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EXECUTIVE SUMMARY

Purpose

In Spring 2012, Dr. Michael Bernstein, Tulane University’s Provost and Vice President for Academic Affairs, convened a multidisciplinary committee to conduct an environmental scan of the higher education landscape and provide recommendations for positioning the University as a national leader in education and research over the next 10 to 20 years. This report presents the Committee’s findings and recommendations for the direction of the University as well as findings and recommendations related to specific Schools and Colleges.

Process

A committee of 19 faculty and staff representing Tulane’s 10 Schools and Colleges and several administrative units met throughout 2012 to perform an environmental scan of the higher education landscape and formulate “Big Ideas” to guide the direction of the University over the next two decades. The provost charged the committee with addressing three questions:

1. How should Tulane position itself as an educational leader over the next 10 to 20 years in light of the changes affecting higher education?

2. How do we provide the most educational value for our students as they prepare for their careers and roles as citizens?

3. What innovations may serve to advance Tulane’s reputation as a “truly distinctive international university” in both teaching and research?

Following a review of best practices for environmental scans and a preliminary review of the higher education landscape, the committee formed subcommittees to conduct environmental scans and make recommendations in five areas key to Tulane’s operations and identity:

- External Issues/Opportunities
- Information Technology and Libraries
- Research Synergies
- Student Experience
- Teaching and Learning

Each subcommittee met biweekly to review relevant literature, hear the views of key faculty and staff within and external to the University, and discuss findings and recommendations. The full committee met biweekly to review the progress of the subcommittees and to hear the views of leaders within the institution. In addition, the full committee requested that the graduate programs and professional schools prepare a brief environmental scan of issues related to Teaching and Learning, Local and Global Linkages, Research Synergies, Career Opportunities for Graduates, Facilities and Infrastructure, Economic Concerns, and Accreditation. The full committee reviewed the findings and recommendations of the subcommittees as well as the responses from the Schools.
and Colleges and prepared this report stating the overall findings of the committee and its recommendations for the University.

Findings and Recommendations

Since the last environmental scan in 1998, Tulane has undergone significant change, including implementation of the post-Katrina Renewal Plan that catalyzed a major restructuring of the University. Concurrently, the landscape of higher education has undergone significant change. However, the issues identified in the 1998 report are still relevant:

“… Institutions of higher education operate in a rapidly changing environment characterized by rapid knowledge growth, rapid dissemination of information technology, and rapidly changing student needs and demands. Trends towards globalization and internationalization have fueled the pace of change.”

Over the past fourteen years, technology has dramatically altered the landscape of higher education, with demand for universal connectivity, hybrid forms of learning, and the acceleration of online degrees and universities. Similarly, globalization has accelerated the exchange of ideas and is increasing the competitive pressures that shape the education marketplace. Sustainability and environmental stewardship are increasingly integral to teaching, research, and operations. And many universities have made significant changes to their educational approaches and curriculum in response to contemporary social and economic influences. The landscape will undoubtedly shift even more over the next 10 to 20 years.

In examining the higher education landscape and identifying how Tulane can or should define and advance its identity in the context of recent and projected changes, the committee identified a number of trends that present both opportunities and challenges:

- **Economic and Market Forces**—The financial model of private universities is threatened by increasing sensitivity to escalating tuition and student debt, the impact of the recent economic downturn on philanthropy, and the decrease in federal funding for research.
- **Accountability**—Increasing pressure to document student learning outcomes and educational value has lead to increasing emphasis on metrics and accountability, and the potential effects of this shift on the student experience must be considered.
- **Information Technology and Libraries**—The proliferation of digital educational products by both non-profit and for-profit entities is challenging the traditional structures of colleges and universities. The limitations of distance learning and the development of hybrid models may reinforce the importance of the “bricks and mortar” university.
- **Globalization**—Research universities operate in an increasingly competitive global market that often privileges innovation in the technologies and sciences over the arts and humanities. Universities can distinguish themselves by providing a holistic approach.
- **Expanding Scope of Research and Learning Themes**—Research universities operate in an increasingly competitive global market where the most prized innovations are developed at the interfaces of the traditional academic disciplines. The coming decades will see increasing challenges to develop hiring and academic review practices that assure sustainable faculty expertise and scholarship, to incorporate rapidly changing technology and facilities in support of research, and to collaborate both within and outside the university to meet the needs for breadth and depth in interdisciplinary research.
The committee established five subcommittees to review how other institutions are addressing these challenges, to examine how Tulane’s current structure and programs compare to other institutions in these areas, and to make recommendations for changes that will position the University to address these challenges and bolster its profile as a leader in education and research over the next 10 to 20 years. Nationally, many institutions are initiating significant initiatives in response to these challenges. Of particular interest to our committee were the new approaches to undergraduate curriculum that have been instituted at peer institutions including Stanford and Bennington. These changes are designed to impart additional value for graduates who not only need technical skills, but also need skills that will allow flexibility in the changing work environment.

Key findings and recommendations include the following:

Increased Sensitivity to Regulatory and Market Forces

Changes in the national and global governmental and economic environment pose many challenges for Tulane University. Tuition and spending per student has increased significantly in the US over the past decade, and students increasingly resort to federally funded student loans to cover the additional cost. Uncertainty about the future of federal funding for student loans and the specter of increased government oversight in the context of a rising national debt and public demand for accountability have the potential to adversely impact Tulane’s ability to accomplish its goals. Correspondingly, concerns about projected reductions in the amount of federal funding available for research have increased competition among universities for the best students, the best faculty, and research dollars.

Globally, considerable investment in graduate education and research by Europe, China, and India threatens to diminish the prominence of US programs in graduate and undergraduate education. US universities have responded by developing novel partnerships with foreign governments to provide additional educational opportunities, and established programs are reaching out to and enrolling more international students in graduate education. Almost half of all doctoral degrees are now awarded to non-US citizens.

RECOMMENDATIONS—Tulane has several opportunities for positioning the University for success in this ever-changing environment:

• First, the University should actively monitor and react to changes in nationally and internationally recognized metrics for success to ensure that Tulane is perceived as a top tier institution.

• Second, the University should continue to develop international educational programs to target educational needs abroad.

• Third, the University should consider developing new programs and adapting current programs that address areas of interest to prospective U.S. and international students and that enhance the skill-sets and marketability of Tulane’s graduates. For example, the committee recommends exploring the development of graduate certificate programs, cross-school, interdisciplinary PhDs, and promoting the current Master of Laws (LLM) degree.

• Finally, the University should consider greater investments in graduate research and education and developing a governance system that can accommodate and support a flexible curriculum in response to changing social, cultural, and economic environments.
The increased availability of information in our digital age is transforming educational systems. Tulane’s students now reside in both the real and virtual world, communicating through social networking on personal devices and instantly accessing information through the Internet. Students are accustomed to communicating 24-hours-a-day through social media and other electronic means, but educational institutions have not kept pace with these changes. Students’ perception of the quality of education is often associated with the information technology (IT) resources available within the institution. Top universities are developing a technology ecosystem that connects the student with the faculty and the outside world. This ecosystem typically allows for students to use their own mobile devices and connect with the institution through an information cloud. E-books are replacing traditional textbooks, and both students and faculty increasingly use social media to facilitate teaching, learning, and collaboration.

Changes in IT are also changing the role of the library in education. The library has historically been a physical repository of information available to students and faculty. With the advent of digital media, the library’s role has expanded from information storage to include information dissemination and analysis. Modern libraries augmented the stacks with learning spaces and tools that support group learning using written and digital media. Tulane currently has a robust library that is nationally and internationally known for its Latin American studies section, the Hogan jazz archive, the Louisiana research collection, and an impressive collection of rare books.

**RECOMMENDATIONS**—To remain a top research institution, the University should consider investing in several improvements to IT and library services:

- First, the University should consider significant investment in the IT infrastructure including technology to connect the uptown and downtown campuses, technology to connect buildings within each of these campuses, technology to equip all classrooms with wireless digital capability, and improvements to ensure all campus networks are secure.

- Second, the University should consider additional movement toward decentralization of IT support through cloud-based services while ensuring that most IT services are accessible from an evolving range of devices. Additional technological support should be provided for sponsored research and e-science initiatives in the form of data storage and curation, and support should be provided for an institutional repository through a partnership involving campus IT, the library, and other stakeholders at the uptown and downtown campuses.

- Finally, the University should consider capitalizing more directly on its library assets. Tulane has one of the top research libraries in North America with strong general collections and valuable unique collections important for research in understanding New Orleans and its connected regions, especially those extending south into the Caribbean and Latin America. The University should focus on its future building plan for the library (i.e., the Library Renewal Plan) as one means to address optimal campus library, learning, and study spaces for the next several decades. As envisioned in the plan, Tulane should utilize the empty ground floor in the main library uptown to address the critical campus need for new classrooms, with the innovation of locating these classrooms directly below a much-expanded Learning Commons on the floor above. Within the plan, opportunities should be developed for increasing collaboration among potential campus partners to support teaching and learning. One example could be a Center for the Study of New Orleans and its
Contributions to Global Society that would be a research center located in reconfigured library space to serve students, faculty, and the community through a unified core of programming drawing upon archival resources such as the library’s Louisiana Research Collection, the Hogan Jazz Archive, the Southeastern Architectural Archive, and the Amistad Research Center. More generally, the library should increase its efforts in the areas of preservation and digitization of unique collections, while adapting to changing demands in the areas of library instruction (information fluency), research support, and scholarly communication.

Enhancing the Student Experience

Tulane’s undergraduate enrollment has expanded significantly since Hurricane Katrina, and the quality of applicants has improved since implementing the 1998 Strategic Plan. The focus on developing residential life on campus has been deemed a success with all students now living in dormitories during their first and second years and between 30% and 40% of students remaining on campus during the third and fourth years. The University has also made great strides in connecting students to the community by providing service learning initiatives in which students gain experience and learning in job and volunteer settings throughout the city of New Orleans. Students report a tremendous connection with New Orleans that they attribute to public service and recreational activities supported by the University. Students also report appreciating the flexibility of curriculum that allows them to earn dual degrees or a double major. Students characterize Tulane as a place where individuality is encouraged and where one can discover “who you are.”

Both the growth of the student population and the challenges the University has faced in the aftermath of Katrina have presented some challenges. For example, many students feel that the facilities are outdated and crowded, and many feel they have limited engagement with faculty. Students also express a need for improved academic advising, access to research opportunities, and opportunities to engage successful alumni. The University has experienced a decrease in the number of tenured and tenure-track faculty, and the remaining faculty have accepted increases in teaching loads that limit their ability to connect with students. Investment in classroom and research resources will allow faculty to maximize their efforts.

RECOMMENDATIONS—The committee feels that students would benefit from continued investment in University infrastructure, the faculty, and support of existing centers:

• First, the University should consider expanding on-campus housing and developing resident colleges and resident halls as educational incubators in which like-minded individuals (i.e., similar majors, similar interests or activities) are housed together to foster community, peer support, and innovation in learning.

• Second, the University should consider increasing the number and availability of teaching faculty and consider increasing the level and types of IT support available to connect faculty with students.

• Third, the University should consider increasing support of the Center for Engaged Learning and Teaching (CELT) and the Center for Public Service (CPS) to expand opportunities for experiential education, and it should consider expanding the career counseling center to provide additional opportunities for current students and graduates, including opportunities to engage successful alumni.
• Finally, the University should consider renovations to Dixon Hall and MacAllister Auditorium with private naming opportunities as well as additional investment in the music and visual arts programs, possibly in partnership with private entities and taking advantage of New Orleans’ unique culture. Improvement of these facilities and enhanced synergies between music and visual arts programs have the potential to enhance revenue streams, support new international partnerships in visual and musical arts, and provide a foundation for a co-curricular music/theatre/film business program. accordingly.

### Teaching and Learning Trends

The Teaching and Learning Subcommittee addressed four sub-areas: Curriculum, Academic Content, and Rigor; Experiential Learning; Learning Objects; and Teaching and Teaching Methods and Collaboration. It reviewed many of the current trends in content delivery and curricular change including open courseware, online instruction, engaged teaching and learning, digital instruction, experiential teaching and learning, and curricular revisions, particularly those aimed at preparing students for today’s workforce. The subcommittee analyzed the available literature in these areas with an eye toward identifying those innovations and developments that not only fit within Tulane’s mission, but also those that will continue to provide a robust and unique educational experience for our students at all degree levels.

### RECOMMENDATIONS

• First, the University has an opportunity to be recognized as a national leader in *Experiential Learning* by capitalizing on its success and national reputation in providing service learning and by expanding its experiential learning offerings through additional internships, externships, and undergraduate research opportunities. Tulane has the necessary framework for continued excellence in this field through the Center for Engaged Learning and Teaching (CELT) and the Center for Public Service (CPS).

• Second, the University should consider improving its digital instruction capabilities, including equipping all classrooms for digital content delivery and remote participation; improving faculty training, including continuing education and instruction in the learning objects, and the latest technology hardware and software; and developing a university-wide, standardized platform for the preparation, delivery, and assessment of asynchronous teaching and learning. These recommendations, if implemented, will not only benefit the undergraduate population, but will also enable graduate and professional students to access special offerings at other institutions and will foster research collaborations across all campuses and with investigators around the globe.

• Finally, the University should consider conducting a full evaluation of the current core and disciplinary-based curricula and implement necessary modifications to ensure that we are delivering the best educational value to our students. This evaluation should be done with full consideration given to the traditions of a broad-based liberal arts education as well as emerging trends in higher education including open courseware, collaborative learning, digital instruction, and the need for life-long learning, all while maintaining academic rigor.
Promoting Research Synergies

Research, a crucial component of higher education, has undergone a tremendous transformation during the past decade as funders and investigators focus on interdisciplinary research in an increasingly globalized and technological era. Fostering collaboration at the interface of traditional disciplines will be essential to expanding Tulane University’s position as a major research institution. Recommended actions with respect to faculty, research infrastructure, computing, administrative organization, and educational programs will synergistically enhance the University research environment and ensure our status as a premier research university in the coming decades.

RECOMMENDATIONS—Tulane University’s faculty is amenable to forming interdisciplinary research teams, and several centers have already been established to facilitate such collaborations. However, structural, logistical, and bureaucratic barriers prevent interdisciplinary initiatives from realizing their full potential, and directed efforts to eliminate these obstacles would yield valuable return.

• First, the University should consider structural changes to enhance collaboration across the traditional disciplines. This includes the establishment of faculty hiring and review practices that value both disciplinary and interdisciplinary research contributions, the development of a framework that fosters the pursuit of large, complex sponsored projects requiring contributions from multiple schools, and a commitment of support for initiatives to promote interdisciplinarity in our graduate programs.

• Second, the University should consider implementing a targeted enhancement of the research environment, including developing a cadre of successful faculty in areas of expanding research opportunity, expanding research information technology and data management services, and creating a residential retreat for artists, writers, and visiting scholars.

• Third, the University should consider promoting cross-campus collaboration through improved electronic connectivity, cross-appointed faculty, and co-location of interdisciplinary research clusters.

• Finally, the University should consider expanding beyond a traditionally parochial view to partner with other institutions in research areas where institution-level collaboration would be mutually beneficial.

