each.
- Princeton University: The President has asked each department to develop a plan by the end of 1994 for increasing the involvement of professorial faculty in teaching first- and second-year students, as part of a more general plan for improving the university's undergraduate teaching program.
- Purdue University: Offers a variety of teaching awards.
- Rutgers University: In 1993, established its first chaired teaching professorship. In 1994, it initiated an Award for Programmatic Excellence in Undergraduate

Education. This award provides \$10,000 to a department that has demonstrated excellence in curriculum development or teaching enhancement activities.

- Stanford University: A teaching award program, in place since 1970, has recently been supplemented by the creation of two new awards for undergraduate teaching. Bing Fellowships, established in 1992, provide \$10,000 for each of three years in recognition of energy, innovation, and initiative in undergraduate teaching; five of these fellowships are awarded annually. Rhodes Prizes, established in 1993, each year provide salary supplements to faculty who have made special contributions to undergraduate teaching in particular areas, such as the teaching of basic "service" courses in the undergraduate curriculum.
- Syracuse University: With the support of grants from the Fund for the Improvement of Post-secondary Education and the Pew Charitable Trusts, the Graduate School has launched a Future Professoriate Project intended to improve both graduate and undergraduate education. The project aims to strengthen the preparation of future university faculty by ensuring that current Syracuse graduate students receive advanced preparation for teaching in the context of their academic disciplines, participate in an advanced teaching apprenticeship as part of their graduate programs, and develop a teaching portfolio in conjunction with a faculty teaching mentor. In 1993, the project won a Theodore M. Hesburgh Certificate of Excellence Award for Faculty Development to Enhance Undergraduate Teaching. Over 150 university faculty are participating as mentors.
- The University of Texas at Austin: The university offers a variety of teaching awards, many of which are presented at ceremonies with large undergraduate attendance (e.g., Honors Day and the university commencement exercises). The university's alumni association each year offers an award to an outstanding teaching assistant in each of the university's colleges and schools.
- Tulane University: Has established an endowed chair in physics for a faculty member with a special interest in undergraduate education. The university Senate has formed a standing committee on teaching quality; this committee has organized a series of conferences on teaching and learning and other activities designed to encourage faculty members to improve their pedagogical techniques. The university and the College of Arts and Sciences offer teaching awards.
- Vanderbilt University: In 1993, announced the establishment of Vanderbilt Chairs for Teaching Excellence, which are intended both to recognize outstanding classroom teaching and to encourage further excellence. Each year, up to two faculty members are named to three-year terms as holders of these

Chairs. Each recipient receives an annual salary supplement of \$10,000 and engages in activities to promote quality teaching.

- University of Virginia: In 1991, established a Cavaliers' Distinguished Teaching Professorship with funds donated by the athletic department from Sugar Bowl proceeds. This rotating professorship includes a five-year stipend and residence in one of the historic pavilions on the UVA Lawn. Since 1992, five similar teaching chairs have been established using private funds and funds raised to match a challenge grant from the National Endowment for the Humanities. In 1990-91, the university instituted a program of UVA Outstanding Teaching Awards, which provides three \$2,000 awards annually to teachers for primarily undergraduate instruction and two additional awards of the same amount for either undergraduate, graduate, or professional instruction. In addition, \$250 awards are given in every department for an outstanding graduate teaching assistant, who then competes for one of three \$1,000, all-university awards.
- University of Washington: Offers teaching awards for regular faculty and teaching assistants.
- University of Wisconsin, Madison: Since 1963, has recognized teaching excellence through Distinguished Teaching Awards. In addition, Hillel Awards honor faculty members for major achievements in teaching, research, and service. Teaching awards to faculty are also conferred by colleges, schools and departments, often with student involvement. For example, the College of Engineering's undergraduate Polygon Engineering Council in 1994 honored nine professors, two instructors, and eight teaching assistants with Outstanding Teaching Awards. Over the last three years, the university's Chancellor has held receptions in honor of faculty who participate in various undergraduate education initiatives, such as those supervising junior and senior undergraduates in substantive research.

Steps to enhance teaching through new information technology

- University of Arizona: Has incorporated microcomputers as integral components of many basic undergraduate proficiency and introductory courses. Has developed new instruction resources and teaching support (e.g., multimedia labs, videocampus, new programs) to train faculty in the use of new technology. Has committed to building a new undergraduate teaching building with complete IT and multimedia facilities.
- Brown University: Approximately 30 professors, in disciplines ranging from Chemistry to Visual Arts, require an interactive computer component in their

courses. For example, one Chemistry course offers on-line notes, lab reports, and other relevant documents and features a specialized software (Cache) that allows students to rotate images of molecules. An Economics course utilizes specially created graphs sketched in class by the instructor with a computer notebook "pen" that can be downloaded into students' own computers. A Visual Arts course helps students develop projects that combine traditional drawing and computer graphics, mixed with music and videos. The university library system offers various kinds of computer assistance, both in library facilities and through on-line connections to personal computers in offices and residences. The university subscribes to 16 subject-oriented bibliographic products that enable users to search holdings of libraries worldwide (for example, Firstsearch includes 30,000,000 titles) and to obtain full text information from document delivery sources such as Lexus-Nexus. The library also has CD-ROM information services that offer access to such materials as census data, other government documents, and specialized bibliographies.

- University of California, Berkeley: Has established an Instructional Presentation Lab to assist faculty in using computer technology to develop multimedia instructional materials specifically tailored to the courses they teach. Has provided new and expanded computer centers across the campus, all linked to a campus network that provides access to library catalogs and other student information systems. A Video Mentor Program provides videotaped lectures by Distinguished Teaching Award recipients for new faculty members to use as role models for the lecture courses they are preparing to teach; the university says this has cut new preparation time for new faculty in half, while enhancing their teaching effectiveness.
- University of California, Los Angeles: Has a classroom development plan to integrate all 250 classrooms into a backbone fiber-optic network to maximize faculty access to information and teaching resources. Twenty advanced media general assignment classrooms have been designed and upgraded since 1982, along with an expanding number (currently 48) of minimedia classrooms. Instructional support services have been developed to provide assistance in materials preparation, media production, courseware development, and instructional design. A comprehensive campus plan to provide students with e-mail accounts, on-line access to information services, and expanded access to library information resources is being implemented. Additional distance-learning facilities, student computing labs, and new media workstations are also under construction.
- University of California, San Diego: Departments now use e-mail extensively to deliver and exchange homework assignments and to provide for rapid, interactive exchanges between faculty and students. Some departments have

already incorporated information resources from the Internet into course instruction, and this is expected to increase rapidly: during 1994-95, the campus hopes to complete the wiring and equipment purchases to network all faculty and provide access for all students. The university says the focus of instructional improvement will be on utilizing technology for instructional purposes, particularly interactive communication between remote sites. By the spring of 1995, a distance learning classroom will be operational in the university library, along with an associated facility to assist faculty in using on-line instruction methodologies and in creating digital multimedia tools.

- California Institute of Technology: Has underway a Chemistry Animation Project aimed at using high-end, workstation-quality computer graphics to aid in the visualization of concepts throughout the undergraduate Chemistry curriculum. The university is also developing computer-based instructional and visual tools to illustrate concepts in atomic, macromolecular, and organismic structure; cell biology; neurobiology; and primatology. Caltech undergraduates, working with Caltech faculty, are producing a series of exportable materials that will make these tools available to universities, junior colleges, and, in some cases, high schools. Tools are also being developed to teach an undergraduate course in biological imaging of living tissues, giving students the ability to profit from the tremendous impact the confocal microscope has had in the field of cell biology.
- Carnegie Mellon University: Has developed a five-year plan to upgrade its on-campus electronic network from the current 1-megabit-per-second capacity to 10 and then 100 megabits per second. From there, it expects to move to a wireless network. A Courseware Committee surveying projects that use interactive multimedia in support of teaching has recommended six such projects for further support, is considering four others, and has advertised for requests for support for additional projects from faculty and staff.
- Case Western Reserve University: Physics professor Robert Brown uses the university's campuswide fiber-optic network (CRWUnet) to enhance interactions with his students. Students read nightly homework hints from a class CWRUnet bulletin board and receive one-on-one help by communicating with their professor through electronic mail. Because students receive so much help outside the class, Professor Brown says he is able to cover basic physics material in less than the normal class time, giving more time for discussion of new frontiers in physics.
- Catholic University: Is in the process of adding multimedia technology to classrooms used for teaching of undergraduate courses in English, History, Mathematics, and Modern Languages. Computer-assisted learning has become a

central part of instruction in Architecture and Engineering.

- Clark University: The university's Office of Information Systems each semester offers workshops for faculty and students on such subjects as the use of new software and word processing systems. This past fall, as part of the university's regular new-student orientation program, each first-year student was given a computer account and required to attend a session to learn how to log on, use e-mail, and access the Internet. Many faculty members are using e-mail to stay in touch with students and some use bulletin boards and networks for assignments. Over the past two years, all faculty offices and student residences have been wired to provide access to the university's mainframe. The library has recently introduced a computerized catalog and a number of computerized reference systems, which students and faculty are being taught how to use. A new Center for Teaching Excellence, now in the planning stages, will provide additional instruction in the use of new information technologies and will offer grants to support faculty who seek to design new courses, or revamp existing ones, to utilize these technologies.
- Columbia University: The Chemistry department has developed and is using computer programs to teach undergraduates the basic principles of chemistry. The Art History and Archaeology department is experimenting with state-of-the-art, multidimensional computer programs. A room in the building which houses the departments of History and Sociology has been equipped to take advantage of state-of-the-art video and computer technologies to teach the social sciences.
- University of Illinois, Urbana-Champaign: In 1988, established an Educational Technologies Board to assist faculty in the development of computerized teaching materials and to advise the campus administration concerning all facets of computer-assisted learning on campus. Since that time the campus has allocated between \$325,000 and \$500,000 each year for Board-sponsored projects. These projects have included upgrading classrooms in various disciplines with new multimedia and video equipment. Several years ago, instituted a computer fee for students to support instructional computing. This separate fee has since become a part of tuition, but it continues to be earmarked for providing computer technology for students. Through the use of these funds, the campus has been able to provide instructional equipment and staff support totaling approximately \$1.5 million per year from FY 1991 to the present.
- University of Iowa: All colleges are drawing increasingly on microcomputer and multimedia technology to enhance the learning experience for their students. A recently opened Information Arcade in the main library gives faculty the opportunity to develop new course materials drawing on a wide range of new

technologies. For students, the Arcade provides an innovative computer networked classroom, as well as an opportunity to work independently at accessing on-line information from a wide variety of sources on campus and throughout the world. A new Business Administration building includes classrooms specially designed to use new technologies as part of the instructional environment; remodeling projects in other departments and colleges are also incorporating facilities to take advantage of new technologies.

- Iowa State University: Since 1988, efforts have been underway to install state-of-the-art communication technology in the university's largest classrooms; now this equipment is being installed in mid-sized classrooms. The goal is to equip all these room with video projectors; high-resolution graphic capabilities; and videotape, CD-ROM, and video disc playback functions.
- The Johns Hopkins University: In 1993-94, the School of Arts and Sciences opened two new computer teaching labs especially for the use of undergraduates. These are in addition to large, open computer labs in the university's Academic Computing Center. Another computer lab is planned for the Film and Media Studies Program.
- University of Maryland at College Park: Has established extensive, ongoing efforts to utilize new technologies to enhance teaching. These efforts include the following:
 - AT&T and IBM Teaching Theaters featuring networked computers at each student station and interactive instructional software
 - the gradual outfitting and upgrading of classrooms to facilitate computer-aided instruction and access to audio-visual equipment
 - annual campuswide workshops to demonstrate innovative campus efforts
 - the application of IBM grant funding to create and implement a special course sequence on Total Quality Management that uses an extensive array of technology based tools to enhance teaching
 - the use of computer-assisted data collection and computer simulation in introductory physics courses
 - the incorporation of substantial computer projects using Mathematica or Maple in the first course in differential equations
 - a well-established Educational Technology Center in the College of Education and a well equipped, non-print-media unit in the undergraduate library; both serve the entire campus.
- Massachusetts Institute of Technology: Ten years ago joined with Digital Equipment Corporation and IBM to design and implement a large-scale

distributed computing system that could be used to improve undergraduate education. This system, now known as the Athena Computing Environment, has evolved into a service organization that provides students, faculty, and staff with workstations that give free access to a wide range of services, such as network services, commercial software, courseware developed specifically for MIT subjects, and a common file system. Athena and other academic computing activities have enhanced undergraduate education in the following ways:

- Public facilities consisting of 360 workstations are open every day around the clock. There is a Macintosh cluster that doubles as a classroom, two additional electronic classrooms with workstations for each student, two lecture halls equipped with instructor workstations and video projectors, and a visitors' center equipped with diverse workstations and video projectors.
- The MIT libraries provide many network services, including numerous bibliographic and scholarly databases, an online catalog, and access to reference librarians.
- Use of academic computing resources is growing among the subjects in the university's core curriculum. For example, Introduction to Solid State Chemistry uses Athena courseware and communications heavily; Physics I and II use the university's cable-TV system to distribute lectures; Introductory Biology uses genetic-modeling software and communications services on Athena; students enrolled in writing subjects have access to a Networked Educational On Line System that permits them to submit and retrieve papers and other documents on-line and provides tools for instructors to annotate papers and share them with students.
- An On Line Teaching Assistant program connects students with teaching assistants and faculty in various subjects. Queries are classified by topic or subjects, and the system manages a query queue for the teaching assistants and faculty who respond. The system keeps logs, places queries at the top of the queue when they go unanswered, and provides for archives of stock answers that students may peruse.
- A number of large-lecture subjects have a system of "class representatives," whereby a sampling of students meets periodically with the lecturer via e-mail to discuss how the class is going.
- McGill University: An increasingly large number of faculty members are using

various forms of information technology in teaching. To further develop these efforts, a Joint Subcommittee on Educational Uses of Information Technology was established in 1994. A Technology Fair is planned for 1995 to demonstrate existing use of instructional technology.

- University of Michigan: Between 1989 and 1992, an Instructional Technology Program in the College of Literature, Science and Arts awarded a total of \$405,000 to support development of new-technology teaching materials in the humanities, natural sciences, and social sciences.
- Michigan State University: Has instituted computer software to assist students with quantitative assignments. It utilizes an intelligent interface that recognizes diverse equivalent answers, and gives students instant feedback and the option to correct work. This software package will also be the platform for an off-site math placement test for incoming students, allowing additional work to be completed prior to matriculation. A campuswide Mathematics site serves as a unified computational environment for mathematics and statistics, and supports graphics and visualization across multiple disciplines. A revised "Introduction to Computer Literacy" course uses a systems-based approach. The mode of delivery combines instructional television, a new, visual, Windows-based computing platform, and the use of e-mail for instructor-student contact. The university has instituted multimedia computational instrumentation in laboratories for foreign language instruction.
- University of Minnesota: Provides e-mail accounts and computer access for all students, faculty, and staff; e-mail is now widely used for student-faculty interaction outside of class, as well as for specific in-class assignments. A number of new computer classrooms and laboratories have been funded to allow specialized instruction by computer (used heavily in writing courses, in certain social science classes, and in the arts). Advanced multimedia technology has also been introduced to enhance a number of large lecture courses.
- The University of Nebraska, Lincoln: A multimedia technology center supports faculty development and the preparation of materials for the classroom. Workshops and grants are available to assist with faculty development and incorporation of new technologies into teaching.
- New York University: An Academic Computer Facility makes available to undergraduate students and faculty a wide range of computer network capabilities, including a Campus Wide Information System that links a number of smaller campus networks and ties into the Internet. NYU-Internet accounts are available to all students enrolled in degree or diploma programs. To aid

undergraduate access, the university is wiring students' residence hall rooms for direct computer links into the networks.

- University of North Carolina at Chapel Hill: Allocates \$200,000 a year to the Office of Information Technology for a project to outfit classrooms with the most technologically advanced instructional equipment.
- Northwestern University: In April 1991, appointed a task force to develop an institutionwide agenda for use of technology at the undergraduate level. Following the report of this group in 1993, a universitywide Instructional Computing Steering Committee, chaired by the Provost, was established to implement the recommendations and set priorities. The university has since installed a campuswide fiber optic network that will enable students and faculty to have access to the campus network and off-campus resources from any point on campus, including residence halls. A project has been initiated to support Electronic Discussion Sessions, designed to enhance the educational experience of students by permitting them to engage in course-related discussions at all hours. Several offices have established generic electronic mail accounts so that students with questions about their academic programs or other issues can send messages at any hour with the expectation of a prompt and personal response.

The university has also established a grants program to provide funding for faculty who wish to employ technology in innovative ways in undergraduate courses; projects currently underway include development of a technology-based course in general astronomy. The university maintains six public computing facilities on the campus that are used by faculty for scheduled classroom instruction and by students for individual class projects. Faculty also load courseware onto servers in these centers for use by students in their classes. Academic Computing and Networks Services provides assistance and technical advice to faculty wishing to employ technology in their courses. A series of "smart classrooms" has been constructed to permit faculty to employ multimedia materials in their courses. In addition, the Main Library has established the Mitchell Media Center to provide multimedia viewing rooms and carrels for classes and individual students, and a Multimedia Learning Center in the College of Arts and Sciences has been renovated and reconfigured to facilitate the use of the latest multimedia materials in foreign language instruction.

