



Beyond the Hype

How Embedded AI Can Help Higher Education
Move from Experimentation to Instructional Impact

D2L

Digital
Promise®
Accelerating Innovation in Education

Drawing on Digital Promise research on
D2L Lumi, conducted with support from D2L
June 2026



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Foreword

At D2L, we believe the future of AI in education must be shaped with intention, evidence, and a deep respect for the realities of teaching and learning.

That belief is one of the reasons I sponsored this research. I believe strongly in what we are building here at D2L, and I also believe just as strongly that innovation in education should be informed by how tools are experienced in practice. It is not enough to build new capabilities. We must understand where they are helpful, where they create friction, and what educators need to use them in ways that are meaningful and responsible.

Digital Promise has been a valuable partner in that work. Their approach to this research helped create the kind of inquiry that is needed right now: grounded, thoughtful, and connected to the lived experiences of faculty, staff and institutional leaders. This work gave us the opportunity to learn more about how D2L Lumi – D2L’s AI capabilities that are embedded within all D2L products—is being used in higher education settings, where its strongest use cases are emerging, and what questions remain as adoption continues to evolve.

What I appreciate most about this research is that it does not over-simplify. It reflects both promise and complexity. It shows that educators are interested in AI that is practical, embedded, and aligned with the work they are already doing. It also reminds us that successful adoption requires trust, clarity, support, and an ongoing commitment to listening and improving.

At D2L, we’re excited about the potential of AI, and we are equally committed to ensuring that its use is anchored in pedagogy, quality, and purposeful, human-centered design. AI should help reduce friction so that the time it returns goes to what matters most: the connection between educators and their learners. This includes the relationships, the reading of student thinking, and the stronger learning outcomes that follow from both.

My hope is that this paper contributes not only to the conversation about D2L Lumi, but also to the broader dialogue across higher education about what effective and responsible AI integration can look like. We are still learning, and that is exactly the point. Progress in this space will come not by making assumptions, but engaging in ongoing partnership, careful inquiry, and a willingness to build with the field rather than simply for it.

I am grateful to Digital Promise and to all the educators and institutional partners who contributed their time, candor, and insight to this work. Their voices are helping all of us move the conversation forward in a more useful way.



Dr. Cristi Ford
Chief Learning Officer, D2L

Executive Summary

Higher education is moving into a more consequential phase of its AI journey. The sector is no longer asking only whether Artificial Intelligence will shape teaching and learning. It is asking a more practical and more important question: what kind of AI is useful in real instructional settings, and what will it take for that use to scale with trust?

This is what makes the recent Digital Promise research on D2L Lumi especially valuable. Conducted with support from D2L, the study examined how faculty, staff, and instructional leaders across seven institutions or institutional entities were using D2L Lumi in higher education settings, what they found useful, where they encountered friction, and what conditions appeared to support or limit meaningful adoption. It offers a grounded view into how embedded AI is being experienced by educators working in real institutional contexts.

Several themes stand out. First, the institutions in the study were broadly supportive of AI adoption, and many had already created a favorable climate for experimentation by offering access to enterprise AI tools, professional learning, and local support. Yet that broader enthusiasm did not automatically translate into widespread D2L Lumi adoption. Awareness was uneven; support was mixed, and adoption remained at an early stage.

