

NAVIGATING THE NEW  
LEARNING ECOSYSTEM

## Scenario

Dr. Bessler been teaching history for 16 years and lately is finding that she uses the LMS less and less for in-class presentations, depending more on cloud-based tools she finds herself or that are recommended to her by colleagues and, in some cases, by students. She remembers when she was excited by the options offered by the LMS but baffled by its ins and outs. That learning curve seems relatively simple now, amid the array of online tools and the constantly changing landscape of mobile apps that she and her students employ.

In her office, Dr. Bessler is trying out the features of a new mapping application that another instructor had suggested she try. When she shows the application to an upper-level historiography class, they enjoy seeing the animation pinpoint an archeological find, present an image of the fragment that was found, reconstruct an artifact, and play a scene illustrating how the item might have been used. The app illustrates some points Dr. Bessler has been making and sparks a lively discussion about the differences between history derived from documents of the era being studied and history reconstructed from archaeological finds.

During the discussion, several students use their own mobile devices and laptops to explore the app first-hand. But when the app doesn't function exactly the same way on every tablet and smartphone and does not work at all on some devices, a secondary discussion arises about why. When students start comparing the app to similar tools, Dr. Bessler guides the discussion back on topic with a request for students to share their advice about individual apps on the class discussion board.

As class ends, a couple of students stop by to ask about using specific tools on the upcoming team projects. Dr. Bessler directs them to the campus website for the Center for Technology in Learning, where there is a list of recommended tools and excellent discussions about them by students and faculty members. They can use any tools they like, she explains, but they are responsible for getting the help they need and ensuring presentations run effectively on the classroom hardware. She also encourages them to use the class discussion board to ask questions and, after their project is over, to share their experiences.

## 1 What is it?

The LMS was once the undisputed center of the digital learning ecosystem. But on many campuses, the situation has changed such that **the campus online learning environment might be better viewed as a continuum**, with the LMS at one end and a student's own collection of applications, tools, and websites at the other. In the space between these endpoints, institutions may offer other tools—locally hosted websites, personal domains for students or faculty, recommendations for tool choices and content management options, and web-hosting platforms. Meanwhile, at mobile app stores and on the web, students and faculty are faced with a constantly morphing public toolbox filled with apps that offer highly specialized content, mobile options, and new distribution models such as open educational resources and subscriptions. As a result, the campus digital model seems to be changing from a single, contained management system to a facilitation model that provides support for and coordination between a diverse set of resources and services. In addition, some institutions are enabling students to take control of their learning ecosystem by helping them construct a personal cyberinfrastructure where they select the tools they find to be the most comprehensible and effective for particular projects.

## 2 How does it work?

To help make sense of this burgeoning digital environment, educators and technologists on campus have employed a variety of approaches. Some schools have standardized on a single mobile device such as the iPad, which can reduce concerns about hardware compatibility and limit the pool of available apps to those that run on a single device. Another approach is to create campus support models with portal sites and dashboards that offer suggested usage paths for, say, music editing, digital storytelling, or data analysis. A third option—sometimes used in conjunction with one or both of the other approaches—is to design a learning community with formal and informal branches on campus, which might provide hardware, collaborative investigation of apps, or lab-style opportunities for faculty and student exploration.

**Perhaps the most essential support students need in this ecosystem is not advice in choosing an appropriate or workable tool but help in managing the content they create with it.** Students may need support in building structures, such as portfolios, where they can store their best work, and tips on the use of file structures so they can store their files where they can easily and reliably access them later. In addition, because students are building content with so many devices and applications, campus IT may choose development platforms with an eye to robust APIs that allow the extraction and synchronization of data not just from campus resources but also from web and mobile sources.

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### 3 Who's doing it?

**A growing number of colleges and universities are taking steps to address this changing ecosystem.** As an extension to a successful web publishing initiative at the University of Mary Washington, for example, a new pilot project will be offering students their own personal domain and web hosting platform. With this personal cyberinfrastructure, students should be able to install and manage their own suites of applications and web-hosted tools. At the University of Illinois, interdisciplinary groups have created faculty learning communities on two campuses with the goal of exploring best practices in using the iPad in teaching and learning. Faculty groups investigate ways to support creative small-group work and to improve student access to digital content, but students using the iPads select the apps that meet their own needs and that will become part of their own learning environment.

The IMS Global Learning Consortium recently announced Learning Tools Interoperability, a specification designed to facilitate the smooth connection of separate learning tools and services. Because managing a long list of credentials for various applications is a potential drag on the development of a student's collected learning resources, federated identity can be an important component. The InCommon Federation, for example, shares authentication and data across protected, network-accessible resources to support education and research among its member institutions. LMS vendors have been working to build connections into other popular services such as Google Docs and Facebook. Blackboard now supports a multiple LMS approach, while Pearson has introduced OpenClass, an open-source platform that provides an LMS-style structure that includes Google Apps, WordPress, and built-in social networking.

### 4 Why is it significant?

As use of the traditional LMS is augmented by web services, mobile apps, course blogs, personal portfolios, and other resources, **the locus of control shifts away from the institution to individual students and faculty.** This parallels a similar trend in coursework away from a lecture-based course model toward one that prioritizes class sessions for collaboration and interactivity, moving the delivery of content outside of class time. For campus providers of IT support, changes to the digital ecosystem may signal a move from tool provision to tool management. Because developers on campus cannot match the volume and variety of emerging tools available on the web or in the app store, some resources and spending could be redirected toward helping students and faculty manage the consumer tools and data in their individual digital ecosystems.

### 5 What are the downsides?

**An ever-expanding inventory of devices and apps can result in users' spending considerable time reviewing options.** It can also drain the energy of team projects as discussion is diverted into questions about which resources to employ and how to employ them. Classmates who are not all using the same hardware may

look to instructors for management assistance and expect them to bridge communication gaps. Instructors might be expected to provide alternative solutions when students do not have the tablet, reader, app, or access required for a given assignment.

Because publishers and other content providers do not all use the same options for interacting, downloading, and storing content, institutions might face challenges if they standardize on hardware and software options. However, using a "whatever works" approach can result in communication and collaboration issues in the classroom. It can also cause administrative obstacles because the analytics that track student activity and participation may be difficult to apply across multiple platforms and environments.

### 6 Where is it going?

**The energy and diversity of the current digital environment is likely to get even more intense in the near term.** Android tablets and the iPad have spawned a new market for mobile apps deployed on devices that have many of the benefits of laptops. These small apps, which are frequently free or inexpensive and that place little burden on local storage, are often highly specialized, easily updated, and quickly outmoded. Colleges and universities may move from teaching specific tools to training students in digital management skills such as how to learn new tools on their own and how to back up and synchronize over multiple devices. Where course content is concerned, increased coordination between publishers and institutions could result in better interoperability and interaction between alternative tool choices and the LMS.

### 7 What are the implications for teaching and learning?

The proliferation of tools has created a more robust and varied teaching and learning environment, one that is frequently managed actively by students or by faculty who are seeking alternatives not offered by local IT. When students seek help, instructors may direct them toward institution-sponsored workshops, seminars, and portal sites or toward solutions provided through student-led forums. By investigating and selecting their own devices and applications, students can learn to apply and adapt available tools, thus acquiring flexibility and synthetic thinking that should better prepare them for the workplace. In fact, **the educational value may extend beyond their relationship with technology, helping them become better organizers and more savvy consumers** as they assume more responsibility for their own learning.

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