- The Ohio State University: Instructional technology initiatives are supported by state Board of Regents funds, university academic enrichment funds, external funds, and internal unit resources. Among many initiatives currently underway, the Department of Communications has taught a two-way interactive video course, Introduction to Telecommunications, between the Columbus campus and the Marion regional campus. An Advanced Computing Center for the Arts and

Design has won inclusion as one of two academic unit participants in a New Media Center consortium, which will facilitate development of an Emerging Technologies Studio, a facility for the teaching and study of multimedia, and emerging media technologies. The College of Food, Agricultural and Environmental Science uses satellite technology for national distance education in the AG*Sat consortium, which involves many of the nation's land-grant universities.

- University of Pennsylvania: Introductory Calculus courses are now taught using "Maple" computer software that provides visualization of mathematical principles. Social Science courses are enhanced by an Undergraduate Data Analysis Laboratory, through which students learn skills for collecting, tabulating, and analyzing data, and also learn how to build and use computer simulation models. In addition, the university has begun to take advantage of the Internet by offering courses to students off-site. A recent highly successful example was "Boethius on the Net," a classics seminar offered to a combined group of on-campus and off-campus students using computer linkages.
- Pennsylvania State University: In the Smeal College of Business Administration, new, integrated, junior-year core courses will be taught by interactive multimedia methods in an attempt to introduce collaborative teaching and learning and technology use in the classroom. Through a TQM Competition grant from IBM, the College will also be providing additional support for faculty to use multimedia techniques to bring their research and consulting into the classroom.
- University of Pittsburgh: The Departments of Biological Sciences and Mathematics and Statistics have used outside grants to undertake major efforts to integrate computer technology into their undergraduate curricula. Other College of Arts and Sciences departments that have initiated efforts to enhance undergraduate education through computer technology include the departments of Chemistry, Economics, and English. The Department of Chemical Engineering has established new teaching methods that involve the use of computers in simulating very expensive laboratory experiments.
- Princeton University: Is vigorously exploring the use of computers to facilitate and enhance undergraduate learning. Has been updating its computer science curriculum with the assistance of a National Science Foundation Grant. Through a recently established Dormnet program, all students now have a full range of computer services from their rooms.
- Rutgers University: Through a number of new funding sources is making a major investment in expanding the availability of computer and media technology in

the classroom. Beginning in the fall of 1994, a Lilly Endowment Teaching Fellows program is focusing on developing a cadre of faculty members who will become institutional leaders in advancing the use of technology in the classroom.

- **Stanford University:** Since 1993, the university's Center for Teaching and Learning has sponsored a seminar series for faculty to demonstrate successful teaching strategies enhanced through new technologies. A standing Commission on Technology in Teaching and Learning was established in the spring of 1994. The university library's Curriculum Development Laboratory enables students and faculty to prepare instructional materials ranging from multimedia transparencies to interactive courseware and multimedia databases. The lab is used to digitize video clips, make CD-ROMs for distribution, edit videotapes, and support the creation of instructional applications for computers. Special grants in the School of Humanities and Sciences support faculty projects that enhance instruction through applications of new technology, such as electronic workbooks for language instruction, modular instrumentation in science laboratories, and interactive computer simulations. Free computer clusters located in residences, libraries, and other areas provide students with access to the Internet over the Stanford University Network; these public clusters supplement in-room connections and departmentally based computer systems, encouraging electronic communication in support of instruction and advising.
- **Syracuse University:** A Teaching and Technology United program has introduced information technology into writing, foreign language, visual communications, and mathematics courses. At present, faculty in four departments instruct over 2,000 students a year using multimedia and instructional technology. Some faculty in writing and foreign language programs are developing instructional courseware to enhance the learning process. Faculty members in all departments who wish to use computer presentations in the classroom may reserve equipment and receive training and consulting support from a Faculty Support Center.
- **University of Southern California:** In the fall of 1994, opened the Thomas and Dorothy Leavy Library, the first university library built from the ground up to bring the latest information technologies to bear on undergraduate education. The library serves as a focal point for instruction in accessing information from electronic archives throughout the world and applying computers to instruction. The university has also developed, as part of its freshman writing program, a computer system specifically designed to help freshmen develop their writing and research skills. The system was developed by the university library and the School of Engineering, with a grant from the Apple Computer company.
- **The University of Texas at Austin:** Opened a new Undergraduate Computation

Center on a 24-hour-per-day basis in 1994. Many courses now feature multimedia applications. Some courses deliver basic materials, such as the syllabus, through an electronic home page. Computer-assisted writing, with electronic editing groups, is a key feature of the freshman composition course. Many faculty also conduct "electronic office hours" through e-mail.

- University of Toronto: Has formed an Academic Computing Advisory Committee, chaired by a Vice Provost, to serve as a clearinghouse for information on new technologies, support development of new instructional technologies and new "smart" classrooms. Has established an Information Commons to give all students access to the Internet and World Wide Web. Examples of recent programs and courses incorporating new technologies include a Computer and Calculus Project, a Writing With Computers program, and an Electronic Discussions in Philosophy course.
- Tulane University: Classrooms and dormitory rooms are being wired to make use of modern developments in information technology. All lower-level language courses are being targeted for integration with information technology. The Architecture faculty is incorporating three-dimensional computer modeling into instruction in architectural design.
- Vanderbilt University: Has instituted an Initiative on Technological Innovation in the Classroom, which is designed to encourage and facilitate new uses of technology in courses and laboratories. The technologies may include but are not limited to computing, electronic network services, video, and multi-media. Faculty compete for grants that fund summer salaries or release time, graduate student support, consultants, equipment, and other supplies.
- University of Virginia: A number of special classrooms incorporating computers and video projection systems have been developed, and the university is aiming to upgrade ten additional classrooms a year in this fashion through a Classroom Improvement Fund. Students and faculty can access a wide variety of texts through an Electronic Text Center, which has a database that includes the Oxford English Dictionary, the works of Shakespeare, and a host of other seminal texts. Visual images stored in a Digital Image Center also can be scanned for study or research purposes. Computerized systems allow students and faculty to mix texts, images, and sound and video clips to create and use new learning tools.

A faculty development program has been implemented that provides faculty fellowships, graduate assistantships, formal training, equipment, and assistance with instructional design and technology. A modest number of courses, expected to be between five and twenty, will be selected each year for intensive

reengineering. A multimedia support center has been established, where faculty are able to digitize video segments for classroom presentations or to create CD-ROMs for multimedia case studies; staff in the center are available to faculty for training and one-on-one consultation.

Faculty in several departments have established electronic discussion groups for their courses to encourage the exchange of ideas and questions outside scheduled class meetings; students who are not enrolled in the courses can also log on and participate, further expanding the reach of the faculty.

- University of Wisconsin, Madison: With the proliferation of new instructional technologies, the university's colleges and schools are developing an increasing number of projects to assist faculty in applying these technologies to enhance teaching. For example, in 1994, the School of Business and the College of Engineering began pairing faculty "eagles" with instructional designers from the Division of Instructional Technology to redesign course modules using new software, programs, and other computer technologies.
- Yale University: An Advanced Video Teaching Committee has been established to introduce modern video disc technology as part of upgraded audio/visual capabilities. Courses targeted are those that require visualization of complex, three-dimensional information.

Grant programs to underwrite faculty proposals for developing new undergraduate courses, course materials, and teaching methods

- University of Arizona: Each year provides ten to fifteen Provost's Teaching Improvement Awards of up to \$2,000 each for supporting development or redesign of general education courses. It also provides up to four awards of \$3,500 each and up to four awards of \$1,500 each.
- Brown University: Provides ongoing support for course revision and new course development, as well as special grants for curriculum and academic program development. Specific grant programs include Curricular Development Grants, a Salomon Fund for Course Improvement and Curricular Development, Undergraduate Teaching and Research Assistantships, Wriston Grants for curricular improvement and development, and Wayland Grants for Course Development, Seminars, and Study Groups. The Office of the Dean of the College, working in conjunction with faculty, also develops programs that focus on new academic initiatives and are funded by outside sources. These initiatives include a Foreign Languages Across the Curriculum program (supported by the Ford Foundation and the U.S. Department of Education's Fund for the

Improvement of Post Secondary Education), and a Parallax-Toward Uniting Science and the Humanities program (supported by the National Science Foundation, the National Endowment for the Humanities, and the Fund for Improvement of Post Secondary Education).

- University of California, Los Angeles: The Office of Instructional Development provides over \$600,000 annually in grants to support undergraduate instructional improvement efforts. One-third of this sum is in the form of minigrants (less than \$750 each) given directly to faculty, and between 700 and 800 such grants are awarded annually. Larger instructional improvement grants provide support for projects that may originate from individual faculty or the collective efforts of departments or divisions; approximately 50 of these major grants are awarded annually.
- Carnegie Mellon University: Has recently established a Center for Innovation in Learning that provides funds for developing new undergraduate courses, course materials, and teaching methods.
- Case Western Reserve University: A number of faculty have used Lilly Foundation Teaching Fellows Program fellowships to create or revise undergraduate courses, using innovative teaching techniques.
- University of Colorado at Boulder: Has established a Council for the Enhancement of Undergraduate Education that provides grants totaling over \$200,000 annually to individual faculty, departments, and student groups for projects intended to enhance all aspects of undergraduate education.
- University of Florida: Provides funds for course development through its Office of Instructional Resources.
- Harvard University: Maintains a pedagogical innovation fund to help underwrite special expenses of undergraduate course development. In a typical year, the fund's six-figure budget supports 20 or more course initiatives with grants of varying sizes.
- University of Illinois, Urbana-Champaign: Maintains an Undergraduate Instructional Awards program that provides funds for general education course development projects. Each year \$40,000 is available from the campus, matched by a like amount from departments or colleges receiving awards.
- Iowa State University: Has a long-standing program to provide, on a competitive basis, financial support for direct costs of developing innovative approaches to

teaching courses.

- The Johns Hopkins University: The schools of Arts and Sciences and of Engineering administer a grant from the William R. Kenan, Jr., Fund to enhance undergraduate teaching through innovation. The fund has supported such undertakings as course development, laboratory demonstrations, and equipping computer teaching laboratories for undergraduate courses.
- University of Maryland at College Park: Provides instructional improvement grants for the development of new courses and the enhancement of current offerings. Approximately 18 to 20 grants of up to \$5,000 are awarded each year.
- Massachusetts Institute of Technology: An endowed fund created by the MIT class of 1951 at their 40th reunion supports projects that enhance undergraduate teaching and education. Projects include, but are not limited to, development of new curricula; training programs to enhance teaching skills; and development of innovative teaching techniques, teaching aids, and teaching evaluation methods. The first call for proposals took place in the fall of 1993 and four awards were given to support the following:
 - the creation of an electronic multimedia on-line textbook for teaching communication skills to engineers, and a set of authoring tools to be used in current writing classes in the School of Engineering
 - an effort by a group of faculty and undergraduate students, working in collaboration with Russian emigres, to tap into the Russian approach to problem-solving in physics, mathematics, and chemistry
 - a Physics Department plan to reenergize their first-term freshmen physics offering
 - the creation of a program for undergraduate research in mathematics.
- McGill University: A Royal Bank Teaching Innovation Fund provides \$60,000 annually to support efforts of individuals or groups in the development of innovative teaching practices and improved methods or curriculum. Faculties must provide matching funds.
- Michigan State University: Has established an All-University Active Learning Award that will support faculty grants to improve teaching and incorporate active learning. The Assistant Provost for Undergraduate Education has undertaken special efforts to provide support for faculty who teach core classes.

- University of Oregon: Funds set aside for implementation of strategic planning initiatives complement a private endowment specifically designed to encourage the development of new courses and teaching methods. These funds have supported such diverse projects as the development of a "design/build" laboratory for architecture students, the introduction of computer technology into costume design for Drama students, and the development of computer assistance in conceptual calculus for nonmath majors.
- The University of Nebraska, Lincoln: Is providing funds to encourage and support development of new and revised courses for its new general education program.
- Northwestern University: Funds are available on a continuing basis through the Searle Center for Teaching Excellence to support faculty efforts to revise and enrich current courses, develop new courses, or undertake pedagogical experimentation. In addition, a multiyear effort during 1994-96 is providing more than \$100,000 to allow teams of faculty (ideally from different departments and/or schools) to work independently on related teaching innovations while meeting regularly with each other to explore basic pedagogical issues related to their work. Several schools have established endowed funds that faculty can use to create innovative approaches to teaching existing curricula or to develop new undergraduate courses. An Instructional Computing Steering Committee provides grants for new ways of employing technology in undergraduate courses.
- Purdue University: A Class of 1941 Teaching Innovation Grants Program assists faculty in developing innovative teaching approaches.
- Syracuse University: A Chancellor's Fund for Innovation, established two years ago, has supported 51 projects to enhance teaching and learning, including a freshman gateway experience in each of the university's schools and colleges.
- University of Southern California: For the last eight years has maintained a Fund for Innovative Teaching, which provides approximately \$50,000 a year in grants to faculty for the development of new undergraduate courses and teaching methods.
- Stanford University: From 1991-94, a Bing Teaching Initiative supported more than 40 curriculum projects; priority was given to the development of new courses to satisfy general education requirements, and to projects that encouraged undergraduates to become more active in research. Highlights of these projects include a revised introductory chemistry curriculum, a new

statistics course serving social science majors, new approaches to the core curricula in art history and drama, and a joint laboratory venture in medicine and biology.

- The University of Texas at Austin: A series of small grants made available through two major computer manufacturers has led to the development of courseware across the campus. The grant applications were peer-reviewed by a faculty committee. Through a recent grant from FIPSE, small developmental grants were made available on a competitive basis to the faculty teaching the university's course in college-level pedagogy. A more extensive program of curriculum development grants is currently in the planning stage.
- University of Toronto: Has initiated a program of instructional development grants for individual faculty projects that will improve undergraduate teaching, and is working to expand that program in several undergraduate divisions.
- Vanderbilt University: Has instituted a Team Teaching Initiative intended to enhance the curriculum. The Initiative provides financial and administrative support to faculty from two or more different schools of the university who develop and offer new interdisciplinary courses. Faculty compete for grants that fund summer salary or release time, graduate student support, consultants, equipment, and other supplies.
- University of Virginia: Using seed money from the Lilly Endowment, has established a Teaching Fellows Program. Each year, six assistant professors receive fellowships that enable them to create or revise courses with the help of senior faculty. With the Lilly grant running out, the university has reallocated funds from other areas of the university budget to continue the program at its current level.
- Washington University in St. Louis: Grants from the James T. Kemper Foundation are awarded on a competitive basis for developing interdisciplinary courses for undergraduates.
- University of Wisconsin, Madison: An Undergraduate Teaching Improvement Council provides grants to faculty for the purpose of developing new courses and innovative teaching. Since 1991, a special undergraduate initiatives budget has supported faculty development of new undergraduate courses.
- Yale University: An endowed fund encourages and supports planning and design of new undergraduate courses and instructional materials.

Creative or novel programs intended to enliven and energize the academic experience for undergraduates

- **Brown University:** Offers Group Independent Study Projects that allow groups of students to initiate courses of study which in content, emphasis, or procedures are not offered in the established curriculum. These projects are cooperative inquiries, in which participating students bear major responsibility for both the planning and the conduct of the work. The projects are evaluated by faculty sponsors, and often lead to curriculum and course innovation. Learning-through-public-service components of certain courses provide opportunities to apprehend theoretical and abstract topics through hands-on experience. For example, through course development grants awarded by the university's Howard R. Swearer Center for Public Service, professors have developed courses in which students work with members of the deaf community, with organizations that serve the underprivileged, and with inmates of a maximum security prison for women. Courses offered as part of the Foreign Language Across the Curriculum initiative give students a chance to study such topics as Russian or Chinese history in discussion sections taught in those languages.
- **University of California, Los Angeles:** In the fall of 1993, initiated a new Social Science Collegium that, in effect, creates a small social science college for freshmen and sophomores within the university. The courses offered cross traditional academic boundaries, focus heavily on writing, and involve high-profile, research-oriented faculty who often do not teach lower-division classes. The courses are designed to address critical issues facing society, and to place these issues in historical context. Recent examples include "Arabs and Israelis: Cause of Conflict, Prospects for Peace," and "History in the Making: East-Central Europe in Transition, 1989-1993." The courses fulfill general education requirements in the social sciences and are open to all freshmen and sophomores in the university's College of Letters and Science.
- **California Institute of Technology:** Offers Super SURF (Physics 11), a tutorial course that each year recruits five freshmen into cutting-edge research. The class meets as a tutorial session for the winter and spring terms of the freshman year, during which individual research problems are chosen. During the summer, class members each work on their research, often creating informal collaborations to explore other problems. The fall term is spent in pulling together the research results to determine what else needs to be done. Out of each year's group, there are typically two publications in scientific journals.
- **Carnegie Mellon University:** Has recently initiated a Bachelor in Humanities and the Arts. This program, offered jointly by the College of Fine Arts and the

College of Humanities and Social Sciences, gives students greater depth in the humanities and social sciences than regular professional programs in the arts. Maintains a special University Choice program for high-ability students who want to explore disciplines in different colleges.

