AI Task Force

Teaching & Learning Working Group
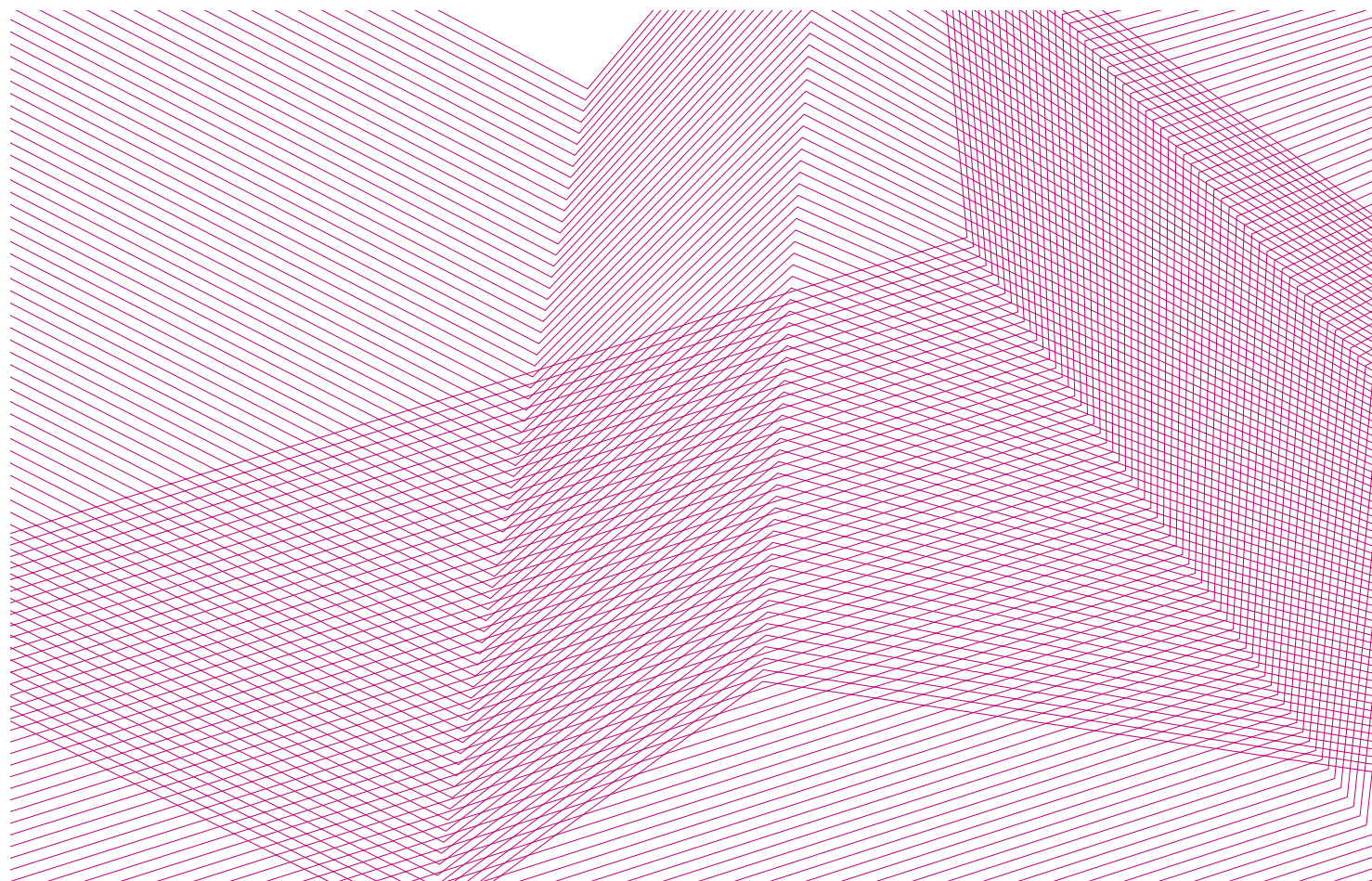
Report & Recommendations

Delivered June 2025

UNIVERSITY OF
TORONTO

DEFY
GRAVITY

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Executive summary

The Teaching & Learning Working Group was established to explore the impact of AI on teaching and learning practices, and faculty, staff, librarians, and undergraduate and graduate students involved in the educational mission of the University, and to make recommendations to support instructors, staff, and the University in responding to these new technologies.

In our work, we considered the current and potential impact of AI on what and how we teach, and what our students might want and need to learn in academic settings. This teaching and learning takes place in the classroom, through units that directly support courses and programs (such as writing and English language development centres), and outside formal academic settings, especially within graduate education. We aimed to identify broad approaches and principles that will remain relevant in this rapidly-evolving context.

To understand how the current and near-future AI landscape is shaping the teaching and learning experience, we engaged in consultation and research to identify both opportunities and concerns. We heard enthusiasm about the potential for AI to provide personalized learning, support instructors with course development, and support assessment. We also heard interest in helping students learn to use AI effectively and critically, and interest in scholarly inquiry about the impact of AI on teaching and learning. Concerns were also raised about: the potential impact of AI on learning and skill development; the quality and accuracy of AI output; information security, privacy, and intellectual property; and the ethics of AI use.

Our discussions also highlighted that many of the effective teaching practices currently in place will continue to be relevant in a world that includes AI. This includes active and experiential learning, practices that reflect the principles of Universal Design for Learning, and teaching that promotes social learning and builds community. Additionally, instructors' continued attention to equity and bias in course materials, and issues related to sustainability and other social and ethical concerns, are particularly important in an AI-enabled world. We recognize that instructors, as subject matter experts, are best positioned to determine when and how to incorporate AI tools into their existing teaching practices.

Drawing on principles for navigating AI in teaching and learning from the U15[1], as well as our understanding of U of T's teaching and learning values and priorities, the Working Group has developed recommendations for instructors, staff, and the institution that reflect our current landscape. These recommendations are intended to support instructors in leveraging opportunities to implement AI in their own context, and to mitigate risks where we feel we have identified effective strategies to do so.