Conclusions

Since 1834, Tulane has offered its students an excellent education and a tremendous possibility for personal growth and development. During its rich history, Tulane has been able to thrive in a world that is marked by change. Today, higher education faces new challenges: instant access to information through information technology, globalization, and national and international financial pressures. Many institutions are making significant structural and curricular modifications to adapt to this new environment. Since Hurricane Katrina, Tulane has launched many initiatives that give it a unique identity to build upon.

The Environmental Scan Committee has reflected upon our changing environment and concludes that Tulane University has a tremendous potential for growth over the coming decades. While the committee acknowledges the significant impact that technology has and will continue to
have on teaching, learning, and research, findings from other institutions as well as a review of Tulane’s strengths and position reaffirmed the relevance of the traditional brick-and-mortar university. The residential environment will likely remain relevant in coming decades, and Tulane is well positioned to distinguish itself from institutions that are abandoning this approach in favor of a lower-cost, lower-contact electronic interface. Tulane’s values (an emphasis on collaboration, interdisciplinary research, social equity, community engagement, global citizenship, ethical leadership, and experiential learning) reside in the real (not virtual) world.

We believe that Tulane University is well positioned to take advantage of our changing environment and remain a “truly distinctive international University.” We are a national leader in experiential learning and are well positioned to distinguish ourselves as innovators through interdisciplinary research and entrepreneurship.

Long-term success will not only rely upon investment, but will also rely upon strategic changes that are needed to address the evolving educational landscape. Specifically, we believe the University must upgrade its facilities to ensure that all our classrooms and research spaces are equipped for collaborative and connected modes of inquiry. Focused recruitment of additional faculty will establish the clusters that are necessary for effective collaboration and interdisciplinary research. In addition, we believe that as a University, we will need to re-examine our core curriculum and organizational structure to ensure that we are able to effectively and efficiently provide our students the skills and knowledge they will need to be successful in our changing world.

In summary, the committee identified six key recommendations intended to guide the University’s discussions as it prepares a new strategic plan:

1. Enhance initiatives in Engaged Teaching and Learning as well as Public Service Centers
2. Rethink Undergraduate Curricula
3. Facilitate Interdisciplinary Research and Teaching
4. Invest in Undergraduate Research
5. Promote Entrepreneurship and Career Development
6. Invest in Classroom and Research Technology
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SUBCOMMITTEE REPORTS

External Issues / Opportunities

Information Technology and Libraries

Research Synergies

Student Experience

Teaching and Learning
EXTERNAL ISSUES / OPPORTUNITIES

Purpose

The External Issues / Opportunities subcommittee examined local, national, and global trends in higher education to identify Tulane University’s relationship to the broader educational environment. The subcommittee also surveyed current University initiatives and identified opportunities to improve our approaches in response to recent and coming changes in higher education.

The subcommittee addressed three key questions:

1. What are the most important and significant national and global trends affecting higher education?
2. What will be the impact of public policies and socio-legal regulations on research and education at Tulane?
3. How should Tulane adapt, innovate and reinvent in response to changes in the external environment?

Significant national trends affecting higher education

- Rise in tuition and spending per student
- Falling proportion of tenured and tenure-track faculty
- Increased competition among universities for students, faculty, and research money
- Increased pressures for accountability
- Increasing use of technology to improve learning outcomes and reduce costs

Significant global trends affecting higher education (globalization)

- Increased competition among US universities for the best international students
- Increased use of collaborations and partnerships
- More international cooperative research projects
- More partnerships between US institutions and foreign governments
- Increased development of foreign branches and collaborative institutions by US universities
- Increased research funding for international research partnerships
Global/Local Linkages and Undergraduate Education

- Increased internationalization of the curriculum
- Increased efforts to combine international experiences (study abroad, non-US area studies programs and international thematic and topics courses) with traditional curriculum
- Increasing number of institutions offering Global Studies degrees and majors, including Tulane, UCLA, UCSB, Wisconsin, UNC, and University of Minnesota
- Increased emphasis on “Global citizenship”
- Increased emphasis on skill-based education, specifically training in research methods, data collection and analysis
- Increased number of courses and faculty that place emphasis on analysis of data.

Global/Local Linkages and Graduate Education

- Growing competition for high quality graduate students and public/private investments in graduate research
- Increasing global investment in graduate education and research by countries other than the US
  - By the year 2000, Europe’s restructured graduate education programs produced more doctorates in science and engineering than the US
  - Other countries, including China and India, are investing substantially in improving both graduate and undergraduate education systems
- Increased public demand in the US for advanced degrees
- Increasing percentage of international students in graduate education; almost half of the doctoral degrees were awarded to non-U.S. citizens
- Changing significance of the PhD
- Increasing numbers of interdisciplinary PhDs and Law School LLMs

Accountability and Assessment Trends

- Increased emphasis on accountability from both inside and outside academia
- Increased scrutiny by government and media for quality of education, faculty productivity, and education costs
- Increased government regulation and oversight (e.g., IRB).
- Changes in curriculum standards and teaching (SACS) driven by state inspectors and accreditation bodies
- New IRB rules and regulations governing human subjects and research
What should we do? What is achievable?

- Ensure that we are perceived as a top tier institution by actively monitoring our metrics for success and making adjustments as needed
- Appeal to international students through the development of international educational programs targeting educational needs abroad
- Meet the educational needs of our students:
  - Invest in efforts to improve and create new opportunities for experiential learning, collaborative research, skill-based education, and interdisciplinary research and education
  - Continue to invest in interdisciplinary graduate research
  - Develop new programs such as Public PhDs, Hybrid PhDs and Law School LLMs
  - Eliminate programs that are inadequate or redundant
  - Continue to invest in resources in CELT and CPS to benefit the research and teaching missions of the university
  - Invest in full-time faculty including tenure-track and tenured faculty as well as instructors with terminal degrees
  - Effectively use technology to enhance these strategic efforts in line with Tulane’s core values
- Improve the quality of our students’ research experience:
  - Create the Tulane University Global Research Network (TUGRN) whose mission is to enhance the research profile and externally funded portfolio of Tulane University through cross-disciplinary research
  - Continue to invest in interdisciplinary graduate research
- Enhance the post-graduate transition of the student:
  - Develop a center to offer career guidance and advice to student entrepreneurs who want to start their own businesses
  - Encourage students to pursue alternative career tracks in the public, private, and non-profit sectors.
Purpose

The Information Technology and Libraries subcommittee examined local, national, and global trends in information infrastructure for higher education. To simplify the research and recommendations, the subcommittee pursued its purpose by separating information infrastructure into two categories: information technology and libraries. The subcommittee examined the current state of information technology and libraries resources at Tulane and developed recommendations for improving these resources to meet or exceed the offerings at peer institutions and to support the teaching, learning, and research missions of the University.

Information Technology: What Other Institutions are Doing

The 2012 Edition of the Horizon Report: Higher Education\(^1\) discusses current trends in the IT realm of higher education. The report suggests six current trends made possible by IT in higher education institutions:

1. People expect to be able to work, learn, and study whenever and wherever they want to.
2. The technologies we use are increasingly cloud-based, and our notions of IT support are decentralized.
3. The world of work is increasingly collaborative, driving changes in the way student projects are structured.
4. The abundance of resources and relationships made easily accessible via the Internet is increasingly challenging us to revisit our roles as educators.
5. Education paradigms are shifting to include online learning, hybrid learning, and collaborative models.
6. There is a new emphasis in the classroom on more challenge-based and active learning.

These points emphasize the importance of IT in these higher education institutions, especially with regard to the increasing importance of mobility. Individuals using IT in higher education expect it to be accessible at any moment in any form. As everyday life becomes more complex, students, faculty and staff must balance education, work and personal time. Efficient use of IT services in higher education makes this inherently easier.

The EDUCAUSE Core Data report\(^2\) compares IT usage at more than 2,500 institutions of all types. Key findings:

- More institutions provide wireless access (91%) and cable television (85%) in some or all student housing rooms than landline telephones (71%).
- Less than half of institutions (39%) encourage students to register a cell phone. Those that do are far more likely to offer students the options of receiving emergency communications.

• More than half of institutions (61%) charge students a technology fee. Only 35% of private institutions assess this fee compared to 69% of public institutions.

• Over half of US institutions (58%) are outsourcing student email.

• Over 50% of all US institutions have either deployed or are planning a central IT program to minimize energy consumption of desktop technology, and an institutional policy or plan for sustainability.

• Almost all help desks provide support to users through the phone (98%) or email (95%) but only 5% provide support via text messaging.

These key points reveal how information technology facilitates education in conjunction with the technological needs of students and faculty and draw attention to the use of outsourcing in higher education. The main outsourced service is student e-mail; approximately 58% of institutions outsource this service. In most cases this is done to reduce cost and increase email storage space. Data also showed most institutions outsource to Google, with Microsoft being a close second.

The report also concludes that because IT often requires some years with large investments and some years with only modest investments, it is difficult to track spending trends for IT. Expenses are often financed at other institutions through student fees for student services such as educational technology and support service. When comparing all types of institutions, the largest segment of spending for IT is toward staff compensation.

The report also found that institutions that are working towards sustainability in IT begin by implementing “green” practices such as utilizing alternative energy sources, encouraging use of energy-saving settings, and properly disposing of and recycling IT equipment. The main goal of these actions is to make IT in higher education more efficient and more sustainable.

Taken together these reports paint a fairly clear image of the current state of higher education IT. Faculty, staff, and students are increasingly mobile, and their IT demands are changing to match their lifestyles. Higher education IT is following larger industry trends toward cloud-based universally available content. These changes will necessarily lead to the development of new pedagogical tools and practices. The challenge for IT is being able to address these changes.

### Information Technology: Academic Faculty and Student Perspective

The academic experience of today’s student is intimately associated with technology. In general, students feel that technology offers better access to resources, provides better mechanisms to deal with administrative tasks, increases productivity, makes them feel more connected, and can make learning more immersive and engaging. The 2011 ECAR National Study of Undergraduate Students and Information Technology reported the following:

• Students own and use multiple technological devices (about a dozen/student) and show a clear preference for small mobile devices (smart phones, netbooks, iPads or other tablets)

• Students at institutions that award MS and PhD degrees are more likely to own portable technologies

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3 Dahlstrom, Eden; de Boor, Tom; Grunwald, Peter; and Vockley, Martha. The ECAR National Study of Undergraduate Students and Information Technology 2011. (2001).
• 76% of students felt that technology extended learning beyond the classroom
• 72-73% of students felt that technology made it easier to get help when needed, and/or allowed them to take control of their own learning
• 65-67% of students felt that technology made learning more creative, and/or made coursework more engaging
• 60-61% of students felt that technology elevated the level of teaching, and/or made them feel more connected to professors or other experts

While students clearly valued technology, a students’ perception of an institution’s technology was found to be based on how well the faculty uses IT and not on how advanced the technology is. In the students’ eyes, it is more important that the instructor use technology effectively and frequently and that its use is seamlessly integrated into their course.

The six most frequently reported technologies currently in use in academic settings are highly predictable and include: a laptop computer, Wi-Fi, a printer, a USB drive, a desktop computer, and a projector. In contrast, the devices students wish instructors would use more are more varied: e-mail, course/learning management systems (e.g., Blackboard), e-books or e-textbooks, presentation software, online forums/bulletin boards, web-based videos, freely-available course content, podcasts/webcasts, Facebook, wikis, and social studying sites.

EDUCAUSE also surveyed practices and perceptions regarding online course delivery: 80% of students reported that their institutions offered some courses online and 65% have taken a completely online course. Perhaps unexpectedly, 58% of these students reported that online-only courses do not provide the same value as courses that blend face-to-face and online components.

Current trends in technology (what others are doing) from the faculty and student perspectives were reviewed from the material published by EDUCAUSE, the Chronicle of Higher Education, the Gartner Group,4-8 and the Campus Computing Project. Students value academic technology for the connections it allows them to make with instructors/experts outside of the classroom, and they value the combination of face-to-face interaction/instruction blended with online learning opportunities.

Trends in institutional and instructional use of academic technology:

• **Bring Your Own Device (BYOD)/Multiple Devices.** Institutions are recognizing that providing a common device to all students is a poor strategy, as recent history shows that students will rebel and not use it. Strategies are now being developed that recognize the BYOD nature of the student population (and administrative/staff population) and to provide support for both standard and specialized applications and services.

• **Mobile Devices.** While BYOD is popular on campus, students’ preference for mobile devices (smartphones, tablets, iPads) as a first choice for an academic interface will continue.

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Finding ways to seamlessly integrate the use of these devices in instruction is a major movement academic technology.

- **Clouds.** The era in which the personal computer serves as the sole device used by students (and others) is coming to an end and the personal cloud era is beginning. The personal cloud will provide users with a new level of flexibility with the (multiple) devices that they use for daily (academic) activities.

- **E-textbooks.** The trend toward e-textbooks is strong and will continue, as it appears to keep students more engaged in learning and as the cost of readers decreases. Student preference for this mode of delivery is strong and surveys by Campus Computing Project indicate that 96% of private university officials agree that e-book content will be an important instructional resource for the next 5 years. In addition, 84% of these same officials agree that e-readers will be an important instructional platform in the next 5 years.

- **Open Source Text Books.** A related trend is the move toward the use of open source texts and course materials. Several sources such as Boundless Learning, Apple’s iBook2, and Kno currently provide such material. Here again, lower costs of e-readers will contribute to increased demand for and use of this material.

- **Social Studying Sites.** Students express a strong preference for online contact with other students and faculty members. Course/learning management systems allow this, but students find such systems “clunky” and a significant number of instructors do not make use of them. New social studying sites (such as Piazza), which are comfortable and easy for students to use and easy for the instructor to monitor, appear to be a growing in popularity.

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**Information Technology: What We Do**

Tulane University’s Technology Services (TS) covers a wide range of projects that can be categorized as Support, Infrastructure, and Information Systems. Services include the following:

- Help desk support is provided 24/7 from an outside vendor, while levels two and three support are provided by support staff within Technology Services.
- TS offers pedagogical and development support to faculty and academic departments including the development of cutting edge academic and administrative applications and projects (e.g., Center for Public Service Information System, the Conflict of Interest Application, MediaNOLA).
- TS builds and supports the vast majority of server-based applications across the institution including (but not limited to) the Content Management System (hosts the university webpage), the Banner Student Information System, the Active Directory (allows for user management and authentication), the Primate Center Research Database and the Luminous Portal (powers Gibson.tulane.edu).
- TS builds and maintains the network infrastructure necessary to provide access to these applications. Currently TS is in the process of a major network renovation.
- Additional network improvements are planned (i.e., fiber ring in the downtown area connecting 1555 Poydras to the Health Sciences buildings; fiber from the uptown campus to No. 2 Audubon and University Square enabling 10G links to these locations; new and redundant firewalls and border routers; new 10G network for Tulane’s data center; replace the aging DNS infrastructure with advanced and secure DNS appliances that can support IP version 6 (IPv6); connect every building on campus with 10G fiber; replace all switches with
one that can provide multicast and Power over Ethernet (PoE) and 10G uplink; and replace all Wireless Access Points with one that can provide 2.4GHz and 5.0GHz radios. As demand for streaming video, online meetings and use of web applications increases, Technology Services’ goal is to remain 10 steps ahead of user demand. With the increasing number of mobile devices on campus it is vital that available bandwidth keeps pace with the increasing demands our campus is placing upon it.