- Clark University: In the fall of 1994, launched a new International Studies Stream that allows students an opportunity to satisfy their broad liberal arts requirements in their first two years by taking a set of interrelated courses with an international theme. In their first semester, participating students take an innovative interdisciplinary core course, "Citizenship in Global Society," and a seminar with an international focus. They also expand their skills and understanding of international affairs by satisfying an expanded foreign language requirement and by participating in a study abroad program. Special outside-the-classroom events, such as lectures and field trips, bring participating faculty and students together at regular intervals to foster the creation of a vibrant learning community. Students in any major can elect to enroll in this International Studies Stream, and the pioneering group of participants, approximately 10 percent of the first-year class, come from quite diverse backgrounds. The faculty and board of trustees have also approved the establishment of an Environmental School within the undergraduate college, which will open in the fall of 1995. The School will offer a totally new approach to environmental education and to liberal arts education, addressing the central question of reconciling economic and technological development with long-term environmental sustainability. Students in the School will satisfy their broad liberal arts requirements by taking nine specially designed courses that focus on human-environmental interactions, spanning the sciences, social sciences, and humanities. They will also pursue a major in one of several departments that will participate in the School (Geography, Biology, Philosophy, English, Sociology) and take a capstone course in both the School and their major.
- University of Colorado at Boulder: Has developed a FallFest program for freshmen that enrolls small groups of students in packages of three courses built around common themes. Each package of courses includes a small seminar course that is built around a workshop experience with close faculty-student interaction and the use of upper-division students as mentors. The university also has developed a special program that presents studies in the humanities to engineering undergraduates.
- The Johns Hopkins University: Allows undergraduate Nursing students to choose to be part of a clinical track that will provide them the opportunity for clinical practice time in each clinical nursing course with an inner city, vulnerable population. This becomes an in-depth experience that builds progressively through the Clinical Nursing courses. At graduation, the student, in

addition to being prepared as a nurse generalist, has special skills in working with the health care needs of underserved populations. The School of Engineering has developed special courses designed to introduce liberal arts students to technological concepts and analyses. This school also has a special inter-session program that allows engineering students to learn about business and management. The program offers a different, week-long, intensive business and management course each year; recent topics include the international aspects of engineering management, project management, and management challenges of new environmental regulations.

- University of Maryland at College Park: Offers a First Year Focus Program that gives entering freshmen the opportunity to enroll in predetermined course "clusters" that examine a theme from the perspective of courses from different departments. Participating students attend an Interdisciplinary Cluster Seminar that integrates the content of the courses linked by the theme. The program's courses are small, appropriate for first-year students, and taught by distinguished members of the faculty.
- Massachusetts Institute of Technology: Has initiated a pilot program through which students in freshmen introductory courses work collaboratively on homework and receive a portion of their grade as members of a team. Spawned by a group of students after a university colloquium on the topic of academic honesty, the program is aimed at increasing the spirit of cooperation and positive collaboration among students. An Edgerton Center for Hands-On Education creates and supports opportunities for undergraduates to experience engineering and science projects through a variety of means. In the fall term, freshman advisor seminars focus on projects designed, built, and tested by students. In the spring, seminars with the same focus are offered for all undergraduates. Throughout the year, students can come to the Center for help with independent projects.
- New York University: First-year students in the College of Arts and Sciences are offered a creative introduction to college-level work and to the cultural vitality of New York City through a Freshman Reading Program. An exercise in critical reading, thinking, and discussion, the program provides a common experience for undergraduates and facilitates interaction with faculty. For example, the program recently brought together freshmen from the College of Arts and Sciences, freshmen from the University's Tisch School of the Arts, and junior and senior faculty from a variety of disciplines in a study of an award-winning Broadway drama. Participants read the play's script, saw portions acted out, and engaged in a series of discussions and lectures about the work. The discussions included visits from the play's author and director, who were both NYU alumni.

- Northwestern University: Has instituted an interschool Integrated Arts Program that offers courses exploring the creative process from the perspective of the artist in theater, music, dance, and the visual and media arts; the program also offers courses, many of them team-taught, in different disciplines that take art as their subject (e.g., sociology, philosophy, and communication studies). A Music Theater Program gives Music students majoring in voice and Speech students majoring in theater the opportunity to create a second area of specialization to enhance their development as musical theater artists. A certificate Undergraduate Leadership Program combines course work in theories of leadership and historical studies of leadership with small-group activities, off-campus retreats, and involvement in campus and community organizations.
- University of Oregon: Has offered for the last two years a special freshman course entitled "Building Community." The course encourages students to think critically about the concept of community and to explore issues that bind-and divide-communities. Students taking the course participate in community action projects; in 1993, they provided more than 1,000 hours of work to local organizations, including Habitat for Humanity. The Law School has developed a special course intended to integrate the offerings of the Law School into the undergraduate curriculum, and to offer perspectives on law for undergraduates who may be considering graduate study of law. In 1993, the university established a new International College that allows U.S. and foreign students to live together and share a variety of courses.
- Pennsylvania State University: The College of Earth and Mineral Sciences maintains a Center for Advanced Undergraduate Studies and Experience that supports the educational mission of the College by giving undergraduates an opportunity to work closely with faculty and other students, and by providing courses and facilities that would not be available at the departmental level. Offerings include a two-semester interdisciplinary course structured around ongoing faculty research projects; tutoring services; the exploration of new technologies for classroom instruction; and the development of special, interdisciplinary, research-focused courses.
- University of Rochester: Offers qualified undergraduates a tuition-free fifth year of study for enrichment. The university says this "Take Five" program is unique in American higher education. Approximately 200 students enroll each year.
- Rutgers University: Is expanding a program that supports the development of courses which focus on citizenship and civic responsibility by integrating community service activities with academic subject matter in a wide range of disciplines. Last year, Rutgers students in academic classes with a community service component contributed a total of 60,000 hours to local projects.

- **Syracuse University:** The university's Maxwell School of Citizenship and Public Affairs is expanding its internship and service learning opportunities for undergraduates.
- **University of Southern California:** Offers a Thematic Option CORE Program that allows incoming freshmen with excellent academic records and test scores the opportunity to meet general education requirements through a series of intensive, interdisciplinary courses taught by senior faculty. Designed to provide students with a strong foundation in western civilization and culture, the program is characterized by small classes, a rigorous writing requirement, and biweekly tutorials. The university also offers a Resident Honors Program for bright, emotionally mature students who have completed their junior year of high school and are ready to begin college-level study. Participants complete high school requirements in absentia while enrolled at the university.
- **Stanford University:** A senior summer Honors College brings selected seniors with different majors back to campus three weeks before the opening of the fall term for intensive work on their honors theses. Participating students live together in the same residence hall and attend discipline-based and interdisciplinary sessions. Faculty supervise the program closely and plan special activities for each group of majors. The program is intended to provide participants with an opportunity for serious commitment to independent scholarship in an atmosphere of shared intellectual purpose.
- **University of Washington:** In 1991, established an Entry Level Initiative that uses active learning approaches to bring the questions and research of a number of disciplines into the instructional process and promote critical thinking. Disciplines involved include Anthropology, Art, Art History, Chemistry, Economics, Engineering, History, Language, Mathematics, Physics, Political Science, Psychology, and Sociology. Active learning techniques have included greater use of laboratories; newly designed tutorials composed of smaller student groups; having students write on subjects relevant to their lectures and then discuss their responses in class; experimenting with a student response system (small keypads connected to a classroom computer that allows students to provide opinions and answer questions in class and see results tallied and used immediately); and establishing an Art Media Center to allow students working in small groups to review slides and discuss art. The university says this initiative has become a model cross-disciplinary undergraduate education program, winning high student ratings and fostering improvement in student writing and grade averages.

- Yale University: A Life Science Training Center has been established to focus on instructing undergraduates in the techniques of molecular biology. A recently initiated Perspective on Science program allows a limited number of freshmen who have exceptionally strong backgrounds in science and mathematics to explore the interdependence of various scientific disciplines.

Undergraduate seminar courses

- University of Arizona: In 1992, initiated a Freshman Colloquium Program that involves a set of small-group course offerings taught exclusively by senior faculty and designed to introduce lower-division students to the frontiers of knowledge and important contemporary issues.
- Brown University: Maintains a Curricular Advising Program, in which first-year students are taught by the faculty member who is also their advisor; these are often small seminar courses taught by senior faculty. Senior faculty are also commonly involved in teaching junior and senior seminar courses that are integral to concentration programs.
- University of California, Berkeley: Established a Freshman Seminars Program in 1992-93. In 1993-94, a total of 142 seminars taught by regular faculty were offered and 2,422 students enrolled. The courses bear one unit of credit; they are limited to 15 students, and freshmen are given priority for enrollment. The university also offers seminars that are open to both freshmen and sophomores.
- University of California, Los Angeles: In 1992-93, initiated a First-Year Seminar Program that brings freshmen together with senior faculty in a setting closer to graduate study than to traditional introductory courses. Enrollments are limited to 20 students per seminar. Also offers Professional School Seminars, in which faculty from the university's 13 professional schools teach seminars designed specifically for students in general undergraduate programs. These seminars usually focus on a specific topic or issue, but they also provide students with an understanding of the broad perspectives and methods of a specialized field.
- University of California, San Diego: In 1987-88, created an undergraduate seminars program taught mostly by senior faculty. To date, faculty in nearly all departments have participated in the program. Lower division seminars may be offered as specialized departmental courses or as interdisciplinary courses; upper division seminars are more research-intensive.
- Carnegie Mellon University: Senior faculty offer special seminars for

undergraduates in a University Choice Program, and the College of Humanities and Social Sciences is planning a set of freshman seminars. Junior and senior faculty in all departments regularly offer seminars, especially for upper-level students.

- Case Western Reserve University: Since 1988 has offered five-week, noncredit freshman seminars designed to give freshmen an opportunity to explore academic interests with faculty without the pressure of tests or grades.
- Clark University: Since the mid-1980s has offered First-Year Seminars in nearly all departments. Each seminar allows a maximum of 15 students to explore a topic or set of issues in depth with a faculty member, who also serves as their advisor for their first two years. The program has grown to accommodate almost half of all incoming students. Virtually all departments offer small seminars for advanced-level undergraduates; many require their majors to take at least one seminar or to participate in a small research group that works closely with a faculty member. Senior faculty teach many of the first-year and advanced-level seminars.
- University of Colorado at Boulder: Offers freshman seminars as part of its FallFest program.
- Duke University: Each fall, a FOCUS program offers entering freshmen a cluster of interrelated seminars drawn around such common themes as "Arts in Contemporary Society," "Medieval and Renaissance Studies," and "Twentieth Century America." Participating students select two cluster seminars, enroll in a specially designed writing course, and participate in a half-credit interdisciplinary course that brings students and faculty together one evening a week for dinner and conversation. In the spring, freshmen may participate in a First Year Seminars program that offers intensive courses on topics not ordinarily covered in introductory or survey courses. Each seminar is limited to 15 students and taught by outstanding teacher-scholars. Courses offered through this program include "The Constitution and the Court," "Applications of Mathematics to Physiology and Medicine," and "Global Change."
- Harvard University: A program of freshman seminars offered 30 different courses in the 1993-94 year. An extensive network of seminars is also offered through the university's 12 undergraduate residential houses.
- University of Maryland at College Park: Offers undergraduate seminars taught by senior faculty through its freshman First Year Focus program, its honors program, and a new residential scholars program. Many major academic

programs offer, and in some cases require, senior seminars and/or capstone courses for students nearing graduation.

- Massachusetts Institute of Technology: A Freshman Advisor Seminar Program established eight years ago gives beginning students an opportunity to take a for-credit seminar with a faculty member who is also their academic advisor. The seminars meet at least once a week and provide sustained, regular contact between faculty and students in an informal setting. In the 1993-94 year, about 85 percent of the freshman class was enrolled in approximately 120 seminars offered by faculty in 28 departments. In the 1994-95 year, it is expected that virtually all freshmen will be participating in this program.
- McGill University: Seminars for upper year undergraduates are regularly taught by senior faculty. Seminars for first-year students are currently under consideration by a work group established in 1994.
- University of Michigan: Has a First-Year Seminar Program that currently involves 740 students and 37 faculty. Seminars are offered by every department and program in the College of Literature, Science and the Arts, and by several other schools and colleges within the university. The seminars are designed in a way that qualifies them to meet either a distribution requirement or an introductory composition requirement.
- The University of Nebraska, Lincoln: Offers a variety of seminars through its honors program. These seminars are normally taught by distinguished faculty.
- State University of New York at Buffalo: Undergraduate seminars taught by senior faculty are required each semester of all freshmen and sophomores in its Honors Program.
- Northwestern University: All freshmen take two seminars in substantive areas with 15 or fewer students; seminar sessions emphasize reading, thinking, writing, and speaking. A program of Junior Tutorials has been established to enable small groups of second-year students to work with faculty on specialized issues in various disciplines. The program is designed to introduce students to the rewards of significant research projects and to encourage their subsequent enrollment in senior independent study research projects or in research-oriented senior seminars. The university also offers Senior Linkage Seminars intended to help bridge the gap between academic training and real-world application and experience. In addition, a large number of undergraduates are involved in senior seminars within their major that may either be a capstone experience or an opportunity for in-depth exploration of a topic in a small-group situation.

- University of Oregon: Freshmen have the opportunity to enroll in at least one seminar of 20 or fewer students which is taught by a regular faculty member.
- University of Pennsylvania: In 1990, expanded its Freshman Seminar program, which offers students direct, small-group contact with senior faculty. These seminars are offered every year, and a majority of the freshman class enrolls. Most seminar sessions are taught by full-time faculty; the remainder are led by adjunct or visiting professors. The size of each seminar is limited to 20 students. In 1991, the university initiated the Penn Reading Project; involving all incoming freshmen and the faculties of various undergraduate and graduate schools, this project entails the reading and discussion of a common test deemed relevant to contemporary issues. Discussions take place during orientation week in small seminar settings.
- Pennsylvania State University: In the fall of 1994, the College of Liberal Arts offered freshman courses with enrollment of 25 or fewer, all taught by professors or associate professors, to over half the students in the College. Two other colleges also offered freshman seminars taught mainly by senior faculty, including deans.
- University of Pittsburgh: Offers a Freshman Seminar Program that consists of classes of 15 or fewer students, taught by senior faculty. The School of Nursing maintains a freshman seminar program of its own.
- Princeton University: In 1986, established a freshman seminar program that has continued to expand; classes are taught by senior faculty.
- University of Southern California: Initiated a Freshman Seminars program in 1986. The program offers freshmen direct and small-group contact with senior faculty. A total of 35 different seminars were offered during the 1994-94 year.
- Stanford University: Offers a Sophomore Seminars and Dialogues program that gives second-year students small-group learning experiences with close supervision by faculty. The program is intended to encourage a spirit of mentorship between students and faculty; the university says over two-thirds of participating students maintain contact with their seminar instructors in their junior and senior years and almost a fifth find their major advisor through the program.
- The University of Texas at Austin: Several departments have begun to experiment with both freshman seminars and senior capstones seminars, in which small numbers of students interact with senior faculty.

- University of Toronto: In the fall of 1995, will begin a new program of First Year Seminars for freshmen. Each seminar will be limited to 20 students and taught by a regular faculty member. Approximately 80 such seminars will be offered the first year, to accommodate about 1,600 entering freshmen.
- University of Virginia: A University Seminar program, now in its fifth year, offers 25 to 30 small, undergraduate seminars in all undergraduate schools each semester. These seminars are aimed primarily at freshmen and sophomores but are also open to upper class students if space is available. The seminars are taught primarily by senior faculty and offer two hours of credit. The university also maintains a University Topics program that offers a series of short-term, one-credit courses. These courses are offered for a concentrated five- to six-week period.
- Washington University in St. Louis: A special freshman Focus Program provides a small-class setting with several courses organized around a seminar on an interdisciplinary topic such as "Law and Society." Special freshman seminars are also offered in Psychology, Poetry, and History.
- University of Washington: Established a Freshman Seminar program in 1993. The seminars meet for one hour a week, providing a glimpse of various disciplines offered on campus. All classes are limited to no more than 12 students and are taught by distinguished faculty.
- University of Wisconsin, Madison: Beginning in 1991, the university's undergraduate education initiative provided for the development of small freshman classes of 15 to 20 students each, to help first-year students adjust more readily to college-level coursework and to promote closer interaction with faculty. A "Ways of Knowing" course is intended to open the world of knowledge to first-year students by exploring such questions as how knowledge is created, how scholars know what questions to ask, and how they go about finding answers. Structured as both a small class and an honors course, this course is taught by senior faculty in designated disciplines each semester. It is designed to facilitate freshmen-faculty relationships and to allow freshmen to begin the process of developing a research experience. Capstone seminars are designed by senior faculty to help fourth-year students synthesize into a coherent whole the knowledge gained from specialized courses and research experiences, and to help them apply this knowledge to problems they are likely to encounter after graduation.

