# Introduction to the Special Issue: Higher Education in an AI-Transformed World

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Artificial intelligence (AI) has been evolving for decades. In the latter part of the 20th century and the early part of the 21st century, AI received modest interest on the part of the general public. At the time, it had been the focus of activity among computer scientists and technology specialists. The launch of OpenAI's ChatGPT in November 2022 brought significant global attention to this foundational generative AI (GenAI) platform. American corporations such as Alphabet (Google's parent company), Microsoft, Nvidia, and Amazon started investing billions of dollars in this technology. Internationally, well-funded companies in China such as Baidu, Tencent, and Alibaba began challenging American hegemony in AI development. The early GenAI programs such as ChatGPT, Claude, and Gemini are now evolving into broader general AI programs. In four short years, all walks of life including private industry, government, and education have begun developing and implementing AI applications.

In 2025, the editors of OLJ saw that the time had come to examine AI with respect to higher education, where its fast-moving integration has raised critical questions related to pedagogical, ethical, personnel, and technological issues. For this special edition, articles were solicited from faculty, researchers, and administrators who are using AI in higher education.

## Definition of Terms

It is important to define and distinguish between the major forms of AI. AI is a broad field of science in which machines are taught to develop humanlike capabilities. General AI occurs at the point when AI can learn human cognitive skills (Suleyman, 2023) and is rapidly developing. A more recent term, "agentic AI," has come into use and is related to general AI. The primary difference between the two is that agentic AI is a more specific application. It is proactive, autonomous, and adaptive, capable of planning, reasoning, and taking specific complex actions independently to achieve objectives in dynamic environments.

While general AI and agentic AI are in early developmental stages, GenAI (such as ChatGPT) is currently in widespread use. It is a technology within the field of artificial intelligence that utilizes "neural" networks which mimic the human nervous system to create new and original content. It can produce a wide variety of data, including text, images, audio, and video. GenAI can also create content such as synthetic data, code, simulations, and more by identifying patterns and structures within existing data. GenAI builds upon technologies like large language models (LLMs), which are trained using vast amounts of data, to predict and develop new data such as original images or text structured in sentences and paragraphs. GenAI programs such as ChatGPT, Claude, and Gemini are being used routinely by everyday people to

find basic information, to develop ideas, and to engage in creative activities. College faculty and students are embracing GenAI for lesson planning, writing assignments, and collecting background information on topics of interest. In summary, GenAI is now commonly utilized and considered for use in a wide variety of activities. As one author in this special edition concluded, the central question facing educators today is not "What will AI do?" but "What will AI *not* do?"

With these distinctions in mind, what follows is a brief review of the articles included in this special edition generated in part with assistance from the GenAI program, Claude.

In "Artificial Intelligence and Digital Learning: Architecture, Hallucinations, Information, Findability, The First Rung, and The Arts of Inquiry," Gardner Campbell, Charles Dziuban, Colm Howlin, and Mark Smith offer a wide-ranging conceptual examination of how AI powered by large language models (LLMs) is reshaping education, the workforce, and human cognition. The article begins with an accessible explanation of transformer architecture, tokenization, and the hallucination problem before turning to a compelling argument about information structure. Drawing on scale-free networks and power law distributions, the authors contend that AI has become the dominant "hub" in the information ecosystem, fundamentally shifting learners from active seekers to passive recipients of algorithmically served answers. Most urgently, they introduce the concept of the "disappearing first rung"—the AI-driven erosion of entry-level jobs that have traditionally served as the formative training ground where new graduates learn to think, navigate ambiguity, and develop professional judgment in real-world settings.

In "Understanding the Generative AI Divide: Faculty and Student Perspectives in Higher Education," DeStefano, Hackney, & Moskal report findings from a large-scale survey of 3,164 students and 166 faculty at the University of Central Florida, examining actual GenAI usage patterns, perceptions, and training needs. Despite 88% of students reporting familiarity with GenAI, almost half were not using it for academic work, and 76% had received no formal classroom instruction on its use — a striking gap the authors call the "familiarity-usage paradox." Faculty showed similarly high familiarity but inconsistent integration, with only 33% encouraging students to explore GenAI tools and just 18% teaching students how to use them, barriers driven largely by concerns about academic integrity, student overreliance, and their own comfort with the technology. The study's most consequential finding is the significant divergence in how the two groups perceive GenAI's impact on learning: students were decidedly optimistic (M = 4.0/5.0) while faculty were skeptical and fell below the neutral midpoint (M = 2.8/5.0).

In "Graduate Teacher Education Students Evaluate Generative AI – A Two-Year Comparison," Anthony Picciano presents a qualitative longitudinal study tracking how 45 experienced K-12 teachers enrolled in a graduate education leadership program at Hunter College changed their views and use of GenAI between Spring 2023 and Spring 2025. Using student essays and focus group discussions as data sources, the study finds a dramatic shift over just two years: in Spring 2023, only one of the fifteen participating students had previously used GenAI, and seven students declined the AI assignment entirely; by Spring 2025, nearly all students were using it regularly, with many reporting that their school districts had proactively organized professional development workshops around tools like Magic School AI and Toddle

AI — purpose-built teacher platforms. Three thematic comparisons anchor the findings. First, teachers in 2025 had moved from speculating about AI's potential to documenting its active use in lesson differentiation, IEP goal-writing, report card comments, and curriculum planning. Second, both cohorts were particularly enthusiastic about AI's applications for special education students and English language learners — but by 2025, teachers could describe specific, concrete classroom implementations rather than hypothetical benefits. Third, while 2023 participants drew simple grade-level lines around student AI use (generally permitting it in high school, dismissing it for younger grades), 2025 participants expressed more nuanced and cautious positions, wrestling openly with concerns about cognitive development, critical thinking atrophy, over-reliance, and the difference between AI enhancing versus replacing student thinking. Picciano concludes that teachers have become meaningfully more sophisticated in their AI literacy.

In "The Promise and Paradox of AI in Doctoral Education," Brown and Shelton propose a conceptual framework for integrating AI as an adaptive support system in doctoral programs, addressing the persistent problem of student isolation and attrition during the dissertation phase. Grounded in Vygotsky's sociocultural learning theory — particularly the Zone of Proximal Development and scaffolding — the framework reframes doctoral independence as "supported autonomy": the ability to direct one's own research while strategically leveraging available resources, including AI tools. The model organizes AI's potential contributions across three interconnected dimensions. Cognitively, AI can serve as an always-available "critical friend" that helps students overcome writer's block, refine arguments, and prepare more focused questions for supervisor meetings. Affectively, AI provides a non-judgmental space for testing ideas that reduces imposter syndrome and builds confidence through small, incremental successes. Socially, AI bridges the "scaffolding gap" that opens when coursework ends and structured support recedes, helping students maintain momentum and arrive at human mentorship interactions better prepared.

In "Curriculum Mapping as a Tool for Continuous Improvement of the Business Studies (BS) Curriculum in a Digital-First University," Aldin Bellinfantie presents a theoretically grounded curriculum mapping framework developed for Arden University's School of Business and Creativity, using its BA (Hons) Business Management program as a case study. Drawing on learning theories including Constructive Alignment, Cognitive Load Theory, and social constructivism, the framework adapts established models (particularly Veltri et al., 2011) into a five-step cyclical process that maps Program Learning Outcomes, Teaching and Learning Activities, and Assessment Methods against both internal institutional attributes and external benchmarks such as QAA Subject Benchmark Statements and World Economic Forum skills forecasts. The case study analysis reveals that while the program demonstrates strong vertical coherence — with concepts progressively scaffolded across levels — it suffers from weak horizontal integration, where critical skills like data analytics risk becoming siloed within individual modules rather than woven across the curriculum.

In "Predicting Online Instructional Design Students' Intention to Use AI Tools: Value, Utility, and Self-Efficacy," Cho and Chen report findings from a survey of 74 online instructional design (ID) master's students at a U.S. university, examining what factors predict their intention to use AI tools in professional practice. Drawing on an extended Technology Acceptance Model (TAM), the study found that demographic variables — gender, age, and full-

or part-time status — were not significant predictors, while three attitudinal factors together explained 64.8% of the variance in students' intention to use AI: the utility of AI tools for their own academic tasks (the strongest predictor), the perceived value of AI for student learning, and self-efficacy in using AI tools. Cluster analysis further revealed two distinct groups — a "highly positive" group (55%) scoring above average on all four measures, and a "less positive" group (45%) scoring below average — with qualitative content analysis showing that the highly positive group used AI more diversely, viewed it as a collaborative partner, and generated more constructive ideas about its role in instructional design. A significant contribution of the study is its differentiation of perceived usefulness into two distinct constructs, finding that students' direct, personal experience using AI tools for their own tasks matters more than abstract beliefs about AI's general pedagogical benefits — a nuance that has direct implications for program design.

In "Transforming Enrollment Management in the Field of Online Learning," Vickie Cook presents a practitioner-focused roadmap for online learning administrators navigating the evolution from Business Process Mapping (BPM) through Business Process Automation (BPA) to fully AI-driven enrollment management. The article argues that BPM — the visual documentation of workflows across admissions, financial aid, and student communications — is the essential first step toward automation, and that BPA, while valuable for streamlining routine tasks and reducing manual errors, remains inherently limited: it cannot adapt in real time to individual student behaviors, respond to rapidly shifting enrollment conditions, or scale personalized engagement. AI, by contrast, offers three distinct capabilities that go further: predictive AI for forecasting yield and financial aid decisions, GenAI for hyper-personalized student communications, and agentic AI for autonomous workflow management including transcript review and recruitment optimization. The article's central argument is that institutions must treat the BPM-to-BPA-to-AI pathway as a deliberate strategic continuum rather than a set of discrete technology upgrades, and that freeing staff from repetitive processing work allows them to focus on the high-touch human interactions that drive student success and retention.

In "Educating the Educators about AI: Strategic Initiatives in a Graduate School of Education," Borasi and Fredericksen chronicle the Warner School of Education at the University of Rochester's two-year initiative to build internal capacity around GenAI and redesign programs to prepare future education professionals for an AI-transformed workplace. Drawing on entrepreneurial frameworks and lessons from a prior online learning initiative, the authors describe how the school established an AI Task Force, hired a dedicated post-doc to track GenAI developments, engaged faculty through differentiated professional learning opportunities, and ultimately launched a new Advanced Certificate in AI for Educators and Helping Professionals. The article's central argument is that schools of education must go well beyond debating whether students should be allowed to use AI — they must fundamentally rethink curriculum, assessment practices, and faculty development in light of AI's growing role across all education professions.

In "Graduate Students at the Frontier of GenAI: Emerging Trends from a Southwest Borderland University," Parra, Chatterjee, Okoye, and Lucero present findings from a qualitative survey of 24 graduate students enrolled in online educational technology courses at New Mexico State University, a Hispanic-serving institution. Drawing on Connectivism and the Concerns-Based Adoption Model (CBAM), the study traces how students moved from limited prior

exposure to GenAI to more purposeful integration, with close to 70% reporting at least weekly use and nearly all viewing it as helpful for teaching and learning. Three thematic trends emerged from the data: "promise, productivity, and partnership," where students increasingly framed GenAI as a collaborative partner rather than a simple productivity tool; "boundaries and ethics," with 83% expressing concerns about academic integrity and over-reliance; and "navigating uncertainty," marked by inconsistent course-level policies and only 22% feeling their institution had provided adequate guidance. A particularly distinctive contribution of this study is its focus on students who are simultaneously practitioners — mostly community college faculty and K-12 educators — giving them a dual vantage point as both learners and instructors grappling with GenAI's implications.

In "Asked & Answered: Using AI to Nudge Student Metacognition and Responsibility for Learning," a team of faculty and instructional technologists at the University of Maryland, Baltimore County (UMBC) presents a reflective case study of four courses that share a common pedagogical goal — developing students as self-regulated learners — and are exploring AI as a tool to personalize and scale that effort. Grounded in Saundra McGuire's framework for teaching metacognition through Bloom's Taxonomy, the article describes how AI is being integrated differently across four distinct contexts: CHEM 102 uses spaced practice question banks to counter student cramming, with AI as a potential tool to help students eventually curate and schedule their own practice; SCI 100 asks students to crowdsource exam prediction questions for extra credit, with AI positioned to streamline curation and reduce faculty burden; UNIV 102 uses Team-Based Learning with AI-generated quiz questions to help academically at-risk students build study group skills and develop honest self-assessment habits; and CHEM 101 deployed a Google NotebookLM-based "Virtual Prof Bass" — trained on 36 course documents — that gives 800+ students 24/7 access to a patient, Socratic AI tutor modeled on the instructor's own voice and approach. The article's central argument is that the right question about AI in education is not how to prevent students from using it, but how to use it to deepen students' willingness and capacity to honestly assess what they know and close their own learning gaps — a skill the authors frame as essential to becoming a lifelong, self-regulated learner.

We sincerely thank the OLJ copyeditors for their hard work at getting these articles to "press" as well as the OLJ Editor-in-Chief, Dr. Peter Shea, and Managing Editor, Dr. Carrie Miller, who helped us make this special issue a reality.

We hope that you find these articles helpful and that they inspire ideas on future uses of AI in higher education and beyond. If you are conducting research on the use of AI, please consider submitting your work and volunteering as a reviewer to help maintain the high quality of *Online Learning*.

**References**

Suleyman, M. (2023). *The coming wave: Technology, power and the 21st century's greatest dilemma.* New York: Crown Publishing Co.