Building the AI-Ready Graduate School:

New Insights from CGS Member Institutions

Generative AI has arrived in graduate education, and universities are eager to respond. Many graduate schools have already developed policies to govern student use of AI, which is an important first step. Beyond policy creation, it is important to examine key ways in which generative AI has the potential to improve graduate education: making programs more efficient, responsive to student needs, and aligned with what employers want.

This brief examines three promising areas where AI is already sparking change:

- Customized learning pathways
- Admissions quality and efficiency
- Interdisciplinary collaboration

For many institutions, the goal isn't to replace human judgment or faculty expertise. It's to show how AI can handle routine tasks, personalize student support, and free up resources for other pressing tasks while remaining aligned with university values and mission.[1] Throughout this brief, we emphasize the importance of monitoring for bias, maintaining academic integrity, and ensuring that technology serves institutional values.

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CGS has had robust conversations with international stakeholders around the use of generative AI at the 2025 Global Summit. A sampling of the core action agenda items can be found in the pullout box below, while the principles, action agenda, and conference papers can be downloaded from **the CGS website**.

The 2025 Global Summit was convened by the Council of Graduate Schools and the Institut National de la Recherche Scientifique (INRS) on the topic of artificial intelligence and emerging technologies to support student success. That convening resulted in a set of principles and an action agenda. Below are action agenda items for institutions based on that meeting:

- **Reaffirm your institution's core mission and values around graduate education**. Policies and guidelines on acceptable use of AI should reflect these pre-existing values and norms.

- **Convene and support committees on AI.** These committees should include faculty, graduate students, graduate administrators, and other stakeholders to support buy-in and help with dissemination across campus.

- **Develop guidelines for varied stakeholders on acceptable AI use.** Those guidelines should be clear, tied to specific actions, and flexible enough to be updated as technology evolves.

- **Provide training on AI for students, faculty, and staff.** AI literacy is the cornerstone of acceptable use. These trainings should be required and cover a range of topics, including ethics, guidance on how AI systems work, and lessons on specific models.

- **Have a robust legal framework for AI use in graduate research.** Using AI may have legal implications for intellectual property and risk management. Everyone who uses AI should be aware of the legal implications of AI use in their research and the consequences of unsanctioned use.

- **Guide graduate students towards preferred models and other AI tools whose data security and privacy policies align with university best practices.** Students and faculty are going to use AI, so make it easier to work with models that are transparent and work within university guidelines.

When possible, universities should work to create their own secure data systems, including large-language models. Information security and transparency are strongest when systems are controlled by publicly accountable institutions.

Customizing Learning Pathways with Gen AI: The Role of AI Tutors

One of AI's most promising applications is creating customized learning pathways for individual students.[1] Graduate programs struggle to deliver timely, effective support, especially as more part-time adult learners enroll with complex schedules that don't align with traditional office hours.[2] AI tutors that respond to student questions around the clock offer a potential solution. If a student is doing a problem set the night before it is due, for example, an AI tutor can help the student with any questions or walk them through the solution even if a human tutor or professor is unavailable.

These tools come with risks. General AI tools like ChatGPT can produce errors, fabricate sources, and lead to cognitive offloading that reduces learning retention.[3] Students may also choose AI over human support—like teaching assistants—who provide more accurate feedback and crucial human connection during academic stress.

Some institutions are developing AI tutors specifically for graduate students. Penn Engineering Online launched "Jean" in 2025 to provide guidance on content knowledge and course logistics. Clemson University has recently received support from the National Science Foundation (NSF) through the Innovations in Graduate Education program to create and launch an **AI-Driven Virtual Teaching Assistant (ViTA).** This assistant is designed to support medical biophysics students by scaling expert-validated and domain-specific insights from subject experts to support student in an accessible, on-demand format. Importantly, Jean and ViTA are being developed in a transparent way with datasets and protocols publicly available to all users. These values are in line with recent findings from an international CGS convening on AI and student success, where attendees stressed transparency in avoiding bias and preserving data security.

> **Cognitive offloading** occurs when humans use external tools to reduce the mental effort needed to complete a task. This can make processes more efficient, but may reduce the cognitive capacity of a person to complete tasks without the tool.

Recommendations for AI Tutor Implementation

Adoption and Design:

- Treat AI tutors as complements to faculty and staff, not replacements.
- Customize tutors to align with specific course goals and learning outcomes.
- Remember that your students are already using AI. This gives them a better-designed tool for their needs.

Rolling Out to Students:

- Clarify the use case. Frame AI tutors as tools for solving specific problems or automating specific tasks.
- Set clear boundaries on where AI cannot be used, and design assignments accordingly.
- Model effective AI use with concrete examples.
- Require transparency through disclosure policies that clarify when and how AI was used on assignments.

New Tools to Improve Admissions

Graduate applications have surged over the past five years—up 5.6% overall, with particularly sharp growth at R2 institutions (17.4%) and master's-granting universities (15.8%).[4] Admissions officers need innovative solutions to process larger volumes while reducing barriers and decreasing decision turnaround times.

AI can be a partner in meeting these challenges. Existing CRM platforms like Slate have added AI features for automated marketing, predictive analytics, and initial essay reviews. New tools focus on personalizing engagement with prospective students through customized communications, automated transcript processing, and real-time Q&A chatbots. Products like AI Recruiter, Agentforce, and Halda are tailoring outreach across multiple platforms including SMS and WhatsApp.

More specialized tools are emerging as well. AIRR automates transcript evaluation and integrates with existing systems like Slate and Workday, reducing manual data entry. HireVue uses facial recognition and natural language processing to assess communication skills. Notta provides real-time multilingual transcription to bridge language gaps with international applicants.

These tools can increase efficiency, but they require careful oversight. AI should not replace human judgment in admissions decisions, and outcomes must be consistently monitored for bias and fairness.

GenAI as a Tool to Unlock Interdisciplinary Research

AI disrupts traditional disciplinary boundaries by surfacing new domains of knowledge and challenging existing paradigms of knowledge development. This new domain creates challenges and opportunities. Graduate students are uniquely positioned to benefit in this ecosystem: they consume knowledge as students, produce it as researchers, and transmit it as teachers. They will play a key role in developing new approaches to AI research and teaching.

Case Study: Piloting AI Technology in Graduate Admissions at Georgia Tech

Georgia Tech has pioneered the use of AI in graduate admissions. In early 2025, the Center for 21st Century Universities piloted a tool using machine learning to predict applicant success by analyzing application portfolios and identifying non-cognitive skills like communication and leadership. The dual goals: promote fairness in application review and tailor professional development for enrolled students.

Building on this success, Georgia Tech is now piloting three additional tools: a predictive analytics platform to optimize cohort sizes based on enrollment likelihood; a ChatGPT-based essay reviewer that summarizes content and identifies themes for human reviewers; and an advising platform that provides personalized guidance by connecting students, faculty advisors, and career services with timely, relevant data. These tools aim to increase application volume capacity, improve decision timelines, and support students from matriculation through graduation.

To maximize AI's potential for interdisciplinary collaboration, institutions should:

- **Fund AI collaborations to seed success.** While collaborations on AI topics can develop spontaneously, seeding them with financial incentives and administrative support can help create and sustain collaborations around AI that are student-centered and align with university mission.

- **Encourage graduate students to experiment with AI within clearly defined parameters.** Students are often the ones pushing disciplinary boundaries with AI. Create outlets through seminars, reading groups, and capstone projects.

- **Align AI use with institutional guidelines**, even in experimental research contexts.

- **Invite the community in**. Share projects through seminars and informal discussions to promote AI literacy and help researchers communicate with non-experts.

Case Study: Models-Scale-Context Lab and the Humanities at Brown University

Founded in 2024, the **Models-Scale-Context Lab** at Brown University's Cogut Institute for the Humanities exemplifies interdisciplinary AI research. Co-led by historian Holly Case and computer scientist Suresh Venkatasubramanian, the lab examines how humanities disciplines have shaped and been shaped by AI development.

The lab's focus areas—models, scale, and context—bridge humanities and STEM fields. Models, scale, and context represent three foundational concepts within artificial intelligence research that intersect with humanities and social science fields, providing a clear pathway to interdisciplinary collaboration. Research topics range from AI's challenge to traditional authorship concepts to the transnational history of cybernetics. The lab provides a network of reading groups, seminars, and workshops that bring together graduate students and faculty from across Brown and beyond to explore how AI transforms knowledge production.