Instructor use of AI tools in generating course and learning materials
We recommend that:

- Instructors who make substantive use of these tools acknowledge this in their syllabus or learning materials

- A course-specific interactive AI tool (e.g., a virtual tutor) only be used after appropriate testing and evaluation of the tool

- The University develop a testing protocol or checklist for instructors to assess the output of a given AI tool for accuracy and bias in areas related to their teaching

- Instructors encouraging or requiring the use of any AI tool provide information for students about the limitations of the tool and whether and how information submitted to the tool will be used for training or tool improvement

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1   "Navigating AI in Teaching and Learning: Values, Principles and Leading Practices - U15 Group of Canadian Research Universities." (2024, September). U15 Canada. https://u15.ca/publications/statements-releases/navigating-ai-in-teaching-and-learning-values-principles-and-leading-practices/.

Use of AI for formative feedback and summative assessment of student work
We recommend that:

- Any use of AI-generated feedback is transparent to students, and instructors provide a rationale to students for the use of AI-generated feedback

- Instructors ensure that AI-generated formative feedback adds value to the learning experience

- As a general principle, AI-generated grades should not be used to assign course marks

- Divisions consider allowing a small percentage of total course marks (e.g., 5%) to be determined using AI to facilitate frequent or fast feedback on and marking of submitted work. Where this is allowed, this approach, including the rationale for using AI-generated assessment, should be transparent to students. A human appeal process should be available to students who have concerns about AI-generated marks.

Developing AI literacy materials
We recommend that:

- The University develop AI literacy materials and approaches for students to help them identify when AI tools may benefit or harm their learning process, inform them of University-approved tools and current best practices, including for acknowledging and citing AI, and help them understand the strengths and limitations of AI tools

- AI literacy materials continue to be developed for faculty, staff, and librarians that support them in making decisions about AI use in their teaching and in communicating these decisions to students. Additionally, we recommend identifying mechanisms to share AI literacy materials developed by faculty, staff and librarians with colleagues.

Detecting and documenting unauthorized AI use
We recommend that:

- We recognize the challenges instructors face in assessing student work when unauthorized AI use is difficult to detect reliably and at scale during this liminal period. We expect new assessment methods and technologies to emerge. The institution should continue to identify feasible and sustainable approaches as they emerge for instructors to assess student learning and document potential academic offences.

Monitoring norms for teaching and learning environments
We recommend that:

- As AI tools and use cases evolve, the institution continue to monitor how they are used to support student learning and engagement in the university community, and where they hinder learning

These recommendations are limited to some degree by the moment in time when this report was written. There are many opportunities and concerns related to AI where we do not yet have a clear sense of how the technology might change teaching practice or learning goals. This includes both concrete concerns, such as how to identify and document unauthorized AI use in student assignments (if this continues to be a concern), as well as more existential questions about the future of human learning.

In these cases, we anticipate that instructors, individually and as members of programs and disciplines, will need to reflect on how AI might change what students need to learn, and more generally, teaching and learning in their field. Specifically:

We encourage all instructors and academic units to reflect on:

- The human skills that are critical in their field

- What kind of understanding of AI tools and output is relevant in their context

- Their implicit learning outcomes—that is, knowledge, skills, and values that are related to success in the course, but that are not explicitly referenced or addressed in course learning outcomes, instruction, or assessment information

- The ability of course assessments to provide meaningful checkpoints on student learning

Over time, we will see new pedagogies emerge—gradually and organically within each field—to respond to these changes. We offer recommended areas for reflection for instructors and programs to support consideration of how their field and teaching may evolve, and identify ways that U of T can support ongoing discipline-based and grassroots approaches to shaping new AI-informed pedagogies and supporting instructors through this evolution.

We recommend that the University support discipline-based and grassroots change by:

- Providing opportunities for faculty to pursue professional development or informal sharing of practices

- Offering student-facing materials that instructors can adapt for their own course and discipline

- Embedding reflection about the influence of AI on teaching within formal and informal cycles of program review and renewal

- Updating course descriptions and program outcomes as programs of study evolve to communicate to students and colleagues how courses and fields are responding to AI

- Continuing to support pedagogical research and innovation into the impact of AI-engaged teaching practices on learning

While beyond the scope of our report, we recognize the potential for AI to influence teaching and learning beyond courses and programs. Future explorations at the University might address ways in which AI can support or challenge student study and learning strategies and accessibility; the role of AI in learning analytics; and how AI might support academic advising and student exploration of academic pathways and opportunities.

Our hope is that the information in this report will contribute to teaching and learning environments that reflect evolving needs—by offering meaningful learning experiences, allowing for unique human perspectives and interactions, and by building skills and relationships that will support our students, instructors, and the physical and intellectual communities in which our teaching takes place.

Working group membership and approach

Membership

- **Professor Susan McCahan (Co-Chair)**
  Associate Vice-President & Vice-Provost, Digital Strategies; Vice-Provost, Innovations in Undergraduate Education; Provostial Advisor on Artificial Intelligence

- **Professor Karen Reid (Co-Chair)**
  Professor, Teaching Stream, Computer Science, Faculty of Arts & Science

- **Professor Don Boyes**
  Associate Dean, Teaching & Learning, Faculty of Arts & Science

- **Professor Alison Gibbs**
  Director, Centre for Teaching Support & Innovation

- **Clare Gilderdale**
  Director, Innovations in Undergraduate Education

- **Professor Vina Goghari**
  Vice-Dean, Research & Program Innovation, School of Graduate Studies

- **Laurie Harrison**
  Director, Digital Learning Innovation, Information Technology Services

- **Avi Hyman**
  Director, Academic, Research & Collaborative Technologies

- **Professor Karen McCrindle**
  Associate Dean, Teaching & Learning and Director, Centre for Teaching & Learning, University of Toronto Scarborough

- **Stephanie Orfano**
  Head, Scholarly Communications & Copyright Office, University of Toronto Libraries

- **Professor Laura Rosella**
  Professor, Dalla Lana School of Public Health and Laboratory Medicine & Pathobiology, Temerty Faculty of Medicine; Education Lead, Temerty Centre for Artificial Intelligence Research & Education in Medicine

Scope and objectives

The Teaching & Learning Working Group was established to explore the impact of AI on teaching and learning practices, and faculty, staff, librarians, and students involved in the educational mission of the University, and to make recommendations to support instructors, staff, and the University in responding to these new technologies.

