Exploring the Next Generation Digital Learning Environment: Opportunities and Challenges
A Report on the 2016 ELI Focus Session

Gregory Dobbin, Senior Editor, EDUCAUSE

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Abstract
Learning management systems and tools have become ubiquitous, a seemingly indispensable element of higher education. And yet, usage of these systems is conspicuously focused not on learning but on administrative functions. In light of this tension between the shortcomings of traditional LMSs and the need for some kind of organized digital learning environment, EDUCAUSE undertook to explore what might come in a post-LMS—or a reimagined-LMS-era, a notion that earned the moniker “next generation digital learning environment,” or NGDLE. On April 26 and 27, 2016, participants in the 2016 ELI Focus Session met online to hear more about the NGDLE, discuss factors supporting the development of an NGDLE, and explore ways that the community might move forward in advancing a new learning ecosystem.
Higher education has a conflicted relationship with the learning management system (LMS). In the 1990s, as technology was thoroughly making its way into the educational enterprise, the LMS offered a way for colleges and universities to manage learning, along with corresponding administrative tasks. LMSs and tools have since become ubiquitous, a seemingly indispensable element of higher education. And yet, usage of these systems is conspicuously focused not on learning but on administrative functions, with many faculty using them only for class rosters, the syllabus, and grades. Typically based on a one-size-fits-all, course-centric (and institution-centric) model of education, most conventional LMSs are difficult to customize and are not especially adept at supporting the learner-centered approaches and discipline-specific applications that increasingly characterize higher education.

In light of this tension between the shortcomings of traditional LMSs and the need for some kind of organized digital learning environment, EDUCAUSE undertook to explore what might come in a post-LMS—or a reimagined-LMS—era, a notion that earned the moniker "next generation digital learning environment," or NGDLE. Groups of experts were convened, the EDUCAUSE Center for Analysis and Research produced a report on the state of the LMS (The Current Ecosystem of Learning Management Systems in Higher Education: Student, Faculty, and IT Perspectives), and the EDUCAUSE Learning Initiative wrote a white paper, The Next Generation Digital Learning Environment: A Report on Research, that outlines the research findings and the principles underlying the development of a new learning ecosystem. In addition, 7 Things You Should Know About NGDLE provides a snapshot of the larger NGDLE report, and this NGDLE hub describes the initiative and its outputs.

On April 26 and 27, 2016, participants in the 2016 ELI Focus Session met online to hear more about the NGDLE concepts described in the white paper, discuss factors supporting the development of an NGDLE (and the obstacles working against it), and explore ways that the community might move forward in advancing a new learning ecosystem.

A Call for Coordinated Action

If a single message emerged from the presentations, the questions and answers, the side- and backchannel conversations, and the responses to the focus session activities, it is that the effort to discover what lies beyond the LMS of today requires coordinated activity across higher education, including the companies that supply technology to the community. In numerous instances and contexts, presenters and participants called for disparate institutional units to approach the NGDLE in a coordinated way.

The consensus was that the NGDLE is more a process than a project. One presenter commented that having this conversation now is important because these kinds of conversations didn’t happen in the 1990s with the early development of the LMS. Achieving the coordination advocated by the focus session presenters and participants will require improved communication, the participation of a wide range of people, and new partnerships.

Communication: Effective communication is an element of any successful endeavor, and for the NGDLE, this encompasses sharing information, soliciting input from many groups, educating those involved, and creating an active dialogue, both within and across institutions.

“Communicate more extensively with faculty and students about the resources that are available and the opportunities that they have. [...] Improve communication across multiple divisions and units to build consensus across the university.”

“Educate campus members on the aspects of NGDLE to assist with clarification and adoption.”

“Communicate the necessity of this system as an existential need.”
Inclusion: When asked to identify NGDLE stakeholders, participants identified more or less everyone, including institutional leadership, faculty, students, librarians, IT leaders and staff, accessibility officers, and many others.

“Pretty much everyone, or rather representatives from each part of ‘everyone.’”

“The NGDLE [...] touches so many areas of the university that you would need to include representatives from everywhere but not in all parts of the conversation. Determining when and who should be involved at each stage is the challenge.”

Collaboration: From communities of practice to new partnerships, collaboration in many forms is seen as vital to progress in the NGDLE. Higher education has a mixed record with collaboration, and the NGDLE is seen as too important and too vast to be successful without extensive cooperation among individuals and groups.

“Create spaces for collaboration. Don’t make the NGDLE seem as though it is exclusive to only the tech-savvy crowd.”

“Inter-system groups [need] to collaborate so that whole university is on the same page.”

“Staff from various departments are eager to start collaborating.”

Hurdles to Overcome
The NGDLE faces plenty of challenges, from the logistical to the cultural. A chorus of support greeted the statement from one participant that the lack of a shared vocabulary between educators, technologists, and vendors to talk about these issues is one of the most significant impediments to the NGDLE. Many comments surrounded the need to reorient higher education to focus on the learner perspective, breaking from a tradition that focuses on courses and the institution. Other frequently mentioned obstacles include resources (not just financial resources but also time and necessary skills), longstanding practices, and organizational structures and cultures.

