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Wikis and Podcasts and Blogs! Oh, My! What Is a Faculty Member Supposed to Do?

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From the moment Kim Vega wakes up, she is thinking about or using technology. An associate professor since 1996, she quickly checks e-mail at home this morning on her university laptop to see if her department has confirmed the starting time of the monthly department meeting, if there are any frantic messages from students about the exam scheduled for her afternoon class, and if a co-author has sent revisions for an article due that week. As she drives to work, she gets a call from a colleague whose car has broken down and who asks that she start a 10 a.m. class for him. Once on campus, she grabs her paper mail and boots up her laptop. She has to log-in multiple times to access university services on campus: the wireless system, the campus Virtual Private Network (required for mobile technologies) for her e-mail software, and finally, the course management system. She downloads students' assignments to review before her class – this takes almost fifteen minutes because she has to download each individually; she then names and files the documents on her hard drive so that she can identify students with assignments. She heads out to start the morning class and, thanks to the campus wireless network, checks e-mail while the students complete an online tutorial. However, since she closed her laptop to walk across campus, she has to repeat the log-in process again. Although at first she was skeptical of her department's laptop initiative, for once she is gratified to have it, even though she is frustrated about the time it takes to access institutional services. When her colleague arrives to take over the class, Kim heads back to her office, where she spends an hour answering e-mails on her desktop

computer, grading students' assignments, and reading her campus paper mail. She has several unanticipated interruptions: a software update, five phone calls, and a computer reboot due to the software update. When she reboots, she finds that her password has expired; after changing this, she has to log-in to all of her accounts yet again. After the afternoon class starts, she explains to her students that they will first post their final essays onto their blogs and then critique each other's essays. Kim hasn't tried this before, but she has read about the value of blogging and so has decided to test it out. She had a disaster when she tried a wiki and found that students plagiarized and edited each other's work. She hasn't figured out when or why to use what tool, but she knows her savvy undergrads like to play on the Internet and she is trying to tap into this. As class ends, she meets with a former student, a graduate who is now teaching high school and wants to discuss a possible electronic mentoring project between Kim's students and his ninth-graders. Kim is a bit overwhelmed by the plan and wonders how much more her teaching will have to change as new technologies keep coming along.

The Never-Ending Gaps

The gaps between students' and faculty members' use of technology have widened. The digital divide focused on access and socioeconomics just ten years ago, but today we see a widening divide between parent and child, teacher and learner, and employer and employee. In the mid-1990s, most students did not own a personal computer, they used single-function technologies (phones, cameras, audio and video players), they had sporadic and limited access to the Internet, they may have used a course management system in very limited ways, and although they communicated with e-mail, neither instant messaging (IMing) nor text-messaging was common. Today, most students own a computer, use multifunction mobile technologies, have ubiquitous access to the Internet, regularly use course management systems for coursework, and incessantly IM and text-message (e-mail is passé).[1]

It is not surprising that today's learner brings more advanced skills and higher expectations to the college/university learning environment. The National Educational Technology Standards (http://cnets.iste.org), introduced in the mid-1990s for K-12 children and teachers, have helped to diffuse technology in K-12 education. Currently, 98 percent of all U.S. states use these or a similar form of technology standards that now also include standards for administrators. This means that current college and university students have likely completed high school with a curriculum that supports NETS performance standards. With previous experience in learning environments that offer technology-supported instruction, students come to campus with certain expectations about what faculty members and the institution should offer, especially in the teaching and learning environment.

The portrait of faculty members' experience with technology over the same time period is quite different. In the mid-1990s, e-mail use between instructor and student was encouraged but not necessarily required: many campuses did not offer student accounts, and faculty access to e-mail was typically not seen as necessary. Some faculty did provide course Web sites, but the use of such sites was also not required. Although

institutions provided campus-based Internet access, many faculty members did not have home access, nor did most colleges or universities provide remote access. Faculty likely did not have classroom Internet access, and computers and digital projectors had to be requested on a per-use basis; overhead projectors and chalkboards were the mainstay classroom "technologies." Rarely did students have technology that could be brought to class, much less used in class.

