"Reinventing Teaching and Learning Using Technology at Lawrence Tech"

Final Report to the Community
April 17, 2008

Introduction

Lawrence Tech has made significant strategic investments in the technology associated with its academic programs, student services, assessment methods, faculty professional development, IT infrastructure and applications, digital library services, and instructional technology services. Key initiatives associated with these investments are the undergraduate student laptop and tablet program, the campus wireless program, the campus-wide adoption of Blackboard, and the establishment of LTU Online. If isolated, these initiatives cannot create a sustainable competitive advantage. Lawrence Tech must leverage these investments to "reinvent" Lawrence Tech's learning environment for all modes of instructional delivery and support.

National efforts and programs such as the EDUCAUSE Learning Initiative[i], EDUCAUSE Center for Applied Research (ECAR)[ii], Sloan Asynchronous Learning Network[iii], the National Center for Academic Transformation[iv], and the Coalition for Networked Information[v] all indicate the importance of integrating pedagogy with technology. Few campuses, however, have included pedagogical improvements with campus technology investments on a planned basis. Lawrence Tech intends to make this happen, and has the potential to create a competitive advantage in this area by being recognized for our innovative use of technology to improve traditional, hybrid, and online modes of learning to support our institutional motto of "theory and practice."

This report summarizes the work of the "Reinventing Teaching and Learning Using Technology" task force, which has addressed these issues over the past year. The recommendations included in this report address a range of areas including faculty and student services, hybrid academic programs, academic software, IT infrastructure and technical support, and campus master planning.

The Task Force and its Mission

From March 2007 through March 2008, a Task Force composed of representatives of academic and support units throughout the University met and shared information aimed at reinventing teaching and learning using technology at Lawrence Technological University (see Appendix 1 for a list of Task Force members). This group and other members of the University community

attended conferences, brought speakers to the campus, visited or investigated other colleges and universities, and inventoried existing resources to explore, best utilize, share, and recommend ways and means by which Lawrence Tech could use technology to reinvent its teaching and learning.

The "Reinventing Teaching and Learning Using Technology" Task Force builds on the existing university-wide learning technology initiatives such as the undergraduate laptop and tablet program, the campus wireless program, the campus-wide adoption of Blackboard, and the establishment of LTU Online. It is imperative that new and existing initiatives are defined and modified to implement an advanced learning technology environment to improve instruction for both traditional on-campus and online students, to advance the reputation of the university, and to seek external funding for continuous improvement. To this end, the Task Force addressed the following objectives:

- Use lessons learned from across Lawrence Tech for what is effective and efficient, and identify how Lawrence Tech can employ these practices into appropriate traditional, hybrid, and online classes.
- Identify external institutional benchmarks and discipline-focused technology best practices to support instruction.
- Identify different technology (software, hardware) in each discipline and recommend how these tools can support classroom, hybrid, and online instruction.
- Identify infrastructure, service, staffing, budget, and timing needs to support the improvement of instruction.
- Integrate the work of the Task Force into Lawrence Tech's assessment, strategic planning, and budgeting processes.
- Conduct a technology tool and skill set inventory.
- Share effective course development methodologies within the university and, where appropriate, with other institutions.

The Task Force operated for one year, with monthly meetings starting in March 2007 and ending in March 2008. The Task Force supported its work using a Blackboard organization, a public web site, and periodic updates to the Lawrence Tech community. The Task Force organized its work into four quarters:

- The "first quarter" focused on identifying potential technologies and pedagogies for consideration
- The "second quarter" focused on information gathering and site visits to provide the task force with specific information about the technologies under consideration
- The "third quarter" focused on identifying proposed pedagogical and technological campus improvements; and
- The "fourth quarter" focused on identifying budgetary needs and timelines

This final report of the Task Force lays out a vision for Lawrence Tech's teaching and learning environment that includes specific recommendations for each college and for University-wide initiatives coordinated through the Veraldi Instructional Technology Resource Center (VITRC), the IT Services, the Library, LTU Online, and other departments. The recommendations in this report should be considered during the development of the FY2009 university budget.

Task Force Activities and Accomplishments

The Task Force met monthly starting in March 2007. Detailed meeting notes were posted to the Task Force Blackboard organization, and are available upon request. A mid-term report was published to the campus community in November 2007 (see Appendix 3).The major activities and accomplishments of the Task Force included the following:

- Identified benchmark universities and discipline-specific software and hardware for exploration.
- Invited Dr. Carl Berger, Dean Emeritus of the University of Michigan School of Education, to the campus for a presentation on technology-enabled teaching attended by approximately 100 faculty, staff, and administrators. Dr. Berger hen held in-depth discussions with the Task Force, Dr. Walker, and Dr. Vaz.
- Sent teams or individual participants to bring back information from the following conferences and institutions:
    - Virginia Tech – evaluated their use of tablet computers for engineering instruction.
    - EDUCAUSE Learning Initiative – participated in focus sessions on immersive technologies, the "net savvy" student, and "Life 2.0"
    - Blackboard World – evaluated directions for development of the Blackboard product suite
    - Sloan-C Asynchronous Learning Conference – evaluated directions and best practices for asynchronous learning systems
    - Wimba Conference – evaluated directions for development of the Wimba suite
- Supported Dr. Vaz' decision to deploy tablet computers to undergraduate students by:
    - Providing extensive support to the implementation process including
    - Adopting the Classroom Presenter software from the university of Washington and Microsoft Education
    - Adopting the WriteOn notation software from Virginia Tech
    - Conducting an inventory of discipline-specific software to identify tablet migration issues
    - Establishing a faculty task force on tablet computing, which provided faculty with initial Tablet PC training including 3 different workshops
- Supported the campus use of Blackboard by:
    - Reviewing the Blackboard 7.2 rollout and support plan.
    - Establishing a Blackboard Content System implementation team
    - Reviewing the University's new policy on the TEACH Act as well as related training materials
- Investigated the deployment of classroom technologies by:
    - Forming a relationship with MIT iLabs project to make LTU engineering laboratory equipment available over the Internet
    - Establishing a student technology interest group.
    - Researching the use of audience response systems ("clickers") for use in the classroom.[vi] After extensive discussions and reviews of experiences at other institutions, the Task Force agreed that Lawrence Tech should deploy the survey functionality within the Wimba Live Classroom product to accomplish these tasks.
    - Exploring the use of classroom capture technology systems, and determined that the Wimba Live Classroom product could provide entry-level functionality in this

area, reducing the need for extensive investment in dedicated classroom lecture capture hardware.
- Initiated a survey of existing learning technologies installed in Lawrence Tech classrooms, laboratories, and studios.
- The EDCC has organized faculty focus groups in each college to identify and assess technology needs and issues.

A Vision for Lawrence Tech's Teaching and Learning Environment

The New Media Consortium 2008 Horizon Report[vii] proposes a vision for using new technologies to improve higher education. The report asserts that, "[t]he academy is faced with a need to provide formal instruction in information, visual, and technological literacy as well as in how to create meaningful content with today's tools (p 6). "

The report underscores the differential experiences of students and faculty members regarding their use of technology, especially the new social networking or collaboration technologies such as Facebook. New Web-based services are changing how institutions choose to invest in enterprise-level systems such as e-mail and course management systems. Institutions often ignore student expectations and find it difficult to meet these expectations given the "withering pace of emerging technology (p. 7)."

The Horizon Report identifies six emerging technologies and discusses their potential impact on higher education. These technologies are consistent with the recommendations of the Task Force:

1. "Grassroots Video" (impact timeline of one year or less) –Task Force recommendations include proposed improvements in classroom lecture capture and upgrades to our streaming video capabilities
2. "Collaboration Webs" (impact timeline of one year or less) – Lawrence Tech has already made significant investments in Blackboard, Wimba, and other collaboration tools. Task Force recommendations include proposed improvements in SharePoint, Second Life, and other collaboration technologies.
3. "Mobile Broadband" (impact timeline of two to three years) – Lawrence Tech's investments in tablet computing and upgrading the campus wireless infrastructure support this trend, although significant progress in broadband availability, consumer adoption, and campus investment are needed to realize this vision.
4. "Data Mashups" (impact timeline of two to three years) – The improvements proposed by the Task Force can help lay the groundwork for creating "data mashups" (combining data from different sources integrated into a single tool and view) over the next two to three years in selected programs.
5. "Collective Intelligence" (impact timeline of four to five years) – Lawrence Tech's investment in the Blackboard Content System, our efforts to implement a digital repository for student and faculty works, and investments in collaboration technologies provides the potential for developing some early collective intelligence capabilities within five years.
6. "Social Operating Systems" (impact timeline of four to five years) – Lawrence Tech's investments in Wimba, Pronto, and other collaboration systems set the stage for exploring the development of social operating systems.

The latest Sloan Consortium report, Blending In: The Extent and Promise of Blended Education in the United States,[viii]" highlights the importance of blended learning solutions as a "discrete option which institutions choose on its own merits" (p. 1). The report notes significant student preference for blended learning programs as alternatives to fully on-ground or fully online programs.

These trends indicate the need to develop a teaching and learning environment where faculty and students have access to and skills to use new learning technologies. The effective use of these technologies will support and encourage:

- Students and faculty who are facile with using technology;
- An IT infrastructure that is reliable, efficient, and flexible;
- An experimental university posture regarding the use of new learning technologies; and
- A constant focus on continuous improvement of learning outcomes coupled with technology enablement.

The Recommendations in General

This process harvested forty-nine (49) recommendations from its members and from the university community. Task Force members categorized these recommendations and then prioritized them. An annex to this report includes full deliberations of the task force and all supporting documentation. Six clusters of recommendations emerged as holding the greatest potential for significantly improving teaching and learning with technology at Lawrence Tech:

1. **Faculty and Student Services – I**ncentive and recognition programs for faculty to improve teaching and learning using technology and ways to involve students in this process, especially with the new tablet PC program.
2. **Hybrid Academic Programs –** Establishing supporting development of fully hybrid academic programs, including course redesign, multimedia development, assessment redesign, and faculty stipends.
3. **Academic Software –** Short-range and long-range improvements to Lawrence Tech's course management services, pilot projects using tools such as Second Life and SharePoint, and cost-effective improvements to Lawrence Tech's multimedia capabilities for classroom lecture capture, streaming video and related services.
4. **IT Infrastructure and Technical Support –** Recommendations for consideration in upgrading the campus IT infrastructure, expanding the quality and coverage of technical support and training to improve teaching and learning.
5. **Campus Master Plan –** Input to the current Campus Master Planning process, including improvements to Lawrence Tech's laboratory and studio learning spaces, and improvements to Library services.
6. **Academic Departments –** Input to colleges and academic departments as part of their on-going operations and budget development.