Resources: Not surprisingly, participants pointed to funding as a significant obstacle, as well as the time and skills needed to enable change.

“Without enough financial investment and support to explore, experiment, and implement the complex NGDLE ecosystem, it can be a mission impossible.”

“A key barrier is the time required for faculty to experience and become comfortable using a new system.”

 “[A point of friction is the] need for professional development.”

Learner focus: The NGDLE enables many new forms of education and recognition of learning that center on the needs of learners. The effort dovetails well with initiatives aimed at measuring learning rather than seat time, though the credit hour and other entrenched structures won’t change overnight.

 “[Move] toward more learner-centered to help in retention and mastery.”

 “We need to adapt the methods and tools to the learners to provide the most effective way to educate them.”

Resistance to change: The NGDLE represents a cultural and practical shift, not only for faculty and students but also for administrators, IT departments, and many others on campus. Established culture presents a considerable difficulty on many campuses.
“Faculty may be reluctant to learn a new system.”

“Inertia is hard to overcome.”

“Even though [the current LMS] isn’t being used to its full potential (most instructors seem to use it primarily for grade and assignment management), there is comfort in its familiarity for both faculty and students.”

**Decentralization:** Some focus session participants suggested that decentralization could hinder the development of the NGDLE. But centralization is often seen as limiting flexibility and as an insistence that one size fits all. The NGDLE pillar of interoperability would reframe the tug of war between centralization and decentralization. In a truly interoperable learning environment, many of the technical barriers to adding components are removed. But the technical ease of adding components gives rise to a new concern, that of coherence—if individual departments, faculty, or students can add any standards-compliant application to the learning environment, the result could be a bewildering assortment of choices. This means that the centralization issue moves away from being a technical one to one of governance. The degree of interoperability envisioned in the NGDLE will call for new governance processes to help avoid redundancies while encouraging the experimentation and variety that would be hallmarks of the NGDLE.

“Since there has been so much decentralized growth over the past five years, I think it would be hard to get the innovators to step back and work together at the university level.”

“The decentralization of IT (and the top-down process to centralize [impedes progress]).”

**Pieces of the Puzzle**

Development of the NGDLE depends on several foundational elements, some of which are currently in place (to varying degrees), while others are more difficult to spot in today’s campus environments. On the surface, some of these elements appear to be technical in nature, but as several participants noted, it will be important to focus not just on technology but also on creative learning designs and innovative course models.

**Integration:** The interoperability and personalization that are central to the NGDLE call for broadly adopted standards, and **Learning Tools Interoperability (LTI)**—a standard to integrate learning applications—seemed to be at the top of most people’s lists. Participants spoke both of the difficulties arising from a current lack of integration and of the opportunities that standards and **APIs** could bring. On a cautionary note, some pointed out that integrating services (adding tools to an ecosystem) can be much easier than dis-integrating them (removing them later), highlighting the need for effective vetting and governance.

“We also are working closely with faculty committees to bring more awareness of the need for LTI compatibility in tools they use and that these tools also provide data back to the campus in xAPI or Caliper format.”

“There’s a pervasive feeling across the board that we are trying to eat soup off of a plate...with a fork.”

“[Make] LTI standards part of our adoption/procurement process.”

**Analytics and Assessment:** Development of the NGDLE depends on the collection and analysis of the full range of data related to learning and student success. Analytics programs remain relatively new, and most institutions are still investigating how best to understand, present, and act on learning data. This work raises questions about data ownership, the ethical and effective use of data, and
what happens when data contradict deeply held beliefs. Moreover, new forms of assessment are emerging, and one presenter noted that there is not a single, shared definition of assessment, especially when the term is considered in relation to evaluation. Entwined with analytics and assessment is advising, which takes on an integrated aspect in the NGDLE context. One presenter spoke about how his institution significantly expanded its pool of advisors and combined that increased capacity with insights from analytics to understand which courses are the best predictors of graduation.

“We have only recently begun mining our Moodle platform for data analytics, so the move to provide data both for our researchers and instructors and students is a fairly new project.”

“Our system has a learning analytics tool chest to help instructors with course design and begin implementing, without too much help from IT.”

“Make more effective use of analytics. Increase use of e-assessment and make it easier for teachers to process results.”

“Analytics will play a big part with our reenvisioned learning environment.”

“There are pockets of initiatives dealing with analytics as it applies to advising and retention.”

“We can use the results of analytics, student surveys, retention/success data [...] to make meaningful change both at the course level and an institutional level.”