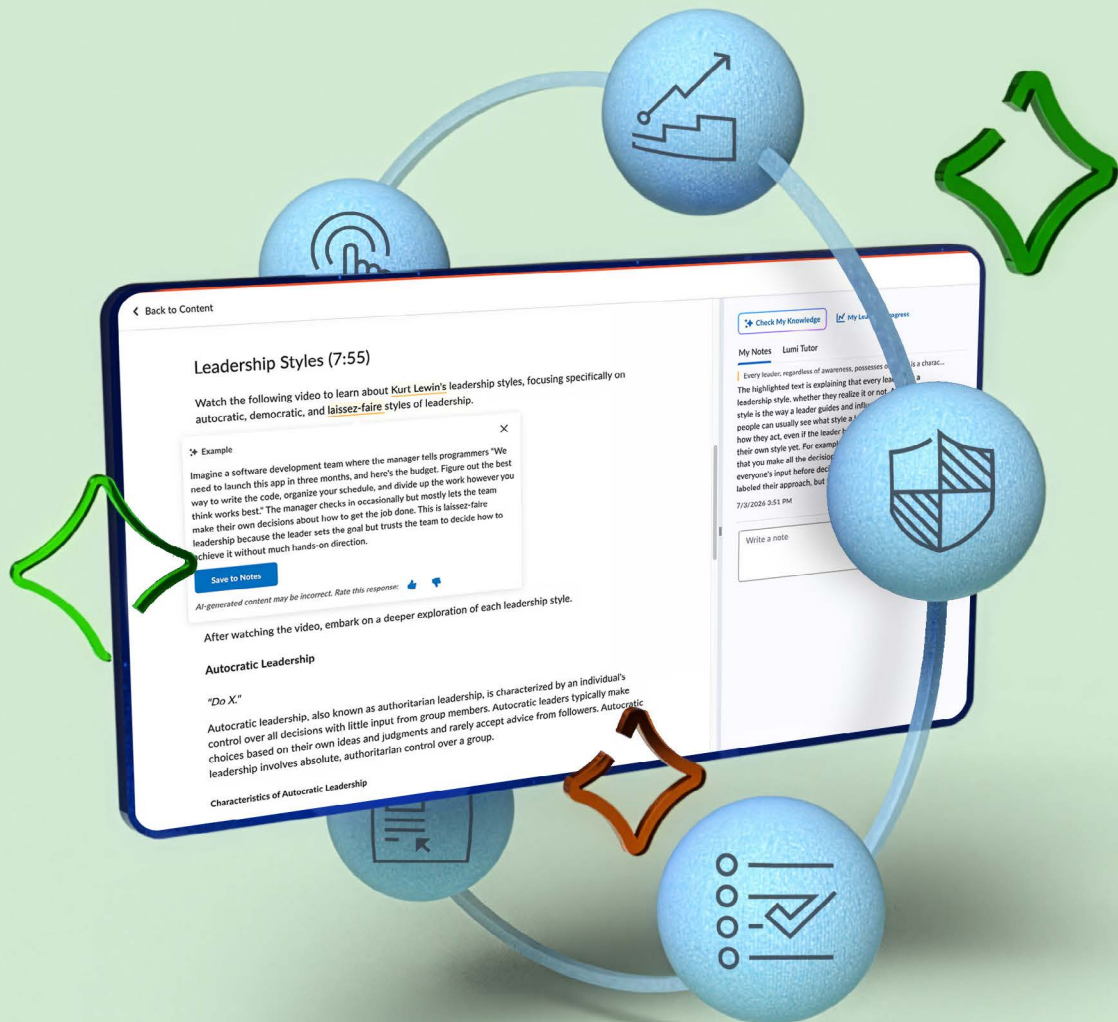
Second, educators responded most positively when AI was tied to practical, bounded instructional tasks. D2L Lumi Quiz emerged as the clearest example. Participants described it as useful, efficient, and aligned with the realities of course development. One participant said it “did enough of the right things,” a notable, if somewhat qualified, endorsement. The most usable AI may matter more to educators than the most expansive AI.

Third, trust matters. Participants saw D2L Lumi’s embedded, closed-system design as a meaningful advantage. Because it worked from course materials in Brightspace rather than drawing from uncontrolled outside sources, educators often viewed it as easier to use and less prone to bias or inaccuracy than general-purpose AI tools. An instructional designer even described D2L Lumi as a “gateway AI” for faculty who were earlier in their AI journey.

Educators responded most positively when AI was tied to practical, bounded instructional tasks.

At the same time, the report does not present an uncomplicated success story. Participants wanted more customization, more contextual intelligence, and greater flexibility in how D2L Lumi could draw from resources beyond the LMS. They raised important concerns around certain use cases, especially AI-generated feedback, where efficiency could come into tension with pedagogy, instructor judgment, and the relational work of understanding students. Those concerns are central to what responsible educational AI must address.

The research points to a clear conclusion: the next chapter of AI leadership in higher education will belong to those who can speak credibly about embeddedness, trust, instructional fit, and measurable value for student learning. It’s a call for less noise and clearer definitions around what effective AI in education looks like.



Trust matters. Participants saw D2L Lumi's embedded, closed-system design as a meaningful advantage.

The Market Has Shifted: Institutions Want AI That Fits the Work

The AI conversation in higher education has matured quickly. Not long ago, it was dominated by broad speculation: excitement about transformation on one side, concern about academic integrity and disruption on the other. That phase is not over, but it is no longer enough. Institutions now want to understand where AI can deliver value inside the actual work of teaching, learning, course design, and student support.

The Digital Promise study reflects that shift directly. The research questions centered not on abstract AI sentiment, but on contextual factors, problems of practice, benefits and challenges, and criteria for evaluating whether AI tools are supporting teaching and learning goals. That framing reflects a field beginning to ask better questions and focus more on meaningful learning outcomes.