In two cases – multimedia training for faculty and pilot projects for Second Life and SharePoint – we request the support of the Provost to champion the recommendations by providing financial support of $10,000. In other cases, we request one or more service departments to champion the recommendations in the context of their mission and budget. All of these recommendations will require the allocation and management of staff time. Some of the significant recommendations are already funded, including implementation of the Blackboard

Content System and instructional technology training services. Colleges and academic departments should pursue many of these recommendations in the course of their annual budgeting process.

The recommendations contained in this report are in general incremental, with some of the initiatives requiring large capital outlays or long timeframes for implementation. This is consistent with the charge to the Task Force to address the reinvention of teaching and learning using technology. To this end, the Task Force focused on leveraging investments already made, experimenting with promising pilot project, and encouraging faculty to use technology to improve how they teach in the context of their teaching styles and students' learning styles. The alternative to this approach was a more monolithic and disconnected approach where significant university investments would be made without considering the lives of faculty and students, and which would therefore be more detached from the everyday teaching and learning experience at Lawrence Tech.

The Task Force notes that many significant IT infrastructure issues must be addressed to support the improvements recommended in this report. These improvements include power upgrades to campus buildings, inbound and outbound campus Internet bandwidth, extensions and upgrades to the campus wireless network (including the upper floors of the UTLC Building), additional network storage, hardware virtualization, security upgrades, and disaster recovery and business continuity services. Although these recommendations are not explicitly included in this report, they are critical to the success of many of the recommendations presented here. The Task Force believes that these IT infrastructure investments will insure that our vision for teaching and learning at Lawrence Tech is achieved.

The Recommendations in Detail

Faculty and Student Services

These recommendations propose incentive and recognition programs for faculty to improve teaching and learning using technology. They also address ways to involve students in the instructional process, and to enhance the level of services and training available to both faculty and students. Within these recommendations, the Task Force requests that the Office of the Provost provide financial support for one key recommendation totaling approximately $2,500 for the FY2009 budget year. Specifically, the Task Force recommends that:

1. The Office of the Provost supports VITRC to develop a faculty training program in the use of multimedia technologies. Faculty who participate in the training program would receive a headset and webcam for use in course development and teaching. We recommend funding training and equipment for up to 30 faculty members at an estimated expense of $2,500 for the first year of this initiative.
2. VITRC modifies its current Course Development Grant Program to include a recognition program for faculty members demonstrating exemplary use of technology to innovate teaching and/or to produce pedagogically focused scholarly work. We recommend establishing an annual award program of up to two (2) $500 honoraria for awardees. We also recommend identifying one faculty member to serve as an instructional technology research support resource attached to the Center for Teaching and Learning, and to provide one semester of release time for that faculty member during the course of the academic year.

3. The Office of the Provost collaborates with the Faculty Senate to consider establishing a "last lecture" series that would be captured digitally for on-demand playback.
4. VITRC expands its training services to include technologies and tools such as Wimba, SafeAssign, integrating tablets with teaching, and other topics. We recommend that this training be provided using a "just in time" approach where VITRC staff visit individual or small groups of faculty members within their academic department, rather than the traditional approach of providing larger-group scheduled training.
5. IT Services, VITRC, and LTU Online sponsor and support a student technology interest group to provide input to future student technology needs.
6. VITRC funds membership for the university in the New Media Consortium to influence directions for future teaching and learning using technology.
7. The Library provides formal training to all faculty members on the TEACH Act, copyright clearance procedures, and conversion of analog to digital media, as well as maintain comprehensive web resources on these topics.
8. The Library establishes Sunday service hours and a "virtual reference services" using Pronto or Wimba. We encourage support of the $25,000 budget request for a part-time librarian to support Sunday coverage.

Hybrid Academic Programs

The task force supports the Provost's initiative to develop a number of fully hybrid academic programs, supported by faculty stipends for course redesign, multimedia development services, assessment redesign, and administrative scheduling modifications. While seeking external funding to support this initiative, the Task Force recommends that planning work commence in the 2008-2009 academic year to identify candidate programs, define hybrid program characteristics, and propose changes to administrative procedures.