Undergraduate honors programs

- University of Arizona: Initiated an honors program in 1985, with 300 students in six courses; currently, over 2,000 students are enrolled in 125 courses each semester. Has developed and offered new honors courses with increased faculty participation. Has also developed an undergraduate research honors program and is developing a research capstone experience program for all majors.
- Brown University: All of its concentration programs allow for honors work. Students must complete an honors project (this varies among concentrations), directed by one or more faculty members.
- University of California, Berkeley. Has an honors program that includes involvement in research.
- University of California, Los Angeles: An Honors Collegium offers a selection of small, rigorous, interdisciplinary courses designed to teach undergraduate students to think creatively and critically.
- University of California, San Diego: Each of the university's five colleges offers a freshman honors program. There are also honors programs for upper-divisions students.
- Carnegie Mellon University: All the university's colleges offer honors programs that enable undergraduates to work closely with senior faculty.
- Catholic University: In 1985, established a universitywide undergraduate honors program with an interdisciplinary core curriculum of three course sequences in the classical liberal arts, as well as special honors-level courses in selected disciplines, taught by senior faculty. In the fall of 1993, the School of Engineering initiated a fourth course sequence in environmental studies; courses in this sequence are also taught by senior faculty.
- Clark University: Nearly every department offers outstanding students the opportunity to do an honors project.
- University of Colorado at Boulder: Has a university honors program that is also a residential program.
- University of Florida: Has a freshman and sophomore honors program that enrolls over 400 freshmen annually; the program provides 50 small classes each term, taught by regular faculty. Special programs enable honors students to work with research faculty in regular academic departments and also in the research

facilities of the Health Science Center and the Institute of Food and Agricultural Sciences.

- University of Iowa: Offers an honors program that involves top undergraduates and senior faculty in more than 50 departments.
- Iowa State University: Offers upper-level students an honors program that includes special courses, special seminars taught by senior faculty, special projects and conferences, fireside forums with senior faculty, and participation in regional and national collegiate honors conferences. The university also offers a freshmen honors program; here, enrollees take an honors seminar and an honors section of Freshman English, plus other honors courses and seminars in their fields, taught by senior faculty. Also available to honors students is a special Mentor Program, in which students are matched with faculty doing research in areas of common interest; many continue to work with their faculty members and become part of the regular research team.
- The Johns Hopkins University: Offers honors programs in Biology and Humanistic Studies. The Biology program culminates in a written thesis based on at least one year of research carried out under the sponsorship of a Biology Department faculty member. The Humanistic Studies program provides an opportunity to pursue an independent, often interdisciplinary, research project in the humanities. This program culminates in an honors essay written in the senior year.
- University of Kansas: Has a four-year honors program that emphasizes critical discussion and skill in self-expression in the freshman and sophomore years and research and writing in the junior and senior years. Freshman honors students participate in tutorials with senior professors, intended to introduce them to the nature and value of a liberal-arts-based education; enrollment in each session is limited to 12 students. Twenty outstanding sophomores are selected annually as University Scholars, and each is matched with a faculty mentor who guides the student's academic development for the rest of his or her undergraduate years. The honors program has its own campus building, the Nunemaker Center, for departmental and interdepartmental honors courses.
- University of Maryland at College Park: Has a well-established, universitywide honors program for highly qualified entering students. An increasing number of individual departments are offering honors programs of their own.
- McGill University: Honors theses in most department are based on research projects supervised by faculty, including senior professors.

- Michigan State University: An undergraduate Honors College offers students a variety of individualized academic programs, independent study, and multiple independent and collaborative research opportunities. An Honors College Research Fund awards grants on a competitive basis to facilitate undergraduate research projects.
- University of Minnesota: Maintains college-based honors programs that offer special sections of regular courses, as well as colloquia and seminars.
- The University of Nebraska, Lincoln: Maintains a residential honors program; participants are involved in small classes taught by exceptional faculty, and most work with faculty to develop special research projects, which they submit for graduation with distinction in their respective colleges. The university has recently initiated a new sophomore-level honors course in research methodology in a variety of areas and disciplines. Departmental honors courses are also available in most colleges.
- State University of New York at Buffalo: In approximately one-fifth of its academic departments, offers Departmental Honors Programs that provide especially talented undergraduates with opportunities for special courses and research. The university has an undergraduate Honors Program that involves a variety of faculty members who not only teach and serve as mentors but also encourage development of new undergraduate courses and curriculum experimentation.
- University of North Carolina at Chapel Hill: An honors program, established in 1954, allows any student with a 3.0 grade average to pursue a significant research project under the direction of a faculty mentor. Over 200 students are currently enrolled in the program.
- Northwestern University: Nearly all departments offer honors programs for highly qualified students. Graduation with honors typically requires that the student complete with distinction several graduate courses or an ambitious independent study research project. The McCormick School of Engineering and Applied Science offers an Honors Program in Undergraduate Research that allows selected entering freshmen to begin working immediately with an engineering faculty member/adviser in a challenging research project; the project may continue throughout the student's undergraduate career, allowing continuing close association with faculty researchers.
- The Ohio State University: Offers an honors program to approximately 3,000 undergraduates. This program brings students in contact with senior faculty

engaged in leading-edge research in a variety of laboratory and classroom settings.

- **University of Pennsylvania:** Maintains a universitywide undergraduate honors program that offers small (usually limited to 15 students) classes taught by standing faculty, many of whom are internationally known scholars. Honors students also have access to a special advising program, access to special opportunities for research and independent study with senior faculty. Each year, approximately 125 freshmen are selected for the program; students who are not part of the program may gain admission to individual honors courses with permission of the instructor.
- **Rice University:** Offers undergraduate honors programs in several departments; programs feature combinations of smaller classes, seminars, independent reading, and research.
- **Rutgers University:** Offers undergraduate honors programs through the individual undergraduate colleges. The programs usually consist of special seminars, lectures, and discussions, and emphasize independent research projects.
- **The University of Texas at Austin:** For more than 50 years, has offered a universitywide honors program that provides an interdisciplinary approach to learning. Most individual departments also have honors programs of their own. The Colleges of Liberal Arts, Natural Science, Communications, and Engineering have collegewide honors programs. Liberal Arts also offers two one-hour freshman honors courses, "The Concept of the Liberal Arts" and "Research in the Liberal Arts," that are team-taught by a variety of faculty.
- **Tulane University:** Maintains an undergraduate honors program; most courses are seminars, and each is limited to 20 students and taught by full-time faculty or distinguished visitors.
- **University of Wisconsin, Madison:** Offers honors programs for freshmen and sophomores, as well as upper-level students. Grants are awarded to support senior honors thesis efforts.

Opportunities for individualized, independent study

- **University of Arizona:** Offers an Independent Study program that allows undergraduates to undertake research projects with individual faculty members, either as part of a faculty member's ongoing research or as a special project

devised by the student with the faculty member's support.

- Brown University: All departments offer independent studies, undertaken with faculty supervision, in the context of usual course offerings. These studies may, and often do, lead to a culminating project or honors thesis. Brown also maintains a Group Independent Study Program.
- University of California, Los Angeles: Has an active tutorial/independent study program that allows undergraduates to work independently, but under full guidance of a faculty member, on a topic of particular interest. In the 1993-94 school year, 2,538 undergraduates were participating in this program.
- University of California, San Diego: Has increased emphasis on independent study for undergraduates. For example, faculty in the Department of Biology supervised 415 undergraduate independent study projects in the 1993-94 year, an 81-percent increase since 1991.
- Carnegie Mellon University: The university says individualized, independent study programs have long been a staple of most departments.
- Catholic University: Offers opportunities for independent study in almost all undergraduate majors in its School of Arts and Sciences. Undergraduates must work with faculty members on a proposal and obtain the permission of the dean.
- Clark University: Offers directed research and reading programs that give undergraduates broad opportunity to do creative work under the supervision a faculty member.
- Duke University: Offers wide-ranging opportunities for independent study across all disciplines.
- Harvard University: In most fields, individualized study opportunities are available through the department's regular tutorial program or by special arrangement with faculty. A number of students each year design their own special concentration or major under the direction of a faculty advisor.
- The Johns Hopkins University: Under the supervision of an appropriate member of the faculty, undergraduates can earn up to three academic credits per semester for independent study, independent research, or an internship.
- University of Kansas: Allows any well-prepared undergraduate to work on an independent-study basis with senior faculty, with the approval of the faculty

member.

- University of Maryland at College Park: Offers a comprehensive, degree-granting Individual Studies Program. Undergraduates who wish to pursue a course of study that does not fit within the university's more than 100 regular academic majors are permitted to develop and defend their own tailored course of study. With faculty approval, this course of study becomes the student's curriculum for his or her undergraduate degree. Within departments, advanced students may register for independent study with campus faculty-and even with off-campus scholars and researchers, as long as a campus faculty member sponsors and monitors such arrangements.
- McGill University: Many departments offer Special Topic courses, which enable students to study independently under the supervision of a faculty member.
- Michigan State University: Independent study options are broadly available to undergraduates.
- University of Minnesota: Nearly every department in the university offers independent study. Students may either study with a specific faculty member in a department or select from 300 fully designed correspondence courses.
- The University of Nebraska, Lincoln: Offers independent study and other opportunities for supervised but individualized academic work. Students may graduate with distinction by submitting a thesis to the faculty and advisers of their college.
- Northwestern University: Nearly all departments offer independent study opportunities to well-prepared, upper-level students.
- The Ohio State University: Individual-study opportunities with faculty are widely available to undergraduates at all levels in virtually all the university's 200 undergraduate programs. These individual studies often involve laboratory and studio research under faculty supervision.
- University of Pittsburgh: Opportunities for independent study are widely available.
- The University of Texas at Austin: Nearly every department in the university offers independent study.
- University of Toronto: Offers opportunity for independent studies in the third

and fourth undergraduate years.

- University of Wisconsin, Madison: Departments offer a wide array of independent study and directed study courses that provide opportunities to work individually with faculty members, and to pursue and develop particular interests in depth.

Opportunities to participate in advanced courses and obtain advanced degrees on an accelerated basis

- University of Arizona: Time-to-degree is being studied with combined bachelor's and master's programs as an option.
- Brown University: Because faculty teach at both the graduate and undergraduate levels, undergraduate are always encouraged to take advanced courses, including graduate level courses, where appropriate. In addition the university offers a four-year combined AB/MA degree and an integrated, five-year AB/MA degree program.
- University of California, Los Angeles: Allows talented undergraduate students to take a wide array of graduate courses in many disciplines. In the 1993-94 school year, undergraduates held 1,900 places in graduate-level courses, mostly research seminars. Some of these students are part of a Departmental Scholars Program, through which departments nominate exceptionally promising juniors and seniors to pursue bachelor's and master's degrees simultaneously.
- Carnegie Mellon University: Departments have a series of dual-number courses that are available to both undergraduates and graduate students. Many departments have programs that enable undergraduates to take an MA or MS on an accelerated basis.
- Catholic University: The School of Arts and Sciences offers BA/MA degrees in Economics and Business, English, History, and Politics. In addition, qualified undergraduates can complete a BA/JD program in six years.
- Clark University: Has offered an integrated five-year BA/MA option in several fields for over 20 years. Last year, Clark approved a new program that will permit undergraduates with strong academic records to undertake the fifth year of study for free and earn an MA, MBA, or MHA at no additional cost. Seniors, and sometimes even juniors, with strong academic records can, with faculty permission, take graduate courses in various departments.

- The Johns Hopkins University: Offers premed tutorials for juniors and seniors; the Office of Academic Advising maintains a list of physicians, mostly Hopkins School of Medicine faculty, who provide clinical or research opportunities, usually in a hospital or laboratory. Outstanding students interested in international studies may apply to an international studies BA/MA program after their sophomore year; those selected complete three years on the university's main campus and two years at the university's Nitze School of Advanced International Studies. Advanced undergraduates in psychology may take graduate courses in a number of fields. The School of Engineering offers an honors bachelor's/master's program; with admission as early as the spring of the sophomore year, the program offers an automatic, 50-percent tuition waiver for the fifth year.
- University of Kansas: Allows any well-prepared undergraduate to enter advanced courses with the approval of the faculty member.
- University of Maryland at College Park: Outstanding undergraduates who meet campus and departmental criteria are routinely allowed to enroll in appropriate graduate-level courses. Outstanding students enrolled in their final undergraduate semesters may petition for concurrent enrollment in graduate courses, with credit toward a graduate degree.
- The University of Nebraska, Lincoln: Offers preprofessional programs that allow undergraduates to get their bachelor's degree while pursuing advanced work in a professional school.
- State University of New York at Buffalo: Allows undergraduates to take graduate-level courses for undergraduate or graduate credit. Has programs that offer combined undergraduate-graduate/professional degrees, such as BA/JD.
- Northwestern University: Offers many joint-degree programs that allow well-qualified students to complete the work for both a bachelor's and master's degree within four years; this is made possible by "double counting" for both degrees a limited number of courses. In addition, with special permission, advanced undergraduates are permitted to enroll in graduate-level courses.
- Rice University: Some programs allow undergraduates to enroll in graduate-level courses.
- University of Rochester: Allows undergraduates to take many graduate courses. Offers a series of "3-2" programs that allow undergraduates to begin work during their undergraduate years on master's degrees and to earn both degrees in five

years.

- University of Southern California: Makes available to undergraduates a variety of advanced-level courses.
- The University of Texas at Austin: Undergraduates in their senior year may take graduate courses for reserve graduate credit; such courses may be used for credit in graduate work. With the approval of the department chair and dean, undergraduates may take graduate courses on a space-available basis. The Department of Accounting has an accelerated MPA program into which juniors are accepted.
- University of Wisconsin, Madison: Highly qualified undergraduates can register and earn degree credit for graduate-level courses. Seniors who are within six credits of an undergraduate degree may apply for admission to the Graduate School and classification as a Senior-Grad. As such, they can begin graduate-level coursework while still completing requirements for their undergraduate degree. Similarly, the College of Agriculture and Life Sciences enables students interested in pursuing careers in medicine or veterinary medicine to complete the course requirements for possible admission to the appropriate school while working toward the completion of the bachelor's degree in any of its 15 majors.

Opportunities for interdisciplinary, interdepartmental study

- University of Arizona: Offers an interdisciplinary studies major that allows undergraduates to combine three disciplines into a coherent and intellectually challenging major. A total of 113 BAs were awarded under this program in 1992-93.
- Brown University: Offers 85 concentration programs, which are almost evenly divided between traditional disciplinary departments and interdisciplinary programs. Also offers a large number of courses that are interdisciplinary and interdepartmental in nature.
- Case Western Reserve University: Undergraduates with broad and diverse interests can combine majors in such fields as management and theater, engineering and music, computers and art. Approximately 12 percent of the university's baccalaureate graduates annually pursue double majors or dual degrees.
- Carnegie Mellon University: Much research at the university is interdisciplinary.

Therefore, undergraduates who sign onto such projects have the benefit of such activity. In addition, many student research projects sponsored by a universitywide Student Undergraduate Research Grant program involve multidisciplinary student teams of students in research projects across disciplines, many of them outside the student's major field of study.

- Catholic University: Offers interdisciplinary programs in Biochemistry, Chemical Physics, Communication Studies, Medical Technology, and Medieval and Byzantine Studies.
- Clark University: Offers several interdisciplinary majors, including Biochemistry and Molecular Biology; International Development and Social Change; Environment, Technology, and Society; Comparative Literature; and Ancient Civilization. With support from three faculty members and the approval of the Dean of the College, students can also pursue a self-designed major, which typically combines three different disciplines. Clark also offers interdisciplinary minor concentrations in twelve areas: Asian Studies, Communication Studies, Cultural Identities, Global Processes, Environmental Studies, Ethics and Public Policy, International Relations, Jewish Studies, Neuroscience, Peace Studies, Race and Ethnic Relations, and Women's Studies.
- The Johns Hopkins University: An institutionwide human biology program is aimed at providing an improved educational linkage between undergraduate and postbaccalaureate studies in the field of human biology. For example, School of Arts and Sciences undergraduates wishing to study the natural and social sciences in relation to human behavior may take an interdepartmental, interdivisional area major in behavioral biology. Undergraduates who wish to pursue a BA in music may take courses at both the School of Arts and Sciences and the Peabody Conservatory. Over a five-year period, undergraduates may pursue a bachelor's degree in music performance simultaneously with a bachelor's degree in the arts and sciences or engineering.
- University of Maryland at College Park: Undergraduates have broad opportunities for interdisciplinary and interdepartmental through the university's degree-granting Individual Studies Program. In addition to this universitywide program, the College of Business and Management and the College of Engineering also have programs that enable their students to study foreign languages (German or Japanese) and to travel abroad to participate in learning experiences. The university also offers interdisciplinary programs of study in Natural Resources, Jewish Studies, and Women's Studies.
- Massachusetts Institute of Technology: Undergraduates can pursue a double

major or joint major in science or engineering and a wide variety of strong arts and humanities programs, such as performing arts, visual arts, architecture, literature and creative writing, or media arts.

