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Leading a Multiple Project Mobile Learning Initiative

The Approach at Boise State University

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Overview

As academic leaders and IT personnel in higher education institutions make a concerted effort to determine the impact that mobile devices will have on their communities, many have decided to launch wide-ranging, device-specific initiatives or invest substantial resources to make services mobile friendly in a platform-neutral manner. Such large-scale projects may arise from the leadership team's desire to project the institution's technological or pedagogical innovativeness, ostensibly to attract students for whom mobile devices have become a veritable extension of self. Not every campus-wide mobile initiative, though, is meant to be all-encompassing (such as the "tablet for every freshman" approach). Such initiatives may in fact take the form of many separate projects, each designed to meet the needs of specific subgroups of instructional personnel or students. Although it might lack the attention-grabbing sort of headline that often accompanies the adoption of a ubiquitous tool, a more measured approach toward integration of mobile devices can be a reasonable and pragmatic way forward. When all members of a community are allowed organic space for exploration, experimentation, and development, broader and longer-term adoption is more likely to occur.[1] A necessary component of sustainability—however well-intentioned or well-supported organic projects may be—is that initiatives must undergo formative evaluations and be allowed to evolve based on recommendations that arise from evaluative activities.

Any mobile initiative raises a number of important questions to consider. For example, how are instructional personnel being intentionally supported to explore innovations in teaching and learning? Which strategies have been developed to address physical access to mobile devices for both students and faculty? Beyond implementation, but integral to it, is the importance of assessment (before and after the project). As such, those involved in mobile initiatives need to ask how they will assess the efforts and needs with regard to mobile learning. Because all campus constituents benefit from the sharing of evaluation data, what is the plan to communicate results with both internal and external audiences? Further, how can assessment data be used within existing institutional structures to share innovation and ideas? Finally, if there are new projects that seem to have traction, stakeholders should ask about the specific plans to ensure sustainability and scalability.

Background

Faculty and staff from a number of units within Boise State University convened in Fall 2010 under the auspices of the Presidential Task Force for Teaching and Learning with Technology. Led by the directors of the Center for Teaching and Learning and the Office of Information Technology (OIT), the goal of the task force was to develop a series of specific recommendations that would allow for the development of one or more innovative, technology-based projects across campus. After consideration of a number of factors, including data from student surveys in Spring 2010, and knowing that mobile learning was of interest to administrators, faculty, and students alike, the task force submitted a proposal titled "Mobile-Learning for Boise State: A Proposal to Catalyze Transformation in Teaching and Learning" in Summer 2011 (a link to the full report is in the "Where to Learn More" section). The proposal was based, in part, on an examination of small-scale projects already in-progress around campus and a consideration of broader strategies that could support the entire community. As shown in Table 1, these projects included professional development for faculty, an examination of how students might use mobile resources, the development of mobile-friendly sites, and an assessment of students' ownership and use of mobile devices. The initial projects were organized by disparate offices or created by small groups of individuals.

Table 1. Examples of Mobile Projects prior to Fall 2011

Project	Description
Mobile Summit	Led by both the Office of Student Affairs and Academic Technologies, national leaders and university faculty and students shared ideas during this two-day event to build momentum for expanded mobile projects.
mLearning Scholars Program	Faculty and staff from Academic Technologies, the Department of Educational Technology, and the university's Albertsons Library worked with 11 applicants to explore classroom uses of mobile technologies. The students in one of the applicants' classes were provided with a mobile device. The faculty met twice per month to share insights and best practices.*
Enhancing the Library e-Experience	The project examined how e-books and mobile devices impacted the student learning experience, especially for students in programs with activity focused away from the Boise campus. Students in nursing, social work, and marketing participated; some were loaned iPads and others were loaned netbook computers. The library acquired more than 700 e-books during this time.
University Mobile Sites	In this collaborative effort among personnel from Albertsons Library, College of Business and Economics, and OIT, two different mobile sites (for smartphones) were created, revised, and implemented.**
Survey of Student Ownership and Use of Mobile Technologies	A faculty member in the Department of Educational Technology, collaborating with OIT and the Office of Institutional Assessment, Analysis and Reporting, created a 40-item survey, which was sent to nearly 1,500 randomly selected students and achieved a 42% response rate. The data gave a reliable glimpse of which mobile tools students used.