In this period of rapid change, the Working Group has embraced the University's mission to provide a "transformative educational experience, equipping [students] with the knowledge, skills and competencies needed to navigate our rapidly changing world."[2] Additionally, aligned with the principles affirmed by the broader AI Task Force, the Working Group recognizes that the University is a fundamentally human-centred institution, and that AI should be integrated into our activities in ways that support people and their development and foster a healthy community dedicated to learning and discovery.

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2   *U of T's Mission.* (n.d.) University of Toronto. https://www.utoronto.ca/about-u-of-t/mission

Our focus is on what AI might mean for the future of what and how we teach, and what our students might want and need to learn in academic settings. This teaching and learning takes place in the classroom, through units that directly support courses and programs (such as writing and English language development centres), and outside formal academic settings, especially within graduate education. This report leaves the specifics of teaching practices to the centres for teaching and learning at U of T that offer, and will continue to develop, resources for instructors and units to help them implement AI in their classrooms, programs, and other teaching contexts, recognizing as well that these practices and norms are evolving quickly as the technology advances.

Principles

Aligned with the broader AI Task Force, our ultimate goal is to integrate AI into our activities—now and into the future—in ways that support individuals and communities. We have drawn on the principles provided by U15 Canada on Navigating AI in Teaching and Learning: Values, Principle and Leading Practices, and on our understanding of U of T's teaching and learning values and principles as they are currently practiced, to inform our discussions and recommendations.

The information and recommendations in this report are therefore intended to support a teaching and learning landscape at U of T that:

- Is student-centred

- Reflects the fact that teaching at U of T occurs in many different contexts—within and outside the classroom, across many different fields, and in graduate and undergraduate programs

- Offers transparency and consistency for students about expectations and norms for AI use

- Offers equitable and affordable access to AI tools and to the ability to use those tools effectively

- Ensures that students have an opportunity to meet explicit and implicit program learning outcomes

- Ensures that the assessment of student performance is human-centred

- Recognizes academic freedom as a core value

- Considers and respects instructor and student capacity in responding to change, and the impact of significant change on instructor and student well-being

- Reflects the importance of academic integrity to learning and scholarship

- Recognizes U of T's commitment to sustainability

Approach and outcomes

The Teaching & Learning Working Group met approximately monthly, beginning in May 2024 through January 2025. We began by collecting examples of current and potential uses of AI in teaching and learning at each stage of the course lifecycle, from course planning; through the development of course materials, course delivery, and student assessment; through review and revisions to a course. Across the course lifecycle, we identified three areas or themes in our use cases. **We used these themes to focus our subsequent discussions:**

1. AI's impact on core learning outcomes, and the assessment of these outcomes

2. AI's impact on classroom practices, community, and equity

3. AI's relationship to academic freedom, academic integrity, and intellectual property and copyright

Additionally, early in our work, we organized a half-day retreat for the Working Group during which we explored potential futures for university teaching and learning.

As our discussions continued, we recognized that while AI will in some cases pose fundamental challenges to conventional assumptions and approaches to teaching and learning, there are also many current practices that remain effective and important in an AI-influenced future. At the other end of the spectrum of change, we recognized that there are potentially substantial opportunities for AI to enhance teaching and improve student learning. There are also some areas where approaches remain as yet unclear in light of rapid changes in AI technology.

Many of the questions raised in our discussions will require reflection from individual instructors, as well as consideration at the departmental and/or disciplinary level, along with ongoing building of a shared understanding across the University. Our recommendations are organized to reflect a spectrum of change and possibility: identifying areas where our existing practices remain relevant, areas where immediate action is possible, and areas where we encourage instructors and others across the University to explore the impact of AI in their own disciplines and teaching contexts.

Where a recommendation is for the development of a new resource or process, the University's AI Task Force will identify avenues for implementation.

Teaching and learning in the age of AI

Gathering information and feedback about AI in university teaching and learning

In addition to discussions reflecting the experiences and interactions of Working Group members and reviews of internal and external policies and practices, consultations informed the Working Group's understanding of current opportunities and challenges for instructors, staff, and students. Specifically:

- We held two Town Halls in October and November to discuss emerging recommendations and AI support. Nearly 200 faculty, librarians, and staff attended each Town Hall, and offered excellent feedback about effective strategies and use cases, hopes and concerns, and requests for additional information and support. We heard many exciting examples of how AI is being used, or could be used, by both instructors and students, as well as concern and frustration about academic misconduct and about the potential impact of AI use on student learning.

- We connected with other groups of faculty, staff and administrators, departments and leadership groups (e.g., PDAD&C), both to receive feedback for the Working Group and to share information about AI literacy

- The 2024–25 Vice-Provost, Innovations in Undergraduate Education (VPIUE) Student Advisory Committee was dedicated to an exploration of AI issues with students. This provided us with an excellent opportunity to gather feedback from a small group of highly-engaged students about their motivations, hopes, and concerns related to AI, about the impact of AI on their learning in university and in their future professional and personal lives.

- We drew on information from two surveys: a Pulse survey of AI use in administrative work led by the People Strategy & Administration Working Group that was distributed to U of T faculty, staff, and librarians,[3] and the Student Experience in the Research University (SERU—Undergraduate), which included questions about student use of AI

- We connected, formally and informally, with teaching and learning offices and groups across the institution to gather information about questions they are receiving from faculty and staff, about resources and programming developed to support faculty and staff in teaching with AI, and about examples of effective practice they have encountered. This included participation in bi-weekly meetings of the Centre for Teaching Support & Innovation (CTSI)'s Generative AI in Teaching & Learning group.

- The Working Group collected, shared, and reviewed research and reports about AI in university teaching and learning and related contexts, and about AI activities at other institutions. Indeed, much of the discussion about the impact of AI on universities has focused on its impact on teaching and learning—almost certainly because AI has already demonstrated that it poses significant risks to student learning and challenges to common teaching approaches, and also because it has the potential to open up new possibilities in teaching and to contribute to student learning and accessibility. Of particular relevance to our context is the guidance provided by U15 Canada on Navigating AI in Teaching and Learning: Values, Principles and Leading Practices,[4] and a range of additional research and reports are included in Appendix A.