- **McGill University:** In addition to many joint programs-such as Art History and Italian, Anthropology and Philosophy, and Political Science and Russian-the university offers undergraduates a number of interdisciplinary and interdepartmental majors and minors with a geographical or topical focus. These offerings include African Studies, Canadian Studies, Environmental Studies, Industrial Relations, and International Development Studies.
- **Michigan State University:** The university's general education program emphasizes an interdisciplinary approach to the arts and humanities and the social sciences. A variety of area specializations that cross departmental boundaries are also available to undergraduates.
- **University of Minnesota:** A number of degree programs are interdisciplinary in nature. In addition, students can pursue self-designed, individualized, and interdepartmental degree programs through four different options.
- **The University of Nebraska, Lincoln:** Offers numerous interdisciplinary programs in such fields as environmental studies, Great Plains studies, and women's studies.
- **State University of New York at Buffalo:** Has developed a number of interdisciplinary general education courses for undergraduates in the arts and sciences. There are also a number of new, interdisciplinary, upper-division science courses for students not majoring in science; these courses are taught largely by faculty in the professional schools, including the schools of medicine, pharmacy, and dentistry.
- **Northwestern University:** There are a number of interdisciplinary majors that undergraduates may take. Examples include Environmental Sciences, International Studies, an Integrated Science Program, and Mathematical Methods in the Social Sciences. Several dual-degree programs are offered that cross disciplines; examples include liberal arts and engineering, liberal arts and music, engineering and music, and journalism and engineering.
- **University of Pennsylvania:** The School of Engineering and Applied Science and the Wharton School of Business offer a joint degree program in Management and Technology, which is intended to prepare students for leadership roles in scientific and high-technology industries. The College of Arts and Sciences and

the Wharton School offer a joint degree program in International Studies, which is intended to prepare students for leadership roles in international commerce and policy.

- University of Rochester: Has a Biology and Medicine Program that offers a BA or BS degree in Biological Sciences, with specialties in Biochemistry, Cell and Developmental Biology, Ecology and Evolutionary Biology, Microbiology, Molecular Genetics, and Neuroscience.
- Stanford University: Offers 14 interdisciplinary degree programs. Also offers an interdisciplinary honors program that allows undergraduates to supplement a regular degree program with advanced study supervised by faculty in another discipline. For example, an undergraduate majoring in History may, in addition to completing the degree requirements in that department, also complete the requirements for honors in Latin American Studies or Environmental Studies.
- The University of Texas at Austin: Offers a four-year interdisciplinary degree plan. In addition, undergraduates may major in a number of interdisciplinary programs, including ethnic studies and four area studies programs. Undergraduates may pursue concentrations in addition to their major in such fields as folklore, religious studies, and women's studies. A Normandy Scholars Program allows a small group of undergraduates to study French culture and the history of World War II each spring.
- Washington University in St. Louis: New interdisciplinary programs have been added in the environmental sciences, in Social Thought and Analysis, and in Philosophy, Neuroscience, and Psychology.
- University of Wisconsin, Madison: Gives undergraduates access to a wide range of interdisciplinary and interdepartmental programs, some of which offer related courses in as many as 20 departments. Examples of these programs are Integrated Liberal Studies; African Studies; Applied Mathematics, Engineering, and Physics; Behavioral Science and Law; and Russian and East European Studies. The university's Institute for Environmental Studies (IES) was created in 1970 as a special intercollege unit to promote, develop, and administer interdisciplinary environmental instruction, research, and public service programs. IES offers undergraduates a certificate program in environmental studies to complement an undergraduate degree and major requirements in any school or college on campus.

Opportunities to conduct research or to work with faculty on research or teaching

- **University of Arizona:** In 1987, established a competitive, undergraduate research grant award program that is open to all undergraduates. Projects are usually completed during the summer, with results presented at a student research forum the following spring. More than \$26,000 was awarded to 34 students participating in this program during the 1992-93 year. The university also offers an Undergraduate Biology Research Program that allows undergraduates to conduct independent research with faculty in their labs; in 1993-94, 120 students participated during the summer and 100 during the academic year.
- **Brown University:** In the past four years has expanded its Undergraduate Teaching and Research Assistantships (UTRA) program, which offers a large number of grants to sponsor students in collaborative research with faculty. Independent research opportunities may take the form of independent study courses, group independent study courses, honors theses, and other capstone projects under faculty supervision; all of these are for academic credit. Volunteer opportunities to work with faculty include various research positions, and often lead to paid assistantships. Advanced students have opportunities to tutor other undergraduates on paid and unpaid bases through the university's Writing Center, Writing Fellows Program, Math Center, and Women in Science and Engineering program.
- **University of California, Berkeley:** In 1991, initiated an Undergraduate Research Apprenticeship Program designed to provide highly motivated undergraduates with opportunities to work closely with faculty on research projects in the sciences, humanities, and social sciences. Interested faculty members submit proposals to the URAP office, which publishes a list; interested students may then apply for the research positions of their choice. Participating students may earn units for their contribution to the research. In the 1993-94 year, a total of 248 students participated in the program, along with 83 faculty.

In the spring of 1994, initiated a Research Assistants Task Program, which awards stipends of \$1,000 per semester to undergraduates selected to assist faculty research efforts in the College of Letters and Science and the professional schools and colleges. Participating students are expected to devote 100 hours to their assistantships, which gives them an opportunity to gain a deeper understanding of the diverse components of advanced research. Twenty-five students participated in this program during the first year; funding for the program was quadrupled for the second year, making a total of 100 assistantships available. The university also offers a variety of outlets for undergraduates to publish their research, including a Berkeley Undergraduate Journal, a McNair Journal, and Cal Sciences: The Berkeley Undergraduate Science Journal.

- University of California, Los Angeles: In 1985, established a Student Research Program that allows undergraduates to participate actively in academic research and have one-on-one interaction with research faculty. In 1994-95, over 1,300 undergraduates worked eight to ten hours a week on supervised research projects under the auspices of this program. A special Urban Poverty and Social Policy research program trains undergraduates in the theory and empirical analysis of poverty research issues; students spend 20 hours a week for two quarters on an original project.
- University of California, San Diego: Offers undergraduates a variety of research opportunities, through both independent study and participation in faculty research projects. Formal programs include a Faculty Mentor Program, a Student Research Project Program, and a Summer Research Program. During the 1993-94 academic year and the summer of 1994, a total of 197 faculty and 240 students participated in these programs. Internship programs also provide research opportunities for many undergraduates, particularly in social science and humanities departments. The university also holds an Undergraduate Research Conference annually.
- California Institute of Technology: Since 1979 has offered a Summer Undergraduate Research Fellowships (SURF) program that awards undergraduates ten-week grants (\$3,600 in 1993) to conduct original research. The program is operated in much the same way as the faculty research grant system: students write proposals for projects, these proposals are reviewed by a faculty committee, and awards are made on the basis of these reviews. At the conclusion of the summer, students submit a technical report and give an oral presentation at a SURF Seminar Day, which is modeled on professional technical meetings. For many students, SURF is more than an introduction to research: over 20 percent of SURF students become coauthors of articles in refereed publications. The program is open to students from other institutions. In 1993, 177 Caltech students and 54 students from other institutions participated. Since the SURF program's inception, more than 1,000 Caltech students have done at least one SURF project during their undergraduate years at the institution; almost 50 percent of the 1993 graduating class were former SURF students.
- Carnegie Mellon University: Maintains a competitive, universitywide Student Undergraduate Research Grant (SURG) program that enables undergraduates to work closely with senior faculty on research projects, which is frequently interdisciplinary. In addition, departments and colleges have undergraduate research programs of their own and colleges have honors programs for the same purpose. Many faculty across the campus find opportunities for undergraduates to participate in their research projects, funded and unfunded, for credit, for pay,

or as volunteers.

- Case Western Reserve University: Research opportunities for undergraduates exist in nearly all fields of study.
- Catholic University: The Department of Biology offers summer research internships to up to eight undergraduates under a grant from the Howard Hughes Medical Institute; stipends in the amount of \$4,000 are available for ten weeks of full-time research with members of the Department. Stipends are also available for undergraduates to present research results at meetings. The Department of Biology also offers a Freshmen Research Scholars Program to qualified freshmen; freshmen are assigned to a faculty member and participate in research projects throughout their freshman year.
- Clark University: All undergraduates are encouraged to become involved in research or creative projects, either by assisting in faculty projects or by doing directed work of their own under the supervision a faculty member. A newly created merit scholarship gives outstanding undergraduates in the sciences support to work with faculty on research projects over the summer. Some advanced undergraduates also serve as teaching assistants in courses, for which they receive either pay or credit. In the 1993-94 academic year, the university developed and distributed to all students a catalog of the various research and other creative opportunities available to undergraduates to increase their awareness of the offerings. The university plans to update this catalog regularly. Four years ago, the university initiated an Academic Spree Day, at which students share the results of their research and creative efforts with other students and faculty through poster presentations, panel presentations, art displays, and musical and theatrical performances. At the 4th Annual Academic Spree Day last April, the work of over 200 students was showcased.
- University of Colorado at Boulder: Has an Undergraduate Research Opportunities Program that gives undergraduates opportunities for research experiences under the mentorship of senior faculty. Stipends are awarded on the basis of written proposals.
- Cornell University: The university's undergraduate research program matches undergraduates and faculty members for research collaborations not only in the sciences, but also in the arts and humanities.
- Duke University: Has established an Undergraduate Research Support Program intended to encourage the engagement of undergraduates in faculty research in a wide variety of areas. In the 1994-95 year, some 146 participating students were

competitively selected and paired with faculty mentors from the Arts and Sciences, the School of Engineering, the School of Medicine, the School of the Environment, and the Fuqua School of Business. Sophomores in the natural and physical sciences may apply to participate in a Research Fellows Program, which pairs 24 rising students with life sciences faculty for an eight-week summer mentorship. This program is supported by various programmatic activities, including a tutorial in science writing and data analysis, weekly lunches and tours, and a final symposium. Biology undergraduates may apply to participate in a Howard Hughes Forum, an independent study/seminar program in biology; participants conduct original research under the mentorship of a faculty sponsor and present their results in a special three-day session.

- Harvard University: Maintains two programs of mentored undergraduate research with the aid of the Ford and Mellon foundations. A university-funded program permits undergraduates to serve as faculty research aides.
- University of Illinois, Urbana-Champaign: Offers undergraduates opportunities to participate in research and development projects with scientific and technical staff as well as with eight Fortune 500 companies at the university's National Center for Supercomputing Applications. Since 1979, a Clarence and Pauline Cohn Memorial Fund has supported a Cohn Scholars program, which each year allows about a dozen undergraduates to study and do research in the humanities with faculty.
- University of Iowa: In 1984, established an Undergraduate Scholar Assistantship Program that gives undergraduates an opportunity to assist faculty members from all disciplines in their research and scholarship on a regular, ten-hour-a-week basis. Students who typically rank in the top 1percent at the university are invited to participate; entering freshmen are eligible, and their appointments are renewable for four years. Participating students receive a stipend for their work. More than 400 students and 175 professors have been involved in this program since its inception.
- Iowa State University: Offers an Undergraduate Research Participation Program in which approximately 100 juniors and seniors are matched with senior faculty members to work on the faculty members' research projects. Also offers various other research opportunities for undergraduates through the Ames Laboratory of the U.S. Department of Energy and through more than a dozen other major federal research centers located on the campus. Opportunities are available through these facilities in such areas as Engineering, Chemistry, Physics, Agronomy, Animal Science, Food Technology, Food and Nutrition, Agricultural Product Development, and Materials Research. In addition, the university's Agricultural Biotechnology program offers research internships for

undergraduates.

- The Johns Hopkins University: Most faculty research projects include undergraduate assistants on the research team, and undergraduates who provide research assistance to faculty on a long-term basis are often cited as coauthors of published works. The School of Arts and Sciences maintains a list of opportunities for undergraduates to work with faculty on research projects. At any one time, about half of the university's 3,400 undergraduates in the schools of Arts and Sciences and Engineering are earning credit in this manner, and many participate in research projects for several semesters. In the School of Engineering, grants for the funding of research equipment and supplies for undergraduates are available through the Dean's office. In the School of Nursing, many faculty provide opportunities and encourage undergraduates to assist in their research projects as paid assistants or for credit; nursing undergraduates are also given the opportunity to accompany faculty pursuing international research projects. Each year, the university also grants 35 awards of up to \$2,500 to undergraduates to support the costs of research projects, artistic performances, or original compositions. Interested students submit proposals, which are reviewed by a panel of faculty and administrators.
- University of Kansas: Offers undergraduate research awards, which support students' original work, to a total of 30 students a year. The students are supervised by a major professor, and they work independently, usually during the summer months.
- University of Maryland at College Park: All undergraduates are eligible, given appropriate prerequisites, to assist in faculty research projects. Examples of recent projects that have included undergraduates are archaeological digs in the Middle East, field studies of shark behavior, and the design of laser surgical tools. The university also offers an Undergraduate Research Assistants Program that pairs students with faculty researchers for one-semester assignments. There is also a Senior Summer Scholars Program that provides students with the experience of working with a faculty researcher during the summer preceding the student's final year. Students participating in a training program conducted by the Center for Teaching Excellence may serve as undergraduate teaching assistants.
- Massachusetts Institute of Technology: An Undergraduate Research Opportunities Program, the first and largest of its kind in the country, gives undergraduates the opportunity to participate with faculty and research staff in a wide range of research activities throughout the university. Students may participate in ongoing research or find a faculty sponsor for a self-originated project. Work may be done for credit, pay, or on a voluntary basis. Approximately 2,500 students a year participate in the program, and 60 percent

of the faculty participate as supervisors during any given year. Eighty percent of all MIT undergraduates undertake at least one UROP project during their four years. This past year, UROP students were authors or coauthors of more than 125 published papers. To encourage beginners, a UROP Mentor Program links undergraduates who have not done a UROP project with upper level student mentors who have had at least one year of UROP experience.

- McGill University: Faculty research teams may include talented and motivated undergraduates, as well as graduate students.
- University of Michigan: An Undergraduate Research Opportunities Program, begun in 1988, now involves more than 500 students and 340 faculty members from 12 professional schools and the College of Literature, Science and the Arts. The program is open to any freshman or sophomore in good academic standing.
- Michigan State University: A Professorial Assistantship program awards two-year grants to highly talented undergraduates; grantees pursue research opportunities with a faculty member.
- University of Minnesota: Has a universitywide Undergraduate Research Opportunities Program that allows undergraduates to work with faculty in research and creative activities. In 1992-93, 247 faculty members were serving as sponsors to a total of 349 students.
- University of Missouri, Columbia: In 1994, initiated on a pilot basis a new Research Mentorships for Undergraduates Program. The program will provide 20 juniors in selected Arts and Science Departments with \$3,000 grants to pursue research projects with faculty mentors during an eight-week summer period.
- The University of Nebraska, Lincoln: Offers a variety of research opportunities to undergraduates through internships, apprenticeships, and several formal programs. Formal programs include a Biological Sciences program funded by the Howard Hughes Medical Institute and a Sociology program funded by the National Science Foundation. The University's Center for Biotechnology and Engineering Research also actively engages undergraduates in research. Beginning in April 1995, a universitywide undergraduate research conference will be held annually to showcase the research efforts of undergraduates. Awards will be offered for the best presentations, and a publication will feature the most outstanding works. Stipends will also be made available to undergraduates to help offset the costs of research. Some individual departments already sponsor undergraduate research presentations of their own.

- State University of New York at Buffalo: Offers an Independent Study program that allows undergraduates to undertake research projects with individual faculty members, either as part of a faculty member's ongoing research, or as a special project devised by the student with the faculty member's support. Five departments offer supervised teaching opportunities for undergraduates; students run laboratories and recitation and discussion sections attached to undergraduate courses under the tutelage of faculty members.
- University of North Carolina at Chapel Hill: With a \$1-million gift from an alumnus, the university has just initiated a Chapman Fellows Program that will provide competitively awarded grants of varying amounts to undergraduates to support creative, short-term research projects. Many individual departments also provide opportunities for undergraduate research. For example, the History Department requires that every undergraduate major take a special seminar course that includes a mandatory research project.
- Northwestern University: A grants program provides funds to defray expenses for undergraduate students engaged in research projects in connection with advanced courses or independent study projects.
- The Ohio State University: Offers a wide range of programs, especially for honors students, that enable undergraduates to work directly with senior faculty, participate in research, and take advanced courses. These programs include a variety of institutionally funded scholarship, fellowship, and grant programs and a summer research internship program.
- University of Oregon: Through a Howard Hughes Medical Institute grant, has developed a Workshop Biology course that engages undergraduates in research and independent investigation.
- University of Pennsylvania: Established two grant-supported undergraduate research programs in 1986. A Nassau Fund gives undergraduate researchers financing for start-up, equipment, and supplies. A Rose Award recognizes outstanding undergraduate research on completion. Both programs consider proposals from all disciplines.
- Pennsylvania State University: Undergraduates majoring in architecture and landscape architecture in the College of Arts and Architecture are often, and whenever possible, engaged in formal community-based and applied research activities with faculty members. In the Smeal College of Business Administration, a process has been devised for pairing faculty and doctoral candidates with undergraduate students for research participation; the Advising

Center maintains a directory of projects, and students can negotiate participation for academic credit. The Smeal College has also just launched a new, refereed undergraduate research journal, which will feature papers by its undergraduates. The university's Behrend College offers an undergraduate research grant program, an undergraduate research conference, and a summer research fellowship program. The university provides financial support for undergraduates to participate in professional meetings when they have authored or coauthored a paper that is being presented.