By contrast, many faculty members today have become so inundated with digital communications from students that it is not unusual for communication protocols and limitations to be specified in course syllabi. Most faculty members have home access to campus resources and use a course management system. But have faculty embraced and utilized technology to the same extent as students? Most evidence, though limited, indicates that this is not the case. Students live in a separate reality from faculty members, who are typically not motivated or rewarded by institutional incentives to change their practice. However, as higher education institutions struggle with limited budgets to support faculty and to move courses online, technology seems to change daily. Given the demands of teaching, service, and (for most) research, faculty are now expected to embrace learning technologies along with everything else, challenging the institution to help them make sense of what works and how to work it.

Instructional Technology Challenges

Today's faculty members face several instructional technology challenges:

- *The technology-adoption cycle:* Under ideal circumstances, a faculty member may require anywhere from three to four terms to adopt a learning technology tool; even more time may be needed to produce positive results in teaching and learning. Many faculty members are hesitant to experiment with several tools at once and prefer a "one-at-a-time" approach to adoption and integration. The ever-changing array of available tools and the lack of information related to adoption and use together act as a de-motivator.
- *Lack of integrated technology tools:* Most faculty members are using some type of course management system, but many tools considered to be "emerging" are not integrated into these systems: blogs, wikis, podcasting. Lack of integration results in multiple log-ins, data input, and results tracking. In other words, tools that are not centrally integrated require an additional "use and management" investment that is otherwise unnecessary.
- *Learners' changing expectations:* Students and their preferences are often a moving and diverse target. Not all students prefer the same amount or type of instructional technologies, leaving faculty members struggling to identify and select the appropriate tool.
- *Institutional changes to technology commitments:* Faculty members often adopt and integrate technologies at a different rate—sometimes slower, sometimes faster—than

does the institution where they teach. An organization may decide to review, and possibly change, the course management system every five years. Changes in tools and in the commitment to support them results in an unstable, unpredictable environment, which makes innovation and adoption a risky business for faculty.

Undoubtedly, faculty members have to balance several risks and benefits when determining whether or not to adopt an instructional technology tool: the technology's maturity, its level of integration with other tools, and the institution's commitment to support student and faculty use. These are also conditions necessary and critical to creating and nurturing a culture of experimentation and instructional innovation.

The Latest, Greatest, and Most Promising

In the past five years, the number of online technologies has exploded, with many of them being well-suited for teaching and learning. Those applications defined as "Web 2.0" hold the most promise because they are strictly Web-based and typically free, support collaboration and interaction, and are responsive to the user. These applications have great potential to be used in a way that is learner-centered, affordable, and accessible for teaching and learning purposes. The most commonly used (and discussed) tools are described in Table 1.

Table 1. Web 2.0 Applications

Type	Function	Tools
Communicative	To share ideas, information, and creations	• Blogs • Audioblogs • Videoblogs • IM-type tools • Podcasts • Webcams
Collaborative	To work with others for a specific purpose in a shared work area	• Editing/writing tools • Virtual communities of practice (VCOPs) • Wikis
Documentative	To collect and/or present evidence of experiences, thinking over time, productions, etc.	• Blogs • Videoblogs • E-portfolios
Generative	To create something new that can be seen and/or used by others	• Mashups • VCOPs • Virtual Learning Worlds (VLW)

Interactive	To exchange information, ideas, resources, materials	• Learning objectives • Social bookmarking • VCOPs • VLWs

Given the easy access to and increasing availability of these tools, it is no surprise that so many of them are being discussed in professional meetings and publications related to teaching and learning. Table 2 lists a few sources for identifying these and other emerging instructional and related technologies.

