

3.4.12

Educational Programs: All:Technology use

The institution's use of technology enhances student learning and is appropriate for meeting the objectives of its programs. Students have access to and training in the use of technology.

Judgment

Compliance Partial Compliance Non-Compliance Not Applicable

Narrative

Tennessee Technological University's (TTU's) use of technology is aligned with the University's Flight Plan: Focused for the Future, which identifies four major areas of focus within the University: improve the undergraduate student experience, transform technology, create distinctive programs and invigorate faculty, and expand financial resources and modernize infrastructure [1]. Those foci directly related to technology include:

- Technology Service to Students: TTU will provide all students with reliable and innovative technological tools, knowledge, and access.
- Technology Infrastructure and Innovation: The information technology infrastructure and innovation plan will fortify the current IT framework and promote opportunities for future innovation.
- Technology in Teaching: The technology in teaching plan promotes digital learning techniques to faculty and encourages them to utilize technology in their classes.

In addition to opportunities available in open facilities such as the Learning Commons in the Volpe Library (see below), students will achieve computer competency through discipline-based instruction in the major field.

Technology-enhanced Student Learning Environments

To ensure that TTU students have access to learning environments that are technologically current and effective, TTU began a major Multimedia Classroom Project in 2011, with each college prioritizing its high-use classrooms in each discipline for renovation and equipment upgrades. More than 80 classrooms across the University have now been completed, with more than 15 currently in progress, each equipped with a teaching station, audio-visual controller, data video projector or large LCD screens, speakers, cabling to allow faculty to use their own laptops, document cameras, and other specialized equipment. As the University has completed multi-building capital renovations, all technologies in the classrooms have been updated and optimized. These multimedia systems are designed to be user-friendly, and allow faculty to have a uniform operational experience regardless of the building in which the class meets.

Student Access to Technological Resources

To ensure that students have pervasive access to technology, TTU provides many campus-wide resources and services:

Campus Computer Labs

TTU provides students with computer labs designed to enhance the learning experience. There are both open-access, general purpose labs, and very discipline-specific labs available on campus, with more than 1,000 systems available for student use. Open-access labs are available for extended hours, including a 24-hour lab, and are open a variety of times during semester breaks. Information on the lab

locations, software and hardware available, and open times can be found on the TTU website [2].

Not only does TTU provide a very comprehensive local area network for wired connections, but wireless saturation is extensive. There are 1,197 access points provided across campus grounds, allowing students ease of transition as they move from building to building. The University maintains a fiber optic backbone that provides 10 Gbps to 40 Gbps uplinks to the buildings and supports 1 Gbps twisted-pair connections to the desktop. The wireless infrastructure supports 802.11n performance providing both indoor and outdoor coverage. The campus WAN connection is a 750 Mbps MetroE.

Volpe Library and Learning Commons

In 2011, the Learning Commons opened in the Angelo and Jeannette Volpe Library on the TTU campus. Information Technology Services, in a partnership with the Volpe Library, maintains the technologies used within the Commons. The Learning Commons provides approximately 75 desktop computers, 160 laptops (which are available for checkout), group study rooms, fully equipped practice presentation rooms, a high-technology training room, color and black and white printing, cables, and chargers. The main floor was redesigned in order to provide easy access to charging outlets, tables and chairs conducive to group collaboration, and an atmosphere of pervasive technology.



Figure 1. The Learning Commons area provides access to laptops, study rooms, and presentation areas in the Volpe Library.

Additionally, there are booths located along the perimeter with laptop hookups and large LCD TVs to allow students to easily participate in group work. The library staff also offers training for students using technology, including workshops in presentation design.

During the 2013-14 academic year, 160 laptops were checked out a total of 46,119 times by students. This figure has increased consistently each year since the Learning Commons was launched in 2011.

The Library faculty also provide support not only to students who need help using the Library's electronic resources but also with technology-based activities such as creating and giving PowerPoint presentations, through online tutorials and one-to-one coaching as requested [3].

A digital multimedia lab is under construction on the ground floor of the Volpe Library. This lab will house leading technologies for various media forms, enabling students to have a full and immersive experience with academic assignments, senior level capstone projects, and personal interests. In Fall 2014, the library installed iCUBE on the third floor of the Volpe Library, featuring immersive virtual

reality technologies to support academic programs, research, and economic development.