Academic Software

These recommendations propose short-range and long-range improvements to Lawrence Tech's course management system, to establish pilot projects using tools such as Second Life and SharePoint, and to improve Lawrence Tech's multimedia capabilities for classroom lecture capture, streaming video and related services. Within these recommendations, the Task Force requests that the Office of the Provost provide approximately $7,500 in funding to support development of the Second Life and SharePoint environments to support pilot projects using these technologies. Specifically, the Task Force recommends that:

1. The Office of the Provost supports pilot projects for the use of Second Life and SharePoint in selected courses during FY2009. Hardware and software costs will total approximately $7,500 for these two pilot projects.
2. VITRC, LTU Online, and EDCC coordinate implementation of the Blackboard Content System during FY2009, and begin deploying shared directories, e-portfolios, and library repository functionality using this upgraded system.
3. VITRC and LTU Online coordinate a multi-year dialog to discuss future alternatives for course management systems, including ancillary systems for outcomes assessment, at the university.
4. The Library implements an electronic reserves system to support all classes. We encourage support of the Library's budget request to implement this important service.
5. The EDCC includes PDF Annotator and other tablet productivity tools identified for the FY2009 tablet images.

IT Infrastructure and Technical Support

These recommendations propose improvements and upgrades to campus IT infrastructure and technical support to improve teaching and learning. IT Services has proposed several infrastructure initiatives in its FY2009 budget proposal, and the Task Force encourages careful consideration of these proposals as they underpin the university's instructional technology efforts. Specifically, the Task Force recommends that:

1. IT Services and VITRC collaborate to upgrade the university's streaming video server to provide significantly increased storage capacity and performance.
2. VITRC completes a comprehensive inventory of fixed classroom display and projection technology in all classrooms and auditoria, and prepare a FY2010 budget proposal that addresses upgrading all teaching environments as necessary.
3. VITRC and LTU Online develop procedures and training for using the Wimba product suite as a classroom lecture capture and "classroom clicker" solution, and work with faculty members to implement these tools in the classroom.
4. IT Services implements extended help desk services through a combination of university staff and outsourced services, with the goal of providing 7x24 end-user trouble reporting support by FY2010.
5. IT Services implements improved server, storage, virtualization, and disaster recovery services in line with their proposed FY2009 budget. The task force recommends careful consideration of all IT infrastructure budget proposals to align with the increased reliance of instructional operations on information technology.
6. IT Services and VITRC collaborate to explore the potential for improving the graphics capabilities of tablet and laptop computers provided to undergraduate students.

Campus Master Plan

These recommendations are offered as input to the current Campus Master Planning process to improve Lawrence Tech's laboratories, studio spaces, and Library services. Specifically, the Task force recommends that:

1. Laptop and tablet "charging stations" are created in high traffic areas of the campus.
2. Classroom spaces are modified as necessary to become darkened for high quality multimedia presentations.
3. The Library is redesigned and renovated to provide collaboration spaces, free up space presently dedicated to book stacks, and provide access to power outlets.
4. Large flat screen information displays are installed in public areas, and flat screen "docks" are installed for use in studios and laboratories.

Academic Departments

These recommendations are offered for consideration by colleges and academic departments in their ongoing operations and budget development. The task force recognizes that deficits in our instructional environment, no matter how small, contribute to students' impressions of the university and hence its reputation. Specifically, the Task Force recommends that:

1. The College of Architecture & Design evaluates how to improve teaching studios by creating "cutting areas" and spray booths for student projects, creating storage areas for student projects, installing moveable partitions for studio spaces to facilitate uses by multiple groups, and installing flat screen docking stations to display student works.

2. The College of Architecture & Design evaluates how best to acquire a 3-D rapid prototyping machine, a CNC router machine, and safety saws to support student projects.
3. The College of Arts & Sciences evaluates how to improve their current laboratory spaces to serve the needs of new academic programs.
4. The College of Management evaluates how to improve its computer lab to serve the needs of upper division BSIT students
5. IT Services and the Center for Teaching and Learning survey faculty to determine how best to provide statistical software to the campus in support of student and faculty research.
6. VITRC and the Center for Teaching and Learning identify needs and opportunities for the use of simulation software in specific academic programs.

Appendix 1: Task Force Membership

College and Administrative Units	Representatives	E-mail
Architecture – Architecture	Tom Nashlen	nashlen@ltu.edu
Architecture – Art & Design	Tom Regenbogen	regenbogen@ltu.edu
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Provost (Task Force "Champion")	Maria Vaz Steve Howell	vaz@ltu.edu howell@ltu.edu
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Appendix 2: Full List of Recommendations

Recommendations are grouped into the six clusters described in the report and are color coded to improve readability.

