According to Butler and Sellbom, the three most common barriers faculty face when attempting to adopt technology are unreliability, learning curve, and impact on learning. Computing and Information Services (CIS) Academic Technology department at the University of New Hampshire works to overcome these barriers by utilizing a synergistic relationship between technical support and instructional design.

Introduction

Helping faculty successfully adopt technology requires service and support from technicians and instructional designers. Frequently, departments that support these separate functions do not collaborate to provide faculty with best in breed services for technology integration. We will begin by explaining results from Butler and Sellbom’s 2002 survey of faculty at Ball State University. We will then describe how the University of New Hampshire deals with the three most common barriers to technology adoption from a technical and teaching/learning perspective. We will conclude by inviting the audience to share their models of support and attempt to discern recommendations for how to evaluate the effectiveness of the services and models presented.

Statement of the Problem

According to the 2002 EDUCAUSE Quarterly article *Barriers to Adopting Technology for Teaching and Learning*, there are several factors that inhibit adoption of new technology by faculty in higher education. A study conducted at Ball State University identified the three most common barriers to technology adoption:

- Unreliability of the technology
- Amount of time it takes to learn new technology
- Impact on learning
One of the most interest findings in the survey was that the aforementioned barriers existed regardless of the technical proficiency level of the individual faculty. In other words, early adopters find themselves occupying the same boat as the “Luddites.”

A careful examination of the study and its findings produces the following points:

- The barriers identified are both technological and pedagogical in nature.
- Although these barriers exist regardless of technical proficiency, there are several strategies that can be implemented to help faculty overcome them.
- The barriers can only be overcome when technical departments, such as Audiovisual Services, work closely with those involved in support the teaching/learning functions to develop an interconnected set of services and strategies.

To this end, our paper and presentation will address the following questions for instructional technology support staff and administrators working in similar positions. Both the Manager of Audiovisual Services and Manager of the Instructional Development Center will present on the following key issues:

- How does the University of New Hampshire work to overcome these barriers?
- What are the strategies and services implemented, from both the technical and pedagogical sides, to address the barriers?
- How can we collectively evaluate the effectiveness of our services?

Teaching with Technology Support at UNH

Several departments within Computing and Information Services support teaching with technology at the University of New Hampshire. Two departments within Academic Technology, Audiovisual Services and the Instructional Development Center, find themselves heavily involved in helping faculty overcome the common barriers to technology adoption.

The Audiovisual Services department offers an array of audio/visual equipment and services. Services include delivery and demonstration of equipment, emergency assistance, sound support, consultation and a/v system design. Clearly their focus is on providing reliable technology and services to ensure successful adoption by faculty.

The Instructional Development Center promotes and supports the successful integration of instructional technology principles and practices into the teaching and research missions of the university. Through faculty development initiatives and support for the design and production of multimedia projects, the Center strives to help faculty and students find creative ways to bridge the gap between rapidly developing new technologies and effective teaching practices. Clearly their focus is ensuring faculty use the technology effectively, appropriately, and efficiently.

On the surface, both departments have distinct missions and a separate suite of services. At many institutions of higher education, similar departments function as silos rarely collaborating to provide faculty with an integrated, holistic support model. However, at
UNH, these two departments work hand-in-hand addressing the barriers faculty encounter and work to provide solutions that ensure faculty successfully adopt technology from a technical and pedagogical perspective.

**Barriers and Recommendations**

Using the Butler and Sellbom study and article, several recommendations were presented as strategies to help faculty overcome the most common barriers. During this part of the presentation, we will present the set of recommendations that accompany each barrier and detail how UNH is working to address them.

**Reliability**

According to the study, reliability of the technology is the biggest problem with using technology for teaching. Several other problems closely related to reliability were identified software incompatibility with office and home, mistakes by support services, software malfunctions, burned out bulbs in projectors, slow Internet access, and out-of-date software.

Along with improved quality control, key recommendations suggested by the article to deal with the reliability of technology include:

- Convince the staff involved with technology for teaching and learning of the importance of reliability and the criticality of the equipment, its integration into the classroom, and its maintenance.
- Purchase highly reliable technologies, not the cheapest ones.
- Establish clear lines of responsibility for checking and maintaining quality control of classroom technologies, especially large classrooms often shared by departments.
- Maintain supplies properly and take new approaches (including staff training) to assure rapid responses to breakdowns.

Since the reliability of technology is a key function of Audiovisual Services at UNH, several services and strategies have been implemented to support each of the reliability recommendations:

- While we do not buy the latest and greatest equipment all the time, we do strive to purchase high quality, reliable equipment.
- One backup per device is stocked in the equipment room to ensure minimum down time when the system does fail.
- Multiple training sessions are held with permanent staff and work-study students to reinforce our department’s commitment to high quality services and reliability.
- Classroom maintenance is a high priority and is performed on a weekly basis.
- Customer service work-study students are available from 8 – 8 M – F to ensure that when faculty call the hotline, they speak to a live person who can diagnose the problem and dispatch an appropriate technician.
Learning to Use New Technologies
Better known to faculty as “learning curve,” each new technology comes with its own intricacies, user interfaces, classroom designs, features, bugs, bells and whistles. Similar inhibitors identified in the study include difficulty in using the technology and difficulty in learning to use the technology. Furthermore, as the article points out, there is tendency to dispatch a training solution at all problems when the actual culprit could be a poorly designed interface or a process that needs desperate re-engineering.