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3   University of Toronto AI Task Force. (2024, December 17). *AI Task Force survey.* https://utoronto.sharepoint.com/sites/dvpp-ai/SitePages/AI-Task-Force-survey--AI-use-in-administrative-work-by-U-of-T-staff,-faculty-and-librarians.aspx

4   "Navigating AI in Teaching and Learning: Values, Principles and Leading Practices - U15 Group of Canadian Research Universities." (2024, September). U15 Canada. https://u15.ca/publications/statements-releases/navigating-ai-in-teaching-and-learning-values-principles-and-leading-practices/.

Risks and concerns

Impact on learning and skill development

The potential impact of AI (and large language models, or LLMs, in particular) on learning and s kill development was the biggest concern that we heard in our consultations. The concern is that, in turning to AI to complete tasks that they find difficult, tedious, or frustrating, students might not have an opportunity to develop foundational skills or understanding, or to engage in independent thought and analysis.[5] These concerns are also reflected in widespread concern about AI and academic integrity, as they reflect discomfort with AI's role in allowing students to produce work that they did not develop independently.

We have identified two potential strategies to address this concern, while recognizing these are not solutions and that, currently, solutions do not exist.

The first is the need to help students develop enough understanding of AI to develop critical AI literacy, allowing them to use AI in a sensible, controlled, and thoughtful fashion. This includes helping students understand the capabilities and limitations of AI, both generally and as it applies to their areas of study; helping students assess the impact of AI use on their learning so that they can make appropriate decisions about when and how to use AI in their academic work, paying particular attention to how that use conforms with an instructor's directions; and understanding some of the broader social and ethical considerations related to AI use, so that they can use AI in ways that align with personal or community values. Such critical AI literacy, however, is challenged by a predicament: this literacy may be particularly challenging to develop before students have enough expertise in a given field to allow them to discern the quality of AI output or the relevance of particular learning tasks.

The second strategy is the need to rethink our assessment practices. In his article "The homework apocalypse," Ethan Mollick describes the tension between the ways that instructors might use assessment to help students develop and demonstrate learning, and the capabilities of LLMs like ChatGPT or Microsoft Copilot.[6] Mollick notes that current LLMs can produce essays and problem set solutions that emulate much undergraduate-level work (and projected to soon emulate graduate-level work). Additionally, LLMs can summarize and provide analyses of texts.

Very quickly, it has become nearly impossible to assign a reading, essay, or problem set and discern whether that work has been completed independently by the student, or with some level of input from an AI system. Consequently, assigning these tasks no longer offers a reliable assurance (if it ever did) that a student has meaningfully engaged with course material, requiring us to consider new approaches to independent work and assessment.

It is worth noting that prior to November 2022 (when ChatGPT became widely available), any "homework" completed outside of a supervised environment such as an exam setting had the same issue; the student may have received an unreasonable level of assistance from a friend or tutor. Instructors have taken this into account in assessment planning going back to the beginning of the university. However, the difference in capability (e.g., near instantaneous high quality machine translation), availability, and flexibility (i.e., the same tool can assist in many different fields of knowledge) of AI systems makes the degree of challenge substantially greater.

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5   See, for example, Gerlich, Michael. 2025. "AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking." Societies 15(1): 6. doi:10.3390/soc15010006.

6   Mollick, Ethan. 2023. "The Homework Apocalypse." https://www.oneusefulthing.org/p/the-homework-apocalypse (January 30, 2025).

Additional risks and concerns

Beyond the concern that AI might lead students to skip important steps of the learning process, in our conversations with students and instructors and in the broader academic community, we have also noted significant concerns or risks associated with:

- Unintentional disclosure or inappropriate sharing of personal information, intellectual property, and copyrighted materials. This may become even more of a challenge as we move towards a model where AI capabilities are embedded, sometimes invisibly, in existing systems and software. For example:
    - Students might use AI tools that record, transcribe, and synthesize lectures and digest other course materials (e.g., instructor course notes or library texts) to develop notes or other study tools. This information may subsequently be used to train future AI models or otherwise be shared with developers.

- Instructors or TAs might share student work or information in an AI tool (e.g., to generate formative feedback or synthesize information)

- Recognizing that generative AI can generate "hallucinations"[7] and may also generate results that reflect bias in its underlying models, there is the risk that the output of AI may offer information that is inaccurate or biased. For example:
    - A student-facing chatbot may provide inaccurate details about assignment due dates or requirements
    - Course materials generated by AI may include content that incorporates discredited or out-of-date research, examples, or vocabulary, or that reproduces biases from the training data (e.g., by suggesting case study examples with highly normative gender roles)
    - AI used to support assessment of student work may favour or disfavour particular approaches to, or styles of, writing or problem-solving in ways that do not reflect an instructor's learning outcomes, or that reflect cultural or language biases[8]

- Unequal access to AI tools, or uneven comfort levels with using AI, may disproportionately affect some groups of students and faculty

- An overabundance of low-quality AI output[9] could overwhelm instructors and students

- The recognition that AI continues to evolve rapidly, often faster than our course design or governance cycles, limiting instructors' ability to plan their teaching to reflect current AI capabilities. We also heard concern from instructors who struggled to keep pace with their students' proficiency with AI.

- More broadly, we heard many concerns about the ethics of AI use in general, including:
    - The environmental impact of AI use
    - Which voices are centred or absent in discussions about AI use
    - The (often unlicensed) use of copyrighted material to train AI models
    - The potential impact of AI on work and on society more broadly

Such broader ethical issues intersect with teaching and learning in important ways, and are also taken up by several other Working Groups within the AI Task Force.

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7   Hammond, Kristian. 2024. "The Hallucination Problem: A Feature, Not a Bug." https://casmi.northwestern.edu/news/articles/2024/the-hallucination-problem-a-feature-not-a-bug.html (January 30, 2025).

8   Hirsch, Amanda. 2024. "The Digital Red Pen: Efficiency, Ethics, and AI-Assisted Grading - Center for Innovative Teaching and Learning." https://citl.news.niu.edu/2024/10/29/the-digital-red-pen-efficiency-ethics-and-ai-assisted-grading/ (January 30, 2025).