Initiative & Brief Description	Cost & Timing	Lead(s)	Rank
Hybrid Academic Programs – Funding to support course redesign, multimedia design, assessment design, faculty stipends, etc.[ix]	Staff time for planning in FY2008	Provost	9
Academic Departments – COAD Studios – Install moveable partitions for UTLC studios, mounted on overhead trusses.[x] Create a "cutting area" in each freshman studio. Locate near proposed "spray areas." Install spray booths to support student model work (approx 8x6x6 feet with venting).[xi]	$3K-$5K per studio for partitions, ~$2K each for spray booths	COAD w/ Facilities	4
Academic Departments – Statistics – Campus license for statistical software (SPSS, SAS, etc.) to support faculty and student research, accompanied by training and documentation	$TBD	VITRC w/ CTL	4
Academic Departments – 3D Printer/Rapid Prototyping machine[xii]	~$20K	COAD	3
Academic Departments – CNC router for soft materials	~$20K	COAD	2
Academic Departments – COAD Storage – Create storage locations for student models (e.g. pocket areas around stairwells, old photo developing space).	$TBD	COAD w/ Facilities	2
Academic Departments – SawStop Saw – Safety device for the COAD woodshop to avoid loss of fingers or hands.[xiii]	~$5K	COAD	2
Academic Departments – CAS Lab Retrofit – To support pre-med and nursing programs	$TBD	CAS	0
Academic Departments – COM IT Lab – Revamp M-215 computer lab to support networking, information assurance, and BSIT senior projects.	$TBD	COM	0
Academic Departments – Simulation Software – Psychology simulation software.	$TBD	CAS	0
Academic Software – Course Management System Futures – Evaluate open source alternatives to Bb and other enterprise instructional technologies	Staff time	VITRC LTUO	6
Academic Software – Assessment – Evaluate Bb outcomes assessment system and alternatives to support assessment efforts	~$45K per year	VITRC w/ Assessment Committee	5
Academic Software – Blackboard Content System – Implement and leverage Blackboard (Bb) Content System (e.g. student and faculty shared space, portfolios, repository for learning objects)	Funding in place (Fall 2008)	EDCC VITRC	5
Academic Software – Library eReserves – Implement electronic reserves system (Sirsi or Bb Content System).	~$10K Sirsi eReserves (Spring 2009)	Library	4
Academic Software – Library Repository – Update and roll out Lawrence Digital Image Database (LDID). Recommend approach for institutional repository direction (e.g. Bb Content System, DSpace) to store faculty and student academic and creative works.	$TBD (2009)	Library VITRC LTUO EDCC	4

Initiative & Brief Description	Cost & Timing	Lead(s)	Rank
Academic Software – Second Life –Pilot projects in one or two academic program areas to gain experience.[xiv]	~$3.5K per year (Fall 2008)	VITRC LTUO	4
Academic Software – SharePoint – Pilot project to support selected academic programs.[xv]	~$4K (Fall 2008)	EDCC LTUO	4
Academic Software – PDF Annotator – Include in FY2009 Tablet PC image.	$40 per personal copy (Fall 2008)	EDCC	2
Campus Master Plan – Laptop and Tablet Power – Create laptop and tablet charging stations in "high traffic" areas of each campus classroom building.	$TBD	EDCC w/ Facilities	6
Campus Master Plan – Library Space Redesign – Space redesign to create collaboration spaces, improve access to electrical outlets, and install new carpet. Free up floor space for seating and permit collection expansion.	~$240K to free ~50% of Library floor space, renovation $TBD	Library w/ Facilities	6
Campus Master Plan – Darkenable Spaces – Create "darkenable spaces" to facilitate video projection (e.g. A221, E30, E101).	$TBD	Facilities	4
Campus Master Plan – Flat Screen Displays – Install flat screen displays in all classroom buildings. Install docking stations for tablets to connect with large flat-panel monitors in classrooms where students focus on design problems.	~$100K for 10 displays, ~$25K for 5 docking monitors	EDCC	3
Faculty and Student Services – Faculty Recognition – Establish annual awards for technology innovation in the classroom. Integrate support for technology-based improvements into scholarly work and service requirements for academic tenure and promotion.	~$5K per year for 5 awards	Provost	13
Faculty and Student Services – Multimedia Training – 20 seat training lab with headsets, video camera to train faculty in use of Wimba, podcasting, etc. Headsets and cameras provided to faculty who complete training.[xvi]	~$2,500 per 30 faculty trained plus staff time (Fall 2008)	VITRC	7
Faculty and Student Services – Instructional Technology Training – Expand VITRC training services to include Wimba, SafeAssign, integrating tablets with teaching, Bb 8.0 features, etc. Establish team to develop guidelines for Blackboard shells across the university.	Staff time (Fall 2008)	VITRC	7
Faculty and Student Services – Research Support – Support for technology-focused pedagogical research (proposal writing, investigation, proposed solution, focus on whole program or departmental competitiveness).	~$4K release time plus staff time	VITRC w/ CTL	6
Faculty and Student Services – Support and maintain a student technology interest group.	$TBD (underway)	LTUO	6
Faculty and Student Services – New Media Consortium – Become members of the NMC to influence directions for future teaching and learning with technology.[xvii]	$2,500 per year (funding in place) (Fall 2008)	VITRC	5
Faculty and Student Services – Library Reference Services – Create virtual reference services using Pronto or Wimba.	Staff time (Spring 2009)	Library	4
Faculty and Student Services – Library Scanning –	~$12K PC and	Library	4