- TS has recently partnered with Aastra and Internet2 to bring SIP communications to campus. The “Voice in the Cloud” SIP Services from Internet2 is the latest in a long history of innovative services that Internet2 has offered to its members. By leveraging the infrastructure delivered by Internet2, together with Aastra and Level 3, member institutions can receive carrier-grade service at a very cost-effective price per line. The solution is designed to provide control and flexibility over the administration of critical Unified Communications (UC) services like voice and video communication and empower institutions to customize the solution to meet their unique campus needs.

- TS is taking advantage of the cloud model to move email and file exchange into the larger, more readily accessible cloud systems. All Tulane affiliates will have a large repository for email storage and access to a wide range of collaborative tools available within the Microsoft cloud framework. All faculty and staff will have access to cloud-based file storage through a new agreement with Box.com as part of the Internet2 relationship.

- TS is running a series of pilot projects to get a clearer picture of the Learning Management System market. The university has been with Blackboard for over a decade, and a number of competitors have emerged who offer new models for technological pedagogy. This pilot will help determine whether the current model of LMS engagement on campus should be modified to account for changes in learning styles and information relationships.

- TS is modifying its mobile application strategy to adjust to the demand for mobile interaction. All custom university applications development will begin at the level of the mobile and then build up to the full desktop experience. All applications and services should be available to users on their device of choice and we expect to develop to meet that desire.

**Information Technology: What Should We Do? And What is Achievable?**

Two major trends in IT will be dominant in the next several years: the primacy of the mobile device and the development of an institutional technology ecosystem. The expansion of mobile technology as developed in a recent Gartner report by Rust, Weiner, et al. points to the wide scale adoption of mobile devices as entering a phase where users expect services to move online:

- Regarding the use of personally owned devices in schools and on campuses, it is a question of when it will occur, not if. Therefore, develop policies and strategies to account for, if not accommodate, tablets and other small devices.

- Investigate and support opportunities that consumer and mobile technologies present for alternative development and delivery of information, services and content.

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• Support vendors that satisfy consumer-level device preferences among learners and staff without sacrificing the need to efficiently and economically manage or support those devices in the education enterprise.

TS has redirected its mobile development efforts in this direction. All new projects will be initially conceived for mobile devices and then scaled up to the level of the desktop device. TS must also build a Bring Your Own Device (BYOD) strategy. Both students and faculty are blurring the lines between social interaction and educational work through the use of these devices. Users expect a seamless transition among their various virtual environments and devices as well as the ability to be notified on their own terms on their chosen platform. As an institution, Tulane must have a strategy that allows users to bring their own devices to the table and receive notification in their preferred format at their appointed time. In an analysis by Lowendahl and Bonig the following market implications were identified in the study of higher education device usage:

• Students and faculty depend on consumer devices to be productive, and institutions that cannot or will not support them will suffer a competitive disadvantage in recruiting faculty and students.

• Educators will use several different devices and will expect to be able to move context and content seamlessly between them.

TS must provide an infrastructure that supports and pushes information to these devices and allows users to easily manipulate information and assignments across devices within a unified end user experience. The portal that the university maintains must present a unity of experience no matter where or on what device it is accessed. This new culture of access and mobility is pushing the development (in both the business and the academic worlds) of officially articulated Technology Ecosystem models. As Lowendahl states in his analysis of modern technological environments: “A competitive advantage from technology-based capabilities is rarely about implementing a singular killer app anymore. Today, an ecosystem of capabilities — not all technical — needs to be in place at a specific time to enable real competitive advantage.”

The goal of defining a technological ecosystem is to find and accurately chart the relationship between return on investment and customer experience. The key to building this sort of environment is interoperability among all the systems that govern enterprise IT. With a truly integrated ecosystem, the institution’s technology strategy and development will be predictive rather than reactive. Each piece is situated in a known space and the relationships among those pieces are clearly defined.

This carefully curated ecosystem must incorporate all aspects of campus life and leads directly to a big idea for the implementation of technology on campus. The goal of this project would be to tie all members of the Tulane community (faculty, staff, students, alumni, parents and community partners) together under one unified, social Internet umbrella. The Tulane Portal would take the idea of a single sign-on system to its fullest extent. Each member of the community would be taken to a personal portal where their relevant university information is displayed. In addition to general, dynamic information about what is going on at Tulane as well as weather, shuttle schedules, cafeteria menus, campus sales, sporting event announcements, etc., each group would also see specific information based on their role. Students would see course schedules, assignments from the LMS, events on campus related to their interests, personalized news from the Hullabaloo and President’s office. Faculty would see course rosters and room locations, assignments that need grading, committee notes, department schedules, etc. Staff would see links to the administrative systems that
they have access too as well as relevant alerts for their roll and department. Alumni would see Tulane news as well as events and talks related to their degree, other Tulane alumni in their area, Tulane events in their area, travel deals for returning to New Orleans, invitations to alumni focused events, as well as articles from the Hullabaloo and President’s office related to their interests. Parents would be identified by their relationship to their student and would receive University information as well as those aspects of their student’s schedule and activities that the student wishes to share.

The Tulane Portal does not need to reinvent or replace the social networks the students already use but rather extend them in ways directed by the university. For instance upon logging into the system students would automatically find themselves affiliated with groups for their classes, dorms, home regions and majors. Schools and departments would use these groups to push major specific information and the students would use the course groups to share notes and discuss class assignments. If we tie these profiles to Facebook and Linked-in, then we can also track where students go after graduation and provide further communities of professional interest to Tulane alumni as well. These communities would provide professional networking and development to graduates and would serve as a professional development resource to current students with questions about the field. The idea is to provide a natural extension to the social networking our community already does in a way that is directed toward the growth and extension of the Tulane network. By providing a well-appointed, one-stop location for all Tulane related information as well as administrative and academic systems, we can unite users through common experience.

This model will expand the native proximity of the university. The social aspects of the system construct Tulane as its own destination and learning environment to be engaged with over a lifetime rather than just the years spent physically on campus. The Portal will also help engage more distance learners by allowing them to have a dynamic presence within the social life of the institution.

This project will require not just technological resources but also individuals dedicated to generating content and making sure the Portal remains a dynamic environment. Useful, timely information displayed succulently that also grants the user the ability to immediately respond to the options presented is the key to this sort of social interaction. In order to truly succeed this big idea needs to be supported from all quarters, one small team cannot be expected to run down all of this information; however if each unit takes the small amount of time necessary to contribute to and curate their area, the whole will be much greater and far reaching than anything we have currently established in the realm of IT.

A project at this level will depend on a strong and well-integrated set of technologies all deployed in concert with each other. Each campus system existing and proposed would have to be evaluated not only in terms of its function and workflow but also its relationship to and compatibility with the other systems on campus. The first step in this process is to begin looking at IT from a more central perspective.

The role of Information Technology on campus needs to be reconsidered. The proposed extra-campus engagement cannot be achieved while the university is operating under a reactive IT structure. At all levels of campus administration, projects are often funded and raised under the restraints of immediacy and specificity (a unit needs a particular service yesterday). This approach does not allow for the proper discovery of services or the correct placement of them within the IT architecture of the institution. As a campus, Tulane would benefit from the generation of what is commonly referred to as a “Learning Stack.” A “Learning Stack” is a map of all institutional

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technologies arranged according their function and status (Figure 1). The goal of this style of assessment is to identify and address redundancies in services. Once a map of these various uses of technology is developed, the true needs of the university community in terms of enterprise solutions will be more readily identified.

Figure 1. A simplified example of Learning Stack Architecture

In addition to identifying redundancy, the needs assessment provides the information necessary to isolate the context under which these particular applications should interact with one another. Once this context is established, the proper context layer can be applied to bind together the other technologies present in the stack. Identification of a proper contextual platform for campus technologies is an important first step in moving toward the creation of a unified portal from which all technology services can operate.

Essentially the idea for something akin to the Tulane Portal is an amplification of the service-oriented architecture (SOA) model—a system of applications that is modular, distributed and discoverable for both end users and developers. Regardless of whether an application will support departmental, enterprise-wide, or cross-enterprise interactions, best practices suggest that an SOA implementation should start with a short-duration project that delivers irrefutable business value through five or six services. After this, the organization’s service portfolio should be incrementally maintained, modified, and expanded as business requirements change and as additional business functions are brought into the scope of the SOA initiative.11 Once key applications and services are listed and redundancies are removed, an initial crop of systems can be selected for implementation with the context platform.

Tulane’s ideal context platform is one that allows continued social interaction as well as integration with the mission critical systems of the university. Our learning and administrative environments currently exist as separate silos with social interaction in the former tied directly to classes and zero social interaction in the latter. By binding these services together in a context layer that allows collaboration and invites social interaction, the shape of the institution will change dramatically (students collaborating with former students about career advice or staff offering each other support on the best practices for using an administrative system).

To accomplish this and to remain competitive, TS must continue to maintain an aggressive infrastructure campaign. Our strategies must include a network that supports BYOD both at the network level and in the classroom, and the physical learning environments should be adapted to

match the flexibility of the digital learning environments. The definition of the classroom must be expanded to incorporate device-based pedagogy, timely lecture capture and delivery, and backchannel participation in lecture. If the institution does not engage learners at the individual device level, they will be lost to the other social networks that are competing for their attention.

The creation of a Learning Stack and the integration of key applications into a social context platform that can be used by a new breed of interactive classroom is a goal which is practical with the proper support. These initiatives will also open the door toward the larger development of a mature campus social portal from which the true experience of Tulane can be more widely and passionately delivered to all affiliates past, present, and future.

### Libraries: What Other Institutions are Doing

The literature includes several resources that describe primary developments influencing libraries in higher education today. For example, the paper *2010 Top Ten Trends in Academic Libraries: a Review of the Current Literature* from the Association of College and Research Libraries Research Planning and Review Committee identifies emerging developments across libraries in higher education through a scan of the current literature and from a survey sent to more than 9,000 ACRL members. It projects the following trends:

- **Academic library collection growth** is driven by student and faculty demand and will include new types of resources
- **Budget challenges** will continue and libraries will evolve as a result
- **Demands for accountability and assessment** will increase
- **Digitization of unique library collections** will increase and require a larger share of resources
- **Explosive growth of mobile devices and applications** will drive new services
- **Increased collaboration** will expand the role of the library within the institution and beyond
- **Libraries will continue to lead efforts to develop** scholarly communication and intellectual property services
- **Technology** will continue to change services and required skills

The more in-depth *Association of College and Research Libraries Environmental Scan 2010* is an expanded report from the same Research Planning and Review Committee. It covers similar ground but describes additional trends including the potential impacts of an increasing emphasis on online education, of political and budgetary pressures (especially at public institutions), and of changing demographics among students and faculty. During the past decade, information literacy programs were developed on campuses to coincide with institutional accreditation requirements for library instruction; the ACRL environmental scan projects that these programs will face broadening

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challenges in helping students and faculty adjust to a widening universe of information sources and retrieval methods.

In particular, the report observes, “There is a massive amount of literature addressing scholarly communication, which encompasses the information-seeking behaviors and needs of researchers and scholars, publishing – scholarly, digital, and self, open access, and preservation and repositories. There also are sub-themes for each of these topics.” (p. 12)

Publishing and the means through which scholars and researchers acquire and share information are rapidly evolving, and the library profession is already embedded in this process. Academic research libraries are no longer confined to acquiring, organizing, and preserving published or archival works. Today, many are already working to meet new demands to support grant-funded research in ways ranging from providing explanations of copyright for digital content to enabling full-scale data management through institutional repositories. A new institutional focus on building repositories to house and disseminate research reports and data has been a response to changes in grant requirements. For example, grant proposals submitted to the National Science Foundation (NSF) must now include a data management plan conforming to NSF policy on the dissemination and sharing of research results, including primary data samples and other supporting materials. National Institutes of Health (NIH) guidelines now state that research data should be made as widely and freely available as possible while safeguarding the privacy of participants. (ACRL Environmental Scan, p. 14)

Consequently, a growing number of academic research libraries are engaging in e-science, an emergent area that exploits technologies for computation, data curation, analysis and visualization, and collaboration, often involving large data sets. An Association of Research Libraries (ARL) E-Science Working Group conducted a survey in August 2009 to “build an understanding of how libraries can contribute to e-science activities in their institution” and “identify organizations and institutions that have similar interests in e-science to leverage research library interests.”14 The survey gathered responses from 57 of the 123 ARL member libraries in North America. Twenty-one of these institutions provided infrastructure or support services for e-science, 23 were in the planning stages, and 13 did not yet support e-science.

It is not unusual for scholarly works on printed paper to be preserved with care for several hundred years. However, the preservation of digital information will pose difficult (and in many instances still unresolved) technological, legal, and economic challenges as outlined by a report from the Blue Ribbon Task Force on Sustainable Digital Preservation and Access.15 Nonetheless, many libraries have begun digitizing portions of their print collections, and some are partnering to store and share previously published digitized works.16 The preservation of large, valuable, and aging printed collections will continue to pose significant challenges to libraries as outlined by the ARL.17

Academic and research libraries will be increasingly called upon to document and articulate the value of their contributions toward institutional missions and goals. The Association of College and Research Libraries’ Value of Academic Libraries Initiative was created to respond to these demands and its work laid out a framework that many academic libraries have begun using as contributors to campus conversations about assessment and accountability. This framework is one that emphasizes assessment processes through which libraries examine and focus their impact on areas such as student enrollment; student retention and graduation; professional or graduate school acceptance; student achievement; student learning; student experience, attitude, and perception of quality; faculty teaching; faculty research productivity; faculty grants; institutional reputation and prestige.

In 2005 the Council on Library and Information Resources (CLIR) issued its highly influential report Library as Place: Rethinking Roles, Rethinking Space that explained how digital technology was redrawing library floor plans and how planners had begun thinking about how to design libraries as places for learning rather than primarily as storehouses of information. “The library is the only centralized location where new and emerging information technologies can be combined with traditional knowledge resources in a user-focused, service-rich environment that support … social and educational patterns of learning, teaching, and research.” (p.3) Library spaces on many campuses have been and will continue to be reimagined and reinvented as vital learning spaces central to the core of the academic enterprise. Through collaborative partnerships with areas such as campus IT, student services, and faculty, traditional library user areas have been reprogrammed as Information Commons, Learning Commons, Research Commons, and still evolving models of physical space and accompanying programs. As a result, library renovation or construction projects have been a priority on many campuses even during the economic recession. Examples can be seen in the annual review of academic library projects published each year in the December issue of Library Journal in its series called Year in Architecture.

Redesigned library spaces have become central gathering points, which can have unforeseen results. At last summer’s American Library Association Annual Conference held in New Orleans, an architect and a library dean teamed up to present a cautionary program called Vision and Evolution: Design and Post-Occupancy of the Hazel McCallion Academic Learning Centre. They outlined how a striking new library at the University of Toronto Mississauga, opened in 2007, immediately garnered architectural awards with its design of flexible, beautiful and functional teaching, learning and collection spaces. The former library was considered cramped and busy with an average 3,000 students coming through its entrance each day. The new building with its reimagined spaces immediately saw daily entrance gate counts above 10,000. The building became a victim of its own success resulting in unexpected issues ranging from stadium-level noise to student behavior incompatible with group or individual study. Library staff and the architects quickly needed to

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reconvene to look at strategic renovations that would address the issues while remaining true to the
original plan and design of the building.

To summarize, the future that lies ahead for research libraries will likely hold a combination of
physical and virtual realities, each with challenges and opportunities. Indeed a recent study at the
University of Colorado at Boulder found that the factors significantly related to library users’
satisfaction with digital resources included the physical library they most often visited. In other
words, the frequency with which students and faculty visited the physical library was strongly
correlated to the ease with which they were able to find and use information in digital formats.