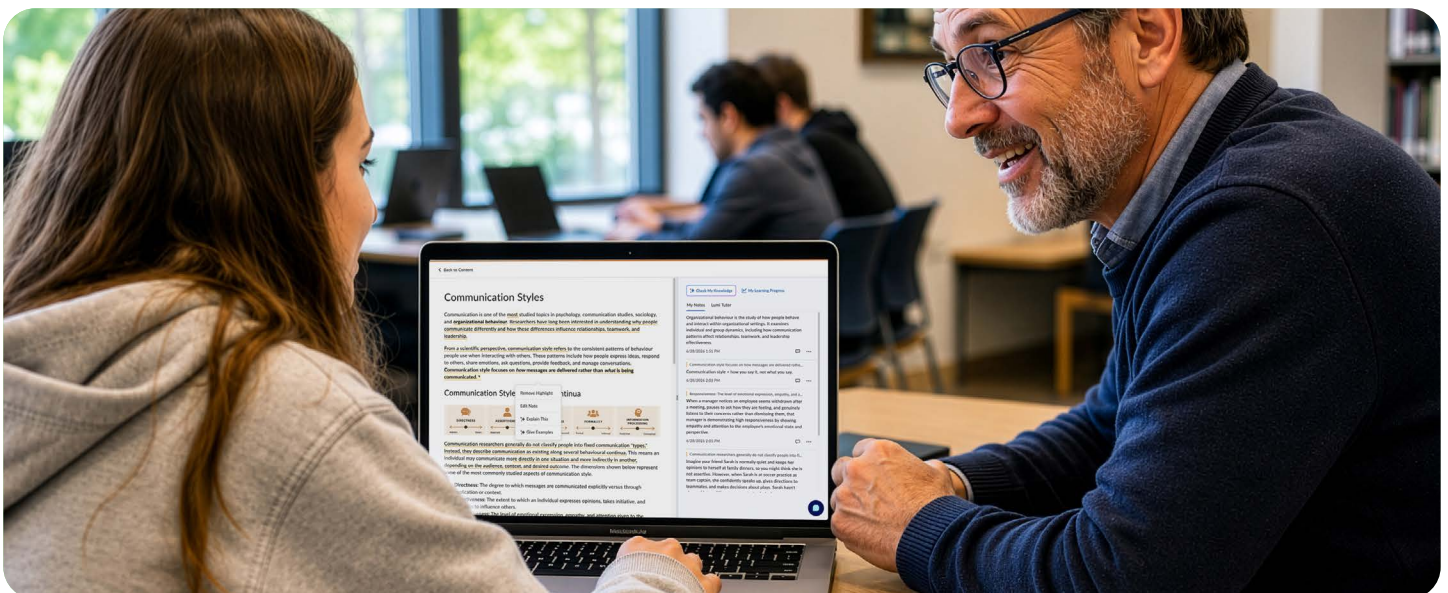
Higher education wants AI that aligns with pedagogy, reduces friction and feels institutionally coherent.

And the answers suggest something important: higher education wants AI that aligns with pedagogy, reduces friction and feels institutionally coherent.

That coherence matters. Across the participating institutions, administrators were generally described as supportive of AI. Yet beneath that broad enthusiasm sat a more complicated reality. Not all faculty shared the same level of comfort or excitement. Some participants described colleagues as resistant. Others noted that optional training models meant the people most in need of support often did not engage it.

“The faculty who really need the training just don’t go” – Study participant

That gap between institutional enthusiasm and everyday adoption is a familiar one. Whether adoption succeeds depends less on new features and more on whether the experience feels manageable, timely, and relevant to the people doing the work.



What Early Adoption Tells Us: Practical Use Cases Build Trust First

One of the clearest findings in the report is that not all AI use cases are equally compelling to educators. Some forms of support create immediate value. Others remain less mature, more variable, or more difficult to integrate into real instructional workflows.

D2L Lumi Quiz emerged as the strongest early use case for instructors in the study. Among those using D2L Lumi, the most frequently cited purposes were creating assessment questions and providing feedback to students. D2L Lumi Quiz was described as straightforward and satisfying. Participants appreciated that it could generate multiple questions quickly and that it still required them to review and approve what was produced before use in course materials. In education, AI trust appears to build fastest when outputs are easy for educators to inspect, verify, and refine.

“Did enough of the right things” – Educator describing D2L Lumi Quiz

By contrast, other use cases showed more varied patterns of adoption. Participants reported experimenting with D2L Lumi for idea generation and assignment design, although they did not always incorporate the resulting outputs into their practice. This did not suggest a rejection of AI-supported creative work. Rather, it highlighted the different expectations educators bring to more open-ended tasks. These use cases often require greater contextual awareness, adaptability, and alignment with an educator’s disciplinary expertise and instructional intent. They may also require more time for educators to develop confidence in how the technology can support, rather than shape, their professional judgment. What educators were looking for was not simply an output, but a strong fit with their teaching context.

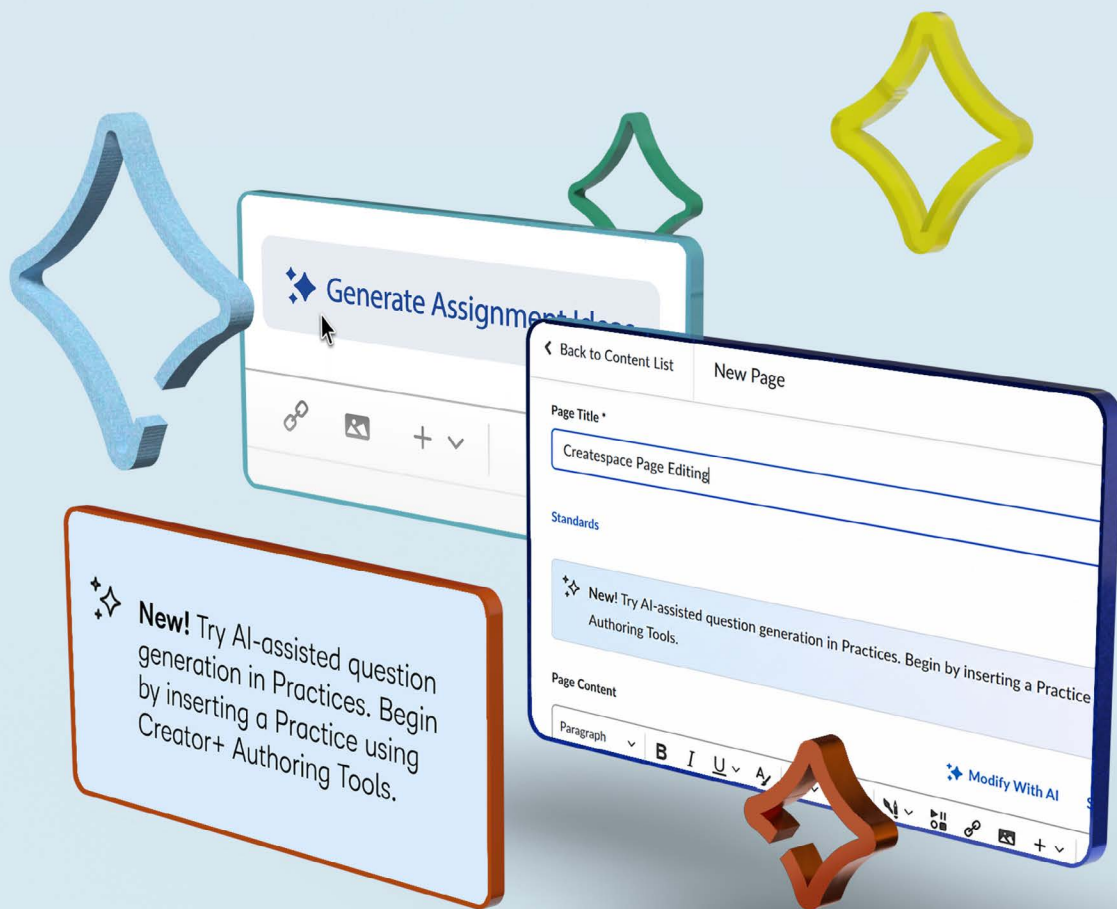
That distinction is important. Educators may be more willing to set aside their hesitation when AI relieves them of a clearly defined, time-consuming task such

as generating an initial set of quiz questions than when it enters work that is more closely connected to their creativity, disciplinary expertise, or instructional decision-making. In those settings, efficiency alone is not enough. What educators wanted was fit: outputs that reflected their course context, pedagogical intent, learners, and professional judgment.

The next phase of AI adoption in higher education will be shaped less by what the technology can produce and more by what educators can confidently stand behind. Faculty are more likely to integrate AI when it strengthens their instructional judgment, aligns with their pedagogical intent, and helps create better conditions for learning. This requires more than efficient outputs. It requires tools that educators can shape, interrogate, refine, and use without relinquishing the expertise, creativity, and care they bring to their work. The most meaningful use cases will be those that earn trust by fitting the realities of teaching and giving educators greater confidence in the learning experiences they are creating.