**Accessibility:** Higher education has a mixed record with respect to accessibility and universal design for learning (UDL). Notwithstanding the institutions that do outstanding work to create inclusive environments, most college and universities have relegated accessibility to an afterthought—citing costs, complexity, and a perceived drag on innovation, many institutions have not designed accessibility into learning applications and services, choosing instead to provide accommodations on a case-by-case basis when requested. The focus session presentation on accessibility and UDL made the point that this “accommodation approach” doesn’t work well—it tends to be more expensive than UDL, accommodations are not always timely, and it fails to realize the benefits that UDL provides for all learners, regardless of ability. The NGDLE presents an opportunity to incorporate accessibility upfront—as “infrastructure,” as one participant said—rather than retrofitting applications and systems later. A clear message from the focus session is that successfully implementing UDL and championing accessibility depends more on institutional culture than on technology.

“UDL = good design. Access tools aren’t just for UDL—they enhance the overall learning experience.”

“Be vocal about the value of interoperability and accessibility standards at every opportunity.”

“Accessibility and UD are becoming more of a basic expectation as a foundation for all classes/tools. We are now implementing a new accessibility checklist before new tools are purchased.”

**Change Management**

Given the resistance to change that one finds in any organization and that is perhaps more stubborn in higher education, change management might be the knottiest issue to address. One participant described the work needed to develop the NGDLE as “massive change from the ground up, involving many, many stakeholders.” Still, the focus session highlighted several approaches to managing this imposing change. Several comments underscored the value of recruiting faculty who are pioneers in “NGDLE thinking” to serve as peer mentors in promoting change.
Encouragement: Even among those who support the idea, turning the ship of the higher education learning environment and making the NGDLE “out of whole cloth” can be an intimidating proposition. Many participants spoke of the need to encourage faculty, students, staff, and the many others involved.

“Our approach is to work with a committee of interested faculty and students to begin the conversation.”


“Aligning goals and faculty activities of several faculty support units will encourage collaboration and a single point of contact and voice for faculty interested in innovation in our learning environments.”

“Different people (faculty, staff, librarians, administrators, instructional technologists, etc.) are practicing one or multiple pieces of those foundational ‘ingredients’ […] at the individual practice level. A campus-wide conversation and discussion is needed in reaching the common ground and defining the NGDLE from all of the stakeholders.”

“[Point to] pilot data from various NGDLE-friendly products, experiences of faculty who are on the NGDLE horizon (peer mentors)....”

Telling the story: Stories can be powerful agents of understanding and of change. A large number of comments concerning communicating the NGDLE vision touched on the value of framing the issues in ways that are easy to understand and apply. And, whether it’s Legos or Mr. Potato Head, metaphors can be an important part of the story.

“Focus on the things that would be important to the stakeholders. For example, explain the financial benefits to administrators. Explain the ease of implementation to the tech staff. Explain that it will be fully supported (training, troubleshooting, etc.) to faculty and students.”

“I think that providing case studies or examples of how the data can be used is a great start. Many are fearful to use tools outside of the LMS because they do not see the value in doing so. Providing relevant examples could lead to further exploration.”

“Be visionary, but also pragmatic. Explain the purpose, speak with stakeholders, paint a picture of the future, create the planning/implementation process, use advisory and governance groups to help lead the change.”

Experimentation and investigation: Pilot programs are a stalwart in higher education IT, and they have a role to play in the NGDLE. A small-scale implementation that provides data (and a story) about the benefits of a technology or an approach can often win over even committed doubters. Higher education is also fond of committees, and many participants mentioned the value of charging new or existing committees with investigating the opportunities of the NGDLE.

“Analyze pilot data and gather data on integrations into the learning environment and which instructors need what.”

“There is a need for a committee that welcomes faculty, students, and IT/ed leaders to discuss the current LMS. This would be a great forum for engaging in a discussion on NGDLE.”

“We’ve got an online/hybrid task force going right now at a high level—their infrastructure subcommittee might be a great venue to start promoting this idea.”

“Our approach is to work with a committee of interested faculty and students to begin the conversation.”
The Journey Ahead

The work thus far on the NGDLE establishes a vision and sets clear requirements for what a new learning ecosystem should achieve, but the specifics of how to meet those goals need to be worked out. The notion of a learning ecosystem that functions like an app store—similar to the way smartphones serve as a platform for a long and growing list of apps that can be added and customized—argues against a digital learning environment based primarily on a single, large application (like an LMS) that endeavors to be all things to all people. Learning applications and tools of varying size and scope come from numerous sources, and it is this richness of opportunity to incorporate these components in novel ways that motivates this discussion. The challenge involves balancing flexibility with an appropriate measure of consistency and with concerns about security, privacy, accuracy, and effectiveness. Higher education needs a learning ecosystem that enables new and emerging models of teaching and learning—models that support active, student-centered learning focused not on the institution or the course but on individual learners and their educational goals. *The Next Generation Digital Learning Environment: A Report on Research* outlines the direction of this undertaking, and ELI and the teaching and learning community are committed to leading the exploration to develop a new learning ecosystem.