** To see video of the m-learning scholars' experiences, go to http://mobilelearning.boisestate.edu/mlearningscholars/mlsindex.shtm.*

*** Boise State University mobile website: http://m.boisestate.edu; Albertsons Library website: http://library.boisestate.edu.*

The mobile-learning proposal, which later was reviewed and approved by the offices of the provost and vice president for finance and administration, in consultation with the university president, allowed for the implementation of a two-year plan with five essential elements as its framework (see Table 2). An important aspect of this proposal is that it was never meant to be a centralized, top-down initiative that requires conformance to a specific device or set of devices, and implementation of the plan was always recognized to be something that would come from all quarters of campus.

Table 2. Priorities of the Mobile Learning Proposal

Element	Priority	Areas Impacted
1	Preparing and Supporting Faculty	Programs, courses, and faculty readiness
2	Supporting Students' Digital Fluency	Skills for academic and professional success; enhancement of engagement and learning
3	Digital Content	Course content; campus e-content creation and publication opportunities; acquisition of e-books and e-textbooks; licensing of existing materials for mobile access
4	Infrastructure	Content delivery platforms integrated, seamless, and web-enabled; student affairs and student life information accessible (and ADA compliant); expanded wireless capacity; provision of powering stations; device procurement and distribution; technical and administrative support; security and policy development
5	Analytics and Evidence of Impact	Support for faculty in the scholarship of teaching and learning; engagement and support for all members of the campus community in long-term research; dissemination of results

Below, we describe a number of projects that have emerged from the mobile learning initiative (hereafter "MLI"), provide the rationale for and results of a student and faculty survey, and offer insight into lessons learned to date. The reason we are able to provide a data-based account of the MLI is due to a recommendation made as part of the original proposal submitted to the administration. Namely, in addition to supporting various projects in terms of fiscal or IT resources, the contributors to the MLI proposal made certain to include a description of evaluation and data-gathering approaches (Element 5). Section Five of the proposal, titled "Analytics and Evidence of Impact," has three goals: support faculty to engage in scholarship around mobile learning, engage and support members of the campus community in long-term research projects, and publish efforts of such scholarship.

Highlights

The approval of the MLI proposal has given rise to a number of projects across campus that have involved a wide array of faculty and staff from many different departments and units. The following description of selected projects, organized under the framework in Table 2, is not exhaustive. It is fair to say that some faculty who are experimenting with mobile learning are not doing so under the umbrella of the MLI. However, the existence of projects outside the MLI proposal is encouraged, as the goal of MLI is not to provide top-down guidance but to shift culture and provide support for nascent projects in whatever way possible.

Preparing and Supporting Faculty

The Mobile-Learning Scholars (MLS) program is facilitated by Academic Technologies, a unit of the Center for Teaching and Learning. It brings together interdisciplinary groups of faculty to focus on mobile learning projects. In addition to receiving their own Apple iPads, faculty participants propose and carry out small-scale projects with students in one of their courses. The university provides hardware for the students (iPads or iPod touch devices) for the semester of the projects. Between Spring 2011 and Spring 2013, six cohorts have been supported, involving a total of 47 faculty, thereby engaging hundreds of students. The initial group of participants suggested that a single semester was not enough time to fully explore the opportunities presented by mobile learning. As a result, we created opportunities for both beginners ("1.0 cohorts") and those returning after an initial experience ("2.0 cohorts"). Faculty participants have explored and assessed a wide variety of mobile learning strategies including student-created mobile content, use of mobile devices to access information at the point of need and in real time, connecting in-class and out-of-class learning, assessment and self-assessment of learning, and student-to-student communication and collaboration.

Additional resources for faculty development have come in the form of a weeklong Summer Mobile Learning Institute and designated "B Mobile Days" and a campus-based conference, "Great Ideas for Teaching and Learning," both of which featured presentations about m-learning.

Supporting Students' Digital Fluency

The university currently has a help desk for students who have specific technology needs. The help desk can be accessed online, by phone, or in person at designated spots on campus and has emerged as an important partner for faculty using digital-rich assignments, including those designed for mobile devices.