Faculty are more likely to integrate AI when it strengthens their instructional judgment, aligns with their pedagogical intent, and helps create better conditions for learning.

These findings do not diminish the opportunity. They help define it. Building the best possible technology for the AI era requires being clear about where early applications are already creating value, where trust still needs to be earned, and where the technology must become more sophisticated. That feedback provides a practical roadmap for moving from useful first applications toward AI experiences that educators can genuinely shape, trust, and integrate into their practice.



Participants also voiced interest in capabilities that resemble broader AI experiences: better customization, more interactive exchanges, stronger memory, and richer output.

Embedded AI Has a Stronger Story Than Standalone AI

One of the most useful insights in the report is that D2L Lumi's embeddedness was not incidental to its value. It was central to it.

Participants repeatedly identified benefits that stemmed from D2L Lumi operating within Brightspace and working from course materials already present in the LMS. This shaped how they experienced accuracy, usability, and trust. In the questionnaire findings, only a small proportion of respondents identified bias or inaccuracy as a challenge with D2L Lumi, while a much larger share reported those concerns when working with other external AI tools. Participants explicitly connected that difference to D2L Lumi's embedded design.

This matters. In higher education, trust is operational, not abstract. It affects adoption decisions, governance conversations, faculty confidence, and institutional

willingness to move beyond experimentation. When educators understand where AI is drawing from and how it is functioning inside the course environment, the path to adoption becomes more plausible (and desirable).

Participants also valued the simple fact that D2L Lumi was already present where they were working. One instructor contrasted D2L Lumi with a workflow involving copy-pasting into ChatGPT and then moving outputs back into course tools, explaining that D2L Lumi was faster than that and more efficient than building the materials manually. For educators, workflow friction is often the difference between curiosity and sustained use. Embedded AI has a natural advantage when it removes extra steps instead of adding them.

“Gateway AI” – Instructional designer describing D2L Lumi

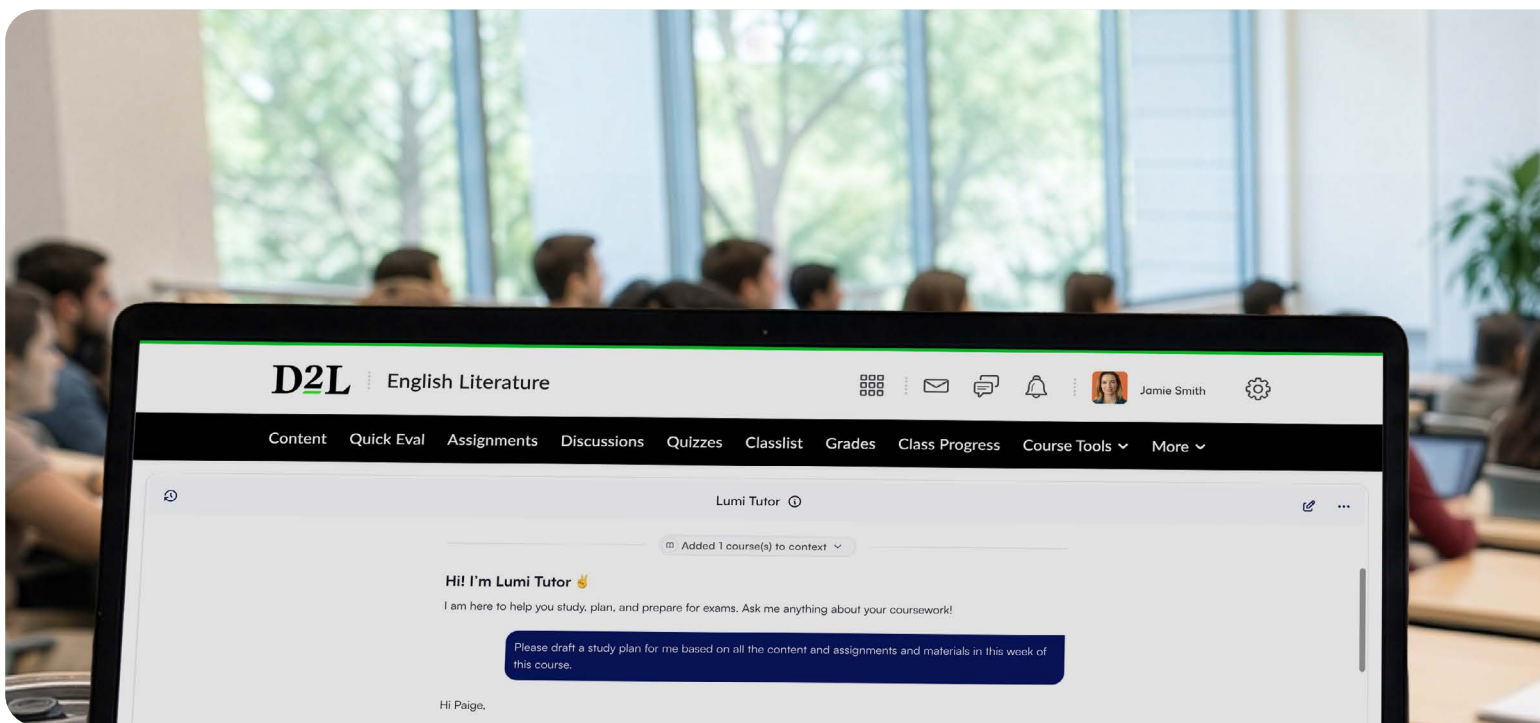
Trust Alone Is Not Enough: Educators Also Want More Context and Control