The Perceptions of Libraries, 2010 report provides additional perspective on the state of libraries
based on U.S. data from national surveys. The report provides data on information consumers and
their online habits, preferences, and perceptions. Its information is placed in the context of
technological and economic shifts since 2005, and looks at varying age and employment groups. Key
findings include the following:

• Among college students surveyed, 99% used email and 92% used social networking and
  social media sites (such as Facebook)
• College students overwhelmingly (83%) begin their information searches using search
  engines such as Google, although at lower rates than in 2005 (92%)
• Substantially more students in 2010 (43%) than in 2005 (31%) felt that information from
  library sources was more trustworthy than from general internet search engines
• Satisfaction with both Google and library databases in 2010 trended down from 2005, while
  borrowing print books from libraries and library leisure reading stayed relatively stable

The ERIAL (Ethnographic Research in Illinois Academic Libraries) project at Illinois Wesleyan,
DePaul University, Northeastern Illinois University, and the University of Illinois's Chicago and
Springfield campuses enlisted anthropologists to examine students’ study behavior. It also found
that students relied heavily on Google and general internet sources, but found that without
intervention, students were not able to navigate or assess general internet resources particularly well.
Students looked most often to teaching faculty for expert information about what library resources
to use in their course assignments while faculty often had difficulty keeping up with new library
resources and modes of scholarly communication. Librarians on these campuses actively new sought
ways to bridge these gaps.

Libraries: What Tulane is Doing Now

Tulane University, through its libraries, is a member of the Association of Research Libraries
(ARL), a group recognized as the top 114 research libraries in North America. The facilities,
services, and resources of the Tulane libraries serve the university's students and faculty, but also

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22 Gerke, Jennifer and Maness, Jack. “The Physical and the Virtual: the Relationship between Library as Place and
http://crl.acrl.org/content/71/1/20.full.pdf+

Computer Library Center, Inc., 2011), accessed March 5, 2012,

serve as a major cultural resource for researchers and scholars from throughout the Gulf South region, from other parts of the United States, and internationally, especially for scholarly work in the areas of Latin American studies, jazz studies, and New Orleans history.

The main library, Howard-Tilton Memorial, supports research broadly across the university's academic programs and research activities. Its general collections are housed in the Howard-Tilton building on Tulane's uptown campus and at an off-site storage facility a few miles away. The Howard-Tilton building also houses the Latin American Library, which holds one of the world's principal collections for Latin American studies. The Howard-Tilton Memorial Library Special Collections Division is located in Jones Hall across from the Howard-Tilton building. It includes the Hogan Jazz Archive, Louisiana Research Collection, Rare Books, University Archives, and the Southeastern Architectural Archive. Howard-Tilton's Architecture Library is located on the second floor of Richardson Memorial Hall within the School of Architecture.

Three more full-service libraries also support the university's professional schools; these are the Rudolph Matas Library (health sciences), the Turchin Library (business), and the Tulane Law Library. In addition, Tulane is host to a number of other smaller, specialized libraries that enhance research and these include the Amistad Research Center, the Minna F. Koch Memorial Library of Botany, the Nadine Vorhoff Library and Newcomb Archives, and the Alfred H. Clifford Mathematics Research Library.

Local and Global Linkages: Tulane's libraries, with more than 4.2 million volumes, represent a depth and a variety of collections of international scope present only at the world's top research institutions. The collections support the diverse academic profile of the university through a range of collections policies and a liaison program that assigns librarian bibliographers to work with each academic department. Much of Tulane’s wealth of rare or archival collections has a regional focus on Latin America, Southern Mexico, and Central America, or on New Orleans and Louisiana.

Tulane's libraries have built a large array of digital resources accessible to students and faculty through the campus network. This includes hundreds of research databases and access to articles from more than 70,000 subscription-based journals and other periodicals. It also includes an unusually large number of published digital collections methodically acquired in a rebuilding process after Hurricane Katrina. Most of the main library's 700,000 e-books are from these historical digital collections. The library is employing a web-scale new discovery tool (SearchAll) to provide broader, centralized access to its digital resources, and is using other technology applications to enhance library use online. A new Tulane University Digital Library (TUDL) hosts digital holdings unique to the university by digitizing selected archival collections.

Teaching and Learning: At the main library, many primary services, including research assistance and technology help, have been consolidated within a prototype Learning Commons where library services are offered in partnership with Tulane's Technology Services. The main library offers all the standard services offered competitively by other large research libraries, including a comprehensive library instruction program, interlibrary loan and document delivery services; graduate student and faculty carrels; campus wireless network access; and photocopiers, scanners and networked printing. Even with its growing collections of digital resources, students and faculty check out increasing numbers of physical items from the main library's circulation service points (more than 110,000 annually). In the Learning Commons, large-screen computers are configured to meet the demands of multimedia and digital-based assignments. The area has other features such as a 50" touch screen LCD display for group presentations and a high-resolution flatbed and document scanner. The Music and Media Center is the primary service point for a new general circulating
collection of more than 40,000 music and nearly 20,000 audio-visual recordings. The Matas Library (health sciences) on the downtown campus and the Tulane Law Library also provide a broad range of services for their professional schools. The Turchin Library at the A.B. Freeman School of Business, with a smaller staff and facility, provides a more limited range of resources and services. This is true of the other specialized libraries as well.

Research Synergies/Data Management: The main Howard-Tilton Library and the Matas Library have been working in partnership with Tulane Technology Services on developing a program of research support services addressing e-science, including those that would address data dissemination, management, and curation needs brought about by grant requirements from the funding agencies such as the National Science Foundation (NSF) and the National Institutes of Health (NIH). The program envisions an institutional repository for Tulane University.

Student Experience: Mostly due to the condition of its two main library buildings, Tulane's library facilities today are an obvious weakness. The 40,000 square-foot ground floor of the Howard-Tilton building was effectively destroyed by flooding after Hurricane Katrina in 2005, and it remains gutted. It housed large collections and the building’s heating, ventilation and air-conditioning (HVAC) mechanical systems. A “temporary” HVAC system is still in use. The ground floor of Jones Hall, which housed a portion of the library’s archival collections, flooded as well. The university will reconstruct the library’s flooded spaces in two additional floors atop the Howard-Tilton building through build-back and hazard mitigation programs offered by the Federal Emergency Management Agency (FEMA). Despite compromises to the Howard-Tilton building, retrofitting a portion of its 1st floor to create the prototype Learning Commons and reading areas on the 3rd floor to create a similar Study Commons after Katrina produced dramatic increases in average entrance door counts. Today the library is easily the most popular study space on the uptown campus.

Building Opportunities: In the FEMA-funded build-back project, spaces within the new top (6th) floor of the main library will be reconfigured in an architecturally dramatic new space with Media, Music, Art, Architecture, Microform (rare facsimile) and Rare Book collections focused around a central service point. The two new floors from the build-back project will return the library to pre-Katrina capacity, but the library will still lack space for growth and its off-site facility is full. Renovation of the lower floors of the building and provision for future growth and enhanced user and collections spaces will need to be addressed in a separate, broader project called the Library Renewal Plan. The purpose of the Library Renewal Plan is to define the space needs and building improvements required for the main library facilities at Tulane's uptown campus location to serve the university for the future. The presently gutted ground floor of the main library will not again be used for library collections, but it could be used to house a large number of new classrooms.

Libraries: What Should We Do?

- Redefine the IT department to provide
  - Connectivity and support between the University, the faculty, the students, and the outside world
  - Support for the development of online learning, hybrid learning, and collaborative models
  - Support for the classrooms
• Support for the faculty as we transition from textbooks to e-textbooks and open source textbooks
• Support for the faculty as we transition from appointments to Social Study Sites
• Data management necessary for the computational sciences

• Develop IT “Green Practices” to constantly monitor and improve our energy usage, recycling, and purchasing to ensure that we are promoting educational efficiency and sustainability

• Capitalize more directly on Tulane’s library assets
  • Tulane has one of the top research libraries in North America. The university should examine or consider its current resource assets such as libraries when considering new programs or areas of emphasis
  • Encourage use of library assets among faculty and researchers, and thereby students

• Focus on the Library Renewal Plan as a means to
  • Address optimal library, learning, and study spaces for the next several decades
  • Utilize the empty ground floor in the main library to address the critical campus need for new classrooms uptown
  • Expand Learning Commons and other popular technology-equipped user areas
  • Provide a more efficient, coordinated, and centralized location for some library services and resources presently located apart from the main Howard-Tilton building, thereby potentially freeing additional campus space for new classrooms

• Increase focus on preservation and digitization of unique library collections

• Adapt delivery of resources to accommodate mobile/wireless devices and new technology applications

• Explore opportunities for increased collaboration among potential campus partners and among other libraries to support teaching and learning; develop focus on library instruction (information fluency), research support, and changes in scholarly communication
**RESEARCH SYNERGIES**

**Purpose**

The Research Synergies subcommittee examined local, national, and global research practices and opportunities for institutions of higher education. The subcommittee also examined Tulane University’s research enterprise and prepared recommendations for addressing challenges and seizing opportunities in this area.

**Research Landscape in Higher Education**

The Association of American Universities’ online commentary on research begins with these remarks:25

“...The purpose of the American research university is to ask questions and solve problems. Together, the nation's research universities constitute an exceptional national resource, with unique capabilities:

- America's research universities perform more than half of the nation's basic research
- The expert knowledge that is generated in our research universities is being applied to real-world problems every day;
- By combining cutting-edge research with graduate and undergraduate education, our research universities are also training new generations of leaders in all fields.”

Research is a crucial component of higher education. To retain its status as a major university, Tulane must meet the changing demands of research productivity in an increasingly globalized and technological era. Traditional learning techniques and conventional disciplinary training of a brick-and-mortar university have their uses. However, top universities have kept pace with the recent national and international explosion of knowledge and information through collaboration and exchange between disciplines, the establishment of research centers and programs for such collegial sharing, and cutting-edge technology in configuring, distributing, and storing data. As the AAU notes in another piece, “Along with creating new knowledge, universities use their research activities to educate students who will become the next generation's scientists, engineers, teachers, and leaders in government and industry.”

This subcommittee identified several opportunities to facilitate synergy within the institution for faculty, graduate, and undergraduate students. One important component of our recommendations is the promotion of interdisciplinary research. While there are numerous definitions of this term, the National Science Foundation has adopted the following from a 2004 National Academies report:

“Interdisciplinary research is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.”26

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The subcommittee members believe that nurturing collaboration across disciplines will be essential to maintaining Tulane’s prominence as a research institution, and this report outlines several steps that the administration can implement to facilitate education and innovation in an era in which interdisciplinary research will be of vital importance in both the workplace and the funding environment. These include recommendations with respect to faculty, infrastructure, computing, administration, and educational programs, all of which will synergistically enhance Tulane’s research environment and ensure our status as a premier research university in the coming decades.

The subcommittee was also concerned about the current environment for graduate students at the university. One barrier to excellence for our graduate programs is the lack of a formal infrastructure to allow for the application of uniformly high academic standards across the university, mentoring and career development, coordinated support, and enrichment opportunities for students. The establishment of such infrastructure could also facilitate interdisciplinary research across the boundaries of academic and professional disciplines by providing funds and space. These goals could be achieved through re-establishment of the Graduate School, or through a university-wide office with appropriate authority, responsibility, and resources.

Research: What Should We Do? And What is Achievable?

• Make structural changes to enhance cross-disciplinary collaboration:
  o Establish a university-wide, integrated oversight office for graduate and postdoctoral studies as an interdisciplinary connector that promotes research and educational synergy
  o Establish hiring practices focused on interdisciplinary research clusters
  o Institute academic review processes that take into account interdisciplinary, collaborative efforts
  o Develop a framework that will allow the University to aggressively pursue large grants that require multiple schools (for example, health system questions requiring participation from the School of Medicine, School of Public Health and School of Business)

• Implement a targeted enhancement of the educational and research environment:
  o Develop a meaningful cadre of faculty in the computational sciences
  o Expand information technology services and establish a faculty advisory committee to improve research computing, data management and information security
  o Fully implement electronic research administration
  o Elevate the scholarly environment and national profile by increasing representation in prestigious honorary societies
  o Create a residential retreat for artists, writers and visiting scholars
  o Foster research through student opportunities for experiential learning
  o Improve the quality of space allocated for research and scholarship

• Promote Cross-Campus (Uptown and Downtown) collaboration:
Facilitate intra- and extra-university connectivity through information technology services.

Overcome the geographic barriers between the two campuses through improved student shuttles and “electric cars” faculty could utilize to commute between campuses with designated parking.

Facilitate productivity and success in joint research and training ventures. Enhancements in the following areas are recommended:

- Videoconferencing
- Cross-appointing faculty
- Eliminating administrative and bureaucratic hurdles
- Partner with other research institutes around focus areas (e.g., Cornell and Technion)
STUDENT EXPERIENCE

Purpose

The Student Experience subcommittee examined local and national trends in student experiences at institutions of higher education and developed recommendations for Tulane University’s programs to enhance the student experience.

The Tulane University Student Experience

The undergraduate class expanded significantly following Hurricane Katrina, and the quality of the applicant pool has improved since our implementation of the 1998 Strategic Plan. Many of the challenges for the undergraduate university relate to growth. Facilities are outdated and crowded. The number of tenured and tenure-track faculty has declined, and teaching loads have increased. At the graduate level, the separation of students in individual disciplines and schools across two campuses creates a challenge.

However, the University has made several improvements in the student experience that can be extended for further gains. There has been a major effort to develop residential life on campus, and students now live in dorms during their first and second years. Up to 40% of the students remain on campus during the third and fourth years. The current student body learns not only in the classroom, but also through direct involvement with service learning initiatives in the city of New Orleans.

The committee interviewed both current and former students (undergraduates only) as well as administrators in the Student Affairs arena. Topics discussed included on-campus housing, orientation, retention, and the Tulane community as a whole.

Satisfaction

- Connection with New Orleans, probably nurtured through public service and recreational activities (music, etc.)
- Flexibility in the curriculum that can allow them to earn dual degrees or double major.
- Individuality encouraged, “discover who you are”
- Dorm life—provides a sense of community with peers

Challenges

- Academic Advising—students often feel that it is difficult to see the faculty
- Career counseling—although students feel academically prepared for future jobs, they feel they need additional resources to find employment in this competitive market
- Alumni networking—students desire additional opportunities to network to find jobs. They would like additional internship and externship opportunities

“Big Ideas” to Address Student Concerns

- More on-campus housing—third year residency requirement?
- Formal mentoring program between undergraduates and grad students or faculty?
• Research/artistic project with faculty members—part of the core curriculum?

Student Experience: What Should We Do? And What is Achievable?

