

# NGDLE

## Scenario

In August, the faculty of the biology department meet to discuss the fall term's courses and share ideas about the digital learning environment. The university uses a standard set of tools for registration, class rosters, grades, and other administrative tasks, but departments and individual faculty have broad latitude to select the applications and services they believe best enable teaching and learning, provided that they comply with next generation digital learning environment (NGDLE) standards. Adherence to these requirements also allows faculty and students to add to their learning environment—both for content and applications—and make adjustments based on learning analytics.

Dr. Weaver shows the other instructors a new application she plans to use in her molecular biology course that lets students manipulate 3D models of molecules. Dr. Filmore shows a similar tool that deals with cellular structures. Other instructors talk about recently released online texts that include updates on last spring's outbreak of antibiotic-resistant infections in South America. Because they conform to the standards set by the learning environment, all of these applications, as well as those that other faculty have used for years, can exchange data with one another and with the administrative systems. They also interact with the university's analytics tools, which provide real-time status about student progress. Two blind students are currently majoring in biology, and all of the learning applications that can be used in the learning environment provide needed access to users with disabilities.

Drs. Murray and Newman are developing a competency-based model for several survey courses intended for non-majors. They began working on these courses a year ago, and they have made considerable progress, aided by the fact that the university's digital learning environment is not tethered to conventional academic terms and credit hours. They have been able to assemble learning objectives, activities, and assessments that reflect their goals for the courses.

Tied in with the university's adaptive learning tools, the environment allows users to access customized feedback and tailor learning experiences to suit various styles. The NGDLE requirements support all of this integration and interoperability, allowing instructors and students to focus on learning.

## 1 What is it?

The next generation digital learning environment (NGDLE) is conceived as an ecosystem—a **learning environment consisting of learning tools and components that adhere to common standards**. Virtually all colleges and universities operate a learning management system (LMS), but while the LMS is valuable for handling the administrative duties of a course, it is less successful in effectively facilitating learning, especially as higher education actively develops new course models and pedagogical approaches. This creates a disparity between the LMS's role as an administrative tool and the need to explore new learning models. In this context, ELI undertook research to ask what the transformation or replacement of the LMS might look like, which led to the concept of the NGDLE, a learning ecosystem that can support the evolution of higher education. Unlike the LMS, the NGDLE is not a one-size-fits-all application but instead pursues a component-based approach that introduces flexibility and variability to address learning needs more specifically.

## 2 How does it work?

Departing from the design of current LMSs, the NGDLE is envisioned not as a single, large application but as an ecosystem, one that functions as a confederation of IT systems and application components that adhere to common standards, both technical and otherwise, that would enable diversity while fostering coherence. A traditional LMS—or another mechanism to provide its administrative functions—might be a component, but the target of the NGDLE would be to enable the digital environment to support learning directly. To do this, next-generation environments must address five dimensions: **interoperability and integration**, to allow parts to be connected and share data; **personalization**, so that learning environments and activities can be tailored to individual users and academic departments; **analytics, advising, and learning assessment**, encompassing course-level learning analytics, as well as planning and advising systems that focus on overall student success; **collaboration**, because the ability to easily work across conventional boundaries is fundamental to effective learning; and **accessibility and universal design**, making the opportunities of the NGDLE available to all students and

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all instructors. In this way, the NGDLE would behave similarly to a smartphone in that it would aggregate elements of content and functionality supported by a cloud-like space that would not be identical for any two learners, instructors, departments, or institutions. Such a system also needs effective identity and access management, and the NGDLE itself must be able to evolve to keep up with changes in the technologies and expectations of education.

## 3 Who's doing it?

No single entity is producing the NGDLE or in charge of the process. Rather, creating the NGDLE will require **coordinated efforts among vendors, colleges and universities, and standards bodies**, and in several areas, work has begun. [IMS Global](#) has developed several relevant standards and an API. [LoudCloud](#) and [Instructure](#) have released tools that support mastery-based and competency-based education. [EdCast](#) allows faculty and students to seek out content more tailored to their needs. The [EduAppCenter](#) features a collection of apps compliant with the [LTI](#) standard. The [Web Content Accessibility Guidelines](#) and [Authoring Tool Accessibility Guidelines](#) provide standards for accessibility.

## 4 Why is it significant?

The administrative functions of existing LMSs have become central to higher education, but online gradebooks and tools to distribute resources play, at best, an indirect role in learning. Moreover, new models of education are beginning to challenge a higher education structured solely around courses, credit hours, academic terms, and traditional methods of assessing learning and conferring credentials. Currently, the contours of the learning environment are most often synonymous with the LMS's capabilities and limitations. The core insight from the NGDLE research is that learners and instructors must have the ability to shape and customize their learning environments to support their needs and objectives. By espousing a component-based architecture based on standards and best practices, **the NGDLE encourages exploration of new approaches and the development of new tools.**

## 5 What are the downsides?

**Building the NGDLE—including addressing the diverse needs of colleges and universities—presents a formidable challenge.** Participation is needed from a wide range of

institutional and vendor entities, who will need to cooperate in novel ways. Some IT staff might feel threatened by the perceived lack of control from a fully realized NGDLE. Meanwhile, removing some of the limitations on which tools can be plugged in to a learning environment could leave students and other users with a bewildering abundance of choice. By the same token, an extensive array of learning applications might—despite their technical cohesion—fail to share enough functional similarities to establish a unified learning environment. Faculty and students will need to learn how to take advantage of the NGDLE, and support for an expansive collection of apps and tools could be difficult to provide.

## 6 Where is it going?

Clear, meaningful standards, conventions, and rubrics are a cornerstone of the NGDLE, and although some elements of that framework exist today, more development will need to be done, with input from institutions and vendors alike. To generate the momentum needed to sustain the NGDLE, disparate interests will need to agree to a common set of goals and work together to achieve them. If the NGDLE gains traction, numerous systems would be candidates for inclusion in that ecosystem. Among them would be authoring tools, portfolio applications, programs to support dual enrollment in high school and college, and many others. Finally, for the NGDLE to succeed, everyone involved in higher education teaching and learning **will need to break with longstanding models and adopt “NGDLE thinking,”** being open to different approaches and encouraging the community to progress along the NGDLE path.

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

The NGDLE is conceived as both **an ecosystem and a mind-set that will allow students and instructors to benefit from the full range of developments in higher education.** The NGDLE concept seeks a balance between the openness of learning and the need for coherence in the environment. The concept emphasizes personalization, collaboration, and accessibility/universal design—all essential to learning. Because the NGDLE conceives of learning as happening in an ecosystem and not within a platform, it focuses not on IT but on learning enablement.