9   Hoffman, B. (2024, June 11). Is Slop A.I.'s Answer to Spam? A Phrase Emerges for Bad Search. *The New York Times.* https://www.nytimes.com/2024/06/11/style/ai-search-slop.html

Opportunities and aspirations

Alongside these concerns, we also heard much enthusiasm about:

- The ability of AI tools to provide interactive, personalized, and adaptive learning support, through AI-supported self-testing, practice, tutoring, or interaction with course materials

- The opportunity for instructors to develop innovative and complex course materials, including case studies or interactive scenarios[10]

- Using AI to offer students additional formative feedback, aligned with course and assignment learning goals

- The opportunity to help students develop skills to use AI effectively, critically, and responsibly within the context of the course or discipline, supporting their future work and study

- Opportunities for scholarly inquiry and pedagogical research about the impact of AI in teaching and learning

- As our level of sophistication in using institutional and student data safely and effectively grows, we also envision a world where AI is able to help instructors and staff understand student needs and learning, and to help students gain more insight into their own learning process

For examples of some of these opportunities in action, please see CTSI's "U of T Teaching Examples" describing AI-integrated assessments and learning activities.[11]

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10 For examples, see Mollick, E. R., & Mollick, L. (2023). *Using AI to Implement Effective Teaching Strategies in Classrooms: Five Strategies, Including Prompts*. Social Science Research Network. https://doi.org/10.2139/ssrn.4391243

11 U of T Teaching Examples. (n.d.). *University of Toronto Centre for Teaching Support & Innovation*. https://teaching.utoronto.ca/teaching-uoft-genai/at-u-of-t/

Opportunities and risks: Virtual tutors

A use case

Virtual tutors present a helpful illustration of the opportunities and risks of AI use in teaching.

Virtual tutors are chatbots that allow students to ask questions about course material. Most virtual tutors are currently designed to respond by helping students work through a concept or problem rather than providing an answer directly.[12]

Many educators are enthusiastic about the potential for virtual tutors to provide on-demand practice and personalized explanations. For students, virtual tutors are available without waiting for office hours, and without any concern about how a TA or instructor might respond to questions or repeated requests for assistance. Tutors may allow instructors and TAs to redeploy their time to students with complex needs or who are interested in exploring a subject more deeply.[13]

However, alongside these benefits, there are a range of potential risks—some of which might be relatively easy to mitigate, while other risks might remain theoretical until we have more experience with such tools. Risks include:

- Missing an opportunity to stretch a student's learning. Conceptual explanations that do not fully meet the student at their current level of understanding miss an opportunity to stretch the student's knowledge and learning skills (i.e., ensuring the learning is in the "Zone of Proximal Development" for the student[14]). Providing information that is either too complex or oversimplified results in suboptimal learning of both the subject material and the development of learning skills. In the latter case, our concern is that students will miss learning opportunities, or become overconfident in their understanding without recognizing additional complexity and nuance, leading, potentially, to failure on a summative assessment such as an exam.

- It is well known that struggling through developing competency in a subject, even if only somewhat successful, improves a learner's ability to tackle subsequent learning challenges.[15] This is one of the ironies of learning—making it too easy to learn a subject or skill and skipping important steps of skill development may reduce the retention of the learning, and may make learning subsequent subjects more difficult. Additionally, by accelerating through the learning process, students have fewer opportunities to reflect on and make connections with subject matter.

- Similarly, we might expect the potential loss of the "tutoring effect," which improves the explainer's understanding of a subject when they tutor another person, and fewer opportunities for students to build learning communities through study groups and discussion forums

- Missed opportunities to develop the planning and help-seeking skills needed to seek in-person support. This includes planning ahead to ensure that there is sufficient time to seek support if needed, and the ability to communicate needs without the opportunities for repeated iteration offered by AI. This need to plan ahead, because help will not be available in the moment, also reduces the inclination to cram the night before a test or assignment.

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12 See Lilach Mollick and Ethan Mollick's "Tutor Blueprint" prompts for an illustration of interaction between a student and a virtual tutor: *Instructor Prompts*. (2024). More Useful Things: AI Resources. https://www.moreusefulthings.com/instructor-prompts

13 For example, see Chan, S., Lo, N., & Wong, A. (2025). Leveraging generative AI for enhancing university-level English writing: Comparative insights on automated feedback and student engagement. *Cogent Education*, 12(1), 2440182. https://doi.org/10.1080/2331186X.2024.2440182 and Gates Foundation. (2024, July 9). *This Newark school is already using AI*. https://www.gatesnotes.com/work/provide-quality-education/reader/my-trip-to-the-frontier-of-ai-education

14 *Zone of Proximal Development—An overview*. (2010). Science Direct Topics. https://www.sciencedirect.com/topics/psychology/zone-of-proximal-development

15 For example, see Lovett, M. (2023). *How learning works: Eight research-based principles for smart teaching* (Second edition). John Wiley & Sons, Inc.; Pink, D. H. (2011). *Drive: The surprising truth about what motivates us*. Riverhead.; and Diemand-Yauman, C., Oppenheimer, D. M., & Vaughan, E. B. (2011). Fortune favors the bold (and the Italicized): Effects of disfluency on educational outcomes. *Cognition*, 118(1), 111–115. https://doi.org/10.1016/j.cognition.2010.09.012.

- Missed opportunity to learn to communicate across difference. When a student needs to think about how to frame their question for a TA or instructor, who may be coming from a different culture, the student is learning to communicate across difference (as is the TA and the instructor in formulating their response)

- Missed opportunity to build a relationship with instructors and TAs who can offer motivation and inspiration through personal stories and connections that attach affective meaning-making to the content. These relationships may also be valuable for life and career development (e.g., a reference for graduate school or future research opportunity).

- The potential for the tool to provide inaccurate, antiquated, or biased information

- Inappropriate or incomplete referral information to concerning prompts (e.g., in response to statements indicating that a student is considering harming themselves or others)

These assumptions about the impact of AI-enabled virtual tutors is an extrapolation of what we know about effective teaching and learning in other contexts and not based on the assessment of virtual tutors per se. Nonetheless, these examples highlight that a course experience is about more than just learning the content; the meta-skills and human relationships that are fostered through the experience are also critical.[16]

Such an exploration of the effects on learning—both positive and negative—helps determine whether to encourage the use of such a tool, and can help instructors make decisions about whether and how to use AI in their teaching. The assessment of value will depend on many factors (e.g., class size, class level, learning outcomes, etc.) and there is no single approach that is likely to be the best choice in all cases.