To look at the larger picture of student assistance and training, a small group of individuals from the Albertsons Library, Academic Technologies, Educational Technology, and student government met to discuss the issues involved with students' digital literacy. As the group began to discuss the various issues, they realized that "literacy" did not capture the full range of aptitudes and attitudes of regular technology users we seek. After much discussion, the group settled on the term "digital fluency" and developed the following definition:

> An evolving aptitude that empowers the individual to effectively and ethically interpret information, discover meaning, design content, construct knowledge, and communicate ideas in a digitally connected world.

As the campus considers how best to support digital fluency, this group is actively exploring what kind of resources and activities will be most useful. One possibility is to acquire access to tutorials online. The bigger picture, though, is to ensure that the training aligns with what might be required of students in specific courses or programs. Part of the work that remains is to help instructors understand which pieces of their assessment might be enhanced by moving to a mobile platform.

Importantly, our definition of "digital fluency" has been helpful in framing conversations with a variety of campus stakeholders. Digital fluency is a lifelong skill and resonates with faculty in a way that "adopt a device" often does not.

Digital Content

The Albertsons Library at Boise State University has invested substantial resources in augmenting its e-book holdings.[2] These investments are offset, however, by some significant cost advantages. For example, from July 2011 to January 2012, a total of nearly $42,000 was spent for electronic texts, but the list price of the books to which the campus community has access is valued at $5.2 million (if the books were purchased at full price). Over the six-month period, a total of nearly 14,000 total transactions were recorded—an average of just over 75 transactions per day. The library continues to purchase electronic titles and expand offerings for m-learning, such as securing downloadable titles and finding books used for specific courses. Moreover, the Albertsons Library leadership continues its support for acquiring titles requested by the community of users, either directly or indirectly (by examining patterns of use).

To help ensure that the acquisition of e-content is strategic, library staff have been involved as participants in each of the MLS cohorts described above, have consulted with faculty designing courses in our new general education program, and have played a key role in a project focused on transforming an entire program to leverage mobile learning strategies. Our first efforts in this area are in the Master of Applied Historical Research (MAHR). One goal of the MAHR project is for students to use mobile devices throughout the program to gain experience in using the technology as interpretive tools. The cost of the mobile device for students was offset by the use of e-content and a commitment by faculty to reduce textbook costs over the course of the program.

As we move forward, we have plans to support additional transformations at the program level, to intentionally scaffold e-textbook use, and to support faculty who want to create content for consumption on mobile devices.

Infrastructure

Campus-based surveys for the past two years have shown that while cell phone ownership (or regular access to one) is nearly ubiquitous, only about 50% of students and faculty have access to devices or data plans that allow for large amounts of data transfer. In order to address the gaps, to date more than 200 mobile devices (netbooks, iPads, iPad touches, Androids, e-book readers, and others) have been purchased by the MLI for use by faculty for various projects. Additionally, Albertsons Library, OIT, and Academic Technologies have purchased devices and established systems for community members to borrow devices.

As our project has proceeded, we've encountered and solved a number of infrastructure and institutional barriers. For example, all classrooms on campus now have wireless access, support mechanisms are readily available for faculty and students no matter what device they happen to be using, systems are in place for refreshing borrowed devices, and the number of places where one can recharge devices continues to grow. An important aspect of the initiative has been the work done with the Disability Resource Center. A group has been formed that looks for quality applications for accessibility and examines how best to configure devices for students with disabilities.

While we've successfully addressed infrastructure issues in the MLI in our initial exploratory phase, we continue to discuss and watch for solutions that will help us scale both infrastructure and support as mobile learning spreads further on the campus.

Analytics and Evidence

Assessment of the MLI has been embedded as part of every program. In addition, we sought to obtain results that would inform our efforts on a broader scale. In Spring 2012, the Mobile Learning Assessment Group (a group of faculty recruited to serve in this capacity) collaborated to create and carry out a survey of campus-based instructional personnel and to analyze the results. The faculty survey, which consisted of seven sections, was sent to more than 1,300 instructional personnel (faculty, instructors, adjuncts, and graduate teaching assistants), and the final completion rate was 35.7%. The student survey was sent to 1,600, randomly selected from a sample frame of 10,000 students who fit the profile of a typical, on-campus, degree-seeking student (undergraduate and graduate). A number of best practices for survey implementation were used, including prepaid incentives, which resulted in an overall response rate of greater than 43%. A similar student survey was administered in Spring 2011. A detailed account of the results from both surveys can be found in the "Spring 2012 Mobile Learning Campus Climate Assessment Report" (linked from the "Where to Learn More" section); selected interesting results are included below.

