

Strategic Implications of an Educational Technology Assessment

A two-year research project on educational technology at the University of Washington yielded strategic implications for adoption of technology

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Universities face the challenge of being aware of and responsive to continuous, rapid technological change as it affects the institutional mission. To address this challenge, the University of Washington conducted an institution-wide assessment of educational technology. The purpose of this research was to inform the design of technical tools and services intended to capitalize on pedagogical successes, meet challenges of technology adoption, and ultimately serve the UW community's needs and desires best.

Results from this study have provided a unique opportunity to understand a university's technology infrastructure, faculty and student expertise, interplay of pedagogy and technology, barriers to technology adoption, and methods to improve existing tools and strategies. These findings have pointed toward practical strategic implications for adopting educational technology.

Methods

This multidisciplinary study achieved a systemic assessment of educational technology by coupling qualitative and quantitative research strategies. Four intricately related components composed this study: a faculty survey, faculty focus groups, a student survey, and student focus groups ($n = 2,885$).

With the goal of instituting a campus-wide effort to merge energy, resources, and knowledge, the faculty and student surveys were products of dynamic collaborative efforts. Partici-

pants informing survey content included the Provost's Office, the Faculty Senate, the Faculty Council on Educational Technology, the Office of Educational Assessment, the Office of Educational Partnerships, the Student Access and Computing Group, the Student Technology Fee Committee, Computing and Communications, the Program for Educational Transformation through Technology, and the UW Libraries.

Common questions between the two survey instruments assisted the researchers in ascertaining direct significant correlations between the two sampled populations. This design yielded compelling data comparing student and faculty use, expertise, and expectations of technology within a university community.

Quantitative data were explored further in qualitative research. At the conclusion of the faculty survey, respondents had the opportunity to speak candidly about technology by participating in anonymous, uncompensated focus groups. This data provided in-depth contextual detail of faculty's experiences with and uses of educational technology.

To address the need for research that relies on students to define educational technology, students themselves were the driving force of the student focus groups. Undergraduate students enrolled in a research course with objectives that included defining research questions, leading focus groups with their peers, and analyzing data.

Researchers triangulated the data from each of these four methods to make a rich interpretation of the findings and gain a robust understanding of educational technology on the UW campus.

Findings

Complete analyses of the data sets resulted in four emergent themes: benchmarks of technology integration, faculty and student expectations for building technical skills, enhancements to the culture of educational technology, and technology as a new social context for learning.

Benchmarks of Technology Integration

"Educational technology" does not have a universal definition. It is a complex mix of hardware and software embedded in various educational contexts. This research outlines the UW's definition, addressing those tools used by faculty and students in the service of education. Technologies integrated into this definition included course Web sites, PowerPoint, discussion boards, e-mail, library reserves, and use of the Web for research.

Expectations for Building Technical Skills

Both students and faculty wanted to improve their ability to use educational technology effectively. Members of each population defined their preferred instructional approaches to gain these new skills.

Ninety-six percent of students wanted direct instruction on technology in the classroom. Students defined the desired methods for technology instruction to include in-class demonstrations (82 percent), step-by-step instruction in a computer lab (67 percent), and verbal training (58 percent).

Faculty survey respondents identified three preferred approaches to computer learning as interaction with colleagues, friends, and family; exploring and experimenting; and local technical support in a one-on-one, just-in-time basis. They also wanted to receive training from individuals who can assist them in developing and using technology to enhance their pedagogy.

Students from every discipline anticipated a significant increase in their ability to use technology while enrolled at the university ($p < .001$). They expected this training to be provided in large part by the institution.

Both faculty and students suggested training faculty in how to effectively develop, use, and integrate educational technologies into their curricula.

Students wanted technology to be employed consistently throughout the university. Faculty were aware of this student expectation but identified multiple barriers to adoption. The top three barriers identified were lack of skills, lack of time, and lack of incentives. An institutional responsibility was identified—universities should consider assisting faculty with integrating technology uniformly across curricula.

Students overwhelmingly rated their ability to critically evaluate information they find on the Web very highly. Faculty strongly disagreed and wanted the university to continue to support them in building information literacy skills into the courses they teach.

Enhancements to the Culture of Educational Technology

Technology adoption can thrive only in a culture that supports it. Faculty described the present culture and support for appropriate educational technology use as still in its nascent form. Forty-two percent of faculty respondents reported never having used a computer

in the classroom. Faculty suggestions to enhance the culture of technology included curriculum awards, release time for technology change, or crediting teaching with technology in the tenure review process.

Technology as a New Social Context for Learning

Interactive electronic communication is a new social context for student learning and collaboration. Students depend on this technology for their coursework and research, particularly for a safe peer-to-peer teaching and learning environment. Every student respondent reported using electronic communication for this purpose. Eighty-three percent of students use e-mail every day for their coursework, and 30 percent use instant messaging daily for academic purposes.

Though students clearly value these communication technologies, they want the technologies to be used primarily by themselves and their peers. Only 20 percent of students reported a desire to have faculty use instant messaging in their courses.


Strategic Implications

The researchers brought initial findings to the UW public through a technical report, in open seminars, and in meetings with units and faculty groups. From these research-informed discussions we articulated strategic implications of technology adoption for UW and higher education at large.

- Universities need to allocate resources to research that assists in facilitating thoughtful, effective, and innovative educational technology uses. This research should assist the university in integrating technology in a manner driven by pedagogical objectives, institutional standards, and student learning.
- There are technologies widely accepted and desired by both faculty and students. Increasing the use of these technologies requires institutional change. Campus-wide agendas and institutional mission statements must be drafted for technology adoption.
- Students and faculty have dramatically different expectations of appropriate

levels of technology integration. Universities need to develop an institutional statement of expectations of technology integration and proficiency.

- Higher education institutions need to consider developing detailed plans for assessing technology. Faculty are hesitant to adopt technologies that have not undergone enough research to demonstrate substantial learning gains. Universities need to develop strategies designed to assess learning gains when educational technologies are integrated into curricula and then use these strategies to assess technology in the classroom.
- Educators need to assess their students' information literacy. They may wish to consider integrating content into their curricula aimed at developing their students' literacy skills.
- Higher education research needs to explore student uses of emerging technologies, such as instant messaging.
- To enhance the culture of educational technology requires facilitating clear communication among all community members.
- Higher education must not head blindly into the future. Large-scale institutional assessments of educational technology using multiple methods, such as this study, must be ongoing.

For more strategic implications of this study, please view the full technical report online at <<http://depts.washington.edu/pettt/home.html>>. In addition, the qualitative findings will appear in *Planning for Higher Education* (in press).¹ 

Endnote

1. K. Gustafson, "The Impact of Technologies on Learning," *Planning for Higher Education*, Vol. 32, No. 2, 2003–2004, pp. 37–43.

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