This approach has already produced tangible outcomes. A paper on data sovereignty co-authored by graduate students and faculty from History and Computer Science is in the publication pipeline, as is a collaborative project on chatbot history involving students from Cognitive Neuroscience, International Affairs, Physics, and History. Two graduate students are co-organizing a spring workshop on "Scale" featuring scholars from multiple disciplines.

The lab demonstrates that understanding AI holistically—where technical development is inseparable from ethical and contextual frameworks—can generate both scholarly insights and pedagogical innovation.

Questions For Graduate Leaders

- Does my university have clear policies and guidelines around artificial intelligence use? Are those policies designed with graduate students in mind?

- What are my university policies around AI and authorship? Are graduate students being educated about the ethics of AI use in research production and the potential legal ramifications for unsanctioned use?

- Are faculty and graduate students encouraged to explore AI tools in an informed and productive way? How can the graduate school or equivalent unit work to improve AI literacy on campus?

- Are other offices on campus using AI tools that may be useful resources for the graduate school? How can offices across campus collaborate to ensure that guidance on AI use is consistent?

- How are faculty and graduate students using AI to advance their research? How might that research open up new opportunities for exploration beyond traditional disciplines? What can I do to support those efforts?

Resources

118th Congress [Bipartisan House Task Force Report on Artificial Intelligence,](#) December 2024

This comprehensive report was prepared by the United States Congress in December 2024 to provide high-level guidance to various sectors about artificial intelligence. Universities are discussed in sections on AI use in education as well as in research and intellectual property.

[Australian Council of Graduate Research Good Practice Principles](#)

The Australian Graduate Research Good Practice Principles articulate a set of standards considered to be essential for the delivery of graduate research programs. The Graduate Research Good Practice Principles have been developed and endorsed by the Australian Council of Graduate Research (ACGR) and contain high level statements about governance, policy and procedural standards that ACGR believe are necessary components of quality graduate research programs. These principles should apply to all candidates, supervisors and programs, regardless of the mode or location of delivery.

[AI-Driven Virtual Teaching Assistant (ViTA) in Medical Biophysics Graduate Education,](#) Clemson University

Clemson University is developing an AI virtual teaching assistant to support master's students in their medical biophysics program. The program is interdisciplinary and there is a challenge in providing timely, relevant

support to students enrolled in the program using traditional human teaching assistants only. This AI assistant aims to improve learning outcomes and support a wide variety of students through delivering personalized, context aware academic support within existing graduate curricula. The program is part of the Innovations in Graduate Education (IGE) program supported by the National Science Foundation (NSF).

2024 Educause Action Plan: AI Policies and Guidelines by Jenay Robert and Mark McCormack

The 2024 EDUCAUSE Action Plan: AI Policies and Guidelines, provides a framework to help ensure that institutional AI-related policies and guidelines comprehensively address critical aspects of institutional life and functioning.

European University Association Resources on Generative Artificial Intelligence

To enable the exchange of practices and exploration of use cases among EUA members, the Association has launched a work program focused on universities' experiences and approaches in addressing artificial intelligence. Activities carried out in 2024 and into 2025 will address practical and ethical questions around the integration of AI technologies in universities, as well as providing orientation on AI-related trends in higher education and research.

Massachusetts Institute of Technology, Enhancing Higher Education with Generative AI: A Responsible Approach

This Strategy Guide examines current and future use cases for the responsible use of generative AI in higher education, describing the benefits and best practices as well as potential pitfalls to avoid. It also explains how institutions of higher learning can get started and achieve measurable results now while building strong foundations for future success.

NORC at the University of Chicago, Artificial Intelligence in Graduate STEM Education

This project explores AI implementation in graduate STEM education in the United States. The project combines surveys of STEM PhD-awarding universities with insights gathered ata two day convening to suggest data-informed guidance on how to implement artificial intelligence in STEM graduate programs to promote student success, streamline administrative processes, and improve research outcomes.

University of Michigan, Generative Artificial Intelligence at the University of Michigan

The University of Michigan offers a suite of resources about generative AI for students, faculty, and other community members. These include custom AI tools, example use cases, guidelines for responsible use, and events.

University of Toronto, Toward an AI-ready University

The University of Toronto is an institution dedicated to the development of human potential. We recognize AI's transformative capabilities and associated risks for our institution and society which compels a thoughtful approach to this class of technologies.

Acknowledgments

Endnotes

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