Managing

Necessary Change

in UNCW’s

Knowledge Ecology

Chancellor’s Steering Committee on Information Technologies
October, 1998
Recommendation 1.1: UNCW should create and fill a new position, Vice Chancellor for Information Technology, to develop and facilitate technology-driven change management processes for the university and oversee the provision of IT services for the campus.

The new vice chancellor would have several major responsibilities:

1. Provide management oversight for a new organization, Information Technology Services (ITS), and its manager, the Executive Director for Information Technology Services (as described in the next recommendation) to consolidate and provide operational management for all centrally coordinated core information technology resources and production services.

2. Establish, oversee and coordinate with other divisions the appropriate change management processes for technology-driven change requirements affecting the institution as a whole.

3. Serve as a coordination point for addressing policy issues related to the impact of information technology on the mission-critical activities of the university. Initial priorities for the Vice Chancellor might include developing processes for creating coherent instructional technology support through the use of the LJNCW intranet and appropriate technology tools and services.

For example, the Vice Chancellor for Information Technology should work with a small group designated by the Provost and Chancellor (possibly including the
Executive Director for Information Technology Services, the Director of the Center for Teaching Excellence, the Director of the Technology College, the Director of Extended Academic Programs, and the Vice Chancellor for Public Service and Extended Education) to develop an institution-wide strategy for supporting instructional technology. The strategy should address:

- the desirability of supporting a common online interface (look and feel) for students,
- the need for easy-to-use standardized development tools that lead to a scalable, sustainable, and supportable instructional presence on the web,
- options for providing centralized and decentralized support for the use of technology in the instructional process. (For related information, see the sections on Organizational Implementation Models Appendix E, and IT Staffing Requirements Summary, Appendix D.)

This is an example of the kind of inclusive process that the Vice Chancellor should organize and "manage" in order to ensure integrated, efficient, and effective services. Technologies and related development and support expertise should be viewed in an institution-wide context, not only across the academic departments but also across all service and administrative areas. Therefore, similar working groups should be formed to address online service requirements within and across other areas, especially those that provide student services.

Other policy issues will include working with the University's faculty and counsel to establish intellectual property guidelines for online resources developed by the faculty. (See the report of the CSIT Subcommittee on Guidelines on Policy Development.)
4. Create and facilitate change management processes to prioritize and fund the evolutionary development of UNCW technology initiatives and programs. Unlike the oversight of ITS, this does not involve the management of an organization. Rather, it is managing processes by which the institution can receive, review, prioritize, and align a substantial amount of annual incubation funding for the purpose of developing, acquiring, or contracting for innovative projects and services that are strategic to UNCW's goals and direction. These "incubation funds" should be recurring, but should not be used to support any particular project or innovation beyond a limited period of time on the assumption that the projects and any attendant IT services and applications must become self-sustaining. The establishment of an Executive Council for prioritizing the university's investment in its incubation funds is described in Recommendation 2.1. Some guidelines for this process include:

- Soliciting proposals for incubation projects from all areas of the institution
- Establishing the standards for submitting, receiving and reviewing incubation project proposals through the Executive Council
- Setting aside some predetermined percentage of the incubation fund for responding to spontaneous opportunities that provide innovative or strategic positioning for UNCW

5. Ensure that the core production services required to support the university's priorities and initiatives are incorporated into Information Technology Services, or other university departments as appropriate.

6. Represent the university's strategic technology interests as a standing member of the University Planning and Quality Council
Recommendation 1.2:

UNCW should appoint an Executive Director for Information Technology Services to provide operational management for the new service organization Information Technology Services (ITS). The Executive Director should report to the new Vice Chancellor for Information Technology, described above. The Executive Director position should not be filled until the Vice Chancellor for Information Technology is appointed. The ITS organization would consolidate the current groups providing central IT services - OTT, MIS, Telecommunications, part of the administrative applications group in the business office, and the management of the interactive video classrooms currently managed by the Division for Public Service and Extended Education.

Information Technology Services would:

1. Operate institution-wide infrastructure systems the physical data network and its connections to NCREN/Internet, the servers that provide intranet services on the network, the NCRENINCIH video network, and the telephone network.
2. Install and manage centrally supported applications that are broadly used across the institution - for example, email and the Information Associates applications that provide financial and student information services.
3. Provide "end-user" support functions, such as training, personal computing assistance, help-desk and consulting services for students, faculty and staff.
4. Oversee, maintain and support the use of technology-intensive instructional facilities such as classrooms and labs.

5. Coordinate with campus departments and service units to provide, manage and train more specialized staff to provide a level of expertise which would be difficult to maintain and support at a local level.

6. Develop and maintain written policies and procedures pertaining to technology infrastructure and systems.

It is believed that if the preceding recommendations are fully implemented, then the university will be in a position to:

- Bring order and focus where there is now fragmentation and confusion.
- Create an office responsible for coordinating and bringing institutional coherence to UNCW's distributed and central investments in information technology and its applications.
- Provide strong, service-oriented, operational management for core production IT services - those that can scale to a significant level of institution-wide use and, in fact, are used by large, often heterogeneous groups of UNCW employees and/or students.

These stable, core production services are at the heart of the UNCW intranet. They are the common scaffolding that will be used by all departments and divisions, academic and otherwise, to create and maintain their presence on the UNCW intranet. They provide leverage for departmental investments in IT resources and services. Naturally, they will change as technology continues its rapid advance. These advances and the institutional changes they enable must be understood in an institutional context that provides for "change management."
Any institutional strategic planning process today will immediately raise a host of IT related opportunities and issues. That is certainly true, for example, when planning programs to support the faculty in efforts to develop instructional methodologies and curricula that take advantage of online communication and resources. The presence of cabinet-level IT leadership at the institutional planning and budgeting table will help ensure that UNCW develops the institutional capacity required to invest wisely in IT for strategic purposes. On the other hand, any planning and budgeting process that focuses solely on IT can lead to unwise expenditures if it is not informed by the institution's strategic priorities. By placing IT leadership at the institutional planning table and vesting authority over the central IT organization in that officer, UNCW will create a crossroad where institutional priorities can intersect IT planning and spending to the benefit of the institution. Communication, cross fertilization, and institutional purpose can prosper in such an environment, and this is a critical expectation associated with the cabinet-level position recommended here.

In the case of intranet applications for which there is no single application "owner" such as e-mail, the Office of Information Technology Services should take the responsibility for selecting and managing the application - whether centrally or as a distributed system. In other cases, such as an institutional financial system or a set of web-based tools to support instruction, the central IT organization should not necessarily have responsibility for selecting the application, but should have a voice in the decision, along with representative clients of the system. However, even when the Vice Chancellor for Information Technology does not manage the department that has primary responsibility for the decision-making process, he/she should have the power to require compliance with the institutional IT architecture (standards) and support capability in order to
maintain the viability of the physical and support infrastructure. However, this power should be applied only on
limited technical grounds based upon established specifications.

**Principle 2. The Necessity for Change Management:** Change management is institutionalized by requiring
formal processes for selecting developing/customizing, and implementing mission-critical technology resources.
These processes should include input from both the central IT organization and a representative group of
stakeholders who will be using those resources and intranet applications.

The central IT leadership should be represented in institution-wide strategic planning and budgeting processes.
The senior information technology officer (in this case, the Vice Chancellor for Information Technology)
should have the power to authorize or reject the final selection of new or replacement intranet applications,
based on their compliance with the institution's IT architecture. Such control does not preclude unique or
specialized mission-critical applications for units that have been authorized to operate and support these
applications independently.

**Recommendation 2.1:**

Among the change management vehicles under the direction of the Vice Chancellor for Information
Technology should be an Executive Council for Information Technology Strategies. This Council, chaired
by the Vice Chancellor, should be convened regularly to ensure the participation of the other vice
chancellors, the faculty, and other mission-critical stakeholders in the process of prioritizing strategic
investments in information technology initiatives and the evolution of the UNCW intranet.
UNCW should separate experimentation with new technologies and related incubation projects from core production services. This means that LJNCW should create a process for managing the transition from incubation and production, to application and implementation. Institutional needs and the UNCW vision for the use of technology should drive this evolutionary process in which new Internet and intranet applications are identified for selective experimentation and incubation. The idea that the institutional vision should drive the adoption of new technologies is the key to managing change in the knowledge ecology.

Supporting the use of instructional technology presents special challenges. In the absence of institutional coordination, there are likely to be as many instructional technology "solutions" as there are academic departments or even instructors. Even the most technically astute instructors are not likely to judge new instructional technology opportunities by their implications for institutional affordability, scalability, and supportability. Moreover, technology leaders are more likely than most instructors to be aware of the latest technologies with instructional promise but are less likely to be good judges of the practical reality of that promise from an instructional or departmental perspective. These possible disconnects argue for a process that involves the central IT leadership, academic departments, and key faculty leaders in shaping an institutional approach to supporting the use of online resources and communication tools in instruction.

**Recommendation 2.2:**

The Provost should have responsibility for coordinating all credit-bearing courses and academic programs, however they are delivered. When technology is used to support credit-bearing distance education, the emphasis should be on offering degree programs to reach and appeal to off-campus audiences.
while not precluding contract programs or collaborative efforts with other institutions. The Provost should develop a plan for actively encouraging deans to offer online degree or certificate programs as appropriate to UNCW's goals.

It is important that UNCW link the traditional academic program to new credit-bearing offerings that significantly relax the traditional requirement for face-to-face classroom contact between student and instructor. The coordination of these efforts and their articulation with the regular academic program will become even more important as the UNC General Administration makes new funding for credit-bearing extended education available to UNCW. The Provost is the officer responsible for academic programs, and this responsibility should include programs based on courses delivered with little or no face-to-face classroom contact in order to serve non-traditional students for whom convenience of educational access is a major issue - "distance" programs.

UNCW, like any other institution, will find that some members of the faculty will raise issues of academic quality or integrity when credit-bearing courses are delivered as part of distance programs. The quality or integrity of a course or program, however, should be determined by its outcomes - student learning. Research solidly indicates that students learn as much in distance programs as in traditional programs. Moreover, instructors have always been the final judges of learning outcomes except in courses with a standardized examination or in programs aimed at an external certification process. There is no inclination at UNCW to deviate from this traditional practice of vesting academic integrity in one's colleagues, and so there is no rationale for treating distance courses and programs as anything but "business as usual" provided that the same faculties and deans...
who are already vested with the responsibility for judging course and program outcomes are also responsible for distance courses and programs. UNCW has a process for admitting new courses into the curriculum and approving new degree programs, but there is no reason to apply this process to existing courses or programs when only the delivery method is changed while the responsibility for judging learning outcomes remains unchanged.

Given that UNCW vests authority for credit-bearing distance education programs with the Provost, then two major issues must be addressed:

- UNCW will have to overcome natural academic inertia to support enough distance offerings to meet its ambitious goals for serving off-campus students - enrolling approximately 2500 additional off-campus students over the next few years. Such inertia is not unique to UNCW. It is widely reported by institutions that vest authority for distance programs with the chief academic officer.

- UNCW will have to create a mechanism for resolving issues relating to admissions, registration, marketing, and other processes that cross institutional boundaries and that, whether ultimately decided by prevailing policies or not, appear to most participating offices to be new and outside the scope of current practices.

**Recommendation 2.3:**

The Provost and the deans should encourage and support the incorporation of online resources and collaboration tools into instruction as appropriate to subject matter and instructional goals. When faculty members are considered for rewards, promotion, and tenure, their work in adopting instructional technologies should be reviewed in the context of institutional initiatives and priorities, as well as the context of contributions to education in the discipline or profession.
Consideration should be given to adding an evaluation item to the review of deans and department chairs focusing on removing barriers to technology applications and providing rewards and recognition. Faculty who devote energies to the professional application of learning technologies in their instruction should be rewarded. Faculty evaluations should take into account and appropriately recognize the faculty members use of technology in teaching, research, and scholarship. To ensure a supportive environment for such efforts, UNCW must correct the current critical shortage of support staff available to service equipment and to aid faculty in obtaining technological skills. These and additional recommendations worthy of consideration can be reviewed in the report of the CSIT Subcommittee on Faculty Support and Rewards.

**Recommendation 2.4:**

An assistant or associate provost position should be created to oversee academic program development, especially that enabled by information technology. This officer should serve as the head of Extended Academic Programs, oversee the Technology College, the Center for Teaching Excellence, and other inter-curricular programs and services as deemed appropriate by the Provost. If these functions are to be assigned to an existing vice-chancellor, then coordinating support for that office will be necessary.
Appointments to the permanent, full-time director positions of the Technology College and the Center for Teaching Excellence should be made after the appointment of the assistant or associate provost for academic program development.

**Recommendation 2.5:**

The Chancellor should charge the Division for Public Service and Extended Education with coordinating marketing services and providing appropriate administrative services required by academic programs to ensure that audiences beyond the on-campus student body are reached. This should include placing those services on a sound financial foundation, whether they are located in the Division, the Provost's Office, Student Affairs, or elsewhere.

The Division for Public Service and Extended Education has been the visible point of contact for resolving issues related to marketing and certain aspects of administrative coordination, and has been assisted by the Provost's Office which has responsibility for enrollment management. UNCW should avoid a duplication of effort in this arena, while ensuring that it can market and support the credit-bearing distance education programs that it sees as an integral part of its future.

Over time, courses should be differentiated less by delivery methodology and more by audiences they target and the differentiated marketing and service strategies required to reach those audiences. Indeed, UNCW should encourage the incorporation of online resources and collaboration tools into instruction, whether aimed at traditional or non-traditional students. Ultimately, UNCW may consider a "Web-centric" access approach for all on-line offerings and include, among other things self-help guides and "virtual advisors."
All of the preceding recommendations for focusing, managing, and governing IT services and linking them to change processes, however, will amount to little unless UNCW sets its sights on online literacy for all employees and students.

**Principle 3. Online Literacy:**

*Literacy in the new medium of globally networked information and communication is a prerequisite for an informed and productive life in a democratic "learning society."*

The new literacy can be thought of as the expression of traditional forms of literacy in an online medium of inter-networks, especially the Internet. This literacy thus includes the ability to:

- Locate networked information resources, thereby exhibiting familiarity with the concept of organizing and locating information according to various organizational schemes - a form of "library literacy."
- Apply available software tools of analysis to networked information to create new meaning -active learning on the part of students, and scholarship on the part of faculty members.
- Present ideas and findings and their relationships to the work of others in the hyper linked environment of inter-networks that include the capacity for the oral and visual representation of ideas, as well as in text.
- Create and participate in networked learning communities with others using new collaborative communication tools. Examples of these tools include threaded asynchronous discussion groups and real-time, multiparty chat groups, both of which may involve audio and video as well as the typed word.
**Recommendation 3.1:**

Formalize the Technology College with continuing operating funds and a full-time funded director's position to provide continuing leadership. Consider strengthening the program to afford students an opportunity to earn technology concentrations in the interdisciplinary context of their studies in other disciplines and professions.

By creating the Technology College, UNCW took a first step to embrace the new literacy concept and establish a vehicle for its practice among both students and instructors. The Technology College can give UNCW a leadership position in online literacy, as well as a leverage point for future institutional progress. It also can give UNCW a source of skilled student employees who can help support the institutional intranet.

As a student-centered technology initiative, the Technology College differentiates UNCW in a positive light to students, their parents, and their potential employers. It also adds value to UNCW's traditional baccalaureate programs. The Technology College can serve schools and departments by showcasing and marketing those programs that particularly emphasize the use of technology in their delivery or content. It fits well with UNCW's stated intention to develop degree programs that can be completed wholly or in part without setting foot in a traditional classroom. Most, if not all courses developed in this "distance" context should qualify as listings of the Technology College, thereby affording non-traditional students an added-value opportunity to earn a certificate from the Technology
College - a unique marketing edge for LTNCW Further, LTNCW should continue to explore offering a minor in information technology within an academic specialization, coordinating a portion of the requirements with the Technology College certificate.

**Recommendation 3.2:**

*Leverage the Technology College as a center for new academic courses and programs planned and coordinated with the Deans and academic departments.*

In this capacity, the Technology College could also be used to pilot and coordinate institutional academic initiatives arising in the departments, such as a coordinated pilot program for student laptop computing in a particular professional school. Operating as a focal point for student immersion in technology usage required as a part of normal academic expectations, the Technology College can be another locus of innovation for technology-enhanced academic programs. Once faculty have developed their skills, with possible assistance from CTE, the Technology College could offer a ready environment for applying these skills to course delivery. Similarly, the Technology College could work in tandem with the Vice Chancellor for Information Technology to imbed previously incubated projects.

Specific suggestions for implementing program strategies within the Technology College include the following:

1. Hire a full time Project Manager to begin work on Technology College development during the transition to a more permanent structure.

2. Develop academic program options (in addition to individual courses) for students.
3. Develop and implement new requirements for student participation based on more programmatic courses and more complex technology requirements.

4. Develop a 3 credit hour course as a core requirement for entry into a Technology College academic program (as opposed to individual courses).

5. Provide a 1 credit hour option for students taking Technology College courses, but not entire programs.

6. Enhance the service learning options for Technology College courses.

7. Expand the service component of Technology College required courses.

8. Develop and coordinate the means for students to perform some of their service work with community agencies in conjunction with Division for Public Service and Extended Education programs.

9. Develop a cross-disciplinary capstone course that combines the social, economic and personal implications of using technology with the instructional application of technology. This course could also include a significant service component.

10. Use the Technology College to pilot student laptop initiatives.

11. Provide training to students participating in Technology College courses.

12. Develop a corps of paid student technology assistants to work on incubation projects, course development projects with faculty, Public Service community projects, etc.

**Recommendation 3.3:**

**Market the Technology College as a special opportunity of the on-campus UNCW baccalaureate experience.** As a special part of the Technology College, co-market the new online, distance courses developed this past summer or earlier to take advantage of traditional students’ apparent enthusiasm.
for taking a few courses in an online format in the interest of convenience. Research indicates that traditional, campus-based students account for approximately 70% of current enrollments in online courses.

Marketing courses offered through the Technology College should be approached utilizing a wide array of strategies. In addition to listing them in the traditional schedules, a comprehensive listing of course offerings should be developed for widespread distribution. UNCW should begin immediately to pursue some alternative approaches as follows:

- Ensure that all full web-based courses are listed in the expanded SREC (Southern Regional Electronic Campus) inventory
- Establish a web-centric/web-central link which dynamically displays information about courses and instructors that is interactive and enticing
- Align UNCW with "leading edge" link sites which have significant hit rates related to available course offerings
- Pursue specialized offerings to address regional and state needs that are in high demand, such as teacher renewal.
- Place strategic ads in appropriate media.

**Recommendation 3.4:**

Invest in training in online literacy for both faculty and staff. This training should be done in the strategic context of specific, funded projects designed to enhance or transform some academic, student, or business service or process through the incorporation of Intern et/intranet technologies.
The recent course development projects designed to produce a number of online, distance courses serve as an example of the power of team approaches to build campus capacities. Many other approaches are also viable such as curriculum development projects selected to appeal to educational market niches consistent with UNCW's mission and strengths, or projects in the student services domain that are now under development. It is critical that UNCW identify and make known those market niches that will be targeted for accelerated attention over the next two years. (See the 8/20/98 preliminary responses to the survey of Academic Affairs Deans' market niche ideas for information technology in Appendix I). Prioritizing these investments and delivering the necessary training and development resources for strategic purposes should be coordinated by the Vice Chancellor for Information Technology and the Executive Committee for Information Technology Strategies in consultation with other stakeholders, such as the Center for Teaching Excellence.

If UNCW is to incorporate Internet technologies into its business practices and services aimed at the student body and the faculty, then most members of the staff will have to become literate in the use of the new technologies. Only then will UNCW be in a position to benefit from transformational improvements in effectiveness and efficiency enabled by a networked knowledge and service ecology.
**Recommendation 3.5:**

Make the Center for Teaching Excellence a locus for encouraging deans and their faculties to embrace new instructional methodologies that take advantage of online resources and collaboration tools, whether for classroom-based courses or for courses with little or no on site classroom component. Strengthen the CTE further, by hiring a full-time Director to oversee the project and develop its strengths as a learning mechanism for faculty. Also encourage the deans and their faculties to evaluate the learning efficacy of these new methodologies with the assistance of experts from the Watson School of Education, the Technology College, and elsewhere.

The Center for Teaching Excellence provides faculty with the means of continuous improvement of pedagogy by exploring effective instructional techniques and communicating them throughout the UNCW campus and the UNC system. The center maintains a peer-reviewed on line journal on teaching as well as faculty work stations for multimedia-assisted instruction in all classroom buildings and faculty work station for developing presentations.

The goals of the CTE are:

- To assist faculty in the broadest sense
- To explore different methodologies that utilize some technology (but not charged with course development)
- Provide resources to fully support the array of applications that a particular department is seeking.
- To serve as collaborators with technological leaders and instructors to meet in summer with faculty to exchange technological support using augmented staff and/or COLLEGIS support.
Principle 4. Universal Access:

All students and employees should have convenient access to a personal computer, with a basic collection of productivity software, that can be connected to the institution's network at any time and from almost any place they are working - offices, libraries, homes, residence halls, field locations, or other remote locations.

Online literacy in a broad institutional context requires that almost all members of the faculty, staff and student body have anytime, anywhere access to the UNCW intranet and the Internet beyond. Just as universal access to a telephone hand set and a telephone connection enables the greatest return on investment (ROI) in an institution's telephone network, universal access to a PC and a connection to the Internet are core requirements for increasing UNCW's return on its IT investments. Indeed, it is a requirement for any institution-wide effort to encourage new instructional methodologies, student support services, and other administrative services. No institution can afford to operate parallel systems that preserve the old way of doing business alongside the new, transformed way for any sustained period of time. The financial and human prices are too high.

This principle of universal access has important ramifications for LTNCW because, realistically, students will have to bear a significant share of the costs of their personal access to PCs - just as they now bear the costs of their personal access to assigned textbooks and other learning resources and tools. They accordingly will expect the networked PC to be a necessary component of their learning environment and, thus, of UNCW's instructional and student services environment. The plan should embrace the faculty and staff, as well as the student...
body, and accordingly ensure that the faculty and key student service personnel have access in advance of any expectation of universal student access. In the case of students, planning should focus on how to provide universal access, not on whether students should be required to buy a PC. Leases supported by student fees provide viable alternatives to a required-purchase plan.

**Recommendation 4.1:**

Under the leadership of the Vice Chancellor for Information Technology, UNCW should continue its universal access study and complete a phased plan for universal access. By 2000, the University of North Carolina at Wilmington will officially establish a Standard of Expectation for Universal Access for students, instructors, and members of the staff which guarantees anytime, anyplace personal access to the Internet and the UNCW intranet within a specified and feasible service area.

UNCW's plan should make provision for a network connection per "pillow" in all residence halls but should also take into account the fact that the large majority of on-campus students do not live in residence halls.

Considerations for providing universal access to students include the following:

1. Establish the goal and expectation of universal student computer access by the year 2000.
2. Establish this goal as a planning assumption and create a phased plan for its implementation.
3. Publicize this goal so that schools, departments and support units can begin integrating it into their own plans.
4. Monitor the student computer ownership data and alter the planning assumptions as necessary.
5. Examine student computer utilization patterns and requirements as a means for determining student computing lab needs and other support requirements.

6. Create guidelines for hardware and software and immediately disseminate this information for use by students.

7. Coordinate computer hardware standards for planned and existing professional school student computer initiatives.

8. Coordinate the UNCW Bookstore computer sales and support programs with the Universal Access Plan.

9. Coordinate student computing initiatives for professional schools through the Technology College.

10. Develop a strategic plan for student computing labs based on planning data regarding student ownership and usage patterns.

11. Evaluate the need for specialized and departmental labs.

12. Integrate the computer access/purchase/lease requirements into Technology College program requirements so that student financial aid criteria are met. Consider integrating Internet access through a service provider as well.

13. Establish arrangements with a vendor or vendors to provide cost effective purchase and/or lease opportunities for students, faculty and staff.

14. Insure that universal faculty computer access precedes the deadline for student computer access.

15. Develop and implement a plan for training faculty and students. Faculty training could be conducted by the Center for Teaching Excellence and student training conducted by the Technology College.

16. Establish initiatives through the Center for Teaching Excellence and the Technology College that encourage and support faculty exploration of ways to integrate student computer use into the curriculum.
17. Provide network and Internet access for all students in all dormitory rooms.

18. Provide students the necessary support and help in setting up their computers and network access in their dorm rooms.

19. Develop a plan for connecting classrooms to the network so that faculty and students have access to the network during classes.

20. Develop a plan with area community colleges and public schools to extend Universal Access

Recommendation 4.2: A student fee should be included as part of an overall funding plan to ensure continuing universal access at UNCW.

The universal access plan should be institutional, but individual departments and schools are beginning to address universal access in their own way. Therefore, UNCW is on the verge of creating pockets of network access in a way that will confuse students and exacerbate the problem of supporting a multitude of different PC configurations.

The subcommittee report recommending against a purchase requirement usefully articulates a set of universal-access issues. Whether the new planning effort concludes in a required-purchase recommendation or in some other mechanism, it should at a minimum address:

- the equity issue inherent when some students can afford to purchase their own computers and others cannot
- the economic issue of spiraling support costs in response to organic, unmanaged increases in the number of PCs connecting to UNCW's network, and
• the prospect of the individual productivity that will derive from basing UNCW's intranet on a limited set of standards to the benefit of all who use its resources and services.

The universal access recommendation implies continued growth in the use of IT services, which, in turn, implies increasing support costs or a degradation of support services in the absence of standardization. Universal access to Internet resources also implies that institutional standards should be consistent with the evolving Internet standards and protocols and the Internet's advances, such as those envisioned by the Internet2 Project and the federal Next Generation Internet initiative. These items argue that universal access should be based on institution-wide hardware and software standards.

**Principle 5. Standardization:**

An institution should contain overall IT support costs and improve the quality of its IT support services by centrally supporting selected specific configurations of personal computer hardware and productivity software to be replaced/updated on a technological life-cycle basis. Indeed, the central IT support organization should assume responsibility for the institution's IT standards and organize departmental technical leadership to assist in the development of those standards.
Recommendation 5.1:

The Vice Chancellor for Information Technology should form an IT Standards Council to be expertly staffed by the Executive Director for Information Technology Services, and comprised of key members of the IT support staffs from UNCW's various academic, service, and administrative offices. Except when special needs dictate otherwise, all UNCW IT purchases should conform to the architecture developed by the IT Standards Council, including the hardware and software standards that are part of the universal access plan.

Recommendation 5.2:

The leaders of Information Technology Services should form user groups and task forces to address current support issues and to gather advice and information that will be useful to the IT Standards Council as it advances UNCW's IT architecture.

Recommendation 5.3:

The Chancellor should call a moratorium on the implementation of school or college-specific universal access plans unless the parties involved are willing to adopt common institutionally approved standards. Indeed, a potentially attractive approach to universal access would be to start with the schools and colleges that are ready to deal with the complexities of universal access as a means to pilot a more comprehensive plan.

Standardization does not preclude the purchase and support of other technologies by departments, provided that such technologies do not increase the costs of central support for the shared network and its centrally supported baseline applications.
For example, UNCW should have a uniform wiring plan and a set of guidelines for adding computers to its institutional network. These guidelines should assert the authority of Information Technology Services to deny or turn off network connections that imperil the reliability and/or robustness of the mission-critical UNCW intranet.

**Principle 6. Life-Cycle Funding:**

*Funding for an institution's central IT support organization should be placed on a recurring life-cycle basis to the extent possible, and should not overly rely on one-time sources or depreciation schedules not attuned to the rapid pace of technological change. Standardization will not be possible unless investments in IT are made on a rational, life-cycle basis.*

Most of today's hardware configurations have at most a three-year life expectancy, and software is typically upgraded every 12-18 months. Reliance on one-time funding or unrealistic depreciation schedules seriously limits the ability to accommodate these life-cycles and meet other contingencies that accompany technological change. One-time institutional funding sources are typically very competitive, and an allocation to the central IT organization can introduce additional tension into what is too often already a strained relationship between central and departmental IT support advocates competing for scarce resources. McClure, Smith, and Sitko have described this tension of crisis proportion in a monograph that should be required reading among senior administrators.

Instructional technology again poses a special challenge. Too many institutions undertake special instructional technology initiatives - grants to the faculty, for example - without accounting for the recurring life-cycle resource implications of the success of such initiatives. Unlike administrative application systems and
the personnel supporting them, instructional technologies and attendant support personnel have only recently, if at all, been identified as a central budget responsibility and have generally not been included as a mission-critical component in budget planning exercises.

To avoid these pitfalls and to ensure that the other recommendations in this report have an opportunity to succeed, UNCW can implement strategic resource planning immediately.

**Recommendation 6.1:**

Immediately UNCW should begin immediately to implement a life-cycle replacement policy to provide students, faculty, and staff access to appropriate computing facilities. The university should also develop a life-cycle resource strategy for IT related services.

Appendix C and Appendix G provides a cost estimate for implementing the recommendations in this report.

All of the preceding principles and related recommendations, along with the paraphrase of Baton's quote offered in the introductory discussion, can be summed up in the following overarching principle.

**Principle 7. The Strategic Investment Principle:**

*An institution's total IT investment should serve institutionally strategic interests while being administered with enough flexibility and participatory processes to encourage and support innovation and entrepreneurship in the departments.*

What is optimal for UNCW may not be optimal for each department and individ-
ual member of the faculty and staff. Conversely, what is optimal for a department or individual may not be optimal for the institution. Whether centrally or locally funded and managed, the focus of and ease of access to IT support should be as accommodating and as proximate as possible to the individual. Yet central support should be prioritized and funded to serve strategic institutional goals.