Table 2. Emerging Technologies

Source	Systems	Learning Technologies	Devices	Infrastructures
Gartner, *Hype Cycle for Higher Education, 2006* (http://www.gartner.com/DisplayDocument?id=493481)	• Repositories • Global library digitization projects • Course management systems • Higher education enterprise portals • RFID library materials management	• Open-source e-learning applications • E-portfolios • Podcasting • Learning content	• Personally owned devices with campus network access	• Internet 2/next-generation Internet • E-learning • 802.11x on campus • Web services for administrative applications • CRM for enrollment management • ID and access management
New Media Consortium and EDUCAUSE Learning Initiative, *2007 Horizon Report* (http://www.nmc.org/horizon/)		• User-created content • Social networking • Virtual worlds • Massively multiplayer educational gaming	• Mobile phones	
EDUCAUSE	• Creative	• Open		

Learning Initiative (http://www.educause.edu/eli/) NITLE (http://www.nitle.org/index.php/nitle/laboratory)	Commons • Facebook • RSS	journaling • Digital storytelling • 3D visualizations • Blogs • Podcasting • Wikis	• Web 2.0 • Wireless

Evaluating Emerging Technologies

Given that higher education finally has some technologies actually designed for teaching and learning, institutions and faculty members alike need to determine the value of these tools and how they can best support learning. It is vital that the institution provide services and resources while also supporting the range of faculty members' skill, expertise, capability, interest, and motivation. We propose a multifaceted approach that involves (1) capturing current practices, (2) determining the needs, wants, and preferences of both faculty members and learners, and (3) carefully matching the pedagogical value of the tools as it relates to teaching and learning behaviors.

Capturing Current Practices

It is important to determine current faculty practice. The capture of baseline information may include any or all of the following approaches:

- *Student and faculty surveys:* Items surveyed might include the use of tools, where tools are used, teaching approaches, and demographic information including age, gender, year of study/employment, and program of study.
- *Student and faculty focus groups or observation:* This strategy can uncover information that is not easily discovered in surveys, such as classroom use of technology, use of course management systems, preferences, limitations, and needs.
- *Document analysis:* Annual reports, tenure reviews, lesson plans, Web pages, and PowerPoint presentations or course handouts can indicate areas of technology use and can reveal instructional styles.
- *Behavioral and psychological surveys:* These surveys can capture teaching/learning styles, adoption stages, and individual motivation.
- *Snapshot interviews:* Conversations with faculty can reveal core instructional applications used (e.g., management, engagement, production, interaction, communication, evaluation).

The greater and more diverse the approach, the more likely it will be to capture

baseline information, but individual "portraits" of use may not paint the bigger picture. Breadth, depth, and frequency assessment strategies can reveal significant issues relating to faculty effort and time, support, and access to services, materials, and tools. This data can be captured through software tracking, faculty self-reporting (e.g., time-based surveys, logs), shadowing, and observation over time or in different settings (e.g., classrooms, course management systems).

Determining Needs, Wants, and Preferences

The instructional technology that a faculty member needs, wants, and prefers may be related to the teaching load and to the teaching discipline. A heavy teaching load will require more institutional support, which may be easily provided. But teaching approaches used in specific disciplines relate to teaching style. Teaching styles and technology adoption are relevant when discussing faculty members' use of technology in their teaching practice. To address the range of needs and traits present in a classroom, Anthony Grasha developed an integrated model of five teaching and learning styles:

- *Personal Model:* This most common style is related to what faculty members teach. Instructors in this area focus on modeling appropriate behavior and thinking, and they use personal examples and stories.
- *Experts:* Faculty in this style group are knowledge experts who help the learner become more proficient under their direct instruction. Arts and humanities faculty are typically experts.
- *Formal Authorities:* Faculty members in this group operate in a formal and traditional approach and focus on correct and appropriate procedures. Foreign language instructors are typically formal authorities.
- *Facilitators:* Interactive engagement describes this style, in which the faculty member assumes the role of consultant to the learner. Instructors in education tend to fall in this category.
- *Delegators:* These instructors put as much responsibility on the learner as possible with minimal input—for example, teaching through coaching and co-learning.[2]

Determining an instructor's teaching style can help in the selection of the technologies and environments that are most likely to be a good fit with the instructor, the course content, and probably the learner. Students develop disciplinary expectations as they take more courses and recognize the way that courses are structured. Using technology consistently across programs can make things easier for both students and faculty.