Self-Described Technology Adoption Stance

Both groups were asked to choose from a set of statements the one that best describes their technology adoption—a question that has appeared in previous iterations of the ECAR study of undergraduate students and information technology.[3] Interestingly, and as shown in Table 3, Boise State University faculty and students align very closely with each other on the adoption scale. This seems to controvert popular thought that students are more likely to adopt new technologies than their professors. It also speaks to the fact that the intentional diffusion of new technologies and approaches should not be limited to faculty. Instead, one must consider that students themselves also need and deserve information and training about innovations.

Table 3. "Which of the following best describes you?"

Response	Faculty (2012)	Students (2012)
I am skeptical of new technologies and use them only when I have to.	5.7%	3.4%
I am usually one of the last people I know to use new technologies.	13.3%	15.6%
I usually use new technologies when most people I know do.	45.3%	49.7%
I like new technologies and use them before most people I know.	27.5%	21.3%
I love new technologies and am among the first to experiment with and use them.	8.1%	9.9%

Ownership of or Access to Mobile Devices

Data on ownership of or access of mobile devices, shown in Figure 1, is not surprising except perhaps that there is a broader adoption of tablet devices (such as iPads) among faculty than among students—nearly twice as many faculty as students reported owning such a device.

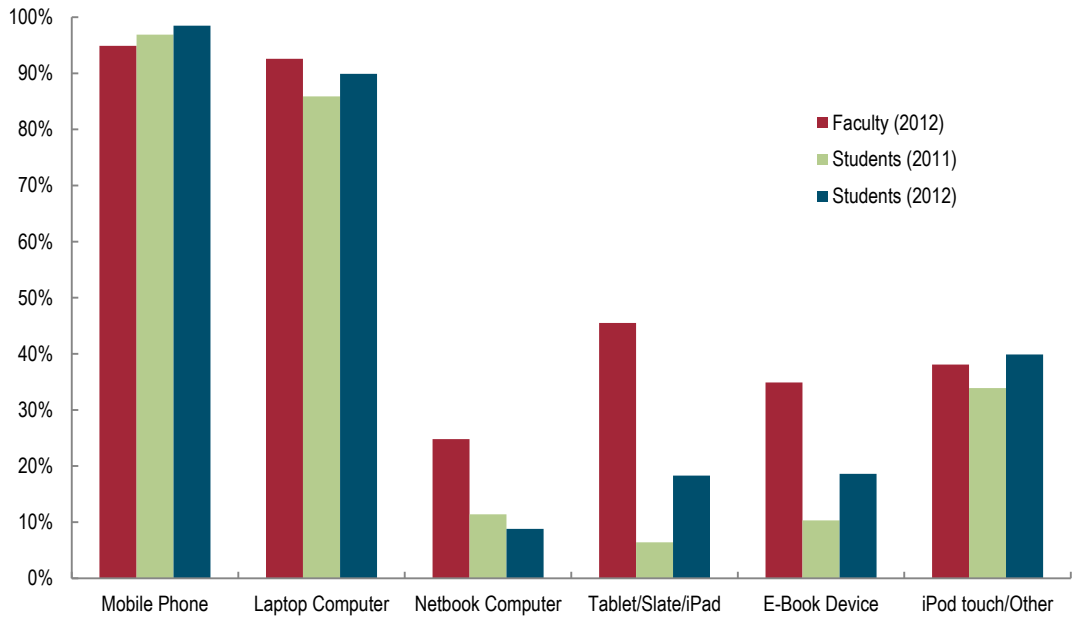

Figure 1. Faculty and Student Ownership of Mobile Devices

Despite the high penetration of mobile phones among students and faculty, one cannot assume a given phone can be used to download data. The growth of smartphone ownership or access grew by an average of 50% from 2011 to 2012, but fewer than 65% of students reported owning a smartphone in 2012. And, of the students who own a smartphone, more than 60% of them reported paying half the bill (or less) for their own data plan, meaning that parents bear the cost burden of data plans. It is important to keep in mind, therefore, that increased demands by faculty on the students to use their own devices to download data may well incur further costs for parents who are paying a mobile plan bill. Because many of our students self-fund their education, the cost of a data plan could introduce an additional financial strain. Of the students who own a laptop or similar device, 77% reported that they access the Internet through a university wireless connection. More than 90% of all student respondents indicated that they had access to a broadband Internet connection at home.