Nothing is more strategic to UNCW than its instructional program, which also accounts for the heft of its expenses. Accordingly, instructional technology should remain a focal point as UNCW attempts to optimize its return on investment in IT. As a strategy for increasing institutional ROI, UNCW could focus its investments in instructional technology on the 10-20 introductory courses that no doubt account for over 40% of its enrollments. Another fruitful approach might be to focus on professional programs in which competitive forces are driving the need to change instructional delivery models to take advantage of new technologies. In any case, UNCW should take into account that open individual faculty grant programs designed to attract widespread individual faculty interest in instructional technology often result in episodic, ad hoc solutions that neither serve broader institutional interests nor scale to a sustainable level over time. The instructional technology support needs of pioneering instructors with a bent toward early-adopter experimentation are fundamentally different from the support needs of the faculty at large. Most instructors have little interest in suffering the pain associated with the bleeding edge of alpha or beta IT instructional services.
Recommendation 7.1:

UNCW should continue to invest in the programmatic development of web-based intranet applications.

Among the possible outcomes to pursue are the following:

- Enhance selected, existing campus-based, off-site, or video-based courses with online web-based resources and collaboration components, such as asynchronous, threaded discussion forums, course content and media databases, and resource library databases.

- Develop distance programs to be delivered entirely online. Develop an institutionally coherent web presence to market UNCW and integrate its offerings.

- Continue the current effort to enhance student services with online components such as the development of:
  - community-building discussion forums for orientation and for special interest groups
  - online workshops and special interest resource databases.

- Connect the community, LTNCW alumni, and the public to the institution through the development of online discussion forums and resource databases.

- Develop a web site to facilitate access to various UNCW information and policy documents. Develop a web site that integrates programs and services across the institution.

- Develop a process to transfer data from instructional web applications, such as those developed this summer on the COLLEGIS Learning Network, to UNCW's back office system.
Recommendation 7.2:

In order not to lose momentum and to secure the gains made this summer, UNCW should continue the development effort envisioned above during the transition period in which the recommendations of this report are considered and addressed. The Chancellor should appoint a small, but representative working group led or staffed from the business office or his office, to analyze the resources now being allocated to IT across the institution and to define/refine the financial foundation for continuing to build UNCW's capacity to use and manage IT as a strategic asset.

This working group should:

1. Identify sources to support a significant level of annualized funding in the range of 0.5%-1.0% of annual institutional expenses, to make available through the new Vice Chancellor for Information Technology and the Executive Committee for Information Technology Strategies for the purpose of incubating IT enabled innovation and change; for example, limited term project funding, special purchases, and limited-term service contracts dedicated to the evolution of the UNCW intranet.

2. Recommend sources for an orderly financial transition to the consolidation of dispersed IT services into Information Technology Services. This plan should refine the costs of funding the following new positions and related operating budgets associated with these recommendations, explicitly:
   - Vice Chancellor for Information Technology,
   - Executive Director for Information Technology Services,
   - an assistant or associate provost position for academic program development,
• a director for the Technology College,
• a full-time director for the Center for Teaching Excellence,
• associated administrative support for these positions, and
• the new IT professional positions noted in Appendix D as additions to the staff of Information Technology.

3. Identify life-cycle funding sources for the new costs associated with (1) and (2) above and estimate the life-cycle costs and identify funding sources required to:

• Institutionalize the recent good work of the Office of the Provost to fund universal access throughout Academic Affairs, as well as to extend the life-cycle funding principle to all divisions of the institution.
• Fund student universal access on the principle that students will have to bear a significant percentage of that and that needy students should not be disenfranchised by such direct or indirect costs.
• Fund the training and web development costs.

Possible funding strategies for these recommendations include:

• Increase the student educational technology fee by $200-$250 per year, explicitly justified to cover the costs of email, web, print, and help-desk services "consumed" by students - and possibly to cover the costs of a PC should the universal access plan rely on a lease to be covered by student fees. PC lab costs could be included in the justification, but students might want to know why labs are still necessary in addition to the need for personal access to a PC.
• Reserve some portion of new institutional funding that becomes available over the next few years - while protecting current departmental budget levels from erosion.
• Tap revenue opportunities associated with online courses and public services.

• Take advantage of expansion budget opportunities consistent with the IT plans of the UNC General Administration.

• Seek external resources that might be available through grants and gifts.