By JOHN O'BRIEN

Next Steps for the NGDLE

Since April 2015, when the original EDUCAUSE report on the next generation digital learning environment (NGDLE) was published, the idea has decidedly taken off. I believe we are still talking about the NGDLE two years later because the framework captures the imagination without limiting the scope of what the next generation environment could be. In fact, the universe of future environments has expanded since 2015 as various elements of next generation environments (e.g., analytics, adaptive learning, and social networking) have grown—both in number and complexity. The power of the NGDLE is its richness, not its specificity, as the wide-ranging articles in this issue of *EDUCAUSE Review* make clear.

In his framing essay, Malcolm Brown effectively reviews the genealogy of the NGDLE. More importantly, he paints a compelling picture of its constituent parts, finishing with a strong appeal to agency. In the end, the NGDLE will be defined by us because, in Brown's words, "we are the architects." Appropriately, his final appeal is to the EDUCAUSE community to continue the conversation that this unwieldy acronym began.

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Joining this conversation are Phillip D. Long and Jon Mott, with an article on what they call "N²GDLE" (just when you thought an acronym couldn't get any more ungainly). They see the roots of the NGDLE in the aspirational dreams of "intelligent tutoring systems" that harken back to the 1960s and 1970s. These systems were, the authors say, unable to transform higher education to become more student-centered. Similarly, they note that we have developed contemporary systems that pretty much continue traditional teaching and learning roles. They write: "If we are content with the status quo, we can simply stand pat with the tools, processes, and role definitions that structure teaching and learning at our higher education institutions today." Or, as an alternative, Long and Mott offer an "aggressive and aspirational vision of the N²GDLE," which integrates the best of networked and adaptive learning environments. They outline in detail the environment's components, all of which they believe are within reach.

Stephen Laster, chief digital officer for McGraw-Hill Education, shares this focus on a learning environment that will be student-centered. He too supports the vision of the NGDLE, with a particular focus on the development and widespread adoption of interoperability standards. His article, "Tearing Down Walls to Deliver on the Promise of Edtech," is not only a powerful endorsement but also an encouragement to college and university leaders to keep the pressure up. He writes: "The true accelerator toward the NGDLE's world of choice is the virtuous cycle of institutions and faculty demanding the implementation of standards in their procurements of edtech and the commitment of edtech vendors doing their best work to make standards-based integration a core capability of their offerings."

Michael Feldstein's article, "What Is the Next-Generation?," offers an extraordinarily sweeping but concise history of the learning management system (LMS). According to his LMS family tree, the current LMS is third-generation, which started around 2010, "when moving from one LMS to another became easier, class spaces within the LMS became easier to populate with specialty tools for particular kinds of educational interactions, and ease of use began to improve significantly." Looking ahead, Feldstein identifies the catalyst for the fourth

generation: "All of the pieces—the products and the interoperability standards, the educator demand, and the institutional procurement processes—have to come together in order to drive a step-function change." Feldstein insists that this next generation of digital learning environments will not be realized at conference sessions or in published articles. Rather, it will emerge from the "boring and obscure" work that is needed for real change—work that takes place "in deeply unsexy places like technical interoperability standards meetings or on LMS selection committees."

There are many recurring themes in the NGDLE articles presented in this issue of *EDUCAUSE Review,* along with multiple understandings of where the NGDLE came from and where it may be going. In "The Origins of Innovation in the Edtech Ecosystem," Vince Kellen notes that discussions like these often ignore the essential pliability of technology tools. He offers a wide-ranging, compelling analysis of hope and hype, but he concludes that seeing information technology merely as a disruptive tool misses out on the far more urgent, far more lasting results that come from seeing IT tools and the people who wield them evolving together. In this vision, the LMS is replaced by a market in which "both tools and tool-makers undergo intertwined incremental evolution to help solve local and collective problems." Kellen concludes with a call to action for his fellow CIOs.

D2L CEO John Baker offers his unapologetic conviction that the evolution of the LMS is the best expression of the NGDLE: "We cannot leave it to instructors to be LMS, content, and pedagogical experts. We need to give them a ready-made—but flexible—system." Baker is also skeptical of the metaphor of "old school" Legos used in the 2015 EDUCAUSE white paper: "Modern edtech is a lot more like the modern Lego. There are wheels and rocket launchers and belts and all kinds of amazing pieces that work well with each other, but only when they are configured properly. A user cannot simply stick together different pieces and assume they will work harmoniously." Baker proposes an additional metaphor, of the LMS as a connecting central nervous system. Focusing on what people need rather than what technology can do, Baker issues a call for the vendor community to be "better partners" who will contribute to a "next generation LMS designed for the purpose of creating great learning experiences that improve learning outcomes."

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All of these authors acknowledge, in one way or another, the watershed 2015 EDUCAUSE white paper that first defined and called for the NGDLE. They also all agree that the real work of architecting the NGDLE will take us beyond the metaphors and the visions. This real work is crucial, and it will not be easy. Whether the next steps are evolutionary or revolutionary is up for grabs—as is the question of whether the charge should be led by vendors, IT pundits, CIOs, faculty, or students. Most likely, as in so many other areas of higher education, the development of the next generation of digital learning environments will require contributions from all of the above.

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