Attitudes toward the Use of Mobile Technologies for Learning

Students and faculty were presented with a stemmed question that started with the phrase, "Use of mobile technologies for learning will…," followed by several statements. The differences between faculty and student "agree" and "strongly agree" responses are shown in Figure 2. One can observe that there are some statements where responses are very close ("extend learning in the classroom"), but others where students have a much different opinion ("mobile technologies allow students to produce higher-quality work"). Overall, students are more likely than faculty to see mobile devices as empowering them on a number of levels.

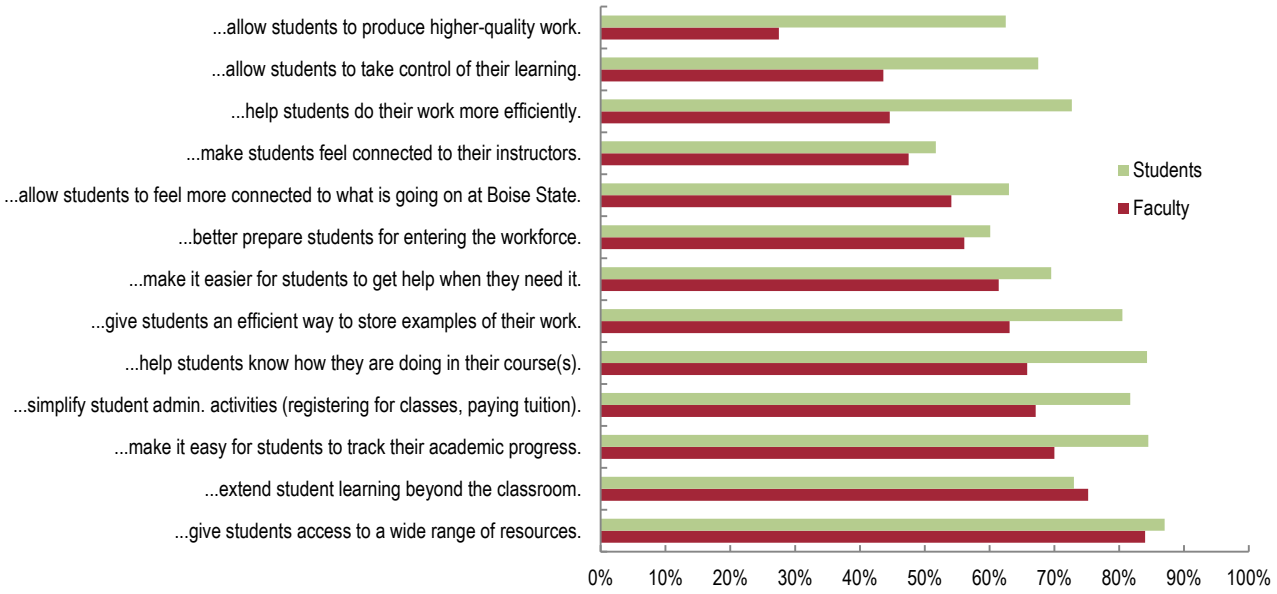

Figure 2. Faculty and Student Attitudes about Use of Mobile Devices for Learning

Student Feedback on Use of Mobile Devices in the Classroom

Assuming that not all students in a given classroom are equally enthusiastic about the use of mobile devices within the classroom itself, we asked the students a stemmed question related to their perception of this use setting. As shown in Figure 3, students are widely distributed in their perspectives—in many cases, more students "disagreed" or "strongly disagreed" with a given statement than "agreed" or "strongly agreed."

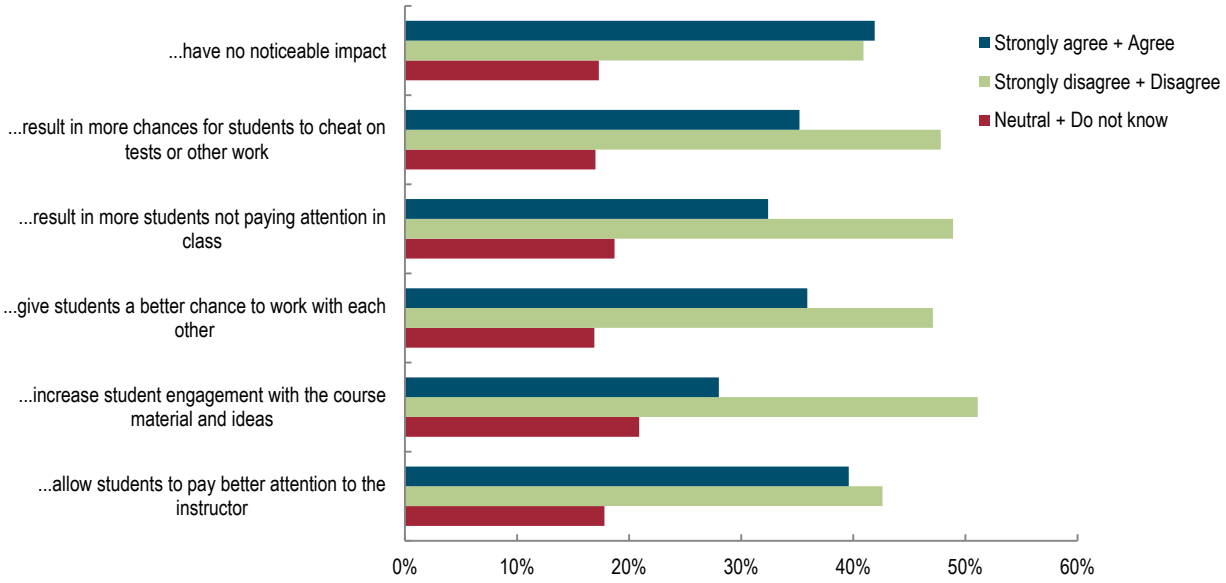

Figure 3. Student Opinions about In-Classroom Use of Mobile Devices

Of particular note from the student responses on these items is that despite the notion that mobile devices will increase student engagement in the classroom, more than 50% of students who responded disagree that it would. Once again, these data seem to indicate that student attitudes toward the use of mobile devices are as much a factor to address as are the attitudes of instructional personnel.

Full-Time vs. Part-Time Faculty Perceptions of Support

Nearly half of all instructors at Boise State University are less than full-time employees—this includes emeritus professors who may still be teaching an occasional class, graduate teaching assistants, adjunct instructors, and others. It is important to know if the groups perceive different levels of support to integrate mobile devices. An analysis of the following three questions shows a statistically significant difference ($p < .001$) between the full-time and part-time instructors:

1. On-campus guidance is available to select the best mobile device(s) for teaching.
2. On-campus instruction is available for one to learn how to integrate mobile learning strategies into teaching.
3. My department supports teaching with mobile learning strategies.

The Likert-type scale had six options from which to choose: "strongly agree" to "strongly disagree," a "neutral" option, and a "do not know" option. In each case, part-time instructors responded "do not know" at a significantly higher rate than full-time instructors. The data demonstrate that one must be careful not to lump all faculty together. Institutions should account for differences between those who are employed full-time and those who are not. An additional challenge for Academic Technologies and the Center for Teaching and Learning is to ensure that part-time faculty members are aware of training opportunities and resources. In fact, it is likely that such units at any university would need to make an extra effort to communicate with those who are on campus in a limited way or who many not have much interaction with the campus community otherwise.

Feedback from M-Learning Scholars

In addition to the campus-wide survey, we also collected and analyzed data from Spring 2012 m-learning scholars and their students, who provided insights into their experience (a link to the full report is in "Where to Learn More"). The following recommendations came from the assessment of the project:

- Provide more preparation time for those who are just beginning to explore mobile learning within the MLS program.
- Explore ways to help students learn to use the devices or apps more quickly, such as practice assignments, face-to-face training, drop-in support, or online resources.
- Explore mobile learning in courses that do not require all students to own or have access to a specific mobile device.
- Continue to support and offer more mechanisms for faculty to share their mobile-device experiences with each other.

- Encourage student involvement in research projects focused on student learning and engagement with mobile learning.
- Encourage interaction and sharing of ideas between students who are participating in MLS courses.