Identifying where an instructor falls in a continuum of technology adoption may be an important first step in knowing where to initiate support. Early adoption models focus on the relationship an educator has with technology. Thus, these models focus on how educators have learned about technology, how they use it in their teaching, how technology is perceived as effecting practice, and how educators spread use to others. More recently, the Technology Acceptance Model (TAM) focuses on perceived

usefulness and ease of use.[3] TAM integrates well with teaching style because it can be part of an individual profile yet can also be used to identify cross-faculty patterns suggesting where interest and barriers lie. For example, if a faculty member from one department perceives that a technology is not useful, there may be external variables at play, such as average age, lack of departmental incentives or rewards, or curricular limitations.

Matching Pedagogical Value with Teaching and Learning Behaviors

Pedagogy is derived from learned theory, experience as a learner and instructor, personal and disciplinary style, and constraints of the instructional environment. Knowing what instructors are doing and what students need and prefer is one component of instructional planning, particularly with emerging technologies that may be unfamiliar or, more important, untried in educational settings. Therefore, before introducing new technologies, faculty and institutions should consider the typical teaching and learning activities in which both the instructor and the learner participate. Regardless of pedagogy and technology, instructors and learners are doing the same things they have always done throughout the instructional process. For example, instructors must communicate, assess, provide feedback, observe, present information, and organize activities. Learners read, present a point of view, search/collect/analyze information, practice, create, and respond. It is easier to consider technologies for adoption within the context of these existing teaching and learning activities. For instance, blogs are suitable for presenting points of view, reporting, and offering peer critique but are less useful for practicing or performing. Virtual worlds work well for practicing and performing but are not effective for reporting. Thinking about the basic constructs of learning (e.g., to comprehend, analyze, and evaluate) facilitates the selection and application of instructional technology for faculty members.

Selecting Emerging Technologies

The Web 2.0 buzz has a way of making almost anyone feel hopelessly behind in the use of instructional technology. But faculty members are asking several critical questions: Do emerging and innovative technologies actually result in an improved educational model? How are these technologies implemented and sustained? How do these technologies map to instructional problems? Which technologies actually improve learning? In a climate of increased accountability, instructional tools that utilize emerging (or, sometimes, existing) technologies must be effective at addressing broader "grand challenges" such as accessibility, affordability, accountability, and improved learning.[4]

It is important to remember that emerging technologies can be used to produce some of the same benefits that would result from a stronger focus on learner-centered, pedagogically driven instruction: improved information literacy skills; increased participation in the learning process or contributive learning; and more collaborative and practiced learning. In other words, emerging technologies are designed to assist

learners in becoming active, engaged learners and information evaluators as opposed to passive learners who merely reflect their instructor's knowledge. In this new environment, learners rely on and interact more with other learners, further building and constructing each other's knowledge.

The selection of an instructional technology that an institution will pilot and eventually centralize and support should be an informed, data-driven process. Unfortunately, technologies are often selected for arbitrary reasons that have little to do with teaching and learning or the students they serve. We offer the following recommendations to assist in the selection process:

- *Know who you are and who you want to be.* One way to sort through the available technology tools is to consider the institution's internal needs and external image to determine how much and in which technologies to invest. This strategy can be applied at the faculty member, department, or institutional level. For instance, a business college may decide that it will be on the forefront of instructional technology because doing so fits its mission, whereas a small liberal arts college may select only a few technology tools that are supportable and that address very specific instructional and student needs.
- *Know your students.* A study published by the EDUCAUSE Center for Applied Research (ECAR) in 2006 showed that students who are innovators or early adopters of technology prefer moderate amounts of technology in their instruction and that younger students prefer even less technology than do their older peers. Instead of making assumptions, institutions need to survey students and faculty members, by discipline, to understand their teaching and learning preferences.[5] Goals should be stated clearly, and faculty members should be assisted in building on something at which they already excel.
- *Know your challenges.* Many technologies have the potential to improve learning, but they must be implemented with the appropriate pedagogy and instructional problems in mind. Podcasting is a good example. Transmitting an entire lecture is likely to have little impact; selecting a short, particularly difficult segment to transmit will more likely result in use by students.
- *Treat technology as a means and an end.* Consider implementing tools that span subjects, such as course management systems. Also consider implementing discipline-specific tools that students will need to use in the workplace, such as AutoCAD for engineering or architecture students.
- *Emphasize data, data, data.* Collecting data is important not only when tools are in a pilot phase but also over time. In conjunction with faculty members, the institution should identify the instructional challenges that will be addressed and track whether or not the technology has been effective in meeting its goals. Adoption often evolves with support and experience; collecting data will help to capture trends in use and adoption.
- *Support what you implement, and implement what you are able to support.* Instructional technology requires support for both students and instructors.