Student Training and Support

Student training in the use of learning technologies is provided primarily through courses in the major and in the General Education program. This practice helps ensure that students have access to appropriate technologies in their academic programs, and are trained and supported in their use. The course required of all new first-time freshmen, UNIV 1020, includes some coverage of campus computer use [4]. Also, all TTU students are required to pass ENGL 1010 and 1020 (English composition I and II), the course sections for which typically meet one day per week in a PC classroom and include proficiency in the use of PC technology among the course goals [5]. Most degree programs include specialized courses that integrate instruction in the use of hardware, software, and online resources that are relevant to the major discipline. Education majors, for example, take FOED 2011 (Teaching and Technology)[6] and FOED 3010 (Integrating Instructional Technology into the Classroom)[7]. Students in the College of Business (along with other majors) all take DS 2810 (Computer Applications in Business) [8].

Support for students in the use of technology is provided through the myTech Helpdesk operated by Information Technology Services in Clement Hall 212. Support is available via email, phone, and walk-up support for all TTU students, faculty, and staff, including password resets for Banner SSB (Eagle Online), Banner INB, and email accounts; and general troubleshooting of computer issues, both personal and TTU-owned. Support hours are 8:00 a.m. - 8:00 p.m., Monday through Thursday; 8:00 a.m. - 4:30 p.m. on Friday, and 4:00 p.m. - 8:00 p.m. on Sunday. This service is readily available to off-campus TTU users; a total of 1866 student requests were received during the period October 20, 2014 to June 4, 2015, with the majority of those requests handled by telephone rather than in person [9].



Figure 2. Laptop hookups and LCD TVs add to the technological accessibility that the Library offers.

College-Level Initiatives

Individual colleges, departments, and programs at TTU are encouraged to improve student learning by transforming existing facilities to accommodate new teaching methods and learning environments. Some recent examples include the **Math Emporium** (opened fall 2014), renovating an existing all-purpose PC lab into an open 55-station teaching space for hybrid instruction that combines the traditional classroom lecture with independent problem-solving. The **Sociology Collaborative Research Center** opened in

2014 in a space previously used for program administration with 10 networked computers and a printer for use by Sociology majors. In Johnson Hall, the College of Business created the \$150,000 **Heidtke Trading Room** that simulates a financial trading area. The College of Engineering has created the **Mole-SI (Mobile Learning Environment and Systems Infrastructure) Lab**, a mobile, collaborative environment for instruction where engineering software can be accessed remotely on-demand.

Technology Funds to Support Student Learning

Each year, proposals are solicited for projects which will directly impact the student experiences with technology at the University. These proposals, prioritized by departmental chairs and college deans, are reviewed by a team of IT Services staff, campus administrators and faculty, and students. The committee then makes a recommendation as to the projects that should be funded throughout the coming year. This is made possible by the Technology Access Fee paid by students (currently \$112.50/semester, of which \$12.50 supports the purchase of instructional technology), with an average yearly base of approximately \$2,000,000. Projects funded through this program range from technology in the Learning Commons, to the digital multimedia lab in the Volpe Library, to the green printing initiative.

The Innovation Technology Institute

The Innovation Technology Institute (formerly the Technology Institute), is a collaborative enterprise originally created by the office of the Provost, the School of Interdisciplinary Studies, and Information Technology Services [10]. The Institute is a part of ITS Academic and Client Services, under the direction of the Deputy CIO, and has as its mission to foster the effective and innovative use of technology in teaching and learning, thereby supporting excellence in the educational mission of TTU. The Institute is now housed in the Volpe Library in newly renovated spaces, designed for faculty enrichment and training.



Figure 3. The Innovation Technology Institute is housed in the Volpe Library.

The philosophy of the Innovation Technology Institute is that technology must open new possibilities for learning and education. The Institute promotes the use of technology for the purpose of furthering education with the philosophy of education to help faculty provide a positive and collaborative learning experience, which is challenging, engaging, interactive, and communicative through the use of technology. The Innovation Institute is available to the faculty of TTU as a community of interest, activity, and experience for effectively engaging participants with the tools of technology for learning.