Key recommendations suggested by the authors to deal with the fact that faculty do not have much time to learn to use new technologies:

- Have faculty with different levels of proficiency test new classroom technology setups before implementing them in other classrooms.
- Classrooms should be as similar as possible,
- Given that classrooms need to differ sometimes, clear and simple documentation should exist.
- Offer training programs.

Learning to use new technologies is a faculty need addressed by both departments at UNH. Smart classroom design accompanied by just-in-time documentation supported by training and practice opportunities is a model frequently utilized by our departments. In response to the recommendations suggested by the authors, UNH performs the following services:

- We encourage faculty to visit the Audiovisual Services department for consultation. Assistance with physical setup or connectivity are given at this time.
- All classrooms at UNH fall into one of four categories. A Super Tec (Technology-Enhanced Classroom) includes all equipment necessary for teaching and learning (LCD, DVD, Laserdisc, VCR, Mac and PC Computers, Laptop Interface, and Crestron Control). A Tec Type 1 classroom includes all of the above without the luxury of the installed PC and Mac. A Tec Type 2 uses a less expensive approach to building the classroom eliminating the need for a switcher and using an Extron control system. A General AV Classroom includes a wall mounted 27-inch TV, DVD, VHS combination unit. All classrooms include overhead projectors and slide projectors. These standards uniform throughout the classrooms we control. We also offer consultation with departments to ensure that locally controlled classrooms are similar to the standards we have established.
- Documentation exists in 3 forms. First, we post job aids in the equipment rack with clear instructions. Second, we issue quick reference guides including directions, phone numbers, and troubleshooting tips at the time of training. Finally, the equipment operating instructions as well as pictures of the equipment and classrooms, are available on our website.
- Training is given to faculty in group sessions during the week prior and first week of classes every semester. We require faculty to be trained on a yearly basis, and enforce this by changing combination locks that secure the equipment racks. We further offer individual training on classrooms that may be slightly different
depending on the programs offered in that building. Finally, we offer
departmental training and design services for classrooms that are not controlled
by Audiovisual Services to ensure that faculty are just as comfortable in those
locations.

- The Instructional Development Center sponsors two programs that help faculty
learn new technologies and, more importantly, how to use them successfully in
their teaching. The Faculty Instructional Technology Summer Institute (FITSI) is
an annual weeklong “bootcamp” for UNH faculty that introduces them to
teaching strategies using technology such as Blackboard, digital video, and
PowerPoint. Another program implemented by the IDC is eTAP, an Educational
Technology Assistant Program. ETAP pairs trained students with faculty and
instructional design teams to develop technology-enhanced content for use
directly in the classroom. This program utilizes students to help teach faculty the
latest technologies, especially Web and animation development tools and
techniques.

- The IDC also offers a full suite of training and documentation for Blackboard at
UNH. Blackboard is currently used by over 55% of the faculty and all UNH
students (approximately 13,000) are enrolled in at least one course that uses
Blackboard. Training and support of this technology is critical to ensure faculty
development and success.

**Impact on Learning**

Why should I use technology? Show me empirical evidence that proves technology
increases student learning? Faculty frequently ask these questions, especially as they
consider the time it takes to learn a technology and design curriculum that utilizes its
features.

So, is technology really worth it? Well, that depends on your objectives? For example, if
you want students to have access to a virtual meeting space where they can discuss
important topics, exchange documents, and work collaboratively to solve problems, then
learning to use the group feature of a course management system is probably worth it.

To help show faculty the value of technology for teaching and learning, the following
recommendations are given:

- Identify faculty that have assessed the impact of technologies on learning on their
campus.
- Encourage faculty to assess and evaluate the impact of technologies on learning.

Considering all three barriers, assessing the degree of impact technology has on learning
is the most difficult for us. Time, or lack thereof, for instructional technology support
staff and faculty to engage in evaluation studies outside of their core duties or research
areas, is extremely challenging. Therefore, we will solicit strategies, suggestions, and
feedback from the audience to help guide an evaluation strategy for teaching with
technology at UNH.
Conclusion

Faculty are using technology in increasing numbers and innovative ways at an unprecedented pace. To effectively support their development, we argue that collaboration between technology experts and teaching/learning personnel is critical. This is easier said than done! This presentation will present perspectives from both areas and offer strategies, recommendations, and solutions that are helpful to both those working with the technology or supporting the teaching/learning process. Using research as the foundation for our arguments, we will show how diverse departments within an academic technology department can collaborate to support technology adoption for faculty with an integrated approach and common set of services and strategies.

References