Exploring the full range of opportunities and risks associated with an AI tool or approach can also help us describe what would make for, in this case, an effective virtual tutor. This understanding helps us articulate, for example, areas where human interaction between a tutor or instructor and student can be particularly valuable, what skills students need in order to be able to engage with a virtual or human tutor effectively, and the steps in the learning process we do not want to bypass through virtual support.

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16   For example, see Felten, P. (with Lambert, L. M.). (2020). *Relationship-rich education: How human connections drive success in college.* Johns Hopkins University Press.

Responding to the current landscape

What AI does not change

For many instructors, the popular emergence of GenAI in late 2022 could not have come at a worse time. Many instructors had, over the preceding years, first completely retooled their courses to meet the different needs of an online classroom, and then redesigned them once more to reflect changes in technology and student experience from the pandemic and to accommodate ongoing health, social, and personal challenges in instructor and student lives. GenAI then arrived, representing a new technology that, we all came to realize, would require yet another rethinking of courses and assessment. Many of the strategies adopted during the pandemic—including shifting some in-person work to unsupervised assessments and more deeply integrating technology into coursework and class time—were particularly vulnerable to the challenges raised by AI.

At the same time, the increased digital proficiency of both faculty and students due to the pandemic has had a lasting effect—both in expanded familiarity with educational technology, and in the increased prominence of teaching and learning centres as "go-to" hubs for support on educational technology, including AI. In addition, AI is only the latest in a string of technological changes that have had a substantial impact on teaching practices (e.g., the introduction of the internet and the proliferation of portable computing devices being prime examples). The speed at which AI has emerged and is evolving, however, is part of what makes this change particularly challenging.

We describe this context because we want to recognize the challenges faced by instructors in the current environment, but also because in our discussions about AI, a recurring theme has been how many of the foundational perspectives and approaches that have informed teaching and course and assignment design prior to AI remain relevant. We therefore begin with some observations about aspects of effective teaching that instructors carry with them into a teaching environment reshaped by AI.

Academic freedom and instructor responsibility

- In this context, the Working Group affirms the role of academic freedom, as described in Article 5 of the Memorandum of Agreement between U of T and UTFA,[17] in instructors' decisions about AI use in their classrooms and teaching. As subject matter experts, instructors are best positioned to determine when and how to use AI tools and AI-generated content for the delivery of course content and in structuring classroom and learning activities. In making such decisions, instructors are responsible for protecting student and institutional intellectual property by following appropriate data governance and information security guidelines, and for observing institutional and divisional guidelines related to grading.

- While instructors may choose to use AI to support course development, when generating course materials (e.g., handouts, lecture notes, assignment instructions, etc.) instructors remain solely responsible for the content and teaching materials distributed to the class

Course materials and assignment design

- While AI may require instructors to reimagine elements of their teaching, existing effective practices, including active and experiential learning and practices that reflect the principles of Universal Design for Learning, remain relevant and effective

- We encourage instructors to consider integrating assignments and other course activities that promote social learning and build community, whether through peer collaboration/communities of practice, or through other ways to connect students to each other and to instructors and TAs, building human-centred skills by providing opportunities for students to articulate their ideas, consider different perspectives, develop collaborative problem-solving skills, and communicate complex or challenging ideas

17 "Memorandum of Agreement | University of Toronto Faculty Association." https://www.utfa.org/content/memorandum-agreement (January 30, 2025).

Bias and ethical considerations

- Instructors have always considered and addressed, in their teaching and course design, issues related to equity and bias in course materials, and issues related to sustainability and other social and ethical concerns. These considerations are particularly important in an AI-enabled world.

Recommendations—Responding to the current landscape

The Working Group also recognized some areas where, even at this early stage of a new technology, new practices may support instructors, staff, and students in realizing the opportunities presented by AI while minimizing or mitigating risks and challenges. These recommendations may need to be revisited as this technology and associated norms and practices evolve.

Instructor use of AI tools in generating course and learning materials
We recommend that:

- **Instructors who make substantive use of these tools acknowledge this in their syllabus or learning materials**, similar to how they would acknowledge materials borrowed or adapted from a colleague. This serves as a model for students regarding the expected use of AI tools.[18]

- **A course-specific interactive AI tool (e.g., a virtual tutor) only be used after appropriate testing and evaluation of the tool**. Instructors are responsible for ensuring that such systems are providing high-quality assistance on course content. Therefore, we recommend that:
  - **The University develop a testing protocol or checklist for instructors to assess the output of a given AI tool for accuracy and bias in areas related to their teaching**. In addition to pedagogical, functional, and financial considerations when considering a potential AI tool for instructor and student use, the University should also assess the tool's data security and privacy, and the tool's response to potentially harmful or disturbing prompts or student input.
  - **Instructors encouraging or requiring the use of any AI tool provide information for students about the limitations of the tool and whether and how information submitted to the tool will be used for training or tool improvement**. In particular, innovative and experimental use of any new technology or approach in the classroom implies some risk that instructors will need to consider and mitigate as part of their initiatives. If the tool is experimental, this should be made clear to students.

Use of AI for formative feedback and summative assessment of student work
We recommend that:

- **Any use of AI-generated feedback is transparent to students, and instructors provide a rationale to students for the use of AI-generated feedback**. Consultations we ran with students indicate that, at this moment in time, many are skeptical of both AI-generated feedback and AI-generated course materials.[19]

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18   This text currently appears in the VPIUE FAQ on Generative Artificial Intelligence in the Classroom: "As an instructor, can I use generative AI to generate content for my courses?": "Generative Artificial Intelligence in the Classroom: FAQ's—Office of the Vice-Provost, Innovations in Undergraduate Education." https://www.viceprovostundergrad.utoronto.ca/16072-2/teaching-initiatives/generative-artificial-intelligence/ (January 30, 2025).
Following a similar principle, graduate supervisors should also share any practices where they use AI tools in the supervision of students.