- University of Pittsburgh: Offers a variety of undergraduate research opportunities. A universitywide Undergraduate Research Fellowship Program gives undergraduates the opportunity to work on projects of their own design under the sponsorship of a faculty mentor, and an Undergraduate Teaching Fellowship Program gives undergraduates a teaching experience that does not merely involve grading papers; both programs award a dozen such fellowships each year. An Undergraduate Summer Research Fellowship Program provides summer research support to several students each year in the departments of Biological Sciences, Neuroscience, and Chemistry. A number of College of Arts and Sciences departments provide undergraduate research opportunities that do not include financial aid. The Department of Chemical Engineering maintains a Research Experiences for Undergraduates Program that allows students to enhance their education by working in research laboratories for a ten-week period, usually in the summer; the program includes social events with the faculty and a presentation to students and faculty. The Department of Mechanical Engineering allows undergraduates to work on research projects with senior faculty both within the department and in the School of Medicine.
- Princeton University: Provides a two-month summer research program for 85 students in molecular biology, including some from other institutions that lack extensive research programs. It also requires all seniors to write theses, working individually with members of the faculty.
- University of Rochester: Offers many opportunities for undergraduates to work with senior faculty in research laboratories.
- Rutgers University: In 1988, established an Undergraduate Research Internship program to increase undergraduate participation in the work of the university's various bureaus, centers, and institutes. One center, the Center for Fiber Optics Research, provides approximately 40 undergraduate internships.
- Stanford University: An Undergraduate Research Opportunities office encourages undergraduate students to participate in research by disseminating

information about faculty research interests, and by sponsoring a program of research grants for undergraduates. Each student project is supervised by a faculty sponsor. The URO grant program has grown steadily over the past decade and served almost 400 students with over \$300,000 in grants in the 1992-93 year.

- Syracuse University: The College of Engineering and Computer Sciences each fall publishes a booklet that lists research opportunities for undergraduates. The College of Arts and Sciences offers an Undergraduate Research Program that facilitates undergraduate research for credit under the supervision of a faculty member. Arts and Sciences also offers a program that puts together teams of students from many different disciplines and various professional schools to design and implement solutions to real-world problems posed by "clients" external and internal to the campus.

A report entitled "Integrating Research into the Learning Environment" was issued in the Fall of 1993. It contained several specific suggestions and initiatives and called for faculty to share their methods for integrating research, scholarship, and creative work into the classroom. Specific policy recommendations have been incorporated into the planning documents of the schools and colleges.

- University of Southern California: Makes available to undergraduates a variety of research opportunities in engineering and many of the sciences. For example, the Psychology Department annually publishes a directory detailing opportunities for assisting in ongoing faculty research. The Department also maintains a departmental Honors Program that provides pretraining for graduate school during the junior and senior years. Undergraduates interested in pursuing careers in the fields of lasers and optics are offered various opportunities to study and participate in research at the university's Center for Laser Studies; offerings include an undergraduate fellowship program, a freshman merit research program, and a special undergraduate laboratory course taught by a senior researcher.
- The University of Texas at Austin: Offers a universitywide small-grants competition for undergraduate research. The College of Liberal Arts and the College of Natural Sciences offer research colloquia for presentation of undergraduate research projects. The College of Natural Sciences also sponsors an annual poster session for undergraduate research results. The university also offers summer research programs intended to introduce undergraduates to the research process and to give them a taste of graduate student life. During the summer of 1994, the university summer undergraduate research programs in biochemistry and chemistry, biology, demography, engineering, mathematics,

molecular biology, and public affairs; funding for these programs was provided by the National Science Foundation, the National Institutes of Health, the Howard Hughes Medical Institute, and the Ford, Rockefeller, and Reed Foundations.

- University of Toronto: Offers broad opportunity to work with faculty on ongoing research projects, both during regular terms and in the summer. The university is developing a Research Opportunity Program to engage sophomores in original research projects and faculty research; the program is designed to serve as an introduction to research and as a bridge between freshman-year seminars and third-and fourth-year independent studies.
- Tulane University: An undergraduate summer research program enables undergraduates to pursue research with faculty mentors. Undergraduates also have many opportunities to work on regular faculty research projects during the school year.
- Vanderbilt University: An Undergraduate Research Program, begun in 1990, provides summer stipends to undergraduates to work with faculty on research projects.
- University of Virginia: A number of researchers make a special effort to include undergraduates in their research proposals and have been successful in attracting funding that supports summer stipends to enable undergraduates to work on research projects between semesters, and to continue working on projects through the academic year. Through a Howard Hughes Medical Institute grant, the university offers summer undergraduate fellowships in the biological sciences; participating students spend two consecutive summers in research laboratories, working on projects under faculty supervision. In the Chemistry Department, a National Science Foundation grant incorporates a program that allows twelve undergraduates from other institutions to pursue advanced research in this subject during a ten-week period in the summer.
- Washington University in St. Louis: A total of 106 Biology undergraduates and 35 Psychology undergraduates take part with faculty in research programs.
- University of Wisconsin, Madison: Offers a sophomore summer research program as a follow-up to freshman year honors courses; the program is intended to introduce high-achieving students to research and allow them to foster close professional associations with faculty researchers at an early stage in their college career. The university offers juniors and seniors opportunities to conduct primary research under the guidance of faculty researchers in the biological,

physical and social sciences, and the humanities. Considerably more intensive than the sophomore summer research program, the junior-senior research program is designed to equip undergraduates with the scholarly skills and tools available through a large research university. Grants of up to \$3,000 to support junior and senior research activities are available from a variety of sources, including an Undergraduate Research Fellowships program, a Senior Honors Thesis grant program, Holstrom Environmental Awards, and University Book Awards for Academic Excellence. The university's Undergraduate Research Fellowship program was initiated in 1992; by its third year, the number of fellowships awarded had increased nearly 48 percent, to 115, indicating a high level of interest among students and faculty. During the first two years of this program, approximately 55 percent of the supervising faculty were full professors, including four department chairs, two program directors, and three holders of named professorships.

- Yale University: Two programs provide support for undergraduates to continue science study during the summer: a Chemistry Summer Research Fellowship program allows Chemistry students to work intensively on an undergraduate project; a Perspectives on Science Summer Research Fellowship program allows students to choose from a list of research opportunities offered by faculty.

Residential programs and other programs intended to provide a small-college experience in the context of a large university

- University of Arizona: In 1993, initiated a Courses in Common program that divides entering freshmen into groups of students who take many of their first-semester courses together.
- Brown University: For some years, has maintained a Faculty Fellows program, which is oriented both socially and academically, to promote informal gatherings between first- and second-year students and faculty. In addition, small first-year living units, combined with a network of upper-class peer resources, help make the residential experience close and welcoming. Peer resources available to all undergraduates include staff-supervised peer counseling networks, and outreach programs from diverse campus-affiliated organizations in student residences. Brown also offers more than 20 "program" residences, encompassing fraternities and sororities, languages, cultural orientations, and special interests.
- University of California, Los Angeles: In 1993, completed a new Northwest Campus Plan, which is intended to create a true residential community for undergraduates. High-rise residence halls have been transformed into a "village" that includes classrooms, tutorial labs, faculty offices, study lounges, reading

rooms, meeting facilities, computer centers, and recreation areas.

- University of California, San Diego: Is organized at the undergraduate level into five separate colleges that function like moderately sized liberal arts colleges and provide students with an academic community on a human scale. Students move through their undergraduate courses with a cohort of 500-650 students, rather than in a mass of 2,500 or more as in other large universities.
- Carnegie Mellon University: With only 4,300 undergraduates, the university says it naturally offers many of the benefits of small colleges. In addition, it provides floors in its dormitories for students studying particular languages and having other special interests. It also clusters its University Choice students-a special program for high-ability students who want to explore disciplines in different colleges-in a way that allows them to live in groups in dormitories without separating them from the rest of the student body.
- Catholic University: In the fall of 1991, began a residential program for upper-class students that focuses on community service projects and includes lectures, weekly meetings, and academic and nonacademic activities. A resident faculty member moderates all student activities in the program. This program will be expanded to include a dormitory for freshmen in the fall of 1995.
- University of Colorado at Boulder: Has developed four residential programs that provide a variety of enrichment and extracurricular activities for freshmen and sophomores. Each program is built around an academic theme: American studies, humanities, environmental sciences, and foreign languages. Students take classes both in their dormitories and from the regular campus schedule. Participating faculty interact with students not only in classroom settings but also in after-hours seminars and at meals. The university's honors program is also a residential program.
- University of Iowa: Offers a Unified Program, in which a select group of undergraduates remains together for two academic years, fulfilling most general education requirements through an integrated sequence of specially designed courses.
- University of Kansas: Offers three residential programs that give new undergraduates the opportunity to live together in the same residence halls, participate in social activities together, and take the same undergraduate classes.
- University of Maryland at College Park: Has recently established a College Park Scholars program that encourages students who share common intellectual

interests to study together in courses organized around common themes and to live together in selected residence halls. The program provides a focus for study, advising, and a variety of educational and social activities. The four current College Park Scholars programs are for students interested in the visual and performing arts; international studies; life sciences; and science, technology, and society. Admission to the programs is competitive. The university has also established two "theme dorms" that present unique living and learning opportunities for their residents: a Language House is organized in sections that give students the opportunity to live in an environment of total language immersion; an International House has students from around the world living together with an approximately equal number of U.S. students. A newly renovated honors dormitory is both a residence hall and a setting for colloquia, seminars, and social activities.

- Michigan State University: Offers a variety of "mini-residential" programs that provide common residential arrangements, added advising services, and enhanced programming ranging from freshmen seminars to student-life issues to career guidance.
- University of Minnesota: The Institute of Technology and the College of Liberal Arts' Honors division have instituted "courses in common" programs, which divide entering freshmen into groups of students who take many of their first-year courses together. A pilot program for a residential college is underway for 1994-1995.
- University of Missouri, Columbia: A new residence program is aimed at providing an innovative living and learning environment that involves extensive faculty mentoring.
- The University of Nebraska, Lincoln: Students participating in a residential honors program live, study, and work together. In the near future, freshman participating in a special ADAPT program in the General Studies division will be clustered into groups, and the members of each group will take all their courses together for their first year.
- New York University: Since 1992, has offered required freshman writing courses in its residence halls through a special Classes in Residence program. The university says instructors report that participating students seem to respond well to academic demands in this less formal setting. Has also recently established an EQUAL (Enhancing the Quality of Undergraduate Academic Life) Commission that regularly sponsors activities intended to bring students and faculty together for educational interaction outside the traditional classroom setting. In the first

year of this program, more than 3,400 students and faculty took part in EQUAL activities. Activities have included a medieval and Renaissance studies majors luncheon with novelist Tom Clancy, a trip to a Korean art exhibition and dinner at a Korean restaurant with a Korean language professor, and a Stern School of Business student-faculty pizza party.

- Northwestern University: For nearly 25 years, has had a system of residential colleges. The eleven colleges-nine of them thematic, the others nonthematic-provide special opportunities for nearly one-sixth of the undergraduate student body. Each college is headed by a Faculty Master and Associate Master; graduate students serve as Assistant Masters. Other faculty and staff are affiliated with the colleges as Faculty Associates. Faculty and student dine together in special college facilities. Each college sponsors an extensive program of "firesides," evening presentations by faculty or visitors.
- University of Oregon: Offers a Freshman Interest Group program, through which groups of twenty-five students share enrollment in three related fall-term courses, one of which limits enrollment to the group. The aim of the program is to help students meet graduation requirements and share academic interests with their peers in a small-group environment.
- Rice University: A total of eight residential colleges provide extensive personal and academic counseling. Each college has about 220 students in residence and another 100 students as off-campus members. At each college, a faculty member and spouse live in an adjacent house as master and comaster, and two other faculty or staff members live in apartments in the college itself. In addition, about 20 faculty or staff members also act as associates for each college, attending dinners and social functions, participating in dramatic productions, and playing on intramural teams. In all, nearly 200 Rice faculty and staff participate in this system.
- University of Southern California: In 1993, established an undergraduate Residential College through conversion of an on-campus dormitory; two faculty families reside in the College and are responsible for a full range of extracurricular academic, cultural, and social activities. The university also maintains a faculty-in-residence program in six different dormitory facilities in and around the campus, offering seminars, discussion, and dinner exchanges among faculty, their friends, and students. Another program, called Food for Thought, coordinates dinners and other activities involving small groups of students and faculty.
- The University of Texas at Austin: Established an honors dormitory in 1992.

- Vanderbilt University: Undergraduate residential living options are designed to meet a wide variety of interests. Undergraduates may choose to live in a philosophy dormitory, where students and resident professors gather to explore philosophical issues; an international dormitory, where students practice a language other than their own in a variety of settings; and a "living/learning lodge," where students establish their own special-interest houses. In addition, freshman residential seminar courses have been facilitated by the construction of seminar rooms during residence hall renovations over the past few years.
- University of Virginia: In 1986, opened its first residential college. The concept is based on the British model of a cohesive residential unit wherein students and faculty live, dine, and socialize together. Two such colleges are now well established; a third is in the planning stages. Two faculty families, those of a Principal and a Director of Studies, reside in the colleges, as well as two faculty fellows. Twenty five to 40 other fellows (faculty, graduate students, community members) are associated with the colleges and participate in meals, advising, monthly banquets and other social events with the resident undergraduate students. Noncredit short courses on interesting topics are offered by fellows in the colleges, as is a range of cultural and social activities.
- University of Washington: In 1987, established a program of Freshman Interest Groups, through which groups of first-year students enrolled in the same courses not only attend courses together but also meet once a week to compare notes and discuss common problems with the help of upper-level student advisers.
- University of Wisconsin, Madison: Maintains an Honors residence program and a Wisconsin Emerging Scholars Program, where Math students live and study together. Its colleges and schools and its Division of University Housing are working to increase and further develop learning communities; projects in the planning stage are a first-year living/learning community that will house 250 first-year men and women, a "house" for women studying science, and a Global Village Learning Community designed for students preparing for, or returning from, year-abroad studies. A faculty committee is also working to increase structured, out-of-class activities that promote greater interaction among students and faculty and university staff. Sustained over a period of time and focused on a specific project or discussion theme, these activities are intended to enrich the undergraduate learning experience through participation in organizations, service projects, peer education groups, and discussion groups.

Student orientation, advising, counseling, and faculty mentoring activities; special programs to help new students make the transition from high school to college

- University of Arizona: Since 1984, has had a Faculty Fellows Program that arranges for faculty to become affiliated with communities of students in nontraditional settings by establishing offices in residence halls, fraternity and sorority houses, and other student centers. Fifteen faculty were participating in this program in the 1993-94 academic year. Has simplified drastically registration and payment processes, virtually eliminating lines at registration and winning a state-wide Total Quality Management award.
- Brown University: Has recently expanded its orientation programs, as well as its first-year faculty mentoring. First-year student-faculty relations are fostered through a continuing Curricular Advising Program, in which freshmen integrate academic advising with regular course work by selecting a course with a faculty member who serves both as their instructor for a semester and as their academic advisor for the year. This year's orientation program was complemented by a day-long conference entitled "Points on the Compass: Choosing Academic Directions at Brown." At this conference the President and a faculty panel led by the Dean of the College spoke about their respective fields. Following a picnic lunch, students met in topic workshops led by two or three faculty to explore and discuss different disciplines' perspectives on the topic.
- University of California, Berkeley: Has established residence-hall academic centers where students can have access to computer equipment; get tutoring from upper-division or graduate students in math, chemistry, and writing; find out about effective learning habits and study strategies; and generally seek advice on academic matters. The university has developed a Smooth Transition program that is aimed at making the first four weeks of classes each semester as smooth as possible; this is accomplished by providing information booths at a variety of locations throughout the campus, and by providing extra staff in high-use areas like financial aid and admissions. The university has asked academic departments to submit three-year plans for gateway courses and major requirements, so students can engage in long-term planning of their own and enhance the prospects of timely progress to their degrees.
- University of California, Los Angeles: Has initiated a three-day summer orientation that provides students with individual counseling sessions, small-group discussions, workshops, and presentations. Attendees can also register for their first quarter of classes, thus by-passing traditional registration, plan a tentative bachelor's degree program, take placement exams, and learn how to use university resources and services. The university has developed a degree audit system that allows students to determine exactly where they stand with respect to core curriculum and graduation requirements.