• Enhance experiential learning:
  ○ Expansion of on-campus housing/residential college availability, with consideration of a third year residency requirement
  ○ Development of Resident halls as educational incubators (e.g., have a Resident Hall focused on entrepreneurship where like-minded individuals can cluster)
  ○ Expansion of CELT, CPS and the development of other outreach programs

• Enhance the overall educational experience:
  ○ An upgrade of facilities to ensure that students at all campuses have a learning environment that meets their educational needs
  ○ Increased number and availability of teaching faculty
  ○ Additional IT support

• Develop programs that would encourage active faculty mentoring of students:
  ○ Establish a formal mentoring program between undergraduates and graduate students and faculty to guide students in choosing their major and future career focus and help with their post-graduate transition

• Take advantage of the rich New Orleans and Tulane Environment:
  ○ Utilization of the Visual Arts throughout the campus (Uptown and Downtown) to ensure the students feel that they are part of Tulane and have the Tulane Experience
  ○ Promote synergy between the Music School and the Business School to develop a curriculum that would be of value for individuals interested in the film and movie industry
  ○ Upgrade Dixon Hall and McAllister auditorium to promote plays and concerts. This would allow Tulane once again to become one of the Centers of Arts in New Orleans
TEACHING AND LEARNING

Purpose

The Teaching and Learning Subcommittee examined the local, national, and global landscape in teaching and learning and prepared recommendations in four sub-categories: 1) Experiential Learning; 2) Learning Objects; 3) Curriculum, Academic Content, and Rigor; and 4) Teaching and Teaching Methods and Collaboration.

Experiential Learning

All learning is experiential, but not all experiences are educational.

Experiential learning includes such educational activities as service learning, internships and externships, community research, undergraduate research, study abroad, problem-based learning, team design projects, and even volunteerism. Activities such as volunteerism are recipient-focused, insofar as the key objectives of the activities are altruistic in nature. Service learning, on the other hand, is a balanced approach in which the provider and the recipient both benefit. In this case, the benefit to the student is primarily academic in nature. At the other end of the spectrum are such activities as internships in which the focus is on the student’s acquisition of specific skills in a vocational environment. At Tulane, any experiential learning activity must have a majority of academic benefit to the student, regardless of whether that student serves as the provider or the recipient of benefits.

The last strategic planning processes had service learning as a key focus, and Tulane University is now a recognized leader in service learning within the higher education community. Thus, we are well along the path to incorporating experiential learning concepts into our curricula. Accordingly, the intent of the current environmental scan on experiential learning is to see what new or emerging areas of experiential learning Tulane should consider for the next round of strategic planning. Based on a preliminary review of the literature and a personal assessment of Tulane’s current assets, one area for further discussion is proposed: undergraduate research.

Undergraduate Research

As a comprehensive research university with the highest rating of research activity in the Carnegie classification system, Tulane is in a unique position to offer experiential learning opportunities of an academic level not possible at other institutions. The difficulties in establishing a comprehensive undergraduate research program are primarily related to capacity. Opportunities in disciplines with the highest demand for undergraduate research are limited by insufficient laboratory space and faculty time. A broad-based mentoring platform involving graduate students, postdoctoral fellows and faculty would be required to accommodate such a program.

Tulane has the necessary framework for launching or enhancing coordinated experiential learning activities through the Center for Engaged Learning and Teaching (CELT) and the Center for Public Service (CPS). The activities described above would best fit into the mission of CELT.
Learning Objects

Teaching styles and students’ learning styles do not always match perfectly and can vary greatly. While this can make for challenges in the classroom, it does not necessarily determine whether or not students are able to learn and master content. The major factor affecting learning success in the classroom appears to be the types of tasks assigned to support learning and how effectively the instructor uses learning tools to engage learning processes. Classroom instruction that is clear and detailed also improves student learning success and mastery of skills.

The subcommittee’s recommendations include having CELT reach out to current faculty and new faculty to work with them to assess their teaching styles, employ strategies for using their teaching styles effectively in the classroom, and teach them how to use assessment tools in the classroom to help students assess their individual learning styles. Workshops on using teaching tools (also called learning objects) such as PowerPoint, the internet, textbooks and other tools more effectively, along with guidance on developing effective experiential learning activities in and outside the classroom, would also further support teaching and learning effectiveness.

Curriculum, Academic Content, and Rigor

Open Courseware

Twelve years ago, Massachusetts Institute of Technology launched OpenCourseWare, through which course materials for virtually all of their undergraduate and graduate courses are available online to anyone, anywhere, anytime. This initiative is not credit-bearing or degree-granting. Susan Hockfield, President of MIT outlined the goals and challenges of OpenCourseWare:

“In the year 2000, a faculty committee first proposed this bold and innovative idea, and since then, the vast majority of our faculty–over 90%–have voluntarily contributed their teaching materials for free and open publishing on OCW. MIT faculty are passionate about their teaching, and they are keen to see their work benefit global society. We do not yet know the full potential of OCW and its ultimate impact on global education. But it is clear to us that by thinking of knowledge as a public good for the benefit of all, and acting on this philosophy through OpenCourseWare, we can make a difference. We know from our evaluation research and from many thousands of user feedback emails that OCW is improving education and bringing new opportunities to people everywhere. We expect this impact will continue to grow in ways we have already seen and in ways we have not yet imagined.”

An OpenCourseWare Consortium was created in 2008, and 250 universities and associated organizations are committed to advancing OpenCourseWare sharing on global education. Some schools, such as Carnegie Mellon and Harvard University Medical School, are combining online OpenCourseWare with classroom instruction. The use of OpenCourseWare in conjunction with classroom instruction is called the Open Learning Initiative approach. The National Center for Academic Transformation suggests that the Open Learning Initiative approach reduces costs and helps students learn faster.

Online Courses

Online courses will most likely continue to proliferate for primarily introductory courses. Nonprofits like the National Center for Academic Transformation (NCAT) will help faculty convert
to online courses. They claim it improves learning outcomes and reduces costs.\textsuperscript{27} Enrollment in online courses quadrupled between 2000 and 2007.\textsuperscript{28} The increase is projected to continue, including public 4-year schools and private 4-year schools. Growth online is being observed in almost all of the eight major disciplines. There is considerable overlap between the potential academic benefits being considered in the Curriculum Subcommittee this sub-group with the use of technology in higher education being reviewed by the Technology sub-group. Collaboration between these sub-groups is encouraged to help identify key recommendations related to online learning.

\textbf{Curriculum}

It seems clear that new skills will be important for students going forward. Common curriculum themes regarding skills students will need in the future:

- Collaboration skills due to the existence of complex problems
- Improvisation skills (or adaptive learning skills) due to a rapidly changing environment
- Data analysis skills as need to be able to handle and analyze data

Lawrence Summers (former President of Harvard University) recently discussed how the curriculum in higher education should change:\textsuperscript{29}

- An inevitable consequence of the knowledge explosion is that tasks will be carried out with far more collaboration
- Educational experience should breed cosmopolitanism and global experiences
- The emergence of English as the global language along with the rapid progress in machine translation may affect the expectation that students need to study a foreign language
- Due to an increasing emphasis on data analysis, students will need to understand how to handle and analyze data

According to Elizabeth Coleman (President of Bennington College),\textsuperscript{30} “Improvisation, collaboration, and mediation will join the ranks of reading, writing, and mathematics as fundamental.” She feels that “Learning how to listen assumes an importance that is on a par with learning how to talk,” and that the issues mankind faces have great urgency and complexity and are of a large magnitude (i.e.: energy sustainability). The curriculum items she thinks are necessary are those that will train students to address these issues.

The Study of Undergraduate Education at Stanford University (SUES) identified the following four elements of importance to today’s college curricula:

- \textit{Owning Knowledge}: Need breadth and depth
- \textit{Skills and Capacities}: Communication, critical thinking, aesthetic and interpretive judgment, formal and quantitative reasoning, ability to think historically, facility in scientific and social scientific analysis, creative expression

\textsuperscript{28} Van Der Werf and Sabatier, The College of 2020: Students, June 2009, Chronicle Research Services.  
\textsuperscript{30} “The Bennington Curriculum: A New Liberal Arts”, Speech by Elizabeth Coleman (President of Bennington College) on October 6, 2007
• *Cultivate Personal & Social Responsibility*: Use knowledge for good, not harm
• *Adaptive Learning*: Adaptation and change are necessities in our ever-changing world

### Teaching Methods and Collaboration

Preliminary research on the future of teaching and learning leads to four initial areas of concentration: 1) increased emphasis on cross-disciplinary education, 2) the 24-hour classroom, 3) Stanford University’s “Faculty College” model, and 4) university-wide technological enhancement.

#### Increased emphasis on cross-disciplinary education

College graduates are increasingly expected to be cross-trained, multi-skilled and able to adapt to diverse work environments. This expectation applies to most if not all industries and disciplines in the 21st century.

- **Example**: Students studying computer science, particularly those who will design applications and products for computer use, should necessarily understand intuitive thinking. With this understanding they will be better able to create products that follow universal thought processes. Such processes are better taught in the psychology discipline.

- **Example**: Students studying public relations will find a need in their industry for proven sales and marketing skills. Positioning a product and establishing its image for the public (the common job of PR professionals) relies heavily on understanding the concept of “unique selling propositions,” which is generally taught in business schools. Public relations, often taught in schools of communication or media studies, would benefit by increased emphasis on business-related skills.

Economic conditions, rapid advances in technology and the shift from the industrial age to the digital age have combined to require universities to look forward to great collaboration among schools and departments.

#### The 24-hour classroom

The traditional model of education held that college classes meet at appointed times, a specified number of times per week. That standard dictated that the teacher would generally have no contact with students except at those appointed times unless the student made an appointment to see the instructor during specified office hours. The contemporary student comes to the university setting accustomed to continual contact with an ever-expanding set of individuals via personal technology. Asking students to release that concept when they enter a classroom will likely cause them to feel frustrated and unfulfilled. By embracing continual contact via personal technology, instructors will create a “24-hour classroom,” meaning that students and instructors can have continual contact, rather than scheduled contact. Although commonly used programs (such as Blackboard) already provide discussion boards and other platforms for interactivity outside of the classroom, the future classroom may break those boundaries by adopting more virtual platforms (such as Second Life) that facilitate ongoing collaboration among students and between students and instructors.

#### Stanford University “Faculty College” Model

In January 2012, Stanford University published “The Study of Undergraduate Education” as an internal document aimed at preparing students for “local, national and global citizenship.” This comprehensive study covered past, current and future visions for the University, while also examining best practices of peer universities. In the section titled “Undergraduate Teaching and
Learning,” the report discusses the “Faculty College” initiative instituted in 2011. Faculty College was established on the premise that “most faculty have little opportunity to talk substantively about teaching. Most of our work as teachers is, in fact, invisible to our colleagues. Interacting more frequently as a community of teachers promises to help instructors learn from one another, discuss and disseminate novel pedagogies and best practices, and create new courses, particularly courses spanning departments and programs.”

The focus of Faculty College is on collaboration among teachers, departments, and schools. Its stated goal is to “bring together small teams of faculty over the course of an academic year to plan, study, and develop curricular and pedagogical innovations.”

Since Tulane’s various departments, schools and faculty operate in a somewhat insular manner, Stanford’s Faculty College model presents a strong, forward-thinking concept for our consideration. It is conceivable that by emulating this model, Tulane could foster greater collaboration and cooperation among students and faculty University-wide.

University-wide technological enhancement

While Tulane is certainly not alone in its challenges to creating technologically equipped classrooms and workspaces, we are beginning to see the real disadvantages of de-emphasizing technology upgrades. With only about half of its classrooms technologically equipped, the University must take an aggressive approach to necessary upgrades, in order to meet the expectations and needs of students and teachers.

Further, with the general public increasingly adapting to social networking and instantaneous information gathering, teaching at the University will necessarily have to adapt to a faster, more challenging pace. Otherwise, students accustomed to society’s own faster pace will not be as engaged or compelled to learn. This will present a significant “sea change” for traditional classroom instruction.

While those changes would be internal, there is a need for University outreach as well. Since the University itself is not the arbiter of technological innovation, it would seem advisable for Tulane to establish a consortium of top technology companies to help position the University to identify and fulfill its technological needs for the foreseeable future. The consortium will also aid the University in adapting and altering its policies to meet the ongoing technology needs and changes. For this consortium, the university should provide futurists, computer scientists, faculty members and administrators to work with the above-mentioned technology companies.

Teaching and Learning: What Should We Do? And What is Achievable?

- Support Undergraduate Research
- Provide students with the skills required in the future:
  - Development of curricular initiatives focusing on collaboration, improvisation and data analysis
  - Promotion of life-long learning throughout the curriculum as well as through the development of a Center that will allow Tulane graduates to register for Tulane courses or direct them to other educational opportunities that will meet their needs
- Rejuvenate the classroom experience:
  - University-wide technological enhancement of the classroom
- Development of modern classrooms in which educational materials available on the Internet are utilized to augment the classroom experience

- Enhance the effectiveness of faculty teaching:
  - Development of CELT teaching and learning effectiveness workshops for existing and new faculty
  - Provision of additional resources to the faculty to allow for new educational techniques
  - Adoption/adaptation of Stanford’s Faculty College Model
  - Development of modern classrooms in which educational materials available on the Internet are utilized to augment the classroom experience.

- Prepare for future changes in classroom instruction and technological needs through the establishment of a consortium of top technology companies to help position the University to identify and fulfill its technological needs for the foreseeable future
_graduate education

architecture

business

law

medicine

social work

public health
GRADUATE EDUCATION

Introduction

Graduate education – here defined as degree programs leading to the Master of Arts, Master of Science, Master of Fine Arts, Master of Liberal Arts, and the Doctor of Philosophy degrees – has long been the cornerstone of Tulane’s status as a research intensive institution of higher learning. Its membership in the AAU is due, in part, to its ability to educate doctoral students and train postdoctoral fellows. Since granting its first PhD in 1887, Tulane has developed research-oriented masters and doctoral programs that parallel those at some of the world’s best institutions. Most recently Tulane launched six new interdisciplinary PhD programs, partly in response to the elimination of doctoral programs in the Renewal Plan, but also in response to a national trend towards fostering multi- and interdisciplinary research. Other emerging trends in graduate education must be reviewed in the context of a long-range institutional planning process. The following sections provide some analysis of these emerging trends, Tulane’s strengths and weakness, and recommendations for enhancing graduate education through the strategic planning process.

Teaching and Learning

Teaching and learning at the graduate level has evolved little in the past 150 years. The Humboldtian approach – that of a research mentor advising a doctoral student on a specific project – is still the model in virtually all of the disciplines offering doctoral degrees. There are certain trends, however, that are beginning to emerge in graduate education that are worthy of note.

- **Interdisciplinary collaborations**—Projects and programs are now emerging that require a team of investigators rather than a single advisor. Although a primary advisor is often identified, a graduate student may be mentored by a number of people, not only in their research area, but also from a career or personal development standpoint. This point is considered further in the Research Synergies section. These initiatives are considered a strength and continued opportunity for Tulane.

- **Service learning**—As students are provided with more service learning opportunities at the undergraduate level, the expectations for service learning at the graduate level will rise. The service learning movement, while concentrated primarily at the undergraduate level, will begin to impact graduate education in the coming years. Tulane should strongly consider how it will respond to the demand for service learning opportunities in graduate degree programs. The focus of these programs should continue to be quality research and scholarship, but even now, many funding agencies require outreach activities and a demonstration of public good for their awards. Service learning presents a unique opportunity to satisfy not only student demand, but to meet funding agency demands for accountability. This is an area of potential strength for Tulane.