19   This skepticism was largely expressed as a sense that the AI-generated material and feedback were less "authentic," demonstrated a lack of caring on the part of the instructor, and/or could be used to assess everything a student does in a course (e.g., discussion board posts, reading engagement, time spent on course work, etc.). Making everything a student does in a course part of the assessment suggests a vision of a micromanaged "big-brother" learning environment that the instructor deploys in kind of an auto-pilot mode. This is obviously unappealing and reasonably viewed as dehumanizing. However, students expressed appreciation for AI tutoring systems, which are not tied to assessment directly.

- **Instructors ensure that AI-generated formative feedback adds value to the learning experience**. Instructors are responsible for structuring and reviewing the feedback provided to ensure that it follows effective practices for high-quality formative feedback by providing feedback that is timely, constructive, and appropriate in volume.

- **As a general principle, AI-generated grades should not be used to assign course marks**. Similar to the approach required for peer feedback, AI-generated grades may inform the assessment of student work, but must be interpreted by an expert human grader in determining assignment of course marks. We recommend that divisions develop and adopt grading guidelines to clarify this expectation in alignment with the *University Asssessment and Grading Practices Policy*,[20] preferably collaboratively so there is consistency across divisions.

- **Divisions consider allowing a small percentage of total course marks (e.g., 5%) to be determined using AI to facilitate frequent or fast feedback on and marking of submitted work.** Where this is allowed, this approach, including the rationale for using AI-generated assessment, should be transparent to students. A human appeal process—typically, the normal academic appeal process—should be available to students who have concerns about AI-generated marks.[21]

Developing AI literacy materials
We recommend that:

- **The University develop AI literacy materials and approaches for students to help them identify when AI tools may benefit or harm their learning process, inform them of University-approved tools and current best practices, including for acknowledging and citing AI, and help them understand the strengths and limitations of AI tools.**

  Such materials could include institutionally developed AI literacy modules that instructors can adapt and incorporate into their courses or make available to students, and/or additional commentary in a syllabus or assignment instructions describing expectations for AI use.[22]

  Improving student AI literacy has the dual goal of reducing inappropriate use of AI for coursework, and supporting students who have less confidence in or familiarity with the university environment.

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20 *University Assessment and Grading Practices Policy* (UAGPP). (2020, January 1). University of Toronto. https://governingcouncil.utoronto.ca/secretariat/policies/grading-practices-policy-university-assessment-and-january-1-2020
   Note in particular that the UAGPP requires that: "Appropriately qualified faculty members are responsible for the final evaluation of all assessments and grades for academic credit at both the undergraduate and graduate level" and that "student performance is evaluated in a manner that is fair, accurate, consistent, and objective and in compliance with these academic standards." The GPP also notes that grades "are an indication of the student's command of the content of the components of the academic program. In assessing student performance and translating that assessment into grades, the University's standards and practices should be comparable to those of our academic peers."

21 Note that this recommendation does not preclude using AI for formative feedback on a larger range of course assignments.

22 In the context of graduate education, supervisors and students should transparently discuss use of AI to establish norms of use in their disciplinary or program context. SGS's Guidance on the Appropriate Use of Generative Artificial Intelligence in Graduate Theses follows basic principles of supervisory practices requiring that "Students who plan to use generative AI tools in researching or writing their graduate thesis must always seek and document in writing unambiguous approval for the planned uses in advance from their supervisor(s) and supervisory committee." In particular, graduate supervisors should clarify expectations for AI use in peer review within their discipline (including peer review as a learning tool within their program, and as a professional activity), especially given limitations on AI use in peer review by publishers and funding agencies.

- **That AI literacy materials continue to be developed for faculty, staff, and librarians that support them in making decisions about AI use in their teaching and in communicating these decisions to students. Additionally, we recommend identifying mechanisms to share AI literacy materials developed by faculty, staff, and librarians with colleagues.**

  Teaching and learning centres at U of T and other offices across the University, have developed and are developing workshops, syllabus statements, and other resources to guide instructors in decision-making and communication about AI use in their teaching.[23] These resources will require ongoing development as norms, use, and technology evolves. It will require sustained effort to keep up with the changes in the technology.

Detecting and documenting unauthorized AI use
We recommend that:

- **We recognize the challenges instructors face in assessing student work when unauthorized AI use is difficult to detect reliably and at scale during this liminal period. We expect new assessment methods and technologies to emerge. The institution should continue to identify feasible and sustainable approaches as they emerge for instructors to assess student learning and document potential academic offenses.**

  While the University does not support the use of AI-detection software programs on student work,[24] the Working Group recognizes the challenges instructors have encountered in documenting and pursuing suspected academic offense cases; i.e., the use of AI to complete assignments when the instructor has prohibited its use.[25] It is unlikely that AI-detection will ever be reliable in the context of an assignment in a course. Approaches available to instructors, such as student interviews or short supervised assessments, may be impractical in large courses and some disciplinary contexts.

  The Working Group was not able to identify any immediate, feasible solutions that would fully address this challenge, but we recognize that this is an important area for ongoing work. We also expect that norms will change quickly (e.g., the expectation that instructors and students work with AI may become the norm), and that changes in assessment methods that reflect the influence of AI will shape how we think about and manage academic integrity—which may in turn point to new approaches to addressing this challenge.

Monitoring norms for teaching and learning environments
We recommend that:

- **As AI tools and use cases evolve, the institution continue to monitor how they are used to support student learning and engagement in the University community, and where they hinder learning.**

  As AI capabilities evolve, norms and expectations in teaching and learning environments will also evolve. Live, in-person, or virtual presence and engagement in teaching and learning activities might likewise shift. For example, instructors may invoke AI tools to aid in the development and delivery of lectures, and similarly, students may bring AI assistants to class to summarize content, assist language learners in following the lecture, or even engage in class activities on their behalf.

  The University should continue to monitor and respond to these changes on an ongoing basis after the conclusion of this Working Group.

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23   See resources listed in Appendix B.