The report is equally valuable because it does not stop at strengths. It also surfaces the product and adoption tensions that must be addressed if embedded AI is going to scale more broadly.

A major one is contextual reach. Some educators appreciated that D2L Lumi only worked from materials inside Brightspace because it made the tool feel safer and more aligned. Others found that same limitation constraining, especially when important course materials lived outside the LMS – articles, videos, textbooks, and other resources that shaped the learning experience but were not fully available to D2L Lumi. In those cases,

embeddedness could begin to feel less like trust and more like constraint.

Participants also voiced interest in capabilities that resemble broader AI experiences: better customization, more interactive exchanges, stronger memory, and richer output. They wanted not just a contained tool, but a more responsive assistant. The challenge is not to abandon bounded trust. It is to preserve that trust while expanding useful context and flexibility. There is an opportunity in that tension: the research confirms the value of embedded AI even as it makes clear the next frontier institutions are asking for.



Saved Time Is the Mechanism. A Deeper Connection to Learners Is the Point.

One of the clearest themes in the report is that educators were not looking for AI to do the teaching for them. They were looking for AI to clear the busywork so they could spend more of themselves on the students — the part of the work where human presence changes what a learner achieves.

That aspiration appears throughout the findings. Participants described benefits in terms of speed, efficiency, and workflow support. They wanted help with routine or repetitive tasks. They imagined future uses that sounded more like assistance than substitution. The report notes that some participants wanted D2L Lumi to function more like an administrative assistant than a content creator.

Participants described benefits in terms of speed, efficiency, and workflow support.

The market is crowded with claims about AI productivity. The more useful idea is that AI can help educators reconnect with their learners. The time D2L Lumi hands back is the mechanism; the point is what that time is for — reading student thinking, noticing what a learner is missing, designing for understanding and transfer, and the mentorship and judgment that drive learning outcomes. A time-saved claim should never stand on its own; it is only meaningful when it names the learning it makes room for.

That framing also better matches the ethos of education. Faculty do not generally define their work by content generation alone. They define it through the design of learning, interpretation of student thinking, mentorship, responsiveness, and professional judgment. AI becomes meaningful when it supports those ends rather than appearing to compete with them.



Where the Report Advises Real Caution: Feedback, Pedagogy, and the Human Work of Teaching

A credible research report should not flatten the complexity of the findings, and the section on D2L Lumi Feedback is where that complexity matters most.

Participants saw meaningful promise in AI-supported feedback. They described D2L Lumi Feedback as detailed, consistent, and often more extensive than what an instructor might provide under time pressure. In large-enrollment or high-feedback settings, those benefits address longstanding instructional challenges.

But the same section surfaced important reservations. Participants said the tone could feel overly positive or obviously AI-generated. Some described hallucinations when student submissions were short or thin on content. Others were frustrated that they could not shape or train the feedback behavior to fit their local context. In those cases, educators ended up spending significant time reviewing, editing, and checking outputs, which weakened the efficiency proposition.

More importantly, some educators raised a deeper issue: feedback is not just an output function. It is also a learning function for the instructor. The process of reading student work carefully helps faculty understand misconceptions, patterns of difficulty, and how students are experiencing the course. That is exactly the connection the previous section is about: if AI is used incautiously here, it may save time while quietly eroding the very insight that lets an educator improve a student's outcome.

Participants saw meaningful promise in AI-supported feedback.

This is where the most important conversation lies. There is real value in speaking with nuance about where AI augments teaching well and where human engagement must remain central – a more honest position than broad automation language, and one that aligns with what educators are wrestling with.

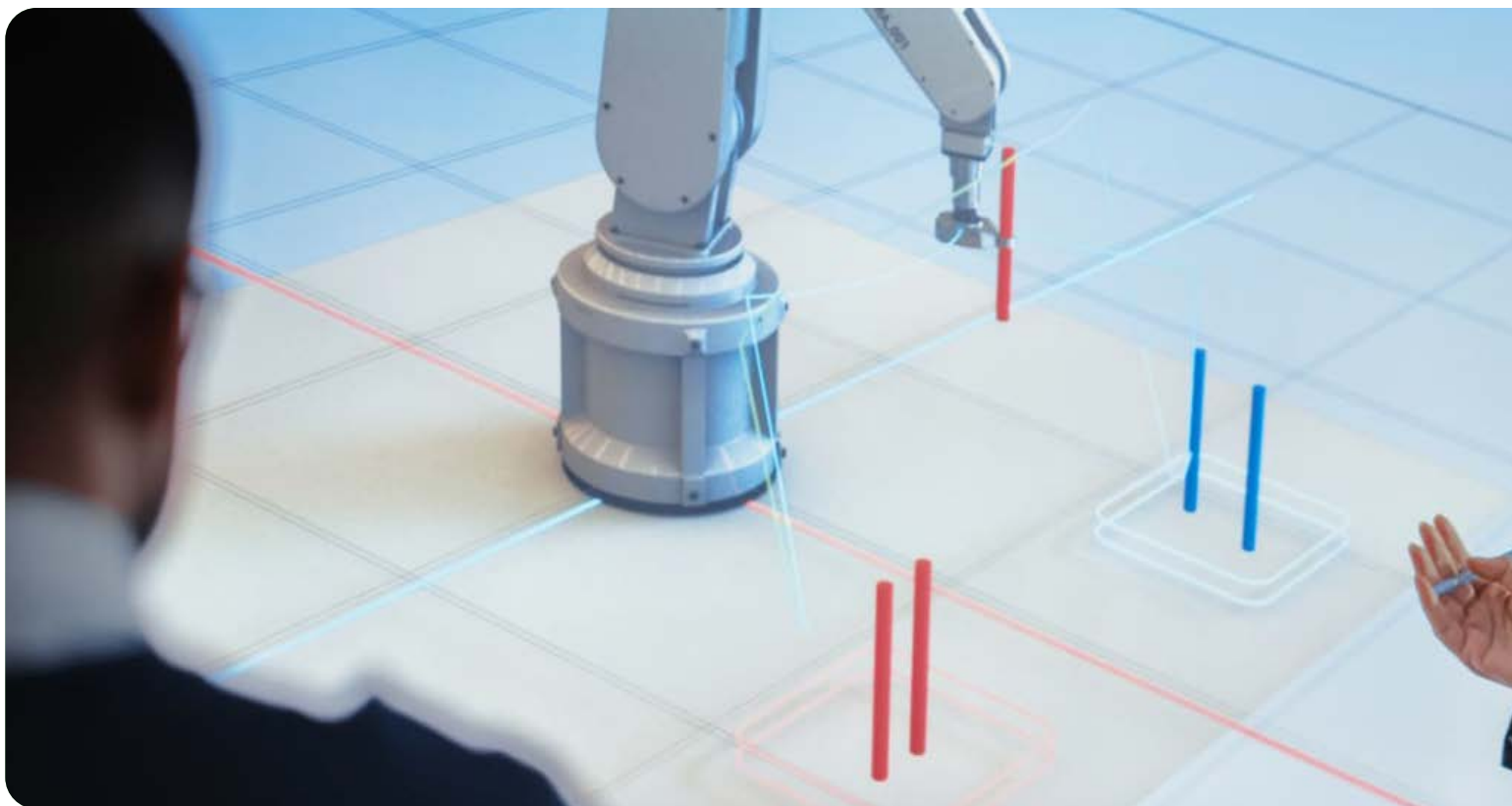
Instructional Designers May Be the Most Important Adoption Layer

If there is one group that comes through the report as especially important, it is instructional designers.

Participants consistently described instructional designers as key enablers of D2L Lumi adoption. They were often the people introducing instructors to the tool, helping them use it one-on-one, and translating abstract capability into immediate instructional relevance. For many faculty, that kind of support mattered more than general professional development because it arrived at the point of need.

This is a strategic insight, not a minor implementation detail. AI adoption in higher education is not just about faculty attitudes or administrative directives. It is about the middle layer of educational practice: the people who help institutions operationalize teaching and learning quality at scale. The report's recommendations reinforce this, suggesting that instructional designers be supported as champions of D2L Lumi on their campuses. Supporting that middle layer may be one of the most practical levers any institution has for adoption.