- **Entrepreneurship**—Coupled with interdisciplinary collaborations and service learning is the concept of entrepreneurship. Tulane has an opportunity to build upon some existing strengths in this area, such as the new Certificate Program in Technology Commercialization. As Tulane builds its emphasis on social entrepreneurship at the undergraduate level, there are also opportunities to couple these initiatives with graduate education.
In general, Tulane is ahead of most of its peers in the areas of Teaching and Learning at the graduate level. It has assessment practices in place that do not exist elsewhere, and has begun to embrace interdisciplinarity as an effective model for addressing difficult research problems. A continued emphasis on teaching and learning at the graduate level will serve the institution well.

Global and Local Opportunities

In terms of student demographics, graduate education has been global for many decades. The Council of Graduate Schools’ annual report on admissions of international students documents the continued influx of international students into US graduate programs. The STEM disciplines, in particular, rely heavily on international students to sustain research. Although retention of international students and their ultimate employability in the United States are concerns, the broader question for Tulane’s graduate students is related to the specific activities that provide them with a broader knowledge and experiences in globalization. International research experiences are critical to developing those skills that will serve our graduate students well as they enter the global workforce. In this area, Tulane is weak. Despite its strong international presence, Tulane graduate students rarely have opportunities to obtain international research experiences. Tulane is currently able to provide limited funds for graduate students to present their research results at national and international conferences. This is excellent exposure for them and allows them to interact with students and scholars from many different countries, but many other international research experiences could be made available with additional funding. The Office of Graduate and Postdoctoral Studies routinely receives requests for international research visits by graduate students to take advantage of such important resources as libraries, special collections, unique instrumentation, and faculty expertise.

**Tulane should establish a fund to provide travel support for at least one international research experience in a doctoral student’s career.**

Research Synergies

The “Promoting Research Synergies” section of this report provides some excellent suggestions that are relevant to graduate education. Those recommendations deemed most critical to graduate education include

1. **Making structural changes to enhance cross-disciplinary collaboration; Promote Cross-Campus (Uptown and Downtown) collaboration.**

Although many of the recommendations proposed by the subcommittee focus on faculty, including establishing hiring practices focused on interdisciplinary research clusters and implementing academic review processes that take into account interdisciplinary, collaborative efforts, the environment these changes would create would be extremely beneficial to training graduate students in highly interdisciplinary areas. The current model of granting PhDs through schools is not conducive to the creation of interdisciplinary projects that align with cross-school faculty projects that may result from the proposed structural changes. The new cross-school interdisciplinary PhD programs have resolved this issue by carving out specific degree programs in broader research areas such as aging and urban studies, but further flexibility in selecting topics and committees would allow students to be at the cutting edge of emerging research areas.

**Tulane should expand its ad hoc Interdisciplinary PhD option in the Schools of Liberal Arts and Science and Engineering to allow for collaboration across the institution in a**
broader array of interdisciplinary research projects in emerging areas. Rather than being student-driven (a student must currently formulate their own project and then seek faculty members to serve on a committee), the university-wide Interdisciplinary PhD would be faculty-driven. Faculty members wishing to collaborate on interdisciplinary projects could request support for a student to work on the project.

2. Implementing a targeted enhancement of the educational and research environment

In addition to expanding information technology services, creating a residential retreat for artists, writers and visiting scholars, and related to improving the quality of space allocated for research and scholarship, a space for graduate students to “call their own” would greatly enhance their Tulane experience and promote interdisciplinary collaborations as recommended in other parts of this document.

Tulane should support the acquisition and development of a Graduate Student House for individual study, group meetings, social gatherings, and to promote interdisciplinary collaboration among the graduate students. The Graduate Studies Student Association already has funds set aside and a prospectus developed for such a facility.

3. Partnering with other research institutes around focus areas

The concept of regional, national and international alliances in graduate education is an intriguing one, but as an institution, Tulane has not taken advantage of its strategic alliances. MOU activity in certain schools (e.g., Business, Architecture) is expanding, especially at the international level, but what we are talking about here is a concerted effort to combine programs at the local or regional level to take advantage of economies of scale. As resources for graduate education dwindle and new interdisciplinary research areas emerge, the synergies created by partnering with other research institutions in strategic areas could be worthy of further consideration. Some mechanism is needed for identifying potential collaborations and quickly creating (and dissolving where necessary) joint and dual degree programs.

Careers

The graduate education community has made a concerted effort to avoid biased language such as “alternative careers” or “careers outside the academy,” the implication being that careers in academia are the preferred or default destination for our graduate students, especially those with the PhD. In this area, Tulane has a weakness, as do many research-intensive universities. This preference for academic careers as the sole measure of student success is beginning to change. The Path Forward from the Council of Graduate Schools states:

“While doctoral recipients are often thought of as being groomed for work in academia, a closer look suggests a different story. According to the … BLS, most doctoral degree holders work in occupations in service industries—generally in professional, scientific, and technical services or in government. Most of these industries and occupations are projected to grow over the next 10 years. For example, the largest projected growth of jobs is in the healthcare and social assistance industry, followed by professional, scientific, and technical service industries.”

This is an opportunity for change. Currently only one, half-time Career Coach in the Career Services Center is tasked with assisting graduate students find placement opportunities outside of academia. Tulane should expand its Career Service opportunities for graduate students,
especially those interested in careers in industry, government, non-profit organizations, and non-governmental agencies.

Facilities / Infrastructure

The facilities required for graduate education are much different than for undergraduates. Class sizes are much smaller and classrooms can be utilized in off-hours to accommodate part-time students. The needs can diminish even further once students enter dissertator status. In fact, one could argue that in certain disciplines (e.g., humanities) all that is needed to produce a scholarly product is an office and a computer. The story is much different in the bench sciences and engineering where state-of-the art equipment is necessary throughout the student’s career in order to conduct research and produce scholarly products at the highest level. However, in all cases the infrastructure required to maintain quality graduate programs is enormous. A well-equipped research library is a requirement for all disciplines, but it is increasingly expensive to maintain, as outlined in other sections of this report. Core instrumentation facilities require not only expensive equipment, but also well-trained staff for maintenance and operation. The research infrastructure required to meet the increasing demands of government accountability and reporting is ever increasing. And the student support network (e.g., mental health facilities) at the undergraduate level may not even be minimally sufficient for graduate students. In many ways, the facilities and infrastructure issue is too big to deal with in a summary document such as this. However, one issue transcends all others with respect to the graduate education community: housing. More than just a place to live, graduate housing provides a living community for graduate and professional students to enjoy what for many is the most intensive period of professional development they will have their careers. Moreover, the prominence of graduate student housing in the campus community assists in firmly establishing graduate education where it belongs – near the top of the educational chain.

Rosen House – on the corner of Ben Weiner Drive and Claiborne Avenue - was demolished in the wake of Hurricane Katrina. At the time, it was the only facility on campus designated for graduate students and married students. The university now provides limited space in The Papillion, a privately run apartment complex in the Garden District, and Deming Pavilion on the Downtown campus. For various reasons, but primarily due to cost, neither the Papillion nor Deming are considered viable options for graduate students, especially those on the Uptown campus. Graduate and married student housing on or near the Uptown campus would be a great attraction for prospective students. It would also assist with retention and the assimilation of foreign students into the Tulane culture. There are additional possibilities for retail space, visiting scholar housing, and even conference facilities depending on the size of the gift.

Tulane should actively pursue a major endowed gift to underwrite the construction of on- (or near-) campus graduate, married student, and visiting scholar housing.

Economic Concerns

Graduate education is expensive. Unlike the undergraduate education model which relies heavily on tuition to support instructional costs, graduate education is built around two primary sources of support: institutional support, typically in the form of teaching assistantship; and government support in the form of research assistantships from research grants. The latter form of support is found especially in the STEM and health science disciplines. Other forms of support are available, including fellowships from state, national and private agencies, and some students are self-supported, especially in the humanities and social sciences. However, these forms of support are in
the minority. The heavy reliance on institutional and federal support for doctoral education has prompted concern, not only because of dwindling state and federal resources, but also because assistantships have been found to contribute to lengthening the time to degree. This dependency has resulted in the simultaneous recommendation from the National Research Council and the NIH working group on the Biomedical Workforce to reduce the reliance on assistantships for graduate education and increase the use of fellowships and traineeships as the preferred means of support. While Tulane cannot directly control the preferences of federal agencies for funding of graduate students, it can move toward providing fellowships for doctoral students. Fellowships, in fact, have been awarded in many of the recent interdisciplinary doctoral programs, especially during the first and last years of the students’ tenure. Some schools offer dissertation-writing fellowships to assist doctoral students in completing their theses.

Tulane should establish endowed graduate fellowships to mitigate the impact of reductions in state and federal funding, and to promote accelerated degree completion.
**ARCHITECTURE**

**Introduction**

Architecture schools emphasize diverse areas of learning. Design, critical thinking, and verbal and digital communication skills are coupled with historical, theoretical, and technical subjects. Architecture has long been a model for project-based teaching and learning centered on the open design studio. In recent years there has been a greater emphasis on research-based design pursued in collaborative and interdisciplinary teams.

Both the profession and the schools have been going through a period of change due to technological advances and challenging economic conditions both nationally and globally. Sophisticated digital technology has led to performance-based design approaches and new project delivery methods in the profession.

**Teaching and Learning**

Schools are reworking curricula to respond to these conditions and to advance new topics including sustainable design and digital fabrication.

Interdisciplinary learning and research-based design are increasingly important. This can be difficult in for schools that lack connections with engineering, planning and landscape architecture.

A few schools have initiated distance learning and low residency programs. Schools in some areas have developed relationships with community colleges to lower the cost of professional education.

**Global Opportunities**

Study abroad has long been an important component of architectural education, but this is now changing from a study tour approach to models that have a more meaningful dialogue with students and professionals abroad. A significant percentage of architecture students in the post-professional degree programs are international with the majority coming from Asia. A growing number of graduates have sought employment abroad in part due to the financial crisis in the construction industry in recent years.

**Local Opportunities**

Community engagement has become a major theme in many schools. Design and building projects often work with local nonprofits in ways that seek to advance community goals. This kind of service learning is particularly strong at Tulane.

**Research Synergies**

Many faculty are now participating in larger scale grants with groups from disparate parts of the university. Topics such as healthcare, building science, and sustainable design are bringing faculty into relationships with the broader university. For example, the initial themes of Cornell’s New York campus include the built environment, health, and media—all topics that engage architecture.
In addition, architecture is moving beyond a narrow definition tied to building design. Future architects will design and build buildings, but they will do so in an era when the overwhelming priorities are climate change, environmental degradation, failing infrastructure, and social stratification. Environmental design will be less about creating new structures than organizing and adapting relationships between existing environments and natural forces.

### Careers

Economic conditions have led to reduced job opportunities for architects in traditional firms. Historically, a proportion of architecture graduates have applied their education in design thinking and creative problem solving to careers beyond building design. Schools of architecture increasingly acknowledge, and in some cases promote, this shift. Schools are reinvesting in career services and internship programs.

### Facilities / Infrastructure

Historically, schools of architecture required little more than a few lecture halls and minimally equipped open studio space. Faculty often shared offices since many kept separate professional studios. Changes in both technology and teaching styles have caused most schools to invest in major upgrades to their buildings to provide classrooms, studios, and offices with appropriate technology. Laboratories for materials research and digital fabrication are also increasingly common.

### Economic Concerns

Student debt has become a significant concern and puts private institutions without major endowments at a disadvantage. Entry-level jobs in architecture average around $40,000 – $50,000, and the internship period prior to licensure is a minimum of 3 years. Concerns regarding student debt will make it increasingly difficult to recruit students without financial aid, particularly for students coming from low-income families. This has led to an erosion of diversity in our schools. As students seek less costly alternatives, some state institutions have partnered with community colleges.

### Accreditation

Architecture schools are accredited by the NAAB every 6 years. These reviews focus primarily on the professional content of a school’s curriculum, though financial and physical resources are considered as well.
BUSINESS

Introduction

University business education consists of an undergraduate program and bachelor’s degree (e.g., Tulane’s Bachelor of Science in Management) increasingly followed by a master’s program and degree (e.g., a Master of Business Administration). With the proliferation of graduate schools of business, particularly at private institutions, and the rise of school rankings by national media (e.g., Businessweek, US News & World Report and the Financial Times), the Master of Business Administration (MBA) became the “flagship program” for most of the prominent business schools. Interestingly, the objective of the MBA was to provide a general management education to those in business practice whose undergraduate degree was in a non-business discipline (e.g., engineering, science, and liberal arts). Today, the MBA continues to attract people from a wide range of academic disciplines, and less than half the students in these programs have undergraduate business degrees.

MBA applications in the United States have declined over each of the past three years. Two-year MBA program applications declined by 9.9% in 2011 alone, and it appears that MBA applications will be down again in 2012. Part of the decline is being driven by the economy as students are concerned about stepping out of a job to go to school when future job growth in uncertain. Another part of the decline is questioning by the major MBA employers of the relevance and value of the degree within today’s business environment, which has led to considerable program self-assessment and revision. While MBA applications are declining, student interest is shifting towards more specialized one-year master’s programs (e.g., Master of Accounting, Master of Finance, and Master of Management in Energy). Experiencing rapid growth in recent years, one-year programs typically require applicants to have the equivalent of an undergraduate degree in business.

To address the drop in MBA applications, some schools such as Northwestern University’s Kellogg School of Management introduced a one-year MBA program where the students take the core courses before entering the program. Other one-year MBA programs focus on students with undergraduate business degrees, bypassing the first year core and proceeding directly to the second, advanced year. Other schools, such as Tulane University’s A.B. Freeman School of Business have expanded one-year specialized programs in an effort to hold constant or to increase total graduate enrollment.

Business schools are also becoming more global. Applications to US MBA programs and one-year specialized master’s programs in 2011 had a higher fraction of international applicants.

Coinciding with changes in demand for graduate business education, a significant trend in the United States is the steadily increasing demand by undergraduate students for a business education. In many major universities, business undergraduates account for 10% – 25% of total undergraduate enrollment; in some universities, business students are the largest segment of the undergraduate population.

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Teaching and Learning

The forces described above are leading faculty and administrators of graduate business programs to question and revise their curriculum and pedagogy. These questions have led to a broadening of learning objectives to include skills and attitudes/values as well as knowledge. Business programs are increasingly focusing on professional skills such as oral and written communication, critical thinking, leadership, and entrepreneurship. Social responsibility questions arising from the recent financial crisis and from earlier business frauds such as Enron led to a more systematic focus on management’s professional responsibilities.

Currently, there also is a shift away from business cases (i.e., learning through role play) to experiential learning (i.e., learning by doing; learning through action) as is demonstrated by the recent change in Harvard Business School’s MBA curriculum. Quintessential examples of experiential learning are Tulane’s Burkenroad Reports equity analysis program and the Darwin-Fenner student-managed fund. Due to the shift toward experiential learning, business schools are called to explore learning outcomes that surpass knowledge retention (e.g., AASCB, 2011) with explicit calls to innovate on assessments practices that provide evidence of learning and skill acquisition. There is also a recognition that some managerial skills are non-course specific and develop experientially across the curriculum. This recognition has led to developments focused on across-course assessments of students’ skill development with advanced algorithms.

At the same time, business schools are questioning the objectives and nature of the second year in a two-year MBA program. The primary question is whether the second year is focused on advanced topics in general management or focused on a specialization or concentration. Specialization/concentration may be a traditional disciplinary focus (such as in finance), a multi-discipline focus (such as in management of information and information technology), and/or an industry focus (such as in management of healthcare organizations).

Finally, there also is a shift toward online education. Schools like Harvard Business School now offer many core business classes online for credit. The entry of highly ranked business schools into online education has the potential to alter business education. For example, the new Master of Finance curriculum at the Freeman School (a one-year specialized master’s program), allows students to take prerequisite courses (such as an introduction to accounting) from Harvard Business School online.

Global Opportunities

Driven by the increasing globalization of business, there is a corresponding shift towards global business content and material in both undergraduate and graduate business school curricula. For example, a recent report by the AACSB (2011) shows that 586 institutions now offer business degrees in Russia.

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35 “Globalization of Management Education”, 2011, Association to Advance Collegiate Schools of Business (AACSB)
36 “Accreditation Criteria”, 2011, Association of MBAs (AMBA)
The “globalization” of business curricula is further complicated as the student bodies at business schools become more diverse.\(^{40}\) A significant number of students in many one-year graduate programs are international, with a majority coming from Asia. Indeed, recent audit-related regulatory changes by the Chinese government will only fuel the existing demand by Chinese undergraduate business students to seek a graduate accounting degree in the United States.

### Local Opportunities

Arising from the social responsibility issues described earlier, community engagement has become a prominent theme in many business schools. The Freeman School has public service learning courses primarily at the undergraduate level, but will need to think seriously about curricula implications of social responsibility in its graduate programs.

### Research Synergies

Some faculty members currently collaborate with faculty from other schools in the university. For example, some of the marketing faculty members at the Freeman School are working with faculty from the medical school and the school of public health. Research synergies across schools within the university are expected to increase as universities attempt to tackle the complex challenges that are faced by humanity.

Freeman is investigating the establishment of business incubators (pockets of entrepreneurial activities arising within the New Orleans area) that will provide an integrated approach (“entrepreneurial laboratories”) both for business research and experiential learning for the school’s undergraduate and graduate students. In addition, such incubators would integrate with other Tulane disciplines and units, depending upon the nature of the particular activities.

### Careers

Current economic conditions in the United States have led to reduced job opportunities for some undergraduate business students, but not others. Many business undergraduates continue their education in a one-year master’s degree or other professional school such as law school. Indeed, nationally led state regulatory changes require accountants to have 150 hours of college credit before they can sit for the Uniform CPA exam, which at many universities (including Tulane) involves a one-year Master of Accounting program. On a positive note, Tulane’s MBA class of 2011 led the nation with a 98% job placement rate within three months after graduation. Its Master of Accounting had a 100% placement rate for the same period, while its BSM students had a 71% job placement rate.

Economies in developing countries (particularly Asia) are growing more rapidly than in the United States. This presents geographic opportunities for students to begin their careers with companies located outside of the United States.

### Facilities / Infrastructure

The appropriate technology for course delivery is becoming increasingly important. To be competitive in the graduate business school environment, classrooms must have state-of-the-art

technology, amenities, and appearance. Further, the nature of the “laboratory” is shifting rapidly from computer labs to real-time trading rooms and the entrepreneurial laboratories discussed earlier.

Economic Concerns

Rising tuition coupled with increasing student debt is a significant concern in the United States, placing private institutions without major endowments at a disadvantage. Indeed, to recruit its incoming first-year MBA class at the quality level of past classes, Freeman’s average tuition discount will likely approach 58% (compared with approximately 35% several years ago). We expect that a weak economy in the United States will continue to adversely affect domestic student interest in graduate business education. Strong interest in high-quality one-year specialized master’s programs by international students coming from stronger economies will most likely continue.

Other economic concerns include availability of qualified business faculty and the need for additional physical facilities, including ever-advancing technology. As the baby-boom generation approaches retirement, a significant proportion of the business professorate is aging. At the same time, opportunities in the professions (particularly accounting, finance and consultancy) reduce the availability of high-quality professionals willing to change careers and return to the university to earn a doctorate. Declines in the professoriate, coupled with growing student demand for business education, will likely continue to increase faculty salaries in the future.

Rankings

Business school rankings are one of a number of factors that affect student application choices and matriculation decisions. Other factors include school reputation in specific disciplines and concentrations, net tuition (i.e., tuition less fellowships and scholarships), reputation of faculty, and word-of-mouth in social media and other informal networks. The Freeman MBA program is nationally recognized as a “mid-rank” school, while other more focused programs have higher rankings.41

Accreditation

The premier accrediting body for business schools is the Association to Advance Collegiate Schools of Business (AACSB). The AACSB, which employs a mission- and strategic-based accrediting system, conducts accreditation maintenance reviews every 5 years. AACSB accreditation standards evaluate a business school’s mission, operations, faculty qualifications and contributions, programs, and other critical areas including the school’s processes for ensuring that its programs achieve their learning goals and objectives.

41 The Freeman Executive MBA program was ranked 25th nationally and 74th internationally by Financial Times (October 2011). The MBA program was ranked 14th nationally for entrepreneurship by Entrepreneur magazine/The Princeton Review (October 2011). The Freeman Master of Finance program was ranked 4th nationally and 26th internationally by Financial Times (June 2011). The Freeman MBA program was ranked 40th nationally by U.S. News & World Report (March 2011) and 35th nationally by Bloomberg Businessweek (November 2010), but was unranked in 2011 (insufficient number of alumni who were contacted filled out the paperwork). The Freeman BSM program was ranked 46th nationally by U.S. News & World Report (September 2011) and 46th nationally by Bloomberg Businessweek (March 2011).
Legal education has entered a period of transition. The significance of this transition for individual law schools will become more apparent over the next five years. Law schools, including Tulane, are being affected by a variety of changing circumstances.

Even prior to the 2008 financial crisis, law school admissions declined as students chose other paths in light of a tightening job market. The significant decrease in applicants that has already occurred will likely not be reversed anytime soon. Over the past two years, law school enrollment nationwide has dropped by 15 percent. The decline in applicants is continuing, as indicated by the latest application figures to Tulane and the decline in LSAT tests taken nationwide during fall 2012. As of December 2012, applications to Tulane Law School were down 11 percent from 2011 and 42 percent from 2010.

Trends in the Law School Environment

- Legal field lost 50,000 jobs from January 2008 to Sept. 2011 (including paralegals and other legal professionals) according to Bureau of Labor Statistics (BLS)
- Law schools graduate around 44,000 new lawyers every year, although this will decrease somewhat as enrollments continue to decline
- BLS projects roughly 25,000 new attorney positions per year for next ten years, indicating a substantial number of extra lawyers graduated each year, increasing competition for the jobs that exist
- Law school applications dropped 11% in 2010-11 and a further 15% in 2011-12
- Median salary in 2010 was $63,000 according to NALP, although salary distribution is bi-modal, with clusters around $160,000 and $40,000 to $65,000
- Average debt load of a law graduate was $98,500 in 2010; at 29 schools, that amount exceeded $120,000, at Tulane it is $117,000

Teaching and Learning

While law schools award degrees other than the JD (e.g., LLM), they are mostly devoted to preparing students for the practice of law. More attention has been given in recent years to performance on the bar exam, reinforced by a relatively new accreditation standard requiring a 75 percent pass rate. While the content of first-year required courses has been mostly unchanged for many years, some elite schools such as Harvard have significantly revised their first year curriculum. A few schools have experimented with change to the third year, a traditional source of student dissatisfaction. It is possible that state bar associations will exert increased pressure in favor of a practice-based upper-level curriculum, as proposed recently in California.
Local and Global Opportunities

Following Tulane’s lead, many law schools now have community service requirements for graduation. Tulane Law School’s commitment to involvement and service to the local community remains quite strong. Tulane also remains very much a globally oriented law school. Examples include a unique admiralty curriculum and programs sponsored by the Eason-Weinmann Center for Comparative Law. The market for LLM graduate students has become markedly more competitive over the last ten years, with many elite schools starting programs that compete with Tulane’s. Washington-St. Louis has just announced an online LLM program, and more schools may move to distance learning to serve the international market.

Impact of US News Ranking

The annual US News rankings play a major role in students’ decisions to attend a particular school and law schools monitor them closely. The Tulane Law School ranking went from 47 in 2011 to 51 in 2012. This was due to a variety of factors, especially Tulane’s decreased rate of job placement at nine months and a decline in our peer reputation among other law schools. The declining academic quality of the class in terms of LSAT and GPA must also be considered. As noted, the total size of the pool of highly qualified students has been shrinking and hence there has been more competition among schools for these students. This could produce a situation in which Tulane is compelled to reduce the size of its entering class, which now stands at 250. Many law schools, both elite and non-elite, have already reduced the size of their entering classes.

Accreditation

Law schools are accredited by the American Bar Association’s Section on Legal Education, which has undertaken a major revision of the standards since 2008. As of early 2012, the end was not yet in sight, although new standards will probably be approved by 2014. The impact of the new accreditation standards is uncertain, although they will promote greater outcome-based evaluation and experiential learning. New reporting standards with respect to placement statistics have already been adopted.
MEDICINE

Introduction

The practice of medicine is undergoing tremendous changes on a national level. These changes have been driven primarily on three fronts: cost, quality, and access in the context of a growing national population. The US annual healthcare expenditure is $2.7 trillion (16.6% of the GDP). By 2020, these expenditures are anticipated to account for 20% of our GDP, and by 2035 they will account for 31% of our GDP. The anticipated cost is partially driven by population growth. It is projected that within 30 years, the population of the United States will reach 500 million.

As a result of these forces, medical schools find themselves in a vortex of change. Currently, there is a physician shortage in the US, and this is projected to increase markedly during the upcoming years. Nationally, medical schools are expected to increase their enrollment by 30%. Unfortunately, this increase has not been correlated with an increase in the number of residency positions. Last year, the number of graduating US medical students exceeded the number of residency slots available. We are in the unfortunate position of graduating students who will not be able to obtain postgraduate education.

The most immediate challenges for medical schools are financial in nature. Decreases in medical care reimbursements and reduced funding from the National Institutes of Health has put a tremendous amount of stress on medical centers. Schools are looking for novel high quality, low-cost ways to deliver medical education. They also are actively pursuing partnerships with private entities to provide clinical care for patients.

Over the next decade we will likely see widespread consolidation of healthcare networks. This may be analogous to what has happened to the banking sector in the past 15 years. The most likely scenario involves mergers and acquisitions that will provide for large, regional healthcare entities that are partnered with academic medical centers to revive clinical care and education.

Teaching and Learning

For the past two decades, medical schools have been working to redefine their curriculum. Historically, medical schools had two years of preclinical education coupled with two years of clinical education. As in other disciplines, the medical schools are now searching for synergy where curriculum would be a four-year system-based platform in which the basic sciences and clinical studies are joined.

Learning styles are changing, and this correlates with advances in technology and the changing student body. Traditional anatomy labs are being augmented with sophisticated computer-generated images. Clinical experience is being augmented with simulation centers that allow for both cognitive and technical training of medical students and residents. Educational styles are becoming more interactive, and students are learning basic information prior to entering the lecture hall. Instruction is increasingly focused on patient safety, quality, and cost effective approach to medical care. Other areas being stressed include working in the framework of a healthcare team.
Global Opportunities

The gap between US medical education and international medical education persists but is rapidly diminishing. Previously, education in US medical schools was without parallel. This is gradually changing with the improvement of international education.

Currently, there still is a significant desire for students specifically from Central America Latin America and the Middle East to enter US medical schools for postgraduate (residency) education. As stated above, the number of open residency slots has diminished. Several countries are pursuing resident education that is outside of the traditional “Cap numbers.” Countries now approach medical schools to pay for international residents to be trained and return back to their nation to disseminate this training. Clearly, this approach will continue to expand but ultimately will be limited by its own success.

Local Opportunities

In the greater New Orleans area, public health has experienced tremendous positive advances in the wake of hurricane Katrina. The traditional charity hospital-based system has transformed into one with mobile partners who are participating in healthcare for the underserved. The 504 health network has developed. This is a coalition of 90 faith and community and university based clinics that are providing primary care for the underserved, linking with the traditional charity hospital system (LSUiH). It is anticipated that the charity hospital system will undergo additional changes in 2014 with full implementation of the Affordable Care Act.

Research Synergies

The traditional research question of new drugs and new technologies is currently changing. With the efforts of healthcare reform, the focus is shifting from the development of new technologies to the effective application of technologies to patients. This new approach, coupled with decreased funding from the National Institutes of Health for traditional research, is fueling a significant change in the research focus of medical schools. Partnerships are being developed with schools of public health and business schools to address the access cost and quality issues for healthcare delivery.

Careers

Currently, the job market is excellent for graduating physicians. The challenges for the graduates include their debt load and future salary. Although most physicians are continuing to practice medicine, business interest and entrepreneurship are increasing. This corresponds with the system change that is anticipated in 2014 with the Affordable Care Act.

Facilities / Infrastructure

Facility needs for medical schools are changing and this is correlated with the changing curriculum. Traditional classroom space is being augmented with sophisticated simulation centers as well as computer systems. Large lecture hall style education is being replaced by small group interactive study.

Hospital facilities continue to need significant upgrades. Technology is advancing rapidly, but limited financial resources threaten to slow the adoption of new technologies in clinical care.
Economic Concerns

Student debt has become a significant concern and puts private institutions without major endowments at a disadvantage. As with other educational sites, there is a gap between private education and public education. The current tuition for Tulane medical school is $55,000 per year. This limits our student body to those who can afford this tuition, those who can obtain the few merit-based scholarships, and those who are willing to take the financial risks of large student loans. Students are more concerned about their debt load in the face of a changing health care system and a decrease in reimbursement.

Accreditation

Tulane Medical Center recently received eight years of accreditation by the LCME.
## SOCIAL WORK

### Introduction

The mission of the Master of Social Work Program at the Tulane University School of Social Work is to educate future social workers to engage in competent, ethical, clinical-community practice that is relationship-centered, evidence-informed, and empowerment-focused, incorporating a global/local perspective. The school prepares students to engage in relationship-centered, clinical-community practice to enhance the biopsychosocial capacity and resilience of individuals, families, groups, organizations and communities. It also teaches students to value human diversity and work to promote social and economic justice as well as prepare students to create and exchange responsive, community-based knowledge and research for relevant, effective, and innovative social work practice; and promote integrative learning by drawing from and contributing to the diverse, culturally rich, inspiring, and challenging environment of New Orleans and through opportunities for intercultural experiences. Both the profession and the school have undergone a period of change due to technological advances and challenging economic conditions. The national accrediting body for social work education programs has also significantly revised its education and accreditation policies to move toward a more competency-based education design and to allow for greater freedom and innovation in program curriculum, encourage program response to context, and focus on student outcomes rather than program inputs.

### Teaching

Based on the new, competency-driven social work education EPAS standards, the School of Social Work has been in the process of preparing for its self-study in 2012 and adjusting curriculum content and teaching strategies to demonstrate seamless integration of required competencies and practice behaviors across the curriculum. Additional courses have been added to meet the new EPAS standards, and efforts to use more classroom technology have been underway. In addition, faculty have participated in teaching workshops and engaged The Center for Engaged Learning and Teaching (CELT) to improve teaching strategies in the classroom. The use of other teaching supports such as TAs and senior faculty mentorship as well as discussions at faculty meetings provide additional resources for faculty in order to provide the best learning experience possible for our students.

### Learning

The school engages students on a consistent basis to assess learning needs, learning achievement, learning goals, and learning opportunities including non-traditional forms of learning that promote diverse learning experiences, particularly with the diverse populations and diverse settings our students often engage. Our program is an 18-month program with intensive learning experiences and diverse learning opportunities both locally and globally to ensure our graduates are adequately prepared to meet professional practice standards upon completion of the program.

Over the past 4 years, we have completed significant rehabilitation of our classrooms to make them Smart Classrooms. In addition, we have moved toward offering brown bag luncheon topics specifically geared towards students interests and have updated our learning lab to allow for real-time viewing and video-recorded role plays to assess required professional practice behaviors.
Interdisciplinary learning is also a relevant part of our student’s successful learning experience. We have courses cross-listed with Public Health, and our students can pursue both a Masters of Social Work and Public Health or Law at the same time.

Our Center for Life-Long Learning and the Porter-Cason Institute offer continuing education workshops and trainings for professionals in the community. These continuing education programs maintain our relationship with the professional community and promote improved professional practice and methods in working with vulnerable populations. We also have the Elizabeth Wisner Social Welfare and Research Center for Children and Families, the Institute for Psychosocial Health and the Traumatology Institute. Each of these provides the academic, practice and research communities with the latest in ground-breaking knowledge and skills in each of the substantive areas. We also host the nationally and internationally recognized Disaster Resilience Leadership Academy.

Finally, our students are required to participate in a yearlong internship field experience that provides field-based learning opportunities with hands on experiences with real world social problems and solutions. Our students have the opportunity to work in various local, national and international settings to address social problems and engage solutions at the direct service level, policy and research level, and community practice level.

Global Opportunities

The school instituted a Global Certificate of Social Work program in 2005. Since its inception, the program has worked to prepare students for effective practice with diverse populations all over the world. Our graduates work in multicultural settings within and outside the United States, including policy development and advocacy; project development and management; community needs assessment; monitoring and evaluation; and community mobilization.

The Global Social Work Certificate program includes coursework with a global focus, including training in international policies and frameworks that guide relief and development work with key stakeholders in governmental, multinational and non-governmental organizations. Locally, Global Social Work students complete internships with HIV/AIDS programs, immigrant and refugee relocation services, and disaster-related coalitions. In the final semester, Global Social Work certificate students have the option of completing their field hours with a placement outside of the United States. These placements include small NGOs in rural communities and multilateral programs in major cities.

In addition to the Global Certificate program, the school’s mission is to engage students in competent, ethical, clinical-community practice that is relationship-centered, evidence-informed, and empowerment-focused, incorporating a global/local perspective. To this end, the school works with our office of Global Programs to integrate content in the classroom that addresses global issues at various levels including global poverty, human rights, food security, access to clean water, etc. We have two courses with a global focus and encourage all of our students to seek additional learning opportunities that will broaden their practice framework to include a global perspective.

Our faculty has research, resilience leadership, and/or capacity building projects in places like Rwanda, South Africa, Haiti, China and Japan. In addition, we have a short course where our Dean takes students on a transformative learning experience to India, and we have had visiting students from India for the past 4 years as well as visiting scholars from Rwanda for the past two years.
Local Opportunities

Community engagement has been an essential priority in our school. The school has consistently worked with local community programs and developed community partnerships as part of our field-based learning program to ensure a visible presence in the community that promotes effective academic-community collaborations and partnerships. Our students are dispersed throughout the Greater New Orleans area and work in organizations and agencies in multiple parishes. The goal of our local work is to make meaningful contributions to the community in solving social problems; exploring global knowledge, skills, and strategies in solving social problems at the local level; and preparing students with a real-world experience both locally and globally where they are able to develop knowledge and skills to solve problems and utilize a framework that makes local/global connections to social conditions.

Research Synergies

The school has several research and practice institutes that look at social problems and models of intervention to address these problems. Developing tools for assessing social problems are part of our faculty research activities, as well as conducting field research including community-based participatory approaches in various settings locally and internationally. The school’s commitment to research is designed to offer a synergistic flow of knowledge between the research and practice communities. The school’s research approach is to build knowledge collaboratively with the practice community to strengthen existing and future relationships that serve the social good.

The program is designed to prepare skilled practitioners, and efforts to impart knowledge and skills through teaching activities and professional practice development in and outside of the classroom have required a great deal of attention from our faculty that can often lead to less focus on research activities. In an effort to re-focus some of the school’s priorities, we recently organized a committee to explore research challenges and opportunities in the school. In 2011, the dean appointed Charles Figley to serve as our Director of Research. New initiatives advanced by the director and faculty in the school will allow for more dedicated time to research activities of the school including identifying appropriate internal and external grant opportunities, identifying opportunities for collaborative research projects and publications, identifying workshop and research development opportunities, and assisting the dean with building in sufficient infrastructure to promote successful achievement of research goals of the school.

Careers

The profession of social work lends itself to various career opportunities in local and international settings. Our students are trained to work in careers that range from child welfare to international development to healthcare. Our graduates are prepared with the knowledge and skills that enable them to work at various levels of the professional work environment and have jobs that range from being a therapist, community organizer, non-profit director, program manager, policy analyst, health advocate and educator, research associate, program manager, consultant for leading public and private institutions, trainer for Fortune 500 companies, to name a few. Because the skills our students acquire are transferrable across careers, the training they receive during their time in the program enables them to pursue traditional careers (e.g., Clinical Case Manager) as well as non-traditional careers (e.g., Mediator in Divorce Cases or Human Rights Advocate).
Facilities / Introduction

The school has had some significant building challenges post-Katrina. Efforts have been made to improve classrooms to make them more technology friendly. There have been ongoing discussions regarding whether the building can support the growing needs of the school including additional office space for staff and faculty, re-working the classroom design, improving utilities, etc. Key stakeholders are exploring our options in this regard.

Economic Concerns

The school has demonstrated increased student enrollment since the fall of 2009 and has had a balanced budget with a significant surplus since 2010. While the school is currently in good financial standing, efforts to ensure secure fiduciary discretion to sustain the school in the long-term remains a priority.

Accreditation

Since 1927, the first year of national accreditation for social work education, the School of Social Work has maintained full accreditation status. It is a charter member of the Council on Social Work Education, which is the standard-setting and accreditation body in the field of social work education. Tulane School of Social Work is accredited by the Council on Social Work Education (CSWE). The school recently received accreditation for its Master of Social Work Degree program for the full eight-year cycle with no contingencies.
PUBLIC HEALTH

Introduction

Public Health is a dynamic field that integrates an interdisciplinary approach to improve the health of populations through health promotion and disease prevention. The School of Public Health and Tropical Medicine (SPHTM) is the oldest school of public health in the country (celebrating our centennial this year) and the only American School of Tropical Medicine. SPHTM is ranked 13th among 49 accredited schools of public health. The school is a leader in global health.

The school's mission is to advance public health knowledge, promote health and well being, and prevent disease, disability, and premature mortality. This is accomplished through education of public health professionals at the bachelor’s, master's, and doctoral levels; scientific research of problems; key partnerships; and service to the global public health community. The school includes six academic departments that correspond to the five areas of public health: biostatistics and bioinformatics, global community health and behavioral sciences, global environmental health sciences, epidemiology, global health systems and development. The sixth department, tropical medicine, reflects our historical roots. The students, faculty, and staff represent more than 70 cultures from around the world. SPHTM offers both professional and academic degrees.

Public Health is a growing area for teaching, research, and community service. The emphasis on global health and the prevention of chronic and infectious diseases opens many opportunities for public health. New schools of public health are being formed each year in the US and in other countries to meet the growing demand for public health professionals and research. New public health undergraduate programs are rapidly growing not only in schools of public health, but also in liberal arts and sciences colleges and universities. The SPHTM undergraduate public health program continues to grow rapidly reflecting the national trend.

Teaching and Learning

SPHTM has a robust interdisciplinary curriculum built on the foundation of the five core areas of public health. SPHTM programs prepare graduates for research and for public health careers. Professional education is primarily at the master’s level with the Master of Public Health (MPH) (the leading professional degree), Master of Science in Public Health (MSPH), Master of Public Health and Tropical Medicine (MPH&TM), and Master of Health Administration (MPH). The PhD in Public Health is the academic research degree that prepares graduates for careers in research and academic leadership; it is offered with disciplinary concentrations corresponding to the six departments. The curriculum undergoes regular review to insure it is responsive to current public health issues and to maintain relevance. A current and vibrant curriculum is an essential for competing for the best students and maintaining enrollment.

One factor that contributes to the success of public health as a sought-after area of study is that it includes an applied focus that provides usable skills along with theoretical knowledge and research. The graduate curricula combine professional and research approaches that makes study in public health very attractive to students. Public health professional education trains leaders who will direct public health organizations, governmental agencies and provide programs to promote health and prevent diseases across the globe. Doctoral programs emphasize in-depth academic research that includes both theoretical and applied approaches.
The Bachelors in Public Health (BSPH) degree has seen enrollment grow from 5 students when it was initiated in 2005 to more than 400 in 2011. The SPHTM BSPH program is embedded within the University’s undergraduate study. SPHTM is a leader in designing undergraduate public health programs that combine a skills-based approach within a liberal arts and science setting. This provides the opportunity for a liberal arts education while adding value with practical skills for graduates to obtain jobs. The BSPH is a pathway to a viable career as well as graduate and professional study, not only in public health, but also in medicine, law and business.

Public Health was an early adopter of distance education in 1994 and has built a highly acclaimed program with a national reputation for excellence. Distance learning programs and technology support our global mission, as midcareer students may obtain a master’s degree from anywhere in the world – be it across the globe or in their local office. It also allows instructors to teach from any location that has an Internet connection. On-line courses are a part of programs delivered to cohorts of students in Taiwan and allow students conducting research across the globe to take courses while away from campus.

The distant education programs are synergistic with and enrich the traditional on-campus programs by 1) integrating technology as a tool for teaching, 2) incorporating instructional design to better structure courses and incorporate interactive exercises, and 3) developing methods to promote life-long learning. Lessons learned from on-line and distance learning programs can be used to restructure traditional teaching to increase learning, allow faculty to reach more students, and decrease stress on classroom space. If incorporated correctly, technology does not compete with traditional teaching but can increase the quality of teaching and improve efficiency.

Greater use of technology in teaching is the wave of the future and is a proven tool for delivering high quality education to greater numbers of students both on-campus and at a distance. This requires exploring new options and judiciously implementing the appropriate tool to achieve a specific goal. SPHTM foresees incorporating more technology in teaching to meet increasing demands for our courses and providing support to assist faculty. We need to enhance technology for teaching and providing instructional design support to enhance teaching and learning.

**Global Opportunities**

Our motto is “Tulane SPHTM is Global Health.” This reflects the fact that public health is not defined or limited by geography. Global is not synonymous with “international,” but rather encompasses both domestic and international settings. SPHTM encourages collaboration among local and international researchers who learn from each other to solve health issues around the globe. SPHTM has been global throughout its 100-year history. The recent initiative to globalize all aspects of the school has imbedded and integrated global health in teaching and research throughout the school. SPHTM is a leader among other schools of public health in emphasizing global health.

Our long international track record and substantial research throughout the world fuels growth and enhances our reputation. SPHTM faculty have established research in Peru, Mexico and throughout Latin America, in sub-Saharan Africa, and in China and other parts of Asia. SPHTM will benefit from this strong foundation for years to come.

**Local Opportunities**

As emphasized above, Global health is an umbrella that includes local as well as international projects. Diseases and environmental issues are not confined by geographic borders. We learn and
translate solutions from across the globe to local settings; similarly, local research and interventions have applications in many other countries and cultures.

SPHTM is well rooted in New Orleans and Louisiana. SPHTM has substantial community-based research and service projects with strong partnerships with state and local health agencies, non-profits, health organizations, and community groups. Local SPHTM research has a focus in health promotion to reduce obesity, physical exercise and healthy diets, and decreasing health disparities. SPHTM students are involved and engaged in internships, practicums, and volunteer activities to help improve health disparities and chronic and infectious diseases. Much of our local research has much in common with tropical countries and with low-income areas. Our partners are a key to the success of local research and teaching. Public health practitioners provide input to SPHTM that helps keep our curriculum relevant and incorporate current issues.

Research Synergies

SPHTM has a robust and steadily growing research portfolio that has a broad base across the school. Public health research is interdisciplinary in nature and includes a spectrum of health related fields and incorporates epidemiology, management, statistics, environment, health education, nutrition, program planning and evaluation, and a plethora of other areas. SPHTM has a culture of research and faculty who are adept at proposal writing and management of large-scale projects.

SPHTM has research partnerships with faculty in other Tulane schools and with other universities and research organizations throughout the world. To stimulate research synergies with other Tulane schools, administrative functions need to improve as well as clarifying expectations of research among faculty.

Careers

Public health is interdisciplinary and encompasses an extremely wide variety of careers. Our students generally do not seek alternative careers; but rather people from other areas seek out jobs in public health. SPHTM employment rates have been in the 92%-96% range for many years.

There is a high demand for graduates of schools of Public Health. Less than half of current practitioners in public health agencies have formal education in public health. Further, over 50% of the current public health workforce will retire in the next 10 years. The opening of new schools of public health is creating a demand for doctoral-level, research-oriented faculty. The shift in emphasis in health care to health promotion and prevention will open many new positions for graduates of schools of public health. These factors contribute to career opportunities for public health graduates.

Facilities / Infrastructure

The growth in the number of students and research at SPHTM presents challenges with keeping up with the need for enhanced laboratory facilities, classroom space and expanding technology to support both teaching and research. To remain competitive for research funding, we must meet the demand for more sophisticated laboratories and high-level computing capacity. Enhancing classroom technology requires not only an investment in technical equipment, but also well-trained staff to support the technology and faculty. While the facilities are adequate today, keeping up with the growing needs for high quality space, equipment and staff will continue to be a challenge.
Classroom space is at full capacity and the need for additional large classrooms grows each year. We are exploring ways to better utilize technology in teaching to reduce the stress on classroom space.

**Economic Concerns**

The cost of tuition is outstripping the expected salaries of our graduates and their ability to repay student loans. The increase in the number of new schools of public health, many at public universities, gives students alternatives at a much lower cost. The current rate of tuition increases cannot be sustained without impacting the quality of students or enrollment. This poses a challenge in meeting the increased cost of instruction, space, and technology. SPHTM has precious little scholarship funds to offset the steady increases in tuition. SPHTM will need to either curb tuition increases or increase scholarship funds to keep the high quality of our students and maintain enrollment. This challenge creates the opportunity to become more creative and cognizant of lowering cost while increasing the quality of education. One area to be explored is increasing technology in teaching to allow current faculty to teach more students and to decrease demand for classroom space. Lessons learned from distance learning can help guide this process.

Cuts in research funding by major federal agencies threaten continued research. Even within awarded research funding, new limits on salary present major challenges. Peer-reviewed research funding is becoming even more competitive so that even excellent proposals may not be funded. Approximately 12% of NIH applications are funded. This competitiveness pressures us to provide excellent facilities and faculty support for grant writing and project management. Competition for top faculty from an ever-growing number of schools of public health increases the need to provide competitive faculty salaries and packages.

**Accreditation**

SPHTM is accredited by the Council on Education in Public Health (CEPH). Programs with accreditation include ABET accredited industrial hygiene program, the Commission on Accreditation of Healthcare Management Education (CAHME) for the MHA program, and the accredited dietetic internship program. Accreditation requires immense effort and is expensive, but the evaluation and assessment stimulates continuous improvement and guides the steps to improve, become more effective, and increase efficiency.