Initiative & Brief Description	Cost & Timing	Lead(s)	Rank
Install networked reader/scanner for fiche and film, and Ariel software to e-mail images.	scanner, ~$6K + $4k/yr for Ariel (2009)		
Faculty and Student Services – TEACH Act Training – Deliver training on TEACH Act, copyright clearance, plagiarism, etc. Recommend to Library as internal initiative.	Staff time (Fall 2008)	Library	4
Faculty and Student Services – Faculty Recognition – Establish "Last Lecture" series and accompanying streaming videos.	~$3K for camera, microphone, tapes	Senate Marketing	3
Faculty and Student Services – Library Service Hours – Staff and student wages to open Library on Sundays.	~$25K per year (2009)	Library	3
Faculty and Student Services – VHS/Digital Migration – Migrate existing VHS media to digital media.	$200 RealProducer upgrade, $TBD for digital conversion	VITRC Library	3
Faculty and Student Services – Course Development Stations – Establish faculty course development stations in private spaces with Studio Suite, Pinnacle or Adobe Premier, StudyMate, Dragon, color scanner, etc. Consider leveraging existing faculty work areas.	~$4K per station (Spring 2009)	VITRC	1
Faculty and Student Services – Digital Storytelling – Establish video program to link alumni recollections with current students.	~$3K for camera, microphone, tapes	VITRC w/ CTL & Alumni	1
IT Infrastructure and Technical Support – Classroom Video – Conduct inventory of all classroom facilities and classify their existing level of technology services.[xviii] Install ceiling mounted video projectors in all classrooms not presently equipped. Install podium-based presentation and lecture capture equipment in all classroom buildings (e.g. upgrades to T-122 and T-419, upgrade to E-26, new equipment for E-101, S-100, and M-218).[xix]	$3K per projector, $1K for installation, $300 per spare bulb. $60K for 6 podium units (Fall 2009)	VITRC EDCC	9
IT Infrastructure and Technical Support – Documentation – Coordinate documentation and training between Help Desk, EDCC, VITRC, LTUO, Library, and college IT staff.[xx] Explore integration with Hobson's and Help Desk knowledge base services.	Staff time (Fall 2008)	VITRC LTUO	8
IT Infrastructure and Technical Support – Streaming Video – New streaming server, storage, additional Helix end-user licenses, bandwidth and backup services.[xxi]	$5K server, $5K/yr services, $TBD storage	VITRC EDCC	7
IT Infrastructure and Technical Support – Classroom Lecture Capture – Document "Wimba as classroom lecture capture" solution. Provide training sessions and wireless microphone, webcam, and touchpad remote control to participating faculty.[xxii]	~$4K to train and equip 20 faculty members (Fall 2008)	VITRC LTUO	6
IT Infrastructure and Technical Support – Disaster Recovery – Infrastructure services and emergency communications plan.	$TBD (2009)	EDCC Provost	6
IT Infrastructure and Technical Support – Extended help desk service hours with outsourced services.[xxiii]	~$29K-$33K per year (Spring 2009)	EDCC VITRC	4
IT Infrastructure and Technical Support – Virtualization – Implement virtual PC environment to support virtual labs and access to specialized software (VMWare license, ESX server blade, and thin clients).	~$35K for storage, blade, and thin clients	EDCC LTUO	4

Initiative & Brief Description	Cost & Timing	Lead(s)	Rank
IT Infrastructure and Technical Support – Tablet Graphics Capabilities – Investigate graphics card upgrade to support Second life and other graphic intensive software	$TBD (2009)	EDCC	3
IT Infrastructure and Technical Support –Virtualization – iILabs Internet-based lab equipment control to support shared science and engineering equipment. iLabs server purchased by LTUO in FY2008.	$TBD (Fall 2008)	LTUO EDCC	3
IT Infrastructure and Technical Support – Media Services – Migrate Media Services unit to use digital video.	$TBD	Media	2
IT Infrastructure and Technical Support – Computation Server – Implement a high-end computation server to support academic programs requiring high-end computation.	~$50K	EDCC	1

Appendix 3: Mid-Term Report

Lawrence Tech has made significant investments in its academic programs, student services, assessment methods, faculty professional development, IT infrastructure and applications, digital library services, and instructional technology services. Key initiatives associated with these investments – the undergraduate student laptop and tablet program, the campus wireless program, the campus-wide adoption of Blackboard, and the establishment of LTU Online – cannot create sustainable competitive advantage in isolation. These investments can be leveraged to "reinvent" Lawrence Tech's learning environment for all modes of instructional delivery.

National efforts and programs such as the EDUCAUSE Learning Initiative, EDUCAUSE Center for Applied Research (ECAR), Sloan Asynchronous Learning Network, the National Center for Academic Transformation, and the Coalition for Networked Information all point to the convergence of pedagogy with technology. Few campuses, however, have integrated pedagogical improvements with campus technology investments on a planned basis. Lawrence Tech can "reach" to make this happen, and has the potential to create a competitive advantage in this area by being recognized for our innovative use of technology to support all modes of learning – traditional, hybrid, and online.

The "Reinventing Teaching and Learning Using Technology" Task Force builds on the existing university-wide learning technology initiatives: the undergraduate laptop and tablet program, and the campus wireless program. Potential grant funding exists to support academic transformation through technology. Implementing an advanced learning technology environment should improve instruction for both on-campus and online students.

Task Force Objectives and Timeline

The Task Force is charged with evaluating technology-based approaches to support improving the quality of instruction in traditional, hybrid, and online classrooms. The Task Force will recommend how best to leverage existing investments in networking, laptops and tablets, instructional technology services, online course development, discipline-specific software, simulation, and other technologies to leverage instructional improvement in all delivery modes. The first Task Force deliverables should provide input to the 2008-2009 planning and budget processes.

The Task Force will work for a twelve-month period to address the following objectives:

1. Use lessons learned from across Lawrence Tech for what is effective and efficient, and identify how Lawrence Tech can migrate these practices into traditional, hybrid, and online classes.
2. Identify external institutional benchmarks and discipline-focused best practices for how to use technology overall to support instruction.
3. Identify different technology (software, hardware) in each discipline to recommend how these tools can be used to support classroom, hybrid, and online instruction.
4. Identify infrastructure, service, staffing, budget, and timing needs to support the improvement of instruction.
5. Integrate the work of the Task Force into Lawrence Tech's assessment, strategic planning, and budgeting processes.
6. Conduct a technology tool and skillset inventory

7. Share effective course development methodologies

The Task Force will operate for one year, with monthly meetings starting in March 2007 and ending in March 2008. The Task Force will support its work using a Blackboard organization, a public web site, and periodic updates to the Lawrence Tech community.

The Task Force schedule is organized into four parts:

1. The "first quarter" is focused on identifying potential technologies and pedagogies for consideration
2. The "second quarter" is focused on information gathering and site visits to provide the task force with more information about the technologies under consideration
3. The "third quarter" is focused on identifying proposed technological and pedagogical improvements for the campus; and
4. The "fourth quarter" is focused on identifying budgetary needs and timelines

The Task Force will issue a status report to the campus community mid-way through its work and a final report at the end of its work. The final report of the Task Force will lay out a vision for Lawrence Tech's new teaching and learning environment, including specific recommendations for each college and for University-wide initiatives coordinated through VITRC, EDCC, the Library, LTU Online, and other departments. These recommendations will be issued in March or April 2008 so they may be incorporated into the University's annual budgeting process.

Summary of Progress to Date

The Task Force has met monthly starting in March 2007. Detailed meeting notes are posted to the Task Force Blackboard organization. The major accomplishments of the Task Force to date include:

1. Identify benchmark universities and technologies for exploration (see the "Benchmark Institutions" section for more information).
2. Identify an initial set of discipline-specific software and hardware for exploration.
3. Sent teams or individual participants to the following conferences and institutions:
    - A team visited Virginia Tech to evaluate their use of tablet computers for engineering instruction.
    - Bill Drummond participated in the EDUCAUSE Learning Initiative focus session on immersive technologies.
    - Rachel Cronover participated in the EDUCAUSE Learning Initiative focus session on the "net savvy" student.
    - Bill Drummond, Linda Wareck, Marquita Poinsetta, and Paula Nranian participated in the Blackboard World conference.
4. Invited Dr. Carl Berger, Dean Emeritus of the University of Michigan School of Education, to the campus for a presentation (attended by approximately 100 faculty, staff, and administrators) and in-depth discussions with the Task Force, Dr. Walker, and Dr. Vaz.
5. Following Dr. Vaz's decision to deploy tablet computer to entering freshman students, provided extensive support to the implementation process including:
    - Exploration of Virginia Tech's Classroom Presenter software and presentations on the software by Dr. Scott Schneider

- Inventory of discipline-specific software by Dr. Pam Lowry to determine migration issues from laptops to tablets
- Established a faculty task force on tablet computing led by Dr. Pam Lowry

6. Established a relationship with MIT iLabs project to make LTU engineering laboratory equipment available over the Internet.
7. Established a student technology interest group facilitated by Bill Drummond.
8. Provided support and counsel on major Blackboard initiatives including:
9. Review of Blackboard 7.2 roll-out and support plan.
10. Initial input on implementation of the Blackboard Content System including academic roles and promotion of shared content.
11. Explored the use of audience response systems ("clickers") for use in the classroom.[xxiv] After extensive discussions and reviews of experiences at other institutions, the Task Force agreed that clickers should not be implemented at Lawrence Tech. As all LTU undergraduate students have laptop or tablet computers, the Wimba "Live Classroom" product (available in all Blackboard course shells) provides comparable functionality without additional investment or administrative overhead.
12. Explored the use of classroom capture technology systems such as Tegrity, determined the Wimba Live Classroom product, with the addition of low-cost microphones and web cameras provides comparable functionality without additional investment or administrative overhead.
13. Explored the use of existing and low-cost tools to capture classroom lectures and post them to Blackboard or as video streams.
14. Reviewed the University's new policy on the TEACH Act as well as training materials developed by Gary Cocozzoli and the Library staff for dissemination to the community.

Next Steps

The Task Force will continue to meet monthly until March 2008. Upcoming tasks include:

1. Participate in the Sloan-C, EDUCAUSE Learning Initiative, and Wimba conferences.
2. Re-focus attention on identifying discipline-specific software.
3. Visit MIT to learn about iLabs, Open Courseware Initiative, Dspace, and other MIT initiatives.
4. Identify several proposed improvements for infrastructure, hardware, software, and facilities.
5. Develop implementation and budget recommendations.
6. Prepare the final report.

Benchmark Institutions

Task force members identified these institutions as benchmarks for technology services in support of teaching and learning.

Institution/Organization	Exemplar
Dartmouth University	Mobile computing, wireless "win-wini" applications
Emory University	Center for Teaching and Learning, use of classroom spaces
Madonna University	Classroom Lecture Capture
Massachusetts Institute of Technology	D-Space, Open Courseware Initiative, iLabs, Classroom spaces, Second Life initiative, Merlot faculty development, MIT Media Lab
Michigan	Sakai CMS
Mich Comm College Assoc	Moodle CMS
Michigan State University	Classroom Clickers
University of British Columbia	Social Networking
University of Detroit Mercy Beaumont Hospital	Use of tablets to support medical education
University of Michigan California – Berkeley	Sakai course management system, Video Capture and Indexing (Virage), Streaming Media
University of North Texas	Faculty training, online program administration
University Wisconsin – Madison	Streaming Video Services, WinMedia and QT
Virginia Tech University	Engineering applications, tablet computing

Task Force Membership

The Task Force will be comprised of University faculty members drawn from each academic department, supported by administrators, and championed by Provost Maria Vaz. Task Force membership will include one faculty representative from each of Lawrence Tech's academic departments, along with administrative staff representing Lawrence Tech's information technology, learning technology, and library services:

College and Administrative Units	Representatives	E-mail
Architecture – Architecture	Tom Nashlen	nashlen@ltu.edu
Architecture – Art & Design	Tom Regenbogen	regenbogen@ltu.edu
Arts & Sciences – Humanities, Social Sciences & Comm	Matthew Cole	mcole@ltu.edu
Arts & Sciences – Mathematics & Computer Science	Jim Nanny	nanny@ltu.edu
Arts & Sciences – Natural Sciences	Scott Schneider	s_schneider@ltu.edu
Engineering – Civil Engineering	EdmundYuen	yuen@ltu.edu
Engineering – Electrical and Computer Engineering	William Kolasa	kolasa@ltu.edu
Engineering – Mechanical Engineering	Patricia Shamamy	shamamy@ltu.edu
Engineering – Technology	Bill White	white@ltu.edu
Management – Graduate	Alan McCord	mccord@ltu.edu
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Center for Teaching and Learning	Don Carpenter	carpenter@ltu.edu
IT Services	Bill Wachob	wwachob@ltu.edu
Library	Gary Cocozzoli	grc@ltu.edu
LTU Online	Bill Drummond	wdrummond@ltu.edu
Provost (Task Force "Champion")	Maria Vaz Steve Howell	vaz@ltu.edu
Veraldi Instructional Technology Resource Center	Pam Lowry	lowry@ltu.edu

[i] See http://www.educause.edu/eli071
[ii] See http://www.educause/edu/ecar
[iii] See http://www.sloan-c.org
[iv] See http://www.thencat.org
[v] See http://www.cni.org
[vi] See http://www.educause.edu/ir/library/pdf/EQM07410.pdf for an EDUCAUSE Quarterly article on campus adoption of clicker technology.
[vii] New Media Consortium (2008). 2008 Horizon Report. Retrieved from www.educause.edu/ir/library/pdf/CD5320.pdf on April 6, 2008.
[viii] I. Elaine Allen, Ph.D.. Associate Professor of Statistics & Entrepreneurship, Co-Director, Babson Survey Research Group, Babson College. Jeff Seaman, Ph.D., Chief Information Officer, Survey Director, The Sloan Consortium, Olin and Babson Colleges, Co-Director, Babson Survey Research Group, Babson College Richard Garrett, Senior Research Analyst, Eduventures, LLC March 2007
[ix] Recent proposal submitted to Sloan Foundation requesting $300,000 over three years to help fund $1,000,000 initiative.
[x] See http://tinyurl.com/352ogp
[xi] See http://tinyurl.com/2krpbm
[xii] See http://tinyurl.com/2jlo45
[xiii] See www.sawstop.com
[xiv] See separate proposal from Marija Franetovic.
[xv] SharePoint is implemented in test mode to support DMIT and LTUO. See separate proposal from Sheppard Sternthal.
[xvi] Headsets cost approximately $15 each; webcams cost approximately $60 each.
[xvii] See http://www.nmc.org
[xviii] October 2007 Campus Computing Survey found that 69% of classrooms in private four-year universities had fixed projection capabilities. See http://tech.ashland.edu/training/class_levels.html for example of classroom technology categories. Bill Drummond has initiated an inventory.
[xix] See http://campustechnology.com/articles/58676/ for an article on various methods for capturing live classroom content.
[xx] Early work in this area is occurring with VITRC and LTUO.
[xxi] Initial server specs and cost estimates prepared by Pam Lowry.
[xxii] See http://www.semsons.com/witorecow.html for an example of a wireless remote control device with touchpad functionality.
[xxiii] Initial estimates received from Presidium for providing outsourced Blackboard and help desk services and access to trouble ticket data.
[xxiv] See http://www.educause.edu/ir/library/pdf/EQM07410.pdf for an EDUCAUSE Quarterly article on campus adoption of clicker technology.