Tablet Initiative

Since 2001, the Innovation Technology Institute has sponsored, through the University's Student Technology Access fees, a tablet initiative for instruction. This initiative grants participating faculty the use of a tablet, either Windows-based or iOS-based, for use in instruction. Faculty submit proposals on how they will use and improve their teaching using a tablet. As a return on the University's and students' investment, the experienced "tableteers" are asked to present their experiences and knowledge to the new initiates. Since the beginning of this initiative, 136 faculty have been granted a tablet PC or iPad.

Camtasia Relay

In addition to the tablet initiative, the Innovation Technology Institute realized early on that more was needed than just presentations with annotations. Some faculty wanted to record their lectures, whether in or out of class. Because of this need, Camtasia Relay was introduced and is now a resource available for any instructor at TTU. Faculty can download the Camtasia Relay client, available for Windows and Mac, and install it on their computer. Then, after some simple setting of the parameters, the faculty must only hit one button to record their audio and computer screen. The TTU IT department assists the Institute with the storage and streaming of recorded lectures with the use of a dedicated server called CMAT. Currently, more than 190 faculty have recorded more than 12,000 lectures for their students.

Online Classroom Management System

Although TTU was one of the first in the Tennessee Board of Regents (TBR) institutions to incorporate an online classroom management system, TBR standardized all its institutions on one system. Desire2Learn (D2L) is the learning management system incorporated by TTU [11]. Serviced by the Innovation Institute for all TTU users, D2L is used by instructors at TTU to help manage and communicate with their classes. Training is given every semester (D2L Training Workshops) by the Innovation Technology Institute for any new users of D2L or for those wishing to learn about some of the more advanced features of the management system.

Information Technology Strategic Plan

In 2014, Information Technology (IT) Services began the formation of an IT Strategic Plan for the campus, with a final version circulated early in 2015 [12]. Eighteen initiatives have been identified over seven broad areas: Engaging Faculty with Technology and Planning for Classroom Technology, Infrastructure and Core Technologies, Technology in Support of Research and Investing in Innovation, Student Performance and Retention, Streamlining Business Processes, the ITS Organization, and Communications around IT. Although project scopes and costs are still being finalized, there are several initiatives that will significantly impact the student experience at TTU:

- “Developing Digital Innovation in Teaching and Learning” (Initiative 2.1a), will increase the level of technology utilization in support of learning across the University, promote exploration and innovation by tech-knowledgeable faculty, and provide a more robust instructional technology support environment. Students can expect more consistent utilization of technologies such as the learning management system. Faculty will see improved support for technology as well as more training and consultation support for innovation in teaching and learning.
- “Connect with Tech” (Initiative 2.1b), will standardize technologies across fields of study, with each college formalizing technology guidelines for incoming students. This initiative will provide students with a set of specifications for hardware that will enhance their technology experiences at the outset of their TTU career, enabling consistency in support, software applications, classroom uses of technology, and curricular integration.
- “Academic Technology Standards” (Initiative 2.1d), will establish standards for learning spaces, cloud services, hardware, software, and other technology tools that provide an environment for successful teaching and learning. This initiative will expand the efforts that began in 2011 with the multimedia classroom project (as described above) and optimize the University's resources in order to support learning at the college and institutional level.

Education, Guidelines, and Policies

The University provides discipline-specific computer proficiency courses for all students, faculty, and staff. Policies for campus technology resource usage are made available on the ITS main web page [13], and at TTU Policy Central [14].

Conclusion

TTU provides, maintains, and continually upgrades its educational and support technology, while

providing full access and support to students. Therefore, TTU is in compliance with Comprehensive Standard 3.4.12.

Sources

-  [01] Flight_Plan
-  [02] Computing
-  [03] TTU Library Guides
-  [04] UNIV 1020 - Syllabus and Computer Activities
-  [05] ENGL 1010 syllabus
-  [06] FOED 2011 syllabus
-  [07] FOED 3010 syllabus
-  [08] DS 2810 Syllabus
-  [09] myTech Helpdesk Usage Oct 2014 to June 2015
-  [10] About the Institute
-  [11] iLearn
-  [12] IT Strategic Plan_Final Draft Feb 15
-  [13] ITS Policies
-  [14] Policy Central