What It Means to Higher Education

The assessment we have done has resulted in a number of lessons learned. These do not apply only to the MLI at Boise State University but appear applicable to other institutions, given that many are considering ways to extend the integration of mobile learning and exhibit similar trends of perceptions and characteristics among faculty and students. Because the lessons themselves rise from data, as opposed to isolated, anecdotal observations, we are confident that the lessons allow us to make meaningful choices about our next steps. First, based on what we have seen, mobile learning is not device-centric—it is learning-centric. This observation is leading us toward a "device agnostic" approach, which will give our faculty the freedom to concentrate on aspects associated with learning and focus on those, rather than unnecessarily constraining learning objectives to the capabilities of a tool chosen for the task. While a device-specific initiative may provide an advantage in terms of streamlined IT support, the reality is that the community of users must make do with whatever tools they are provided, no matter what their actual goals or needs may be. Optimally, it is the purview of instructional personnel to help students learn content, and any instructional tool sets should be developed around those decisions.

An array of entry points allows people within the community of scholars to choose when, how, and to what extent to be involved. An environment that both welcomes and embraces a variety of projects necessarily allows people the space to implement at their own pace, based on their own needs. From an institutional perspective, there must be intentional support structures that can respond to gaps in either infrastructure or training. These supports need to be made explicit and target faculty where they are because many people new to a mobile project may not know where to turn for assistance or what questions to ask. As such, the MLI benefits from a team-based approach that has diverse expertise—from those who deal with hardware interfaces, to instructional designers, to those with expertise in e-content. A formal network of such individuals provides the best support opportunity for projects of any size and type. Distributed knowledge and experiences that can be accessed easily are especially important because it is well beyond the limits of even a larger OIT staff to be knowledgeable about all platforms or applications.

Another implication arising from the Boise State MLI is a reciprocal relationship where e-content (content created for electronic delivery and consumption) enhances mobile learning and mobile learning projects enhance the value of e-content. While this point may seem obvious, what sometimes happens is that the push for e-content does not seem justified until after widespread adoption. In our experience, though, content developed for mobile learning should be developed in parallel with efforts to roll out mobile projects. One such example is from the Albertsons Library at Boise State, which created a mobile-friendly version of its site (not an app) up to a year before the MLI formally started. Then, as instructors proposed projects and started them, the library's content helped bolster the integration of the devices into various courses.

To reiterate our earlier statement, ongoing assessment and evaluation of projects is essential to understanding both impact and appropriate next steps. The academic community rightly expects evidence-driven decisions that are only possible if a team of people commit to collecting data in a systematic manner. Reporting those results within the institution, such as posting white papers to a publicly accessible site, helps make the process of diffusion transparent and permits everyone to give input about the direction of the larger initiative.

We believe that the campus-wide piece of any mobile initiative should be one of support, assessment, and evaluation, no matter where a project is located within the institution. Allowing for multiple projects allows for a broader adoption and, ultimately, sustainability.

Key Questions to Ask

- How are instructional personnel being intentionally supported to explore teaching and learning innovations?
- Which pilot strategies have been developed to address access to mobile devices for both students and faculty?
- What plans have been made to assess the campus community efforts and needs with regard to mobile learning?
- How is progress being communicated and shared with both internal and external audiences?
- What are the specific goals for and plans to ensure sustainability and scalability?
- How are institutional structures being leveraged to share innovation and ideas?

Where to Learn More

- "Mobile-Learning for Boise State: A Proposal to Catalyze a Transformation in Teaching and Learning": http://bit.ly/Y21c7B
- "Mobile Learning Initiative Year-End Report": http://bit.ly/WPHDbL
- "Spring 2012 Mobile Learning Campus Climate Assessment Report": http://bit.ly/Y1SUfS
- "Spring 2012 Mobile Learning Scholars Assessment Report": http://bit.ly/VXQx8D

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Notes

1. Everett M. Rogers, *Diffusion of Innovations*, 5th ed. (New York: Free Press, 2003).
2. "EBL (eBook Library) and eBook Use at Albertsons Library," http://mobilelearning.boisestate.edu/images/EBLFINALREV.pdf.
3. "Students and Information Technology in Higher Education, 2010: Survey Questionnaire," http://net.educause.edu/ir/library/pdf/si/ESI10A.pdf.