- University of California, San Diego: Has established an Office of Academic Support and Instructional Support that provides students with tutoring in basic courses. Individual departments have been experimenting with advising initiatives tailored to their particular departmental needs. For example, the Chemistry department in the 1993-94 year sponsored a special forum to give students the opportunity to provide feedback to a faculty committee charged with overseeing the curriculum and reform.
- Carnegie Mellon University: All incoming students attend a week of orientation before the regular student body arrives in the fall. Those same students are offered special workshops at the beginning of their second semester to continue their orientation and adaptation to the university. A Career Center offers special programs for freshmen to help them examine their goals and plan their college careers. College and departmental advising and mentoring programs have all been reexamined and strengthened.
- Catholic University: Freshmen orientation program was award second-place Best of Show by the National Orientation Directors Association in 1993. In 1992, the university initiated Freshstart, the first segment of a comprehensive retention program. Freshstart is a four-week summer program in English, study skills, and computer literacy, followed by a study-skills course during the fall term. In the fall of 1994, this study-skills course was integrated into an academic course that is part of a general university requirement; initially only remedial students are required to attend, but eventually this integrated course will be developed to serve all freshmen. In addition, the university offers to incoming freshmen a summer Readers Program that features great books taught by senior faculty and also encompasses a study-skills element. In 1994, this program was extended into the fall semester.
- Clark University: In 1992, added an academic program to its new-student orientation program, with the aim of introducing students to the intellectual life of the university and engaging them in active learning encounters with faculty before the start of classes. Since 1993, each residence hall has invited a faculty member to serve as a Faculty Associate for the year. These Faculty Associates participate in programs with students and help them plan special events, in an effort to promote closer contact between students and faculty outside the classroom. In 1994, Clark expanded its new-student orientation to include special sessions on opportunities for involvement as volunteers on campus and in the community. The university also brought faculty advisors together with their advisees at informal suppers to assess advisees' orientation experiences.

Clark has also established new, higher academic criteria for the selection of upper class peer advisors and has required peer advisors to have closer contact

with faculty advisors to ensure that more coordinated, consistent information and assistance is provided to new students. Peer adviser training has also been strengthened. Clark has created special orientation sessions designed to help transfer students. Has strengthened early orientation programs for international students and other students with special needs. It has also connected its Fall Convocation to its orientation program by having as the Convocation speaker the author of the summer reading assigned to new students.

- University of Colorado at Boulder: Has created a single resource office to coordinate and support the advising efforts of individual colleges and departments. This office has facilitated the sharing of advising techniques across academic units, and the university says it has proven to be a valuable "safety net" for undeclared majors, transfer students, and drop-ins. The university has also developed a new course reservation system that allows students who are unable to register for a course because of space limitations to make an immediately guaranteed reservation for the course the next time it is offered. The university has also developed a degree audit system that allows students to determine exactly where they stand with respect to core curriculum and graduation requirements.
- Columbia University: In 1990, initiated a new program through which undergraduates in two adjoining dormitories share a library, an assistant dean-in-residence, two additional residence counselors, and advisors specializing in many of the students' fields.
- Cornell University: Is devising new ways to make student advising more effective. The College of Arts and Sciences gives cash awards to outstanding undergraduate advisers. The College of Engineering assigns freshmen to one-credit courses with their advisers; these courses include field trips to campus landmarks and classes on computer skills and stress management. The College of Agriculture and Life Sciences now considers student advising along with teaching in its faculty promotion decisions.
- University of Florida: Has established a training program for undergraduate faculty advisors.
- University of Illinois, Urbana-Champaign: In 1989, expanded its orientation and advance-enrollment program for new freshmen and their parents to two days to provide more information about academics and student life. Also maintains two programs designed to provide academic support for freshmen who are at risk.
- University of Iowa: To assist freshmen and transfer students, offers an Entering

Year Program of advising, academic courses for credit, tutoring, and personal development support.

- Iowa State University: Has launched several initiatives to identify students who may be experiencing academic, financial, or social problems and to improve student advising:
- In 1992, the Office of Career Planning and Placement was restructured to include student retention initiatives. The director of that office serves as an academic liaison between academic advisers in each of the eight colleges and various student affairs programs and services. The director meets one-on-one with students who are undecided about majors or career choices, facing academic or financial difficulties, or experiencing other problems. In the spring of 1993, more than 200 students used the services of the office.
- An Early Alert Project, launched in the spring of 1993, identifies, through testing, potentially at-risk, entering students. Academic advisers direct those students to appropriate services.
- For the past two years, an Office of Orientation and Retention Programs has coordinated an intervention project to assist new students who are struggling academically.
- Students employed by the Office of Orientation and Retention Programs and the Admissions Office call new students and their parents each fall to see if they have any concerns and to direct them to staff for advice.
- Several departments responsible for introductory courses taken largely by freshmen have initiated a program of "supplemental instruction," in which upper level majors in those fields meet weekly with students wanting additional instruction in those courses.
- The Johns Hopkins University: The Office of Academic Advising in the School of Arts and Sciences is working to strengthen faculty advising with a new "team" approach. An academic adviser from the office will serve as the liaison to a group of three faculty members, including the undergraduate coordinator, in each department. The team will exchange information about such things as course requirements and selection, research opportunities, and career concerns. If the department so desires, the team can then organize group meetings of faculty and academic advisers, or meetings with the department's undergraduates by class. The Office of Academic Advising also sponsors a Study Consultants and Accountability Program, through which graduate students are hired and trained

to work with undergraduates who are on academic probation or are having other academic problems. The consultant and student meet on a one-to-one basis for at least an hour each week. The university's Peabody Conservatory provides free tutoring by graduate students or upperclassmen to any student encountering academic difficulty, whether self-referred or referred by faculty.

- University of Kansas: Has developed special programs to serve both at-risk students and high-ability students. Has a prototype student advising program that gives undergraduates an opportunity to evaluate their transcripts and proposed courses of study on computer.
- University of Maryland at College Park: Initiatives in this area include the following:
 - reassignment of the student orientation program from the office of Student Affairs to the office of Academic Affairs
 - for-credit courses to assist entering freshmen and transfer students with making the adjustment to the campus
 - for-credit courses to assist students in such areas as time management and the improvement of study skills
 - a developmental program to assist incoming at-risk students
 - reinstitution of mid-semester grade reporting as an early warning tool
 - a summer transition program for selected students admitted to computer science, engineering, mathematics, and physical sciences programs
 - computerized advising systems.
- Massachusetts Institute of Technology: Freshman and upper-level undergraduate advising is tightly coupled to the faculty. Freshman advising is based entirely in a Freshman Advising Seminar program that couples a group of eight to ten freshmen to a faculty member who meets with the group in a weekly seminar. All upper class students are advised by faculty in their major departments and receive supplemental advice by other faculty if they choose a minor, a preprofessional track, or second degree. The Office of Undergraduate Academic Affairs promotes regular gatherings of departmental undergraduate program office administrators to exchange insights on policy and process, to develop useful overviews of various curricular systems, and to encourage departments

with less effective undergraduate program offices to learn by example.

- McGill University: Starting in 1995, the various orientation and advising events that have been sponsored by the university and individual faculties, schools, and departments will be presented in a coordinated sequence. Individual features of the events will be enhanced, the whole sequence will be strengthened, and the sequence will be concentrated into a one-week period at the start of the fall semester, rather than stretched out over many weeks.
- University of Michigan: In 1991, initiated a universitywide mentorship program that links first-year students with members of the faculty and staff. Students who enroll are matched by academic or career interests with a mentor and three other first-year students. The program currently involves 700 freshmen and 145 faculty and staff.
- Michigan State University: Has put an increased focus on retention through special retention seminars, collaborative learning projects, mentorship, and enhanced advising programs.
- University of Minnesota: Has provided special funding this year to improve advising of lower-division students. Has also developed a degree audit system that allows students to determine exactly where they stand with respect to core curriculum and graduation requirements. The two largest colleges (the Institute of Technology and the College of Liberal Arts) offer special advising and mentoring programs that connect new freshmen with faculty.
- The University of Nebraska, Lincoln: A New Student Enrollment program is constantly evolving to respond to the needs of incoming students. Efforts have been made to use specially trained upper-level students to follow up with new students and offer support. A University Foundations Program offers incoming freshman a special course that provides an introduction to all aspects of university life, as well as information about a wide range of university support services.
- New York University: To improve guidance for first-year students, a new Dean of Freshmen position was created in 1994 within the College of Arts and Sciences. The Dean has launched several programs aimed at helping incoming students adjust to university life, such as workshops on time management, study techniques, and test-taking skills. The College of Arts and Sciences has also instituted an Academic Enhancement Program for sophomores, especially those who have not declared their majors. The program seeks to introduce students to a wide range of career choices and the curricula necessary to prepare for them;

panels of professors lead discussions on career goals. The College also offers all liberal arts undergraduates a Career Assistance Program intended to encourage them to think practically about preparing for a career while pursuing their studies. This program provides such resources as career counseling, internship placement, workshops on interview technique and resume writing, and assistance in exploring graduate school options. A Synergy Alumni Mentor program matches students with NYU graduates for counseling, internships, or employment. The School of Education operates a New Student Seminar, intended as an on-going orientation to the School, the University, and the higher education experience; all seminars are taught by full-time faculty.

- State University of New York at Buffalo: Is developing a system of faculty advisement in which all faculty will be involved and which will provide every undergraduate student with a faculty adviser.
- University of North Carolina at Chapel Hill: Is in the process of renovating the former student union for use as the Johnston Center for Undergraduate Excellence. This center is intended to be a magnet for the university's most intellectually ambitious students, and it will house the university's honors program; its programs and facilities will include state-of-the-art master classrooms, seminar rooms, a library and reading lounge, and offices for faculty advisors. The center is scheduled for completion in 1996.
- Northwestern University: A student-faculty-administration Study Group on Advising and Counseling is undertaking a comprehensive review of the university's activities in this area. The group's report is expected to include several recommendations relating to enhancement of services through future use of technology and the university's campuswide information network. This network is already being constantly augmented to provide a wealth of advising resources to students and to serve as a vehicle for community building. An automated degree audit system allows students and their advisers easily to determine the specific courses remaining to be completed for any possible degree program.
- University of Oregon: To supplement faculty advising, more than 20 academic departments now participate in peer advising programs, through which specially trained students assist other students and prepare them for their faculty advising appointments. "Faculty Firesides," a program sponsored by the University of Oregon Foundation, offers faculty members and students the chance to spend time together in casual settings where open dialogues are encouraged.
- University of Pennsylvania: Has established a Penn Reading Project to give

freshmen a common intellectual experience. A single text is selected by a student-faculty committee and distributed during the summer to all incoming freshmen. At orientation, students discuss the texts in small seminars conducted by faculty from across the university.

- University of Pittsburgh: Offers a Freshman Studies Course designed to assist all freshmen in making the transition from high school. The course is taught by faculty in 70 sections of no more than 25 students each. The College of Arts and Sciences Advising Center, previously operated by part-time staff, has been expanded to include a sizable full-time staff. An Integrated Student Information System, established in 1990, has also significantly streamlined and improved various information services for undergraduates. An Intervention/Academic Success Project provides support for students experiencing academic difficulties, especially in their freshman year.
- Princeton University: Is undertaking a comprehensive review of undergraduate advising.
- Syracuse University: A summer orientation program was initiated in 1992 and expanded in 1993 to include two-day sessions involving four colleges; this program is scheduled to be further expanded in the future. Freshman "gateway" programs have now been established in each school and college; for example, the College of Arts and Sciences sponsors a Freshman Forum Program that allows small groups of freshmen to meet with faculty members for informal discussions. A variety of efforts have been launched to help identify and assist undergraduates who are in need of help, including an Early Alert Program for identifying student problems in residential living, mid-semester academic progress reports, and a College Learning Strategies course. The university has also initiated a program that enrolls students who are not succeeding academically in a summer academic "boot camp," and follows up during the next academic year by continuing supportive services. The university has also developed a computerized system that gives students easy access to information about their academic records, financial aid status, adviser assignments, and other matters, as well as information about course offerings and schedules.
- University of Southern California: In 1989, initiated a range of courses aimed at introducing freshmen to the critical thinking skills expected of them in college and at emphasizing the difference between college and high school work. Each class is limited in size to 44 students and linked to a freshman writing section. Advising policy for all undergraduates specifies a mentor role for faculty and a records-review role for staff; the latter may be subsumed by the former, but not vice versa. In addition, the college and several professional schools have established alumni mentoring programs for students.

- The University of Texas at Austin: In 1991, established an Undergraduate Advising Center that concentrates on students who have not yet declared a major. A campuswide network of undergraduate advising has been developed from this center. The university also offers a Gateway program intended to help high-risk students make the transition from high school to college, and a summer program designed for the same objective. The university is in the process of developing electronic advising aids that will be available on-line to students to supplement an already existing telephone registration system.
- University of Virginia: The College of Arts and Sciences maintains an active undergraduate advising program through which 150 faculty advisers individually assume responsibility for approximately 32 first- and second-year students. A special Academic Achievement Program provides special assistance to students who are experiencing academic difficulties or wish to improve their skills; this program correlates a Learning Strategies class with courses in the College that fulfill core requirements. The College is also developing a group tutoring program to assist students in handling some of the university's more challenging courses.
- University of Washington: In the 1993-94 academic year, established Graduating Senior Priority and Advanced Senior Access plans, intended to guarantee seniors the courses they need to graduate.
- University of Wisconsin, Madison: Maintains a Summer Orientation, Advising, and Registration Program (SOAR) that provides an introduction to the university for incoming freshmen and transfer students, and their parents. Offers a series of programs for students who are academically at risk, to assist in their development of learning skills and the ability to cope with university life. The university has made major improvements in cross-college academic advising and career-curriculum matching, based on findings of a 1993 undergraduate survey. In spring 1994, a Council on Academic Advising was created to coordinate efforts to improve academic and other advising at the Madison campus. An innovative Cross-College Advising Service (CCAS) began operating in the fall of 1994, primarily for freshmen and other students who have not yet declared a major, or are in the process of changing their major. This approach allows students to explore broad areas of interest and plan courses for better career-curriculum matching. The CCAS strategy includes an improved system of student referral; extended advising hours; satellite advising offices in residence halls, Student Union buildings, and other accessible locations; electronic degree audit summaries; walk-in access; and other advising improvements. Increased access to targeted prerequisite and breadth courses for entering freshmen, through additional sections and "reserved" seats, enables them to move more

quickly toward the advanced coursework required for acceptance to the major.

Programs and centers specifically aimed at developing reading, writing, and study skills

- University of Arizona: Has developed a writing skills program and special programs for particular needs, such as a math skills self-testing program, a computer homework testing and tutoring program, and a program for students with learning disabilities.
- Brown University: Has long offered Writing Fellows courses (courses in a variety of disciplines with a peer writing tutor who offers constructive feedback on papers before the professor reads them); a four-week, noncredit learning skills course; and individual tutoring for a nominal fee. The university also maintains Writing and Math Centers, where students can receive help by appointment on a walk-in basis. In 1994, Brown established Women in Science and Engineering study groups attached to specific physics, engineering, and chemistry classes; while these study groups are aimed primarily at women and others underrepresented in the sciences, they are open to all students.
- University of California, Berkeley: Has thoroughly revamped its remedial composition and reading program into an intensive, accelerated, six-unit seminar. Has established a Teaching Library that teaches students how to use the information resources they need to be successful in their major fields of study; services include in-depth workshops on using on-line catalogs, Gopher training, a term paper advisory service, and training sessions tailored to the special research demands of particular courses.
- Carnegie Mellon University: For many years has had a Learning Skills Specialist to help students improve reading, time management, and study skills; a faculty-staff committee is currently examining the adequacy of that program. Special minicourses are available for students for whom standard composition courses are not enough. An Electronic Writing Center is being planned to operate over the university's distributed network to provide additional help in writing. A Writing-in-the-Disciplines program, already underway, is designed to move responsibility for the improvement of undergraduates' writing beyond the English Department into all other departments. The University's Intercultural Communications Center has established a writing clinic that helps bilingual students and nonnative speakers to improve their writing skills.
- Catholic University: Offers a special Academic Tutoring and Learning Assistance Service (ATLAS) as part of its Counseling Center. ATLAS promotes

academic excellence through a counseling approach in order to maximize students' efficiency and potential. The program is open to all students who want to augment their total learning experience.

- Clark University: Has a well-established Academic Advising Center that includes a Writing Center that oversees Expository Writing and Writing Across the Curriculum courses and provides individual tutoring, services for learning-disabled students, a peer tutoring program, study skills workshops, and academic probation counseling. Clark is in the process of establishing a Math Center that will be modeled on the Writing Center and offer individualized support for students required to take a new "Foundations of Quantitative Thinking" course.
- University of Colorado at Boulder: Has established a University Learning Center that provides professional assistance to undergraduates with special needs through workshops; tutorial services; individual advising; cooperative learning study seminars; and training to improve reading, writing, and study skills.
- University of Florida: Has a reading and writing center that offers "open time" for students with problems in these areas. Students may stop by to get assistance with any facet of writing skills.
- University of Illinois, Urbana-Champaign: A Writers' Workshop offers students individual help in improving their writing skills. An estimated 2,500-3,000 students received assistance through this program during the 1993-94 academic year.
- University of Kansas: Maintains a Writing Center that offers special help to undergraduates.
- University of Maryland at College Park: Offers a Learning Assistance Service that utilizes a variety of methods to assist students with improving study skills. Students with learning disabilities may also seek assistance from a Disability Support Services Office. The English Department operates a Writing Center that assists students with improving their writing skills. The Maryland English Institute assists those for whom English is a second language with reading, writing, speaking, and comprehension skills.
- Michigan State University: A Writing Center offers individualized instruction and assistance.
- University of Minnesota: Has established a Center for Interdisciplinary Studies of Writing to improve undergraduate students' writing abilities.

- University of Missouri: Maintains a universitywide Campus Writing Program that also assists with speaking, reading, and study skills.
- The University of Nebraska, Lincoln: Both the College of Arts and Sciences and the College of Business Administration have special writing centers and laboratories to offer assistance in writing. A new Supplemental Instruction program has been developed that provides special tutoring in particular freshman courses.
- State University of New York at Buffalo: Has established a University Learning Center that offers remedial courses in mathematics, writing, and study skills, as well as extensive tutoring services for students needing individual help. Has also developed an innovative Methods of Inquiry program that teaches study skills based on the emerging literature on critical thinking and metacognition.
- University of North Carolina at Chapel Hill: Maintains a number of programs and centers to support undergraduate education, including a Learning Skills Center, Writing Center, and Learning Disabilities Center.
- Northwestern University: All liberal arts students are required to demonstrate proficiency in writing before graduation. A Writing Program provides courses in composition. In addition, a Writing Place provides peer assistance to students on composition. Noncredit study skills programs are offered by the Division of Student Affairs.
- University of Oregon: Has integrated its services for supporting learning with those for supporting teaching by establishing a Center for Academic Learning Services. The Center's learning components include writing and mathematics labs, small-group tutoring in many undergraduate courses, workshops on learning skills and standardized examination preparation, and individual consultations. The university also offers incoming freshmen a Summer Bridge Writing Program that provides intensive writing instruction before the start of the fall term, as well as a for-credit course, entitled "Introduction to University Study," that addresses issues of effective study at the university level.
- University of Pennsylvania: The College of Arts and Sciences has a writing requirement; the program's pedagogy stresses a cycle of writing, critique, and revision. A Writing Across the University program offers various services to help students improve their writing skills, including advisers, a writing center, and a writing laboratory.

- University of Pittsburgh: Has a number of learning skills programs, including a Learning Skills Center open to all students; an Academic Support Services Center for Student Athletes; a University Challenge to Excellence Program for Special Services students in the College of Arts and Sciences; an Engineering Impact Program, which serves disadvantaged students in the School of Engineering; Learning Skills Centers at its regional campuses; and a Writing Skills Center in the Department of English.
- Princeton University: Maintains a heavy emphasis on writing in its undergraduate curriculum, and continues to experiment in this area. The university has also initiated a Writing Program to provide assistance to students who would like to work on their writing outside the traditional classroom setting.
- Rutgers University: Has opened Learning Resource Centers on all its campuses. These centers offer drop-in tutoring for a wide range of undergraduate courses, individual assessment of learning and study skills, and workshops on learning-related issues. In the fall semester of 1993, student attendance at the centers and participation in their outreach activities totaled 12,187.
- The University of Texas at Austin: A Learning Skills Center offers assistance with reading and study skills and tutoring for a variety of basic courses. A new Undergraduate Writing Center offers writing assistance on a drop-in basis or by appointment. All students are required to take at least two courses with a substantial writing requirement, in addition to their required composition course. An Emerging Scholars program is intended to help students successfully complete calculus.
- University of Toronto: In 1994, appointed a Coordinator of Writing Support to improve the range and quality of support available to instructors responsible for academic writing projects and assignments. The university is expanding an already existing network of laboratories, centers, and clinics that assist undergraduates in such areas as writing, computer science, and mathematics.
- Tulane University: An Education Resource Center, initiated in the 1987-88 year, offers a variety of programs and services aimed at improving academic skills and smoothing the transition between high school and college.
- University of Wisconsin, Madison: Since the 1960s has maintained an extensive system of area-specific academic support programs, including a Mathematics Tutorial Program, a Chemistry Learning Center, a Business Learning Center, a Writing Lab, and many college- and department-based tutoring services. The university's new core curriculum is designed, in part, to strengthen proficiency in

reading, writing, and study skills.

- Yale University: Strongly emphasizes writing across its undergraduate curriculum and offers a special series of writing-intensive courses each year. Special writing tutors are always available in the student residences to help students develop their writing skills.

Experiences and training not likely to be found at many other kinds of institutions

- Brown University: Offers education internships through the school reform initiative of The Coalition of Essential Schools, docent and archaeology opportunities at the Haffenreffer Museum of Anthropology, cross-registration in courses offered at The Rhode Island School of Design, leave-of-absence internships in educationally significant employment sponsored by The Venture Consortium, and study abroad in more than thirty-five countries.
- University of California, Los Angeles: Offers a special research and training program for undergraduates through its Center for the Study of Urban Poverty. Approximately 75 students take a lecture course on urban poverty and public policy, and about half of them choose to become involved in an internship in governmental and community service agencies that address urban poverty issues. Subsequently, 12-15 students are invited to participate in a two-quarter research seminar. These students are expected to spend at least 20 hours a week on an original research project for which they have day-to-day contact with their faculty sponsor; they receive a stipend from Ford Foundation funds. Most students in the program have gone on to pursue graduate or professional education in distinguished departments and schools. The university also offers a Quarter in Washington Program that allows undergraduates to combine course work with research and on-the-job public policy experience in the nation's capital. Fifty-one UCLA students participated in this program in 1992-93, along with five students from other UC campuses.
- University of California, San Diego: Maintains active study abroad and internship programs that offer undergraduates a wide variety of opportunities. For example, anthropology undergraduates can participate in summer excavations in Israel; undergraduates majoring in biological anthropology can select internships at the San Diego Zoo.
- Carnegie Mellon University: Considers interdisciplinary work a hallmark of the university and encourages undergraduates to involve themselves in work of this kind, either on their own or through research programs already underway. The university says it is increasingly removing traditional barriers between

undergraduate and graduate programs to make it more possible for undergraduates to work as partners with graduate students in many research areas.

- **Case Western Reserve University:** Undergraduate and graduate engineering students in an Engineering Support Group volunteer their time and skills to design and build custom equipment for people with disabilities and for physical and occupational therapists. Student "inventions" have included a light-touch activator to help children with cerebral palsy to reach and grasp, and a Rehabilitation Work Cube that allows therapists to work with patients who must practice everyday activities, such as driving a car or climbing stairs. The group operates like a business, with students forming project teams that work directly with clients and meet in weekly roundtable sessions. Elsewhere in the university, art history majors take classes at the Cleveland Museum of Art, which is rated among the nation's finest, and music students receive training at the Cleveland Institute of Music, whose faculty includes members of the Cleveland Symphony Orchestra.
- **Catholic University:** Offers field training for undergraduates in the conduct of archaeological surveys, a practice considered unusual because of the cost involved; a university team that includes undergraduates is currently researching the Huari state in Peru, which preceded the first Incas by 300 to 400 years. Undergraduates in Architecture can participate in a summer foreign studies program that enables them to visit and study historic architectural sites in such areas as Greece, Italy, and Spain. Undergraduates in Drama can serve internships with professional theaters in Washington, D.C., such as the Arena Stage and the Folger Library Shakespeare Theater. Undergraduate Physics majors receive close individual attention from-and have ample opportunity to work on research projects with-faculty holding grants from or on the staffs of NASA's Goddard Space Flight Center, the U.S. Naval Research Laboratory, and the university's Vitreous State Laboratory, an interdisciplinary laboratory studying new, practical uses for glass. Senior faculty music scholars and professors who perform with major organizations like the National Symphony Orchestra teach undergraduate music majors. Undergraduates in Political Science can participate in internship programs in the U.S. Congress, U.S. government agencies, and the British and Irish parliaments. In a joint venture with the area construction industry, the university also offers undergraduates an opportunity to prepare for entry into that industry through a concentration in construction which involves three summers of supervised on-the-job training with a local construction firm.
- **Clark University:** Offers a wide variety of opportunities for internships for credit or for pay. An internship coordinator in the Office of Career Services helps locate suitable placements. Science majors do internships at local biotechnology

firms and at the University of Massachusetts Medical School; Psychology majors can enroll in a Practicum course that includes an internship with a mental health agency; Government majors do internships with members of the Worcester City Council and with city departments; Geography and Sociology majors do internships with urban and regional planners. Through the Worcester Consortium for Higher Education, students can enroll in a Gerontology Studies Program that includes courses and an internship; upon completion, they are awarded a Certificate in Gerontology.

- University of Colorado at Boulder: Through the Colorado Space Grant Consortium, headquartered at the Boulder campus, undergraduates have the opportunity to design space experiments that have been launched on the space shuttle and other NASA launch vehicles. The Consortium has also spawned interactive academic courses that are shared among the various UC campuses, and an outreach program to K-12 institutions has also been developed.
- University of Illinois, Urbana-Champaign: At the university's Beckman Institute for Advanced Science and Technology, undergraduates join with graduate students and faculty as members of interdisciplinary scientific teams. The university says it maintains the nation's largest institutionally based study-abroad program, with approximately 650 students studying abroad each year in nearly 40 countries.
- Iowa State University: Offers research opportunities for undergraduate students in the Ames Laboratory of the Department of Energy, and in several research centers within the Institute for Physical Research and Technology.
- The Johns Hopkins University: The Office of Academic Advising sponsors a universitywide internship program that provides a broad assortment of opportunities for upper-level undergraduates to explore fields outside the Hopkins curriculum. Opportunities include internships with cultural and community organizations, such as the Baltimore Museum of Art, and local, state, and federal government offices. Undergraduate Nursing students have the opportunity to perform clinical internships in inner-city health-related sites; participants in this program receive a stipend from funds provided by the Kellogg Foundation. The university's Peabody Conservatory sponsors internships in professional audio and video recording facilities for Recording Arts majors, in the public schools for Music Education majors, and in private studios and schools for Pedagogy majors.

Also at Hopkins, a special summer Engineering internship program allows about two dozen Engineering students to travel to Europe each year to participate in

research and engineering positions there with companies and government laboratories; participants receive airfare from the university and a salary from their employers. The School of Arts and Sciences sponsors a one-year, interdisciplinary study program for upper-level undergraduates at the university's center in Bologna, Italy. The program is open to students majoring or concentrating in History, International Studies, Political Science, or Economics. The program involves small classes, close contact between students and faculty, guest lecturers, and a series of study trips. The university also has recently increased undergraduate opportunities for foreign study by joining a new consortium, the Council on International Educational Exchange. Scholarships are available for special study programs in 18 nations.

- University of Kansas: Many academic programs offer undergraduates opportunities for practical training and experience, such as those in social welfare, journalism, pharmacy, and education. Architecture students work on projects commissioned by city, county, and state government, such as the fairgrounds for the 2004 World's Fair and the revitalization of the abandoned Union Station in Kansas City. Each spring, up to 20 honors undergraduates may participate in the university's Washington Semester, taking a seminar course and directed readings as they work as interns in government agencies in the nation's capital.
- University of Maryland at College Park: The university's proximity to the nation's capital provides for learning experiences that do not exist in other parts of the country. The Library of Congress, the National Archives, the Smithsonian Institution, and other federal agencies and offices are primary sources of information for students in government, politics, history, and other disciplines. They are also sites for undergraduate student internships and cooperative education assignments. For students in the sciences, the Goddard Space Flight Center, the National Institute for Standards and Technology, the National Institutes of Health, and other federal laboratories are also sites for learning opportunities.
- Massachusetts Institute of Technology: A new community service program allows hundreds of students (especially freshmen) to work in the Cambridge elementary schools on a regular, weekly basis, teaching, tutoring, and consulting on science and math curricula.
- Michigan State University: The university's National Superconducting Cyclotron Laboratory employs and mentors numerous undergraduate students. Internships and practica in every college offer undergraduates opportunities to work with faculty in a wide variety of local, national, and international projects. One recent collaborative project involved the participation of 30 MSU students as hosts for

the International Expo at Taejun, Korea. These opportunities may be credit or noncredit, paid or unpaid.

- University of Minnesota: Located in a major metropolitan area and with one of the largest cadres of international students on any campus in the U.S., the university offers many options for education outside the classroom. Opportunities for work and internships are plentiful; there are numerous arts organizations and community service possibilities. Other special opportunities include a foreign language immersion program.
- New York University: The College of Arts and Sciences sponsors a program that gives undergraduates with high academic standing an opportunity to participate in expenses-paid, NYU-escorted tours abroad between semesters.
- University of Oregon: Offers internships in state government.
- Pennsylvania State University: Undergraduates in the College of Earth and Mineral Sciences have the opportunity to work with the most recent advances in scientific instrumentation. For example, the College's Earth System Science Center has a Cray YMP-ZE supercomputer dedicated to global change research; this supercomputer has been used in research projects by both undergraduate students and high school students. Undergraduates in this college also may participate in a wide variety of field research projects: in recent years, they have taken part in meteorological observations in the eastern equatorial Pacific, biological field work in central Canada, deforestation research in tropical Mexico, and ice core drilling on the Greenland ice cap.
- University of Pittsburgh: The School of Library and Information science provides yearly internship/cooperative programs, through which students work with professionals in their chosen field, and also provides full-time summer internships with major national corporations. The university offers a variety of opportunities to study abroad through several university programs or consortia-sponsored programs. These programs include a Year-in-Japan program; a Denmark Study Program; an Institute of European Studies program that offers placement in 19 different cities; a Council on International Educational Exchange program that offers placement in 13 different countries, study at the Universidad de las Americas, in Pueblo, Mexico; study at the University of Sheffield, in England; and study at Tel Aviv University, in Israel. The university also participates in the Semester at Sea program, through which students from around the nation travel the world aboard a ship outfitted as a university campus; the College of Arts and Sciences awards two scholarships for this program each year.

- **Purdue University:** A growing study abroad program gives students the option to study at universities in about 30 countries.
- **University of Southern California:** Offers the only screenwriting program in the nation for undergraduates, through its School of Cinema-Television. The School's Production Division also offers an undergraduate program, and it is the only one in the nation that funds student projects. The School of Cinema-Television offers many other opportunities to undergraduates as well; located next door to the film capital of the world, it draws upon abundant local resources, including Hollywood professionals who are alumni. Premed undergraduates have the opportunity to gain a practical understanding of medical practice and its demands through an Internal Medicine Preceptor Program conducted at the Los Angeles County/USC Medical Center. Formally organized by a Director of Preprofessional and Graduate Studies Advisement, the program involves students in more than 100 hours of work during a semester; students participate in a rotation schedule in the emergency room and accompany residents, interns, and fourth-year medical students on shifts. At the university's Catalina Marine Sciences Center, undergraduates majoring in Biology have the opportunity to live in dormitories on site and study and work with faculty in the Center's labs.
- **Stanford University:** Offers a Stanford in Washington program that combines rigorous academic study with the practical experience of supervised internships in federal agencies. Also offers an Overseas Studies program that has centers in Berlin, Florence, Kyoto, Moscow, Oxford, Paris, Rome, and Santiago. Students enrolled at an overseas campus remain registered at Stanford, with regular financial aid support. At Berlin and Kyoto, students have the option of participating in internship programs sponsored by local government and industry. Engineering students find the curriculum at Kyoto to be specially adapted to meet the demands of their field. On the Palo Alto campus, many students earning honors in the Department of Biological Sciences and the Program in Human Biology have the opportunity to be supervised by Medical School faculty. The university's Haas Public Service Center administers more than a dozen public service programs and supports scores of individual student-initiated projects. Through the Haas Center, students identify internships and community-sponsored research projects, and work with faculty sponsors who supervise academic coursework and honors projects based on service.
- **The University of Texas at Austin:** Offers a wide variety of experiences, including summer programs in Siberia, England, Costa Rica, and Italy; field trips to conduct archeological research in the U.S. and abroad; a student telescope in the Department of Astronomy and student viewing time at the McDonald Observatory; extensive internships with the Texas legislature and Texas state

agencies; and many performing opportunities in dance, theater, and music.

- Washington University in St. Louis: Undergraduates interested in business have opportunities for internships in France and for exposure to entrepreneurs in St. Louis.
- University of Wisconsin, Madison: Offers undergraduates special opportunities to develop knowledge, skills, and professional networks in specific fields through a Medical Scholars Program and Fellows Programs in the schools of Business and Education. Students in the colleges of Agriculture and Engineering have access to cooperative education and internship programs that provide broad learning and work experiences beyond those available in standard curricula. Outstanding Engineering undergraduates can participate in the ongoing research of one of the world's largest Engineering research programs.