24   "Generative Artificial Intelligence in the Classroom: FAQ's – Office of the Vice-Provost, Innovations in Undergraduate Education: How can I tell if a student used a generative AI system on my assignment? Can I or should I use one of the new AI-detection programs?" https://www.viceprovostundergrad.utoronto.ca/16072-2/teaching-initiatives/generative-artificial-intelligence/

25   The University characterizes this as use of an unauthorized aid.

The future landscape of teaching and learning: Instructor- and discipline-led change

In spite of the in-depth consideration of the potential impact of AI that we encountered in our consultations and investigations, there is a great deal of uncertainty about what the next decade of university teaching and learning might look like, and how AI might shape students' goals for learning and instructors' approaches to teaching as the technology and its use cases mature. **We believe some features of this landscape will include:**

- A greater focus on human-centred skills across many disciplines

- An emphasis on conducting scholarly work that reflects the unique perspective, expertise, and experiences of its author
  - Similarly, an enhanced focus on how meaning and value (e.g., of a text or idea) is established through context, perspective, and relationship, a direction we discussed in our consultation with faculty and staff in the Centre for Indigenous Studies

- Critical information and AI literacy, with the ability to evaluate AI models and output for accuracy and bias, and to determine which elements of AI output to retain and which to discard

- Deeper data literacy, with students incorporating the use and analysis of structured and unstructured data in their academic work (as we already see in new Faculty of Arts & Science undergraduate courses that combine Data Science with English, Biology, and Geography[26]). Data literacy also includes a critical assessment of how data is collected, managed, and governed, and of the impact of those processes on the analysis of that data. In particular, as we heard in consultation with faculty and staff in the Centre for Indigenous Studies, principles of Indigenous data sovereignty and governance offer frameworks that protect and guide the use of data from and about Indigenous communities.

- The potential for AI to accelerate learning of foundational skills and introductory content, leading to an accelerated curriculum

- Higher skills expectations for entry-level jobs as AI replaces some entry-level tasks, which may require rethinking program learning outcomes

- Changes to assessment approaches to ensure that students have both achieved key skills and understanding independently, and that they can demonstrate uniquely human skills beyond what AI can produce or emulate

- Higher expectations for student work when produced in collaboration with AI

- Greater personalization of learning, supported by the teaching team

- An even greater focus on the use of class time for interaction and community-building

- AI support for administrative work associated with teaching, allowing more time for instructor-student interaction and assessment of student learning

Given these likely changes, we can anticipate some of the ways we might ultimately need to rethink learning outcomes in our courses and programs, as well as in units that directly support courses and programs, such as writing and English language development centres. For example:

- How do we explain learning outcomes and goals to students—and in particular, why we want them to complete tasks (including especially foundational skills) that could be completed by an LLM or other AI tool?

- How do we maintain and demonstrate the value of human interaction and human perspectives when AI interaction is available and potentially easier or more comfortable for students to access?

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26   See Applied Data Science Minor among other Data Science Offerings in the Academic Calendar: "Data Science | Academic Calendar." https://artsci.calendar.utoronto.ca/section/Data-Science (January 30, 2025).

- How do we identify and articulate the implicit learning outcomes in our teaching practices—outcomes like learning how to ask for help or clarification, working through multiple revisions, developing skills through practice, making a plan to get needed information or resources, identifying key ideas within a complex topic, and learning to communicate with instructors and peers who have a different perspective?

- How do we provide students with an opportunity to build understanding over time and potentially in collaboration with others (or even with AI systems), while ensuring that course assessments reflect their individual understanding and skills?

One approach to responding to this future landscape will likely be through rethinking our learning outcomes. This rethinking will help instructors, individually and as members of programs and disciplines, to reflect on the implications of these changes across teaching contexts.

Recommendations—Reflecting on learning outcomes

We encourage all instructors and academic units to reflect on:

- **The human skills that are critical in their field** to ensure these are emphasized in course learning outcomes, alongside other learning outcomes that support foundational learning and skills. Human-centred skills could include skills that rely on interpersonal intelligence and interaction, as well as skills used to create information or make decisions that should be human-led.

- **What kind of understanding of AI tools and output is relevant in their context**, and incorporate relevant learning outcomes related to AI literacy within their courses. In particular, instructors across a wide range of fields, including areas with minimal explicit engagement with issues of ethics and bias might find it important to incorporate learning outcomes related to identifying and responding to algorithmic bias. Academic units should follow a similar practice when updating program learning outcomes.

- **Their implicit learning outcomes—that is, knowledge, skills, and values that are related to success in the course, but that are not explicitly referenced or addressed in course learning outcomes, instruction, or assessment information**—may need more attention when AI tools can perform some of the assessment tasks. For example, instructors may wish to address or assess such outcomes explicitly in course materials or assignment plans

- **The ability of course assessments to provide meaningful checkpoints on student learning**. Unsupervised work (e.g., an essay or problem set) allows students to develop important skills, to spend the time necessary to grapple with complex concepts, and to practice and expand on what they learn in the classroom. Students who use AI to complete unsupervised work may develop a false sense of proficiency, and will receive feedback on the work that has no bearing on their actual competency. This could lead to poor performance when students are asked to demonstrate their learning in supervised assessments.[27]

Each instructor might approach these questions differently. However, we emphasize that, regardless of an instructor's perspective on AI, and regardless of the degree to which an instructor explicitly engages with AI in course development, course content, or assignments and assessments, instructors have a responsibility to understand and consider how students may use AI tools. This will help ensure that learning outcomes are maintained and that course activities and assignments remain meaningful.

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27 We note that forms of assessment in graduate education often involve "thinking out loud," such as the oral components of comprehensive examinations and the final oral exam. Graduate students also "think out loud" during the presentation of work at conferences, as well as informally in team meetings or within classes/seminars. If students use AI without critical appraisal and skill development, they may have difficulty when assessed, formally or informally, in such contexts.

Recommendations—Supporting instructor- and discipline-led change

In addition to new learning goals, we also expect to see new pedagogies emerge responding to the influence of AI. We expect these new approaches to teaching and assessment to develop gradually and organically within each field. This early stage of pedagogical development presents challenges as we may struggle to respond to the changes AI might demand of our teaching and assessment. However, we recognize that this moment is temporary.

Our colleagues are participating in a wide variety of pedagogical initiatives within disciplinary societies, communities of practice, and research groups across many institutions. To encourage this ongoing practice, **we recommend that:**

The University supports such discipline-based and grassroots efforts—for example, by providing opportunities for faculty to pursue professional development or informal sