

Technology Enhanced Learning Committee

Final Report

March 8, 2000

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The Committee and Its Charge

The Technology Enhanced Learning Committee (TELC) [\[1\]](#) was appointed and charged on March 31, 1999 by the Executive Vice President and Provost, Dr. Sheldon Ekland-Olson. The charge delivered to the group was to develop a plan for technology enhanced learning (TEL) with particular applications to distance education (DE) for The University of Texas at Austin.

The group, consisting of fifteen faculty, administrators, and staff, was asked to construct an overall framework that could help shape the development of TEL/DE programs on the campus. Steps toward that process were to include compiling an inventory of existing DE efforts from which could be identified strengths and best practices. Further, the committee was asked to address the criteria by which the University might identify both opportunities for and limits on distance education at UT-Austin.

Finally, the committee was asked to include in the framework recommendations of "policies and practices related to: 1) faculty capacity, incentives, and compensation; 2) infrastructure requirements and delivery technologies; 3) course/program priority and selection mechanisms; 4) instructional design, quality, and standards; and 5) student-faculty and student-student interactions."

Over the ensuing seven months of investigation and deliberation, our understanding of TEL and its relationship to DE broadened and deepened. Further, the group has developed a better appreciation of the complexities of dealing with cross-institutional issues such as TEL and DE that require an intricate mixture of decentralized and centralized responses from the institution.

In delivering this report, the committee believes it has fulfilled its charge and provided a framework for all of the University's constituencies to use in communicating UT-Austin's view of TEL/DE and a platform for continued policy development, as well as academic and resource planning.

TELC MEMBERSHIP

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Executive Summary

The continuing evolution of technology enhanced learning (TEL) in the classroom and the increasing availability of and demand for Web-based courses for distance education (DE) combined to spur the development of an overall TEL/DE plan for UT-Austin. Executive Vice President and Provost Sheldon Ekland-Olson convened the Technology Enhanced Learning Committee (TELC) in April, 1999, and charged it to formulate an overall framework to help shape the development of technology enhanced learning and distance learning programs on campus.

The entire committee met 21 times, and there were additional meetings of four separate sub-committees. The committee submitted an interim report in August. This document is the final report of the TELC and is based on the response to the interim report by Provost Ekland-Olson and additional discussions of the issues surrounding TEL/DE.

The recommendations proposed in this report are developed on the basis of a set of **Six Principles** and **Twelve Assumptions** regarding TEL/DE at UT-Austin. The principles are designed to ensure that the quality of our students educational experience is maintained and/or enhanced by TEL/DE, that the resources necessary to accomplish this goal are provided, that faculty are charged with maintaining quality control on the course offerings, and that distance students have a level of infrastructure support comparable to that of residential students. The assumptions serve as a basis from which the recommendations flow and focus on the key role faculty play in the evolution of TEL/DE at UT-Austin and the support provided to them and to students in the process.

The recommendations are framed around four major topics, *Courses, Curricula, and Programs*, *Faculty Support*, *Infrastructure*, and *Administrative Issues*, and are summarized on pages 6-8. Recommendations under the first heading include a call for faculty control of the quality of TEL/DE offerings and provision for administrative oversight through the Provost. The establishment of a centralized unit is recommended to address a number of the practical matters associated with distance education.

The recommendations under *Faculty Support* highlight the importance of incentives to encourage and reward faculty who undertake development of TEL/DE courses. With respect to *Infrastructure*, the recommendations range from the need to identify preferred software and hardware to the provisioning of student services appropriate to distance students. Finally, the recommendations under the heading, *Administrative Issues*, encompass matters such as the need for an institutional planning model, assessment of intellectual property issues, and the development of instruments for course evaluation that are appropriate to a TEL/DE environment.

It is the strong expectation of the TELC members that this report will provide a solid foundation for and impetus to action by the various faculty and administrative segments of UT-Austin. The evolution of TEL/DE at UT-Austin can be shaped through vision, leadership, and action executed in a timely and progressive manner.

Principles

Principle 1: UT-Austin should acknowledge the environmental changes that enable the growth of both TEL and DE in higher education. As UT-Austin moves forth in this environment, decisions about the adoption of technology and participation in DE should be made on the same basis as other decisions about its academic offerings, using clear and

rigorous academic criteria that ensure a primary focus on the quality and enhancement of student education while also encouraging experimentation and innovation in TEL/DE.

Principle 2: UT-Austin can expect to maintain its "university of the first class" status with respect to TEL/DE over the next decade if its policies are coupled with adequate and available resources for faculty and for the infrastructure necessary to provide quality TEL/DE.

Principle 3: UT-Austin should commit to a model of TEL/DE that requires faculty to assume responsibility for ensuring the ongoing quality of the instruction and interaction with the students.

Principle 4: UT-Austin should provide for distance students a scope and quality of administrative, advising, and instructional support comparable to those available to residential students in a campus environment.

Principle 5: UT-Austin should address, on a timely and ongoing basis, the administrative issues that could impede the use of TEL/DE. Policies and processes should be developed and adopted in areas such as intellectual property, financial aid, enrollment, and finance, to create an institutional environment that supports a TEL/DE model of higher education.

Principle 6: UT-Austin should provide a supportive environment for faculty to develop TEL/DE materials, such as online courses, that have internal as well as external markets. In the latter case, an ongoing institutional review of matters related to the development and use of such online courses is needed.

Assumptions

1. The value of technology is, and will be, assessed by its ability or likely potential to contribute to those enterprises that are part of the core academic mission of UT-Austin, e.g., outstanding instruction, research, and service.
2. An increasing number of faculty and courses will likely use TEL/DE to enhance the educational experience of students, increase access, or otherwise meet the academic goals of the institution.
3. Implementing the high-quality TEL/DE activities appropriate to the mission of UT-Austin will be expensive and may compete for funding with other worthwhile initiatives.
4. Faculty will constitute the decision-making unit for determining what strategies will enhance instruction in their academic fields and how best to enhance delivery of degree-focused education.
5. A variety of units may make decisions about the use of TEL/DE in nondegree-focused educational activities, such as certificate programs, but their actions will be subject to academic review.
6. Courses for students not enrolled in a degree program at UT-Austin will be administered under the direction of a continuing education unit, whether the unit is located in a particular College or elsewhere.
7. Experimentation and innovation through TEL/DE require leadership and encouragement from the Provost and the Deans, as expressed in strategic goals, directions, and programmatic incentives, accompanied by guidance and involvement from faculty.
8. Faculty will be provided with the necessary resources to devote sufficient effort to TEL/DE in line with the core values of UT-Austin; these include the aims of instilling in students the will to excel with integrity and a positive spirit, and of providing a quality education that contributes to life-long learning.
9. Faculty will be provided with relevant training opportunities in TEL/DE to accommodate rapid technological advances, and this training will be offered on a regular basis.
10. TEL/DE courses will be designed in accordance with University policies regarding accessibility of electronic information to people with disabilities.
11. Faculty will be provided opportunities, through the Faculty Council or the Graduate Assembly, for timely discussion of relevant reports and policies regarding TEL/DE as developed by the administration.
12. An increase in the number of UT-Austin TEL/DE courses is likely to yield increased participation in external course delivery operations such as the UT System TeleCampus.

Recommendations

Courses, Curricula, and Programs

Rank ²	Topic	Recommendation	Page #
1	Strategic Goals	4.0.1: In close consultation with the faculty and the Deans, the Provost should establish overall strategic institutional goals for TEL/DE course and curriculum development that are consistent with the core academic mission of UT-Austin; these goals should recognize strengths and distinctive capabilities available here and contribute to the University's stature as a nationally ranked institution.	17
7	Annual Reports	4.0.2: The Provost and the Deans should annually ask department chairs, working with course and curriculum committees, (1) to identify current TEL/DE efforts in their programs, (2) to identify curricular areas in which TEL/DE could enhance their educational offerings, and (3) to develop a plan for encouraging the development of the identified TEL/DE enhancements. This information should be reported to the Provost's office.	17
2	Review and Approval Process	4.0.3: The appropriate departmental or other academic units should be responsible for reviewing and approving (1) proposed technological enhancements for an existing course whenever those enhancements constitute a significant pedagogical revision, (2) DE implementation of existing courses, and (3) proposed development of new courses leading to a degree and having a significant TEL component or intended for DE.	17
35	Review and Approval Process	4.0.4: All DE courses will be subject to review and coordination by the Provost, working with appropriate department and college committees.	17
44	Development Criteria	4.0.5: For-credit DE courses should be created only in response to a valid demand from potential students as measured against the mission of UT-Austin.	17
36	Nondegree Courses	4.1.6: Development of courses and programs that are to be offered with a significant component of TEL or intended as DE but that lead neither to a degree, e.g. certificate courses, nor to credit should be the responsibility of continuing education or distance education units and subject to review and coordination by the Provost.	17

5	Central DE Unit	4.1.7: The Provost should identify or create an operational distance education unit, reporting directly to the Provost's office, that together with units in professional colleges and schools shares the responsibility for facilitating (1) market research and needs assessment, (2) distance education program design and development, (3) marketing and promotion, (4) course and program delivery with administrative and student support, (5) developing and maintaining an inventory of courses including certificate and degree programs, (6) developing partnerships with other educational institutions, governmental agencies, professional associations and corporations, (7) achieving visibility as a point of contact for nontraditional access to university academic resources and programs, and (8) coordinating cross-institutional efforts.	18
9	Course Criteria	4.2.8: The intellectual and pedagogical quality of technology-enhanced and distance offerings should be comparable to that of courses taught in more traditional settings and should be monitored by the course and curriculum committees of the academic units.	18
29	Review and Approval Process	4.2.9: The Provost should designate a unit such as the Center for Instructional Technologies (CIT) to coordinate the establishment of guidelines that course and curriculum committees can use in assessing the quality of TEL/DE courses.	18
24	DE as Transfer Credit	4.3.10: The same criteria and protocols currently used to determine academic transfer credit for courses taught on campuses of other institutions should be used to determine the appropriateness of a DE course to satisfy UT-Austin course prerequisites or degree requirements. If the scope of this problem mandates, departments and other academic units may wish to set up committees analogous to the course and curriculum committees to evaluate externally produced DE course offerings on a continuing basis.	19
45	DE as Transfer Credit	4.3.11: The Provost's office, following recommendations by an appropriate departmental or other academic unit, must be responsible for reviewing and approving any externally produced DE course to be incorporated into an official UT-Austin degree plan.	19

Faculty Support

Rank	Topic	Recommendation	Page #

10	Incentives	5.1.1: The Provost and Deans should provide a range of incentives to encourage faculty to incorporate TEL/DE in their courses. A critical concern in this process is consideration of intellectual property issues.	20
30	Content Development Teams	5.1.2: The Provost, possibly working through the CIT, should explore the use of content development teams to facilitate development of TEL/DE-based courses.	20
11	Teaching Load	5.1.3: If a DE course is deemed the pedagogical equivalent of an existing course and enrollment for credit by resident students is authorized, departmental or college course and curriculum committees should be responsible for recommending that the DE course replace the corresponding portion of a faculty member's official classroom teaching.	20
3	Promotion and Tenure	5.2.4: UT-Austin should continue to apply high standards for performance evaluation, promotion, and tenure of faculty while conveying the importance of innovation, including TEL/DE contributions, in all areas of performance (instruction, research, service) as central to the culture of the institution.	21
31	Instructional Capacity	5.3.5: The Provost's Office and the Graduate School should facilitate plans by the Deans to develop formula- and nonformula-funded DE degrees that incorporate a mix of tenure and nontenure track faculty in order to serve nontraditional student populations.	21
46	Training	5.4.6: The Provost should establish incentives for faculty to participate in regular training in TEL/DE techniques.	21
19	Training	5.4.7: The Provost should encourage the CIT and CTE to develop on-line, just-in-time training courses for faculty in TEL/DE techniques.	21

Infrastructure

Rank	Topic	Recommendation	Page #
4	Recurrent Funding	6.0.1: The Provost should establish recurrent funding structures to adequately support overall infrastructure needs, such as technology development and services, student support services, and library resources in a TEL/DE environment.	22
20	Network Review	6.1.2: The Provost should review annually the available networking infrastructure, including resources and capacity, as well as preparing a three-year projection of future needs with identified funding sources.	22

32	Technology Selection	6.1.3: Selection of technology used to implement UT-Austin TEL/DE courses should be an informed decision based on consultation with ACITS regarding accessibility, appropriateness to the curricula, initial and maintenance costs, support for interaction, and fit with the technology infrastructure of the institution.	22
33	Course Management Software	6.1.4: The Provost should consider the costs and benefits of encouraging campus-wide standardization on an integrated course management software environment for instructional management.	23
25	Best Practices	6.1.5: Best practices in TEL/DE and recommended hardware and software should be identified, possibly by ACITS, and these should be re-evaluated annually, with input from all constituencies, so that innovation and the introduction of new technology is not inhibited.	23
14	TEL/DE Support Inventory	6.1.6: The Provost should undertake an inventory of staff and facility TEL and multimedia capability in units and establish a formal mechanism for coordination and collaboration among these efforts.	23
26	TEL/DE Support Collaboration	6.1.7: The Provost and Deans should strongly encourage cooperation and sharing of expertise, equipment, and facilities among central and distributed multimedia production facilities to provide faculty with easy access to TEL development support, including content production where appropriate.	23
37	Video Production	6.1.8: The Provost should seek opportunities to develop additional media production capabilities, especially for professional quality audio and video usable in Web or other broadcast applications.	23
15	E-business Practices	6.2.9: The University should implement the recommendation of the UT-Austin Electronic ID Task Force to establish the satellite Subject Database as a joint project of ACS and ACITS and should strongly encourage adoption of the principles of e-business for official business and academic transactions of the University.	23
8	Student Services and Support	6.2.10: The Provost should assign a central distance education unit to facilitate the administrative, advising, and instructional support for distance students, as well as to assemble and recommend best practices and guidelines, with input from all continuing education units, for the provisioning of student services and support for all DE efforts.	23
50	Library Consultation	6.3.11: As with any new or enhanced academic program, faculty should consult with the General Libraries staff early in the planning process to determine availability of library services and resources.	24

38	Library Consultation	6.3.12: In the case of multiinstitutional TEL or DE programs, the Provost should require departments or colleges to consult with the General Libraries staff about digital resources and services prior to final approval of the program.	24
27	Central Testing Facility	6.4.13: The Provost should establish a centralized testing facility capable of handling faculty needs for administering on-line exams to students on a 24/7 basis in a secure, proctored environment.	25
47	Remote Testing Mechanisms	6.4.14: The Provost, possibly working through a central DE unit, should develop mechanisms for administering on-line exams to students in remote locations.	25

Administrative Issues

Rank	Topic	Recommendation	Page #
16	Administrative Issue Review	7.0.1: The Provost should be responsible for initiating a timely and ongoing review of critical institutional administrative questions emerging from an increase in TEL/DE activities on this campus and, in consultation with faculty, for developing a set of policies and guidelines.	26
28	CIT, CTE and MEC	7.0.2: The Provost should respond to the converging missions of CIT, CTE and MEC by functionally integrating all appropriate activities and expertise in order to provide faculty with efficient and effective instructional support services.	26
17	Nonformula Funded Course Policy	7.1.3: The Provost, in consultation with the Graduate School, a central DE unit, and continuing education units, should develop policy for nonformula-funded academic and continuing education courses. These policies should explicitly address cost recovery of services provided and use of revenue from those courses, a financial condition that may differ from formula-funded financial models.	26
48	Institutional Planning Model	7.1.4: The Provost should develop an institutional planning model for TEL/DE based on specific criteria that can enable forecasting of resource constraints and financial planning for mitigating their effects.	27
34	Intellectual Property	7.2.5: The Provost should develop a standard protocol for alerting faculty annually, or more frequently as appropriate, to resources available for addressing intellectual property matters.	27
12	Intellectual Property	7.2.6: To prevent misunderstandings about ownership, the Provost should develop guidelines on when a contract should be executed for a course that will be significantly enhanced with technology by entities other than the instructor or intended for delivery through something other than traditional instruction by the faculty member.	28

39	Articulation	7.3.7: The Provost, in consultation with the Deans, should propose a process for handling cases of for-credit DE courses falling outside current articulation agreements. The transfer of credit will be assumed to be routine at the undergraduate level.	28
21	Residency	7.4.8: The Provost should develop working definitions of residency and concurrent enrollment in the changing DE context. From those definitions, new policies regarding residency requirements and concurrent enrollment can evolve.	29
40	Course Inventory	7.5.9: A detailed course inventory for credit, noncredit, degree, and nondegree courses should be maintained and be accessible to the public over the Web.	29
41	Course Inventory	7.5.10: The Provost should be responsible for producing course inventories that respond to the various definitions of DE adopted by agencies with whom UT-Austin has a reporting relationship.	29
49	Course Inventory	7.5.11: Courses should be categorized according to a scheme developed by the Provost's office that addresses the level of technology used in the courses. The technology category for each course should be listed in the Course Schedule and in other electronic and print publications that list UT-Austin course offerings.	29

22	Course Web Page	7.5.12: Each course offered through UT-Austin should have an individual Web page that includes the basic course schedule information, including its use of technology or designation as distance education, availability of library resources, as well as links to the syllabus and other pertinent information. These pages should be produced with the least burden to individual faculty, using information technology to integrate existing information wherever possible.	29
42	Student Evaluation	7.6.13: The Provost should direct MEC, CTE and CIT to work jointly with the faculty to pilot test real-time, Web-based instruments for evaluating student learning in a TEL/DE course.	30
51	TEL/DE Assessment	7.6.14: The CIT, CTE and MEC should accumulate and make available assessment data about TEL/DE learning and develop an online information resource on TEL/DE.	30
23	Course Evaluation	7.6.15: The Provost, with faculty participation, should direct the development of course evaluation instruments that reflect the use of technology in instruction.	30

6	Course Development Projects	7.7.16: The Provost should develop a process to review and coordinate all requests for faculty to develop DE courses for delivery through any external DE infrastructure. This process may be analogous to, or the same as, the process used to review all proposals for DE courses at UT-Austin. The review criteria should include those applied to all DE courses, as well as consideration of campus faculty-student ratios and specific external considerations as they might arise.	31
18	Acquisition of External Courses	7.7.17: The Provost, in consultation with appropriate course and curriculum committees, should review and approve the acquisition and use of any course developed at another institution, public or private, as a surrogate for an on-campus UT-Austin course offering. In approving such arrangements, preference should be given to lower-division courses.	31
13	Faculty Courseware Arrangements	7.7.18: The Provost should develop a process for approving courseware arrangements between private entities and faculty or staff, a process similar to that already in place at UT-Austin for reviewing consulting and potential conflict of interest situations. Faculty should be notified on a regular basis that they are expected to inform the Provost's office if they have developed substantive TEL course materials with the intent of making them commercially available.	31
43	Financial Aid	7.8.19: While financial aid may be the purview of the Vice President of Student Services, policies related to its implementation in DE situations should be made in consultation with the Provost and Vice President for Graduate Studies.	31

Definitions, Philosophy and Assumptions

Technology enhanced learning (TEL) is assuming increasing importance in the educational process at all institutions of higher education. A number of dynamic factors, which include an evolving student population, innovative advances in technology, and a changing economic climate for higher education, create an environment supportive of an expansion of the use of technology in teaching and learning. Increasingly, TEL refers to the application of digital, networked information technology to the educational process, although it is not restricted to that particular set of technologies. In the context of this report, the primary focus is on the networked information technology understanding of TEL, particularly the use of the Internet for delivery of instruction.

TEL enables the expansion of distance education (DE), which is defined in this report as a learning situation in which the student and faculty member are not conjoined in time and space. TEL/DE thus encompasses a continuum of educational activities, ranging from traditional on-campus lecture-based courses involving minimal technology enhancement, e.g., student-faculty e-mail communication or posting of course materials on a Web page, to remote delivery of an entire course. Technology enables the implementation of DE, in that educational materials based on technology that today is being used to enhance classroom- and lecture-oriented courses could at some point be used in DE courses. In fact, a DE course may be conceived of as an instructional offering for traditional residential UT-Austin students, local DE, as well as instruction focused on students who are not part of UT-Austin residential degree programs.

In 1997, the Distance Learning Task Force co-chaired by then Provost Mark Yudof and Vice President Teresa Sullivan issued a report in which they proposed that by the next century "the mission of a university of the first class will include the use of electronic media and other interactive tools to enrich the education both of students residing in Austin and of students at a distance from Austin. [3] Further, they stated that the mission of UT-Austin could include:

... distance learning enhancements to regular on-campus courses; continuing education for UT graduates, including additional training, professional certification and maintenance, executive education, and other non degree programs; continuing education for graduates of other schools, of the types mentioned above; enrichment courses (noncredit); courses offered for credit in conjunction with a high school, community college or employer and degree programs.

That next century is here. We find ourselves on a road that will most likely lead to more widespread implementation of TEL/DE as a strategic element of University operations. This committee finds that although we are already traveling this road, how far down that road we go, how fast, and in what particular manner are not and should not be technology-driven questions. Instead, they are quintessentially academic questions to be decided according to prudent scholastic principles and criteria, rather than by appeals to the inevitability of technological change and the assumption that, having embarked on the road, we therefore relinquish our right to influence the journey. Our ability to pause, reflect, accelerate, or alter our travel plans must remain unhindered. For this reason, the TELC strongly recommends that the first two of the following principles guide specific decisions about TEL/DE and the allocation of resources accompanying those decisions.

In considering the pace and scope at which the University might expect to increase its efforts in TEL/DE, many criteria will play an important role. These criteria include a broad range of environmental and behavioral factors. However, the most salient and significant criterion should be the contribution of TEL/DE to fulfilling the academic mission of the University.