“I-need-it” – The moment, described by a participant, when D2L Lumi became meaningful



What Success Should Look Like: A Better Evaluation Framework for AI in Education

Another of the report's most valuable contributions is that it begins to define what success with embedded AI should mean.

Participants said D2L Lumi should be judged by whether it is efficient, effective, and accessible. That triad is simple, but powerful. Efficiency means reducing instructor time and effort. Effectiveness means producing usable outputs and contributing to real student learning — measured by the quality of understanding and outcomes it supports, not the volume of content it produces. Accessibility means supporting inclusive, high-quality course experiences and aligning with broader accessibility expectations.

This is more than research findings; it is a usable framework. Institutions need more disciplined language for evaluating AI than adoption counts or general enthusiasm. They want to know whether AI helps faculty work better, whether it improves learning design, whether instructors trust it enough to return to it, and whether it aligns with quality standards they already care about. It offers the field a way to move the conversation away from hype and toward outcomes.

Effectiveness means producing usable outputs and contributing to real student learning



Listening, Learning, and Building with the Field

The report also points to something that matters beyond the product itself: the value of engaging users directly.

Participants said the research itself influenced how they engaged with D2L Lumi. Some used it more intentionally because they knew they would reflect on their experience. Others valued hearing how peers at other institutions were using the tool. Still others said the process gave them more confidence that D2L was listening to feedback and committed to improvement.

“Cautious optimism” — A participant on the future of the tool

That sentiment is worth taking seriously, with restraint. It reflects the slower, more credible work of learning with institutions about what creates value and what still needs refinement. Research and user voice let this paper show up not as a vendor pitch, but as part of a shared effort to navigate the transition from experimentation to maturity.

What This Means for Higher Education

The strongest conclusion to draw from this research is not that AI has arrived. It is that higher education is entering a more serious phase of AI adoption, and embedded AI is emerging as one of the most promising paths forward. Several evidence-based propositions follow the report.

1. Institutions are ready for practical AI, not just aspirational AI. Interest is broad, but adoption grows where use cases are relevant, and workflows feel manageable.
2. Embeddedness is a meaningful differentiator. Educators value AI that lives where teaching already happens and works from course-based context.
3. The strongest early wins come from bounded instructional tasks. Quiz generation reduces friction while preserving faculty oversight.
4. Successful adoption depends on human infrastructure. Instructional designers, targeted support, and community-based learning all matter.

5. Responsible growth requires honesty about limits. The findings around feedback, customization, and contextual reach make the story more credible, not less, when acknowledged directly.

The clearest message from this research is that the right AI makes teaching and learning work better when it is embedded, bounded, and built around real instructional needs.

The Digital Promise findings show a field that is interested but discerning, optimistic but practical, and increasingly clear about what it wants from AI. Educators valued D2L Lumi when it reduced friction, fit naturally into their workflow, and helped them stay grounded in course context. They also made clear that trust, customization, and pedagogy must remain central as the technology evolves.

The opportunity is to define what effective AI in education looks like: useful, trusted, embedded, measurable, and in service of the connection between educator and students that drives stronger learning outcomes.



Embeddedness is a meaningful differentiator. Educators value AI that lives where teaching already happens and works from course-based context.

ABOUT THIS RESEARCH

This paper draws on a Digital Promise research-practice partnership examining how faculty, staff and instructional leaders across institutions or institutional entities used D2L Lumi in higher education settings. The study was conducted by Digital Promise with support from D2L. Quotations are drawn from study participants. For more on D2L's approach to AI in teaching and learning, visit D2L.com.

About D2L

D2L is a global learning innovation company, reshaping the future of education and work. We are leading the way into a new era of personalised learning, driven by the belief that everyone deserves access to high-quality education, regardless of age, ability or location. Our signature technology product—D2L Brightspace—enhances the learning experience for millions of learners at every stage of life, from the earliest days of school to the world of work. Learn more at D2L.com

About Digital Promise

Digital Promise is a global nonprofit working to expand opportunity for learners and prepare them to thrive on every path ahead. They integrate research, practice, and technology across the education ecosystem to investigate, design, and scale innovations that drive meaningful outcomes.

Their vision is that every person engages in Powerful Learning experiences that lead to a life of well-being, fulfillment, and economic mobility and security. For more information, visit the [Digital Promise website](https://DigitalPromise.org) and [follow Digital Promise](#) for updates.

About D2L and Digital Promise

D2L and Digital Promise collaborate through strategic edtech initiatives focused on research-backed design, accessibility and learner variability. This partnership aims to bridge the gap between learning sciences research and classroom technology tools.



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