> Since faculty members and learners are not always prepared to use new technologies effectively in teaching and learning environments, both infrastructure and design support need to be considered.

What approach should an institution adopt to select instructional technology solutions? The answer is as unique and customized as the organization making the choice. The successful implementation of an instructional technology involves several steps: the clear identification of an instructional problem or need; a review of available tools; an adoption strategy; the adoption process; continued support; and ongoing assessment. Throughout, the implementation approach should be periodically reviewed. The teaching and learning environment is alive and dynamic, as should be the solutions.

Conclusion

Selecting technologies that will further teaching and learning should be a dynamic and iterative process for an institution, for departments that support teaching and learning, and for the individual faculty member. The ongoing evaluation of the relevance of technologies to the challenges of teaching and learning needs to include the users: faculty members and students. In addition, the evaluation process should be customized to the disciplines in which the technologies are being implemented. The gap between students' preferences for certain technologies and faculty members' use of those same technologies may never close, but with thoughtful and deliberate planning, organizations can make the question of "what to do?" into a joint effort and thus continue to progress along the technology continuum.

Kim ponders: What is a faculty member supposed to do? She concludes that if today's ninth-graders are using the same technologies that her current students are using, there will be even newer technologies for her to learn about soon. Although that thought is daunting, she would rather actively participate in the decisions being made regarding the institutional selection and support of emerging technologies than scramble to catch up after a new initiative has been implemented. In her last e-mail of the day, she asks her department chair: "What can we do today to ensure that decisions about technologies represent what students and faculty need and what best supports teaching and learning?"

Notes

1. See the Speak Up reports from Project Tomorrow: <http://www.netday.org/SPEAKUP/speakup_reports.htm>; Marc Prensky, "Digital Natives, Digital Immigrants," *On the Horizon*, vol. 9, no. 5 (October 2001), <http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>; Gail Salaway, Richard N. Katz, Judith B. Caruso, Robert B. Kvavik, and Mark R. Nelson, "The ECAR

Study of Undergraduate Students and Information Technology," *EDUCAUSE Center for Applied Research (ECAR) Research Study,* vol. 7 (2006), <http://www.educause.edu/LibraryDetailPage/666?ID=ERS0607>; Don Tapscott, *Growing Up Digital: The Rise of the Net Generation* (New York: McGraw-Hill, 1998).

2. Anthony F. Grasha, *Teaching with Style: A Practical Guide to Enhancing Learning by Understanding Teaching and Learning Styles* (San Bernardino, Calif.: Alliance Publishers, 1996). See the Grasha Teaching Style Inventory: <http://www.iats.com/publications/TSI.html>.

3. R. P. Bagozzi, F. D. Davis, and P. R. Warshaw, "Development and Test of a Theory of Technological Learning and Usage," *Human Relations*, vol. 45, no. 7 (1992): 660–86.

4. Brian L. Hawkins, "The EDUCAUSE 'Grand Challenges' Initiative," presentation at the EDUCAUSE 2006 Annual Meeting, Dallas, Texas, October 10, 2006, <http://www.educause.edu/E06/Program/9155?Product_Code=E06/FS04>.

5. Salaway et al., "ECAR Study of Undergraduate Students."