Principle 1: UT-Austin should acknowledge the environmental changes that enable the growth of both TEL and DE in higher education. As UT-Austin moves forth in this environment, decisions about the adoption of technology and participation in DE should be made on the same basis as other decisions about its academic offerings, using clear and rigorous academic criteria that ensure a primary focus on the quality and enhancement of student education while also encouraging experimentation and innovation in TEL/DE.

Establishing an institutional policy on TEL/DE involves answering key questions about the evolution of TEL/DE, as stated above. Implementation will involve developing criteria to help faculty choose appropriately from among the multitude of possible technological enhancements available for a specific academic exercise, module, or course. It will also involve the planning for and provision of the resources necessary to implement technological enhancements. A policy that encourages technological enhancement but provides no resources for its accomplishment fails to recognize the commitment and effort that must accompany successful efforts in this arena.

Principle 2: UT-Austin can expect to maintain its "university of the first class" status with respect to TEL/DE over the next decade if its policies are thoughtfully developed and coupled with adequate and available resources for faculty and for the infrastructure necessary to provide quality TEL/DE.

Increased interaction improves student achievement and attitudes toward learning. The committee recognizes that interactivity is more likely to be meaningful if it is planned and deliberate. As faculty undertake the development and implementation of TEL/DE courses, they must accept responsibility for ensuring that student-faculty and student-student interaction is an ongoing part of the instructional experience.

Principle 3: UT-Austin should commit to a model of TEL/DE that requires faculty to assume responsibility for ensuring the ongoing quality of the instruction and interaction with and among the students.

Many of the services taken for granted by residential students may not be available or appropriate for distance learners. Generally, distance learners will have less need for geographically bound services, such as campus bus service or the health center, but will have needs similar to residential students for academic advising, student records, course catalog information, registration services, examinations, course handouts, and reserve reading materials, for example. As UT-Austin makes its academic and continuing education offerings available to students who may neither be resident in Austin nor required to visit the Austin campus, consideration must be given to providing these students with adequate services and support.

Principle 4: UT-Austin should provide for distant students a comparable scope and quality of administrative, advising and instructional support available to residential students in a campus environment.

In keeping with UT-Austin's traditional model of higher education, many administrative policies and processes are built on assumptions that may no longer be relevant or appropriate for TEL/DE courses. University policies and operational practices can be roadblocks to growth of TEL/DE or can support TEL/DE efforts. The committee views as a most critical issue the revision of UT-Austin administrative policies and processes leading to a climate of institutional openness to TEL/DE. This policy review and revision process needs immediate and on-going attention if TEL/DE is ever expected to be more than a few discrete instructional activities at UT-Austin.

Principle 5: UT-Austin should address, on a timely and ongoing basis, the administrative issues that could inhibit or impede the use of TEL/DE. Policies and processes should be developed and adopted in areas such as intellectual property, financial aid, enrollment, and finance, to create an institutional environment that supports a TEL/DE model of higher education.

The merging of financial and technological opportunities for educational institutions as well as for individual faculty is driving the future of higher education commerce. While it is difficult to predict the extent of changes ten or more years into the future, the institution has a strong interest in what faculty choose to do in developing TEL products because it will be difficult to separate a faculty member's brand from the brand of UT-Austin. Ownership of intellectual property in this arena should continue to recognize the primacy of authorship, but the University should also strive to protect the interests and integrity of the institution. We should encourage faculty to work within the university in developing TEL/DE products in the same way that we encourage faculty to write leading textbooks.

Principle 6: UT-Austin should provide a supportive environment for faculty to develop TEL/DE materials, such as online courses, that have internal as well as external markets. In the latter case, an ongoing institutional review of concerns related to the development and use of such online courses is needed.

In line with these principles, the committee adopted the following set of assumptions that frame the discussion, recommendations, and conclusions set forth in this report.

1. The value of technology is, and will be, assessed by its ability or likely potential to contribute to those enterprises that are part of the core academic mission of UT-Austin: outstanding instruction, research, and service.
2. An increasing number of faculty and courses will likely use TEL/DE to enhance the educational experience of students, increase access, or otherwise meet the academic goals of the institution.
3. Implementing the high-quality TEL/DE activities appropriate to the mission of UT-Austin will be expensive and may compete for funding with other worthwhile initiatives.
4. Faculty will constitute the decision-making unit for determining what strategies will enhance instruction in their academic fields and how best to enhance delivery of degree-focused education.
5. A variety of units may make decisions about the use of TEL/DE in nondegree-focused educational activities such as certificate programs, but their actions will be subject to academic review.
6. Courses for students not enrolled in a degree program at UT-Austin will be administered under the direction of a continuing education unit, whether the unit is located in a particular College or elsewhere.
7. Experimentation and innovation through TEL/DE requires leadership and encouragement from the Provost and the Deans, as expressed in strategic goals, directions, and programmatic incentives, accompanied by guidance and involvement from faculty.
8. Faculty will be provided with the necessary resources to devote sufficient effort to TEL/DE in line with the core values of UT-Austin; these include the aims of instilling in students the will to excel with integrity and a positive spirit, and of providing a quality education that contributes to life-long learning.
9. Faculty will be provided with relevant training opportunities in TEL/DE to accommodate rapid technological advances, and this training will be offered on a regular basis.
10. TEL/DE courses will be designed in accordance with University policies regarding accessibility of electronic information to people with disabilities.
11. Faculty will be provided opportunities, through the Faculty Council or the Graduate Assembly, for timely discussion of relevant reports and policies regarding TEL/DE as developed by the administration.
12. An increase in the number of UT-Austin TEL/DE courses is likely to yield increased participation in external course delivery operations such as the UT System TeleCampus.

Courses, Curricula, and Programs

Course and curriculum development, as well as definition of degree programs, have traditionally been within the faculty's purview and should continue to be as TEL/DE evolves at UT-Austin. Thus responsibility for identifying and prioritizing the use of TEL/DE for particular content or within particular disciplines should remain primarily with the faculty of those academic units. Additionally, the use of technology in a particular course may increase to the extent that the course content or philosophy may fundamentally be changed, mandating a review of the course syllabus. In this case as well, the responsibility for review should fall to the appropriate faculty committees. Further, identification of the appropriate target audience for TEL/DE courses and programs should be the primary responsibility of the faculty.

Recommendation 4.0.1: In close consultation with the faculty and the Deans, the Provost should establish overall strategic institutional goals for TEL/DE course and curriculum development that are consistent with the core academic mission of UT-Austin; these goals should recognize strengths and distinctive capabilities available here and contribute to the University's stature as a nationally ranked institution.

Recommendation 4.0.2: The Provost and the Deans should annually ask department chairs, working with course and curriculum committees, (1) to identify current TEL/DE efforts in their programs, including continuing education; (2) to identify curricular areas in which TEL/DE could enhance their educational offerings; and (3) to develop a plan for encouraging the development of the identified TEL/DE enhancements. This information should be reported to the Provost's office.

Recommendation 4.0.3: The appropriate departmental or other academic units should be responsible for reviewing and approving (1) proposed technological enhancements for an existing course whenever those enhancements constitute a significant pedagogical revision, (2) DE implementation of existing courses, and (3) proposed development of new courses leading to a degree and having a significant TEL component or intended for DE. [4]

Recommendation 4.0.4: All DE courses will be subject to review and coordination by the Provost, working with appropriate department and college committees..

Recommendation 4.0.5: For-credit DE courses should be created only in response to a measurable demand from potential students as measured against the mission of UT-Austin.

4.1 Centralized and Distributed DE

Other units of the institution, such as continuing education, may also have a strong interest and indeed a mandate to pursue initiatives, particularly in DE. These units will also be responsible for identifying and prioritizing areas for course development and identifying target audiences for TEL/DE offerings. In particular, the demand for life-long professional learning expected to increase demand for graduate certificate or post-baccalaureate certificate courses. These courses, offered at the graduate level, do not require admission to the graduate school or convey graduate credit; they represent an opportunity to build innovative, high-quality programs that leverage our existing academic expertise.

Developing certificate courses that reflect the University's academic strengths and are delivered through DE would allow UT-Austin alumni and others to update their qualifications without requiring that they be in residence. The committee believes that certificate programs may rapidly evolve into a model involving substantial use of TEL/DE techniques and should be considered part of the core academic mission of our institution. Further, TEL/DE will likely facilitate expansion of certificate programs.

Recommendation 4.1.6: Development of courses and programs that are to be offered with a significant component of TEL or intended as DE but that lead neither to a degree, e.g. certificate courses, nor to credit should be the responsibility of continuing education or distance education units and subject to review and coordination by the Provost.

There is a need for leadership and a centralized mechanism for exploring and defining future needs in TEL/DE and making recommendations to address them. The Provost, as the chief academic officer of UT-Austin, is the appropriate official for establishing strategic targets for TEL/DE from an institutional perspective. The Provost should identify an operational unit that can support and coordinate activities and leverage common efforts in TEL/DE. The responsibilities might include identifying and assessing potential TEL/DE needs, reviewing and responding to institutionally targeted TEL/DE initiatives, reviewing the overall mix of offerings in both degree and

nondegree courses in light of University goals, reviewing proposals for courses requiring a significant TEL investment or those intended as DE offerings, and making recommendations to the Provost concerning resource allocation, program development, course approval, and policy.

The committee believes that the continued involvement of continuing education units, particularly in DE, is important for the institution. The larger professional colleges and schools (Engineering, Law, Business, and Pharmacy) have well-established local units that fill these functions. Those local units are also in a position to work closely with the faculty in those schools to assist in the transformation of TEL to DE and *vice versa* as needed. The ability of schools to support such high quality local units is highly dependent on the ability of their alumni and/or professional constituencies to pay premium prices for programs. Other colleges would find the financial burden of such a unit to be a hardship at best, and for these colleges, centralized handling of transitions between TEL and DE would be best.

A central academic unit, closely aligned with the Provost's office, could serve as a critical transitional link between TEL and DE as faculty identify the need or desire to reach new audiences with specific academic offerings. A close connection to the Provost's office could help to assure faculty that academic quality concerns are adequately addressed and could facilitate working relationships with other functions such as Academic Computing and Instructional Technologies Services (ACITS), ACS, the Center for Teaching Effectiveness (CTE), Measurement and Evaluation Center (MEC), and other similar centralized operational groups. This central distance education unit would cooperate and collaborate with similar units in the Colleges of Engineering, Business and Pharmacy and the School of Law, as well as with Continuing and Extended Education (CEE).

Recommendation 4.1.7: The Provost should identify or create an operational distance education unit, reporting directly to the Provost's office, that together with units in professional colleges and schools shares the responsibility for facilitating (1) market research and needs assessment, (2) distance education program design and development, (3) marketing and promotion, (4) course and program delivery with administrative and student support, (5) developing and maintaining an inventory of courses including certificate and degree programs, (6) developing partnerships with other educational institutions, government agencies, professional associations and corporations, (7) achieving visibility as a point of contact for nontraditional access to university academic resources and programs, and (8) coordinating cross-institutional efforts.

4.2 Quality Guidelines

In the interest of maintaining the reputation of UT-Austin and in effectively serving the community of learners, the committee believes that courses employing technology, whether they are offered to distance or resident students, be of a quality comparable to that of traditional course offerings. Attention to quality through the design, development, delivery and assessment process is critical. Accessibility of students with disabilities to the technologies associated with TEL/DE courses must be ensured, as described in Appendix C.

Whenever possible, existing mechanisms and procedures should be employed to achieve this end. Given that course and curriculum committees traditionally have not been concerned with matters of TEL/DE, guidelines are needed to assist them in evaluating course and degree proposals. Guidelines should address content, instruction, resources, learning activities, assessment, guidance, and student support, as well as the technical specifications for multimedia materials including image, sound, video, etc. The Provost should encourage communication about best practices in TEL and DE between departmental course and curriculum committees and academic units with expertise in TEL/DE, such as the Center for Instructional Technologies (CIT), a central distance education unit, and other continuing education units.

Recommendation 4.2.8: The intellectual and pedagogical quality of technology-enhanced and distance offerings should be comparable to that of courses taught in more traditional settings and should be monitored by the course and curriculum committees of the appropriate academic units.

Recommendation 4.2.9: The Provost should designate a unit such as the Center for Instructional Technologies (CIT) to coordinate the establishment of guidelines that course and curriculum committees can use in assessing the quality of TEL/DE courses.

4.3 Externally Produced DE Courses

UT-Austin must be prepared for an increase, perhaps dramatic, in the number of its resident students taking externally produced DE courses. These courses must be evaluated with regard to the institution's current course

offerings and overall degree plans, and the results used to establish their appropriateness as surrogates for a course available on-campus. In addition, The University must be prepared to entertain the possibility that, in certain circumstances such as limited local infrastructure or expertise, an externally produced DE course may be considered as a requirement of a UT-Austin degree plan even when no corresponding course is offered on campus.

Recommendation 4.3.10: The same criteria and protocols currently used to determine academic transfer credit for courses taught on campuses of other institutions should be used to determine the appropriateness of a DE course to satisfy UT-Austin course prerequisites or degree requirements. If the scope of this problem mandates, departments and other academic units may wish to set up committees analogous to the course and curriculum committees to evaluate externally produced DE course offerings on a continuing basis.

Recommendation 4.3.11: The Provost's office, following recommendations by an appropriate departmental or other academic unit, must be responsible for reviewing and approving any externally produced DE course to be incorporated into an official UT-Austin degree plan.

4.4 Course Review and Approval Process

The increased use of technology as part of the educational toolkit requires the formulation of policies commensurate with the rapid evolution of this field. Consequently, a flexible and streamlined protocol is required for efficient and timely development and approval of those courses, whether residential or distance education, in which TEL is a significant component. The interactions among the various units that are part of the protocol as described in this report are summarized schematically in Appendix D.

Faculty Support

Faculty members are the core resource for the development and implementation of TEL/DE. Yet they are hard-pressed to undertake such activities because of the time and energy required to teach, compete for research dollars, and participate in expanded outreach and development initiatives.

The current system of rewarding faculty (promotion, tenure, compensation, and auxiliary support) encourages faculty to focus most of their time on research and scholarship. In most cases, faculty electing to explore innovations in teaching must choose between activities with markedly different effects on their professional career and income. This situation is exacerbated when those teaching innovations involve TEL/DE, because developing, maintaining, and updating TEL and DE components requires time and effort beyond those typical for a traditional course. Therefore, it is highly likely that a balanced system of rewards will be necessary to encourage faculty to include development of such courses as part of their academic efforts.

5.1 Compensation, Workload, and Support

It is important to compensate faculty appropriately for the time and effort required to develop substantial TEL/DE components for a course. Possible incentives during TEL/DE course development could include strategies such as using the Dean's Fellow program or release time in the form of workload credits (WLCs). Another incentive might be application of a multiplier in the WLC algorithm, analogous to the current practice of using a WLC multiplier as a function of class size; a possible benchmark for applying the multiplier option might be that the course being developed meets the criterion of Category G or H (one-third or more of course content delivery by technology see Appendix B).

Incentives might also be provided in the form of grants to fund TEL/DE-related proposals from colleges or individual faculty. These grants could provide support through equipment/software purchase, salaries, staff time, and student assistants. Additional student support could be provided by funding positions for TAs having technological expertise as consultants to faculty. As incentives are developed, care should be taken to ensure that the institution and the faculty member are in clear agreement about the nature of the support as it applies to determinations of whether the end product is a scholarly work or a work for hire.

Recommendation 5.1.1: The Provost and Deans should provide a range of incentives to encourage faculty to incorporate TEL/DE in their courses. A critical concern in this process is consideration of intellectual property

issues.

Substantive redesign of a course for TEL/DE may require efforts and expertise beyond those of individual faculty. In this case, a multidisciplinary content development team (CDT) could provide the range of skills necessary, including expertise in instructional design, media production, assessment, and testing. This approach to effecting course redesign could be piloted on several courses and the results used to determine the efficacy of various TEL/DE-based pedagogical methodologies in the educational process. A protocol for developing a TEL/DE-based course and discussion of pilot testing is provided in Appendix E.

Recommendation 5.1.2: The Provost, possibly working through the CIT, should explore the use of content development teams to facilitate development of TEL/DE-based courses.

Transforming technology-enhanced classroom teaching to a DE course will likely have limited faculty commitment without the proper compensation structure after the course has been developed. (Here a DE course is taken to be a Category H or possibly Category G course as defined in Appendix B.) Compensation might be monetary but could also be in the form of classroom WLCs. Assignment of any possible classroom WLCs associated with DE should be explicitly considered by the appropriate course and curriculum committees in conjunction with the department chair, when the pedagogical content of a DE class is being evaluated. Note that Option 3 DE courses will be subject to appropriate practices for these types of programs.

Recommendation 5.1.3: If a DE course is deemed the pedagogical equivalent of an existing course and enrollment for credit by resident students is authorized, departmental or college course and curriculum committees should be responsible for recommending that the DE course replace the corresponding portion of a faculty member's official classroom teaching.

5.2 Evaluation of Faculty Performance

The faculty and administrators at UT-Austin should continually reevaluate criteria used in annual evaluations of faculty performance, as well as those involving promotion and periodic review of tenure, and should ensure that faculty, department chairs, and budget councils are aware of the criteria being applied. In establishing these criteria, developing, applying, and assessing TEL/DE strategies represents "value added" to a course when used successfully and should be considered in that context when standards of performance are being established. Evaluating a faculty member's contributions in TEL/DE as part of a teaching portfolio may be difficult for promotion and tenure committees, and solicitation of opinions from experts from within and without UT-Austin should be encouraged in such cases by the Provost and the Deans.

Recommendation 5.2.4: UT-Austin should continue to apply high standards for performance evaluation, promotion, and tenure of faculty while conveying the importance of innovation, including TEL/DE contributions, in all areas of performance (instruction, research, service) as central to the culture of the institution..

5.3 Instructional Capacity

A limitation faced in developing for-credit DE courses is the dearth of tenured and tenure-track faculty to undertake such efforts. It may be appropriate to hire specialists and professionals who do not seek tenure but bring the necessary skills, interest, and time to develop and sustain such courses.

New DE programs such as specialized Master's degrees could generate formula funding based on semester credit hours taught. Alternatively, these new degree programs could focus on nontraditional students and could be nonformula funded, charging tuition based on demand. After some transition, a mixture of tenure- and nontenure-track faculty and adjunct faculty could staff such programs. However, such a transition plan requires agreement between the Provost and Deans on the long-range goals and may require supplemental funding to achieve the desired staffing. Future tenure-track faculty may be selected based on their interest and capabilities in participating in some DE courses.

Recommendation 5.3.5: The Provost's office and the Graduate School should facilitate plans by the Deans to develop formula- and nonformula-funded DE degrees that incorporate a mix of tenure and nontenure track faculty in order to serve nontraditional student populations.

5.4 Training

A lack of training in TEL/DE techniques will impede their introduction into courses, but faculty members have little time for such activities. Incentives may be required to encourage faculty to participate in formal training.

These incentives could include consideration of such training in the annual performance evaluation, merit increases, or as part of a plan involving faculty desktop or laptop computer replacement. Alternatively, training could occur through self-paced on-line courses.

Recommendation 5.4.6: The Provost should establish incentives for faculty to participate in regular training in TEL/DE techniques.

Recommendation 5.4.7: The Provost should encourage the CIT and CTE to develop on-line, just-in-time training courses for faculty in TEL/DE techniques.

Infrastructure

The growing use of technology in the classroom and the recognition that this is not a passing phenomenon constitute a paradigm shift in delivery of education. However, this transformation demands preparation and provisioning of an infrastructure to support it. Below we focus on several key issues that we believe are vital with regard to infrastructure for developing and sustaining TEL/DE: technology and physical infrastructure and student services, including the accessibility of administrative, instructional, and academic resources. A critical need underlies all of the infrastructure issues. The traditional funding model at UT-Austin does not adequately address the need for larger, centralized budgets to support critical institutional services. Creating an environment in which TEL/DE can be developed and used effectively and efficiently may require new funding models that include plans for acquiring new revenues or for shifting current resources.

Recommendation 6.0.1: The Provost should establish recurrent funding structures to adequately support overall infrastructure needs such as technology development and services, student support services, and library resources in a TEL/DE environment.

6.1 Technology and Physical Infrastructure

As the University moves to an expanded level of TEL/DE, there must be a concomitant development of technological infrastructure to support these activities. Adequate bandwidth, on and off campus, is required in order to deliver educational content in the "anytime, anywhere" environment recently advocated by President Faulkner. Further, the hardware, software, and facilities required to sustain this environment will require recurrent funding in order to keep pace with technological changes and user demands.

The technology and physical infrastructure that must be further developed in order to expand UT-Austin's TEL/DE efforts include: (1) data networking and server upgrades; (2) technology classrooms; (3) instructional management systems; and (4) multimedia production facilities.

Planning for future networking infrastructure needs (bandwidth, servers, and support staff) must be carried out at regular intervals in order to meet the demands posed by increased Internet/Web and media-streaming usage that is accessible on a 24 x 7 basis. The nearly completed Network Master Plan should be the starting point for regular analysis and projections for voice/data/video requirements so that appropriate investments in the infrastructure to support TEL/DE activities can be made on time.

Recommendation 6.1.2: The Provost should review annually the available networking infrastructure including resources and capacity, as well as preparing a three-year projection of future needs with identified funding sources.

Technology classrooms must be available if TEL is to grow, and existing technology classrooms must be utilized more fully. These matters have been addressed in the report issued by the Technology Classroom Task Force of ITCC. [5] A committee is currently meeting regularly to develop a budget and facility plan for reconfiguring campus classrooms for TEL.

Technology-based support systems are evolving and in the future will likely include easy-to-use authoring templates, record-keeping functions, and authenticated exam administration, perhaps linked to student and faculty databases. At UT-Austin, the Web course management tool Web CT is now used in over 40 courses. The UT TeleCampus uses a fairly advanced course management system developed by a specific vendor. Tools that help manage the delivery of teaching and learning can increase faculty productivity. These tools should be consistent with future standards that may develop, such as the Instructional Management System supported by EDUCAUSE

or accessibility requirements developed at the national or local level.

Recommendation 6.1.3: Selection of technology used to implement UT-Austin TEL/DE courses should be an informed decision based on consultation with ACITS regarding accessibility, appropriateness to the curricula, initial and maintenance costs, support for interaction, and fit with the technology infrastructure of the institution.

Recommendation 6.1.4: The Provost should consider the costs and benefits of encouraging greater campus-wide standardization on an integrated course management software environment for instructional management.

Recommendation 6.1.5: Best practices in TEL/DE and recommended hardware and software should be identified, possibly by ACITS, and these should be re-evaluated annually, with input from all constituencies, so that innovation and the introduction of new technology is not inhibited.

At UT-Austin, multimedia production and development expertise and facilities are highly distributed. Some colleges, such as Liberal Arts, Business, and Engineering, operate multimedia facilities with staff that work one-on-one with faculty content providers to develop technology-enhanced courses. The CIT operates more on a training model, providing guidance and assistance in teaching faculty and their student interns how to produce and use multimedia educational materials. The staffs of these facilities and the CIT have a good working relationship and cooperate in sharing expertise and resources on faculty projects.

TEL, like DE, can be implemented across the campus using a coordinated, distributed model and building on what already exists here. This model assumes that some colleges will have staff and facilities to carry out basic functions, but central operations such as ACITS and the CIT offer institution-wide services and provide customized in-depth services to colleges as needed.

Faculty may have many needs in the development of TEL. For example, faculty might require live audio and video recordings, graphic design, photography, or other types of content-production services, as well as instructional design, multimedia production, digital video editing and CD-ROM duplication. It is unlikely that all of these capabilities will ever be available to all faculty members in a single location. However, with ongoing coordination and investment to enhance some capabilities, UT-Austin could ensure that faculty who are not in a college or department with extensive media production services and facilities have access to what they need to fully participate in TEL/DE development.

Recommendation 6.1.6: The Provost should undertake the development of an inventory of staff and facility TEL and multimedia capability in central units as well as academic units and establish a formal mechanism for coordination and collaboration among these efforts.

Recommendation 6.1.7: The Provost and Deans should strongly encourage cooperation and sharing of expertise, equipment, and facilities among central and distributed multimedia production facilities to provide faculty with easy access to TEL development support, including content production where appropriate.

Recommendation 6.1.8: The Provost should seek opportunities to develop additional media production capabilities, especially for professional quality audio and video usable in Web or other broadcast applications.

6.2 Student Services and Support

Students who enroll in UT-Austin for-credit DE courses become members of the UT-Austin learning community. They are entitled to academic, advising, and instructional support that is different in character but comparable in quality to that received by students in residence at UT-Austin. Academic advising, library services, software specific to course assignments, the electronic equivalent of faculty office hours, and similar services must be operated effectively and efficiently to support student needs. These services must be designed so that nonresident students incur no penalty in academic progress or in access to administrative services.

On- and off-campus students enrolled in TEL/DE courses will need access to secure services to establish electronic credentials with which to complete academic work, take tests, and receive advising and similar services. It is particularly important for nonresidential students to have convenient and consistent ways to obtain support services as well as to conduct both official business and academic transactions with the University. Secure authentication of electronic identities will require development of appropriate systems, such as the Subject Database and an accompanying public key infrastructure for digital certificates via Lightweight Directory Access Protocol. Likewise, the incorporation of the principles of e-business into the regular operations of the University will facilitate interaction for residential and nonresidential students alike.

Recommendation 6.2.9: The University should implement the recommendation of the UT-Austin Electronic ID Task Force to establish the satellite Subject Database as a joint project of ACS and ACITS and should strongly encourage adoption of the principles of e-business for official business and academic transactions of the University.

Recommendation 6.2.10: The Provost should assign a central distance education unit to facilitate the administrative, advising, and instructional support for distance students, as well as to assemble and recommend best practices and guidelines, with input from all continuing education units, for the provisioning of student services and support for all DE efforts.

6.3 Access to Library Facilities

Students enrolled in technology-enhanced courses taught in appropriately equipped classrooms on the Austin campus have ready access to a wide range of library services to support their educational program. UT Library Online, UT-Austin's digital library, provides desktop delivery of several thousand electronic journals, databases, and full-text services, selected reference sources, digital images, and other resources. Resident students can also readily browse the stacks, check out books, ask reference questions of information professionals, and utilize other services traditionally carried out in person.

Students enrolled in classes remote from the Austin campus do not have that same easy access to library facilities, but they should nonetheless have equitable access to library materials and services. The digital content of UT Library Online is available to enrolled students 24/7, regardless of geographic location or choice of Internet service provider. Access to the print collections via interactive request forms, interlibrary loan services to request materials not held by the UT-Austin libraries in either digital or print form, and interactive reference services via voice or asynchronous means are examples of key elements of library service that must be available to students geographically remote from the main campus.

Cooperative initiatives with other libraries of the UT System and within the state of Texas are being used to build the infrastructure to support the remote learner. The UT System Digital Library, the collaborative program for UT System libraries, has been very successful in leveraging the purchasing power of the Austin campus, the six health science components, and the eight other academic campuses to bring digital content and technical infrastructure to all components that none, including Austin, could provide on their own.

TexShare, a statewide resource-sharing program based in the Texas State Library, encompasses all libraries in institutions of higher education in the state of Texas, including community colleges, independent institutions, and the health science institutions. The just-concluded legislative session added public libraries to the program for the first time. TexShare programs include a library card where students from one institution can go to another library and check out materials, a courier service to move books quickly from one library to another, and a protocol of electronic transmission of journal articles via interlibrary loan. These programs are currently being tailored to meet the needs of distance-education students around the state, regardless of institutional affiliation. Under these TexShare programs, a UT-Austin-enrolled student located in the Rio Grande Valley near Laredo would be able to check materials out of the Texas A&M International library on her TexShare card issued by UT-Austin, to receive print materials from UT-Austin either by U.S. mail or at the Texas A&M International library via the TexShare courier service, to initiate inter-library loan transactions at UT-Austin via the Web (which might be fulfilled by Texas Tech University), and to access the entire digital content of UT Library Online. Reference service to distance learners is in the planning stages at this time.

The importance of collaborative programs for library services cannot be over-emphasized. UT-Austin has and should continue to play a leading role in guiding these programs for the benefit of Austin, UT System, and students statewide. The financial base of library services infrastructure should be consistent with the fiscal basis of the underlying academic program. Costs for library services in support of cost-recovery-based academic programs should be included in the academic program fees.

Recommendation 6.3.11: As with any new or enhanced academic program, faculty should consult with the General Libraries staff early in the planning process to determine availability of library services and resources.

Recommendation 6.3.12: In the case of multi-institutional TEL or DE programs, the Provost should require departments or colleges to consult with the General Libraries staff about digital resources and services prior to final approval of the program.

6.4 Testing Facilities

A significant concern in delivering TEL/DE to large numbers of students is the availability of appropriate testing facilities. As courses incorporate TEL, student testing can also be expected to involve multimedia content. For example, an instructor may want the student to identify the correct pronunciation of a word, dissect a virtual frog, or use a special tool to calculate the solution to a problem. With DE, the students may be at a remote location, and the need to authenticate an identity is critical. On a local level, the need exists for a 24/7 testing center available to students within a reasonable commute to UT-Austin. This center should be equipped with networked computers capable of delivering an interactive, Web-based or multimedia exam. The center should be staffed with persons who could authenticate the student and act as proctors for the exam. Faculty should be able to make their exams available to the students in the center on a secure site with appropriate security on both the server and the client computers. The campus may be able to modify existing facilities to create such a center.

For students in remote locations, UT-Austin should establish relationships with existing entities that could provide secure, proctored testing sites. These sites could be at other educational institutions or commercial establishments that can offer both computer and network access, as well as trusted authentication and proctoring, and can operate as close to 24/7 as reasonable.

Recommendation 6.4.13: The Provost should establish a centralized testing facility capable of handling faculty needs for administering on-line exams to students on a 24/7 basis in a secure, proctored environment.

Recommendation 6.4.14: The Provost, possibly through a central DE unit, should develop mechanisms for administering on-line exams to students in remote locations.

Administrative Issues

While specific academic campus units can meet many of the challenges raised by increased TEL/DE activities on campus, other issues require a significant and ongoing institutional administrative focus. As UT-Austin is increasingly engaged in TEL/DE, questions of planning and finance, intellectual property, articulation agreements, assessment, record-keeping, inter-institutional collaboration and cooperation, financial aid, concurrent enrollment, corporate relationships, and private delivery of course materials must be addressed. These questions may not appear particularly significant when only a few faculty members wish to put a course on the Web, but they become highly significant first as establishing precedent and secondly as UT-Austin finds TEL/DE to be an expected component of its academic mission. Further, because the adoption of TEL/DE is a dynamic process, the Provost must be prepared to revisit many of these issues on a regular basis, as the changing landscape of higher education will continue to require new policies and processes.

In particular, areas such as intellectual property, financial aid, and concurrent enrollment require more complete and ongoing study. Therefore, while this committee makes some recommendations, in certain areas there will be only a brief discussion of issues. A more complete study and report on these various issues by the Provost's office is highly important.

Recommendation 7.0.1: The Provost should be responsible for initiating a timely and ongoing review of critical institutional administrative questions emerging from an increase in TEL/DE activities on this campus and, in consultation with faculty, for developing a set of policies and guidelines.

Finally, as the use of technology in instruction becomes the norm, the missions of CTE and the CIT, as well as some of the functions of MEC, will increasingly converge. Already faculty find themselves in the position of needing to assess the degree to which they want to include technology in a course before making a decision to consult with CTE or the CIT. Faculty seeking advice on on-line evaluation and assessment must decide whether to contact MEC, CTE or the CIT. Clearly this is an inefficient and ineffective approach to providing faculty support. A more effective and efficient solution would be to strive for a one-stop service for faculty that provides them with a seamless portfolio of instructional support services.

Recommendation 7.0.2: The Provost should respond to the converging missions of CIT, CTE and MEC by

functionally integrating all appropriate services, activities and expertise in order to provide faculty with efficient and effective instructional support services.

7.1 Planning and Finances

The funding for academic support services should be consistent with the funding base of the academic program itself. Academic support services for instruction, either resident or nonresident, funded by state appropriations and tuition should be funded from regular operations budgets. Those same services provided through cost-recovery and the respective program fees, rather than state appropriations, tuition, or student fees, should support corporate-based programs.

UT-Austin must be alert to situations, particularly in connection with corporate-based cost recovery degree or continuing education programs, where favorable educational rates for certain software, hardware, and digital library information resources might be jeopardized by use in corporate settings. License agreements, which stipulate the terms and conditions of use, must be recognized and adhered to. However, the issue of access to computing resources by students who are remote from campus and who may be working toward UT-Austin credit on a part-time basis, must be addressed whether they are sponsored by a corporation or self-sponsored. These issues must be determined before program budgets (e.g., Option III programs) are established.

Recommendation 7.1.3: The Provost, in consultation with the Graduate School, a central DE unit, and continuing education units, should develop policy for nonformula-funded academic and continuing education courses. These policies should explicitly address cost recovery of services provided and use of revenue from those courses, a financial condition that may differ from formula-funded financial models.

The development of a quantitative planning "model" for the development of TEL/DE will help identify those institutional changes needed to support faculty as they adopt TEL/DE. This planning model must have metrics associated with it, e.g., the number of courses developed at the eight categories or levels provided in Appendix B, or the number of faculty who are interested in implementing TEL in courses at Category E or above (the "penetration" of TEL within the faculty). Using a planning model and faculty input on TEL/DE curricula, UT-Austin can better quantify the incremental resources of various types (human, physical, and fiscal) necessary to achieve those outcomes.

Certain types of resources or activities must be expanded and may require additional investment in order to implement broad-based TEL/DE efforts. These resources and activities are interconnected, so that increases in one will put pressures on the others at varying thresholds. The following list includes many of the criteria that should be incorporated into such a planning model.

1. Faculty-student TEL/DE development teams (interns)
2. Instructional design and assessment experts
3. Instructional technology experts
4. Teaching assistants for TEL/DE
5. Faculty release time
6. Training of faculty and staff
7. Networking and server infrastructure
8. Technology classroom facilities and support
9. Software for instructional management
10. Library resources
11. Student services

Managing for a smooth growth path in TEL/DE will be significantly assisted by the ability to forecast resource constraints in staff, facilities, and support that can adversely affect the ability of the faculty to deliver a quality TEL/DE learning experience. Anticipating the additional financial implications of faculty-driven TEL/DE efforts will help our institution gauge how universal the support should be and what revenue sources might support them.

Recommendation 7.1.4: The Provost should develop an institutional planning model for TEL/DE based on specific criteria that can enable forecasting of resource constraints and financial planning for mitigating their effects.

7.2 Intellectual Property

The UT System Web site contains well-organized policy statements and tutorials on intellectual property matters, including those that pertain to DE. The Web also includes well-chosen links for further reading and study. These resources are compiled in Appendix F. Despite all this, the practical application of the law, particularly when applied to DE issues, is not always clear-cut and is evolving. This past fall, all faculty received a memo from the Provost on intellectual property guidelines.

Recommendation 7.2.5: The Provost should develop a standard protocol for alerting faculty annually, or more frequently as appropriate, to resources available for addressing intellectual property matters.

Under previous definitions, scholarly work was defined as those typical or traditional materials produced by faculty members related to their professional field. The Board of Regents, through modification of statutory law, has tried to allocate the ownership of copyright of such works to the faculty member. The presumption is that such works are indirectly connected to the institution through its association with the faculty member.

The question of ownership of the copyright of TEL/DE course materials indicates who has the authority to enter into an agreement about delivery of a course. The question of ownership is well addressed in the materials developed by the UT System's Office of General Counsel (<http://www.utsystem.edu/ogc/IntellectualProperty/whowns.htm>). A key point in the ownership question is the acknowledgement of all contributors to what most likely will be a joint work. For example, a course enhanced with technology may have been developed with the assistance of an instructional designer, a graphic artist, a videographer, and a Web designer. Through the contributions of these nonfaculty employees and others, such as students hired to work on a course, the System may have an ownership interest in the final work. The most straightforward process for dealing with this issue is to use a contract to specify the rights of all participants, including the instructor. This contract can be based on the templates developed by the UT System's office of General Counsel (<http://www.utsystem.edu/ogc/IntellectualProperty/edmatrls.htm>) and modified as needed to best reflect the intentions of all of the parties to the development of the course. However, where in the spectrum of TEL/DE enhancement is such a contract needed? That is a complex subject that may require case-by-case analysis, and discussion perhaps in the form of an MOU (memorandum of understanding).

Recommendation 7.2.6: To prevent misunderstandings about ownership, the Provost should develop guidelines on when a contract should be executed for a course that will be significantly enhanced with technology by entities other than the instructor or intended for delivery through something other than traditional instruction by the faculty member.

7.3 Articulation Agreements

The possibility that students may be taking courses from campuses across the globe raises questions about the need to assess potentially thousands of courses from hundreds of schools available through DE. UT-Austin will need to establish a process for determining whether such courses are acceptable for degree credit if they fall outside of predefined articulation agreements. Additionally, the effect of DE courses offered by UT-Austin on current articulation agreements also needs study and clarification.

Recommendation 7.3.7: The Provost, in consultation with the Deans, should propose a process for handling cases of for-credit DE courses falling outside current articulation agreements. The transfer of credit will be assumed to be routine at the undergraduate level.

7.4 Residency and Concurrent Enrollment

The University has residency requirements that apply to students pursuing either an undergraduate or doctoral degree. Students pursuing a Master's level degree have no residency requirement.

The Committee felt that the current requirements afford considerable latitude for a student who wishes to pursue a majority of his or her degree program via distance education. [6] Hence, we are recommending no change at this time, but this matter should be revisited in three to five years as DE develops on this campus.

As more students enroll by DE and services and courses are expanded to meet this demand, the capacity restriction on headcount enrollment will become less clear and perhaps even irrelevant, since these additional students will not necessarily be occupying seats in classrooms.

The term concurrent enrollment has specific meaning in relation to secondary students enrolling in college courses. With regard to UT-Austin students, it is normally discussed in relation to their taking courses at Austin

Community College (ACC), or through CEE, or studying in two different UT colleges.

A consistent university-wide policy on concurrent enrollment does not exist. As a result, practices regarding this issue vary from college to college. It is clear that the 12-hour course load for full-time students required in most colleges at UT-Austin is not so demanding that students cannot also concurrently enroll in additional courses for credit off campus or via distance education, through venues such as the UT TeleCampus, Austin Community College, or UT-Austin Extension. It is currently argued by some colleges that we should not encourage or allow our students to take such courses because of their lower quality, but these colleges are also concerned about a reduction in their semester credit hours. Students at UT-Austin circumvent concurrent enrollment policies by internally transferring from one college to another to take advantage of rule differences. We should adopt the viewpoint that the student will make choices based on convenience and what is best for them. This is rapidly becoming the prevailing view of most universities. Hence, concurrent enrollment policies should reflect this reality and should be applied and integrated consistently across all colleges at UT-Austin. Also, federal guidelines for financial aid will develop a definition of full-time enrollment that permits attendance at multiple campuses, thus recognizing the impact of distance education, and UT-Austin will need to adhere to that definition.

Under current university practice, transfer credit for courses that correspond to UT-Austin catalog courses is routinely given. This would apply to any recognized community college, a university, or to UT TeleCampus. What is at issue are local rules that departments wish to apply, for example, that certain courses in a major must be taken at UT-Austin to ensure that prerequisite courses cover appropriate content. There is a clear reason for capstone and many other upper division required courses, but it is less clear for sophomore-level courses, such as organic chemistry. And if a peer university such as Harvard University offers that chemistry course on-line, it is hard to use the institutional quality argument. Therefore, the allowable departmental major rules need to be identified while developing general concurrent enrollment policies.

Recommendation 7.4.8: The Provost should develop working definitions of residency and concurrent enrollment in the changing DE context. From those definitions, new policies regarding residency requirements and concurrent enrollment can evolve.

7.5 Record-Keeping and Categorization

For purposes of planning and policy decisions regarding TEL/DE, a University course inventory should be developed to reflect the application of technology on delivery of education both to resident and nonresident students. To effect this, the inventory should include the following elements for each course offered through UT-Austin: Course number; semester; instructor; mode of instruction (see below); number of sites; number, identity (name and/or social security number) and site location of students who take the course at a distance; number and identity of resident students enrolled in the course; and the ability by category of students to assess grades and other records such as course/instructor surveys for purposes of evaluation. [\[7\]](#)

Recommendation 7.5.9: A detailed course inventory for credit, noncredit, degree, and nondegree courses should be maintained and be accessible to the public over the Web.

In keeping with the recommendation of the Yudof/Sullivan report, the Registrar could develop an internal identifier for DE courses. This identifier would facilitate the monitoring of student enrollment in DE courses, evaluation of adherence to residency requirements, or compliance with concurrent enrollment policies, and would also enable departments or the University to charge special fees to cover costs of technology, to provide reimbursement to a student's home institution if necessary and to support faculty development of courses.

Although the committee has developed its own definitions of TEL and DE for this report, various groups, including the Higher Education Coordinating Board, have used other definitions. An inventory of courses that meet THECB's definition for DE, viz., "Instruction in which the majority of the instruction occurs when the student and instructor are not in the same physical setting. Instruction may be synchronous or asynchronous, delivered to any single or multiple locations(s): (A) other than the 'main campus' or a senior institution (or on campus), where the primary office of the chief executive officer of the campus is located; (B) outside the boundaries of the taxing district of a community/junior college district; or (C) via instructional telecommunications to any other distance location," is provided in Appendix G.

Recommendation 7.5.10: The Provost should be responsible for producing course inventories that respond to the various definitions of DE adopted by agencies with whom UT-Austin has a reporting relationship.

With respect to mode of instruction, it is important to categorize all courses with regard to the type(s) of technology involved, regardless of whether they fit the THECB's formal definition of DE. Such information will assist the administration in tracking how and where technology is being used for instructional purposes: it will provide a measure of the current impact that technology has on the educational enterprise here and will serve as a basis for making recommendations regarding institutional policies governing TEL in general and DE in particular. Moreover, if this information is available to students, categorization will facilitate selecting courses as a function of the extent to which technology is involved. Finally, as use of the Web becomes more an essential part of interacting among faculty, staff, and students, information about any particular course, its availability as a TEL/DE offering, its syllabus, and other pertinent information should be available as an individual Web page that can be viewed as part of the registration and instructional activities.

Recommendation 7.5.11: Courses should be categorized according to a scheme developed by the Provost's office that addresses the level of technology used in the courses. The technology category for each course should be listed in the Course Schedule and in other electronic and print publications that list UT-Austin course offerings [8].

Recommendation 7.5.12: Each course offered through UT should have an individual Web page that includes the basic course schedule information, including its use of technology or designation as distance education, availability of library resources, as well as links to the syllabus and other pertinent information. These pages should be produced with the least burden to individual faculty, using information technology to integrate existing information wherever possible.

7.6 Assessment, Evaluation and Testing

Assessment in TEL/DE provides an opportunity to focus attention on identifying appropriate methods to facilitate student learning. In the hierarchy of learning strategies, classroom lecturing is the lowest in terms of cognitive gain. Enhanced learning using other methodologies such as multimedia, demonstrations, discussion groups, and learning by doing (computer interaction) can increase retention and assimilation of knowledge, as shown in both industrial and academic training studies. Technology allows for mass customization, or the ability to provide educational material and learning experiences crafted for the needs of individual learners in an effective and efficient manner. Professionals from the CIT, such as instructional designers, in collaboration with personnel from the MEC and the CTE, could work with faculty to use technology and its potential for immediate feedback as a way to increase retention as well as personalize the learning process.

Recommendation 7.6.13: The Provost should direct MEC, CTE and CIT to work jointly with the faculty to pilot test real-time, Web-based instruments for evaluating student learning in a TEL/DE course.

On an institutional basis, the CIT, MEC and CTE could collaborate on an assessment project to build a body of knowledge to guide the continued development of courses and curricula with TEL/DE. Some questions that might be addressed in such a large-scale assessment project are:

1. What balance of synchronous/asynchronous content delivery is best for what kinds of learners?
2. What components of a particular TEL/DE format most enhance the experience for both students and professors?
3. What components of a particular TEL/DE format most detract from the experience for both students and professors?
4. What of value did the students miss most in a TEL/DE course?
5. What of value did the students gain most in a TEL/DE course?

Recommendation 7.6.14: The CIT, CTE and MEC should accumulate and make available assessment data about TEL/DE learning and develop an online information resource on TEL/DE.

As a course incorporates more and more technology or as it is offered to students who may never have a face-to-face session with the instructor or with other students, the appropriateness of the current student course evaluation form becomes a concern. Faculty should not be discouraged from using TEL out of concern that developing comfort with the technology will adversely affect their performance as recorded through student course evaluations.

Recommendation 7.6.15: The Provost should direct the development, with faculty participation, of course evaluation instruments that reflect the use of technology in instruction.

7.7 Inter-Institutional Collaboration and Course Delivery Options

Many universities are involved in efforts to distribute courses either directly or through mediation services such as those provided by the UT TeleCampus, the Western Governor's University, and others. In some cases, institutions (higher education and industry) have agreed to collaborate on the production of courses or on agreements to distribute courses among those participating institutions. Determining whether to participate in such a venture, making choices among various mediation units, and establishing relationships with particular partners is a significant issue for UT-Austin.

The UT System developed the TeleCampus as a technical infrastructure and channel through which the System's component institutions may deliver DE. UT-Austin is currently developing courses to be delivered through this channel. In general, choosing to deliver a course through the UT TeleCampus or any other such DE infrastructure entity, public or private, should be subject to the same decision criteria as that applied to any UT-Austin TEL/DE offering. These criteria, explained earlier in this report, include matters of quality, technology, audience, admissions, faculty capacity, financial cost/benefit and demand on infrastructure. As with all DE courses, the Provost will have final approval. While, in most cases, meeting the needs of the residential students at UT-Austin should take precedence over other instructional activities, the Provost may decide to encourage the faculty to develop DE courses for delivery through a particular entity to satisfy institutional goals or external considerations. Private providers are already contacting the institution seeking contracts to deliver UT-Austin courses over their proprietary delivery systems. If all concerns about retention of intellectual property, preservation of academic quality, and financial benefit are addressed, then the decision may rest on the determination of whether UT-Austin's instructional and technology infrastructure can expand to carry distance courses or whether delivery over commercial networks is a viable and desirable alternative.

Recommendation 7.7.16: The Provost should develop a process to review and coordinate all requests for faculty to develop DE courses for delivery through any external DE infrastructure. This process may be analogous to, or the same as, the process used to review all proposals for DE courses at UT-Austin. The review criteria should include those applied to all DE courses, as well as consideration of campus faculty-student ratios and specific external considerations as they might arise.

External providers, either another higher education institution or a private commercial concern, are increasingly seeking to make content available to UT-Austin for use in its academic program. For example, UT-Austin could contract to replace a course offering with one delivered via the Web or other technology directly from another institution or a company offering courses developed by themselves or by educational institutions. The value of the UT imprint is highest with upper-division and graduate courses. Therefore, the most obvious level at which this process might add value would be with lower-division courses, although it could be used in other areas as well.

Recommendation 7.7.17: The Provost, in consultation with appropriate course and curriculum committees, should review and approve the acquisition and use of any course developed at another institution, public or private, as a surrogate for an on-campus UT-Austin course offering. In approving such arrangements, preference should be given to lower-division courses.

Another matter to be addressed through policy is whether UT-Austin might view the delivery of a telecourse through a non-University entity, either public or private, as competing with the delivery of the course through the faculty member's campus. This question may reveal differences in how UT-Austin views teaching, depending on the venue in which it is done. At this time, it is our understanding that faculty may not be employed by two universities at the same time, but are free to contract with continuing education units at any institution to be paid for the development and delivery of courses. The distinction, if it does exist, may need to be reexamined in light of the ability of a faculty member to use technology to deliver a course through multiple delivery channels, public and private, simultaneously.

In the future there will be many channels for UT-Austin faculty to consider for distribution or dissemination of on-line courses or course materials, channels that include UT-Austin as well as private entities. If there is potential financial remuneration associated with distribution of TEL materials, then faculty are obligated to report such possibilities, as is now done with research patents on the campus. In the latter case, there is a presumption that because the institution provides facilities for carrying out research projects, then the institution has a potential interest in a patent and its subsequent licensing. Likewise in the case of course materials, the institution may have an interest if it provided tangible (material) support for development of a product (such as funding of interns). On

the other hand, a faculty member can develop course materials without financial support, in which case he or she has total ownership, according to UT System policy. This latter case is equivalent to the textbook model used historically at all universities, where a textbook is presumed to have been developed without explicit institutional support.

If employment or consulting contracts (private sector or educational) are required in the development or offering of on-line courses by UT-Austin faculty, these relationships should be reported through existing mechanisms, such as the outside employment form and process currently used here.

Recommendation 7.7.18: The Provost should develop a process for approving courseware arrangements between private entities and faculty or staff, a process similar to that already in place at UT-Austin for reviewing consulting and potential conflict of interest situations. Faculty should be notified on a regular basis that they are expected to notify the Provost's office if they have developed substantive TEL course materials with the intent of making them commercially available.

7.8 Financial Aid

The most recent version of the Higher Education Reauthorization Act specifies that students taking distance education courses are eligible for federal financial aid. While the federal government defined student eligibility, each educational institution must determine whether students taking DE courses from their own or other institutions will qualify for institutional aid or tuition waivers.

Recommendation 7.8.19: While financial aid may be under the purview of the Vice President of Student Services, policies related to its implementation in DE situations should be made in consultation with the Provost and Vice President for Graduate Studies.

Conclusion

This report contains a great many recommendations. The large number of topics and associated recommendations reflect the complexities arising from the transformational aspects of technology as it is increasingly used in higher education. Two watershed events are often credited with transfiguring American higher education. The first of these was the Morrill Act, first passed in 1862, establishing the basis for land grant institutions, assuring that the new states in the American West would have their own institutions of higher education. In 1890, the provisions of the Act were extended to include the African-American schools in the South that were created under the separate-but-equal doctrine. The second watershed event was the passage of the Servicemen's Readjustment Act, better known as the GI Bill, in 1944. On a local level, that legislation caused an enrollment jump at UT-Austin from 7,027 students in the 1945-46 academic year to 17,260 students in 1946-47.

The ubiquity of networked, digital computing technologies in the 1990s holds promise as the third watershed event that will once again transfigure American higher education. Information technology linked through global networks is already transforming the ways in which people communicate, create, access and disseminate information, and behave as consumers. All of these behaviors are represented to some degree in the process of higher education. Institutions like UT-Austin can elect to take an active role in influencing the impact of this watershed event or choose to leave its future to be determined by external pressures. In this report, the committee has opted for the active path, in the belief that TEL/DE provides new opportunities to enhance the student's learning experience and to extend learning opportunities to others. Responding to these opportunities in a deliberate and reasoned manner is consistent with the University's mission "to transform lives for the benefit of society."

Many of the recommendations focus on actions to be taken or overseen by the Provost. This assignment of responsibility was not determined for reasons of committee expediency, but rather reflects our belief that the locus of leadership on TEL/DE should reside within the purview of the chief academic officer at UT-Austin. This assignment should not be seen as infringing on the role of faculty, but instead as illuminating the need for executive leadership, guidance, and facilitation to support faculty and institutional initiatives in TEL/DE at UT-Austin.

We believe that the recommendations contained in this report will serve as the basis for developing the requisite policies. In formulating them, we recognize that using technology in the teaching effort has a cost in human resources, capital investment, and ongoing operating expenditures. We feel that this investment and expense will

be justified in increased productivity, improved effectiveness of teaching and learning, and increased overall efficiencies through a coordinated and supported approach to the use of technology in the classroom. A parallel for the potential impact of new applications of technology in the classroom is found in the introduction of desktop computers nearly 20 years ago: individuals who formerly relied on secretaries for typing memos and reports began doing them on their own computers, and staff were gradually assigned different duties as a consequence. This "productivity creep" was not recognized through staff savings, but instead through additional work that could be accomplished and through faster production of work. We feel that the use of technology in the teaching and learning enterprise will generate similar enhanced productivity as the technology becomes more widely used in the classroom.

Teaching and learning effectiveness from the increased use of technology is still being evaluated and measured at universities and educational institutions around the world. At this time, the benefits are primarily qualitative, with some findings pointing to better retention of material, ability to use more variety of materials in the classroom, and, more recently, the recognition that technology-enhanced learning can assist students and instructors with disabilities.

Efficiency in the commitment to a particular technology must be made through coordinated, but not controlled, implementation. It is not useful to UT-Austin to have individual faculty members or departments making independent decisions regarding technology when administrative support for these decisions resides not only locally in many of the colleges but also centrally. A centralized but flexible and open approach to technology evaluation and implementation and ongoing support can result in efficiencies, although highly standardized approaches (such as that found in the UT TeleCampus) may prove to be too restrictive.

Finally, it is the committee's opinion that "technology enhanced learning" needs to be distinguished from "technology enhanced teaching." Technologies must be evaluated and implemented on the basis of appropriateness for the learning objectives, and the true cost/benefits of the use of technology in the classroom will be found in measuring the results of these efforts.

Appendix A

Glossary Of Abbreviations

ACC	Austin Community College
ACITS	Academic Computing and Instructional Technology Services
ACS	Administrative Computing Services
CEE	Continuing and Extended Education
CDT	Content development team
CIT	Center for Instructional Technologies
CTE	Center for Teaching Effectiveness
DE	Distance education
MEC	Measurement and Evaluation Center
TEL	Technology enhanced learning
TELC	Technology Enhanced Learning Committee
WLC	Workload credit

Appendix B

Categories of Courses

Category A: Course involves no use of TEL options.

Category B: Course involves e-mail contact with students, but uses no other technology-based options, such as a course Web page.

Category C: Course has a Web page containing information, such as the course syllabus, but no Web materials used to supplement lectures .[\[9\]](#)

Category D: Course Web page has supplementary lecture material, but for less than one-third of course lectures.

Category E: Course Web page has material to supplement more than one-third of course lectures.

Category F: Course has at least one lecture, but less than one-third of lectures, entirely replaced by technology.

Category G: Course has more than one-third, but not all, of lectures replaced by technology-based options.

Category H: The entire course is delivered using technology-based options.

Appendix C

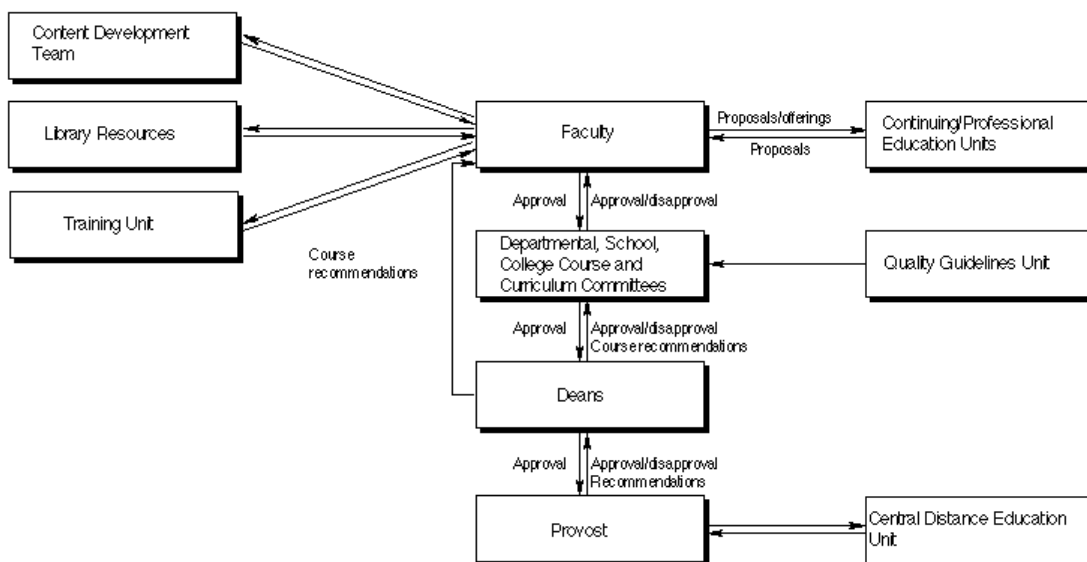
Accessibility Guidelines

Materials for distance-learning and technology-enhanced courses must be designed in accordance with University policies regarding accessibility of electronic information to people with disabilities. Course developers may consult with CIT and TeamWeb staff for assistance in addressing accessibility concerns. Course developers are to include with all course proposals and descriptions submitted for approval assurances that accessibility concerns have been adequately addressed. Evidence might consist, for example, of a completed accessibility checklist based on the "Web Content Accessibility Guidelines," or a copy of an automated accessibility check, such as those performed by BOBBY at <http://www.cast.org/bobby/>.

Appendix D

Flowchart for TEL/DE Course Development/Approval

[Flowchart in .pdf format](#)



Appendix E

Developing and Evaluating a TEL/DE Course

A possible content production process to develop a course at category 5 or higher would include the following steps:

1. The faculty member participates in appropriate training or consultation.
2. The faculty member initially evaluates the existing course content for electronic delivery and creates an inventory of existing materials, including syllabus, lecture notes, handouts, tests, videos, and overheads.
3. The faculty member should then meet with a content development team (CDT). The CDT provides expertise in instructional design and media production while faculty members provide content expertise. The faculty member and CDT reach an agreement regarding the possible, desired, and recommended features and content to include in the course.
4. Once the features and content of the course have been determined, the faculty member and CDT work cooperatively to create a detailed design for the course. The CDT creates a production timeline and cost/effort estimate to determine whether the proposed design is reasonable given time and budget constraints.
5. The CDT, led by the instructional designer, should then develop the detailed design for the course with periodic input and review by the faculty member.
6. After the detailed design is complete and approved, content should be developed, digitized, and incorporated into the course, and then tested in a pilot setting.
7. Quality assurance and assessment can be a component of the pilot testing.

Appendix F

Intellectual Property Resources

Issue	URL	Comments
Fair Use	http://www.utsystem.edu/ogc/intellectualproperty/	To assist faculty with decision-making regarding application of "fair use" of copyrighted materials, UT System has outlined "Rules of Thumb" on several topics to use as a resource. When faculty members have used those rules or the "Four Factor Fair Use Test" in DE courses, they may be reasonably assured that UT will cover their liability should a dispute arise. Therefore, a thorough reading, understanding, and application of these "Rules of Thumb" and the "Four Factor Fair Use Test" by anyone conducting a DE course is highly recommended.
	http://www.utsystem.edu/ogc/IntellectualProperty/copypol2.htm	Fair Use Information, Guidelines, and Rules of Thumb.
	http://www.utsystem.edu/ogc/IntellectualProperty/copypol2.htm#distance	Rules of Thumb specifically for DE.
Content Ownership	http://www.utsystem.edu/ogc/intellectualproperty/telecrs.htm	UT System supports a policy that "allocates the ownership of copyright in scholarly works created by faculty members in their fields of expertise to the faculty member." This extends to digital materials. Exceptions to this policy include when a faculty member or employee has been hired specifically for the purpose of producing a work, in

		which case the work belongs to the employer. Additionally, ownership and royalties sharing become more complicated when a scholarly work, particularly a digital work, then is commercialized for profit.
	http://www.utsystem.edu/ogc/intellectualproperty/whowns.htm	Basic introduction to ownership questions.
	http://www.lib.utsystem.edu/copyright	Copyright tutorial.
	http://www.utsystem.edu/ogc/intellectualproperty/cprtindx.htm	Copyright Crash Course

Permissions	http://www.utsystem.edu/ogc/intellectualproperty/permisn.htm	Gaining permission to use a copyrighted work in DE can be difficult and time-consuming. This URL provides a very helpful, step-by-step process for attempting to gain permission. Copyright clearance and permission services are also provided by copying businesses such as Kinko's.
Licensing	http://www.utsystem.edu/ogc/intellectualproperty/licsrcs.htm	Addresses of digital works and the rights of students to browse, read, or borrow them.
Commercialization, Royalties and Contracts	http://www.utsystem.edu/ogc/intellectualproperty/edmatrls.htm	When a scholarly work produced by a faculty member is sold for commercial use, the University may have a claim to royalties. A variety of forms, agreements, and contracts are provided to assist faculty and the University in reaching a fair agreement on commercial uses of intellectual property.

	http://www.utsystem.edu/ogc/intellectualproperty/copymgt.htm http://www.utsystem.edu/ogc/intellectualproperty/whowns.htm	Provide more information on allocation of benefits in the commercialization of a scholarly work.
General	http://www.utsystem.edu/ogc/intellectualproperty/present.htm#dist	Addresses DE, multimedia, and other current issues in intellectual property.
	http://www.utsystem.edu/ogc/intellectualproperty/telecrs.htm	FAQ's on intellectual property and telecourse delivery

Appendix G

Course Inventory

Course	Sending/Receiving Ratio	Technology	Receiving Institution
EDC 384P	1/1	WWW	
LIS 382L.10	1/1	Two-way video	UTEP
LIS 387.1	1/1	Two-way video	UTEP
LIS 382L.10	1/1	Two-way video	UTSA
LIS 387.1	1/1	Two-way video	UTSA
MNS 191	1/1	Two-way video	UT-Austin
MNS 481C	1/1	Two-way video	UT-Austin
PHR 375E	1/1	Two-way video	UTHSC-SA
PHR 375	1/1	Two-way video	UTHSC-SA
PHR 253D	1/1	Two-way video	UTHSC-SA
PHR 390S	1/1	Two-way video	UTHSC-SA
PHR 394R	1/1	Two-way video	UTHSC-SA
PHR 394F	1/1	Two-way video	UTHSC-SA
PHR 396F	1/1	Two-way video	UTHSC-SA
PHR 392S	1/1	Two-way video	UTHSC-SA
PHR 275F	1/1	Two-way video	UTHSC-SA
PHR 375G	1/1	Two-way video	UTHSC-SA
PHR 296P	1/1	Two-way video	UTHSC-SA
PHR 338	1/1	Videotape	UTHSC-SA
STC 380	1/1	Two-way video	Ft. Belvoir, VA
STC 382	1/1	Two-way video	Ft. Belvoir, VA
STC 383	1/1	Two-way video	Ft. Belvoir, VA
STC 385	1/1	Two-way video	Ft. Belvoir, VA
STC 389	1/1	Two-way video	Ft. Belvoir, VA

Appendix H

Degrees Available through Distance Education

Degree	Option	Discipline	Locales	Modes of Delivery
MS	NA	Chem. Engr.	Three Rivers, TX	Video conference
MS	NA	Pet. Engr.	World-wide	Video
Pharm. D.	NA	Pharmacy	UTHSC-San Antonio	People
M.A. (Information Resources and Mgt.)	II	Lib. and Info. Sci.	El Paso, San Antonio	People
M.S. (Sci. and Tech. Commercialization)	III	IC2		People
MBA	III	Business	Mexico City	People, Web
MBA	III	Business	Dallas, TX (TI)	People, Web

[1] A glossary of abbreviations is contained in Appendix A.

[2] Relative priority of importance for action as determined by vote of the members of TELC.

[3] Memo to President Robert M. Berdahl, Policy Recommendations concerning distance learning: April 10, 1997.

[4] The triggering event for a requirement that would prompt the review/approval process could be when, for example, a course meets the criteria of Category F or higher in Appendix B.

[5] Report to Information Technology Coordinating Council, A Plan for the Campus Wide Coordination and Implementation of Standardized Multimedia Technology in University Classrooms; Multimedia Enhancement Task Force, December, 1998; <http://www.utexas.edu/computer/mic/>

[6] Undergraduate residency requires that 24 of the last 30 credit hours be taken on this campus. The doctoral residence requirement is one year.

[7] Appendices G and H contain a listing of DE courses and degrees, respectively, currently offered through UT-Austin.

[8] The categorization provided in Appendix D is a suggested measure of course technology.

[9] Supplementary lecture material includes any digital material that represents course content. For example, this could include audio files, digital images or animations shown in class, questions answered by professor via a course chat room or e-mail, links to Web sites that contain information discussed in lecture, lecture notes, an original archive of materials/documents referred to in lectures, and exercises designed to test understanding of course content.

03 July 2000

[Executive Vice President & Provost at UT Austin](#)

Send comments to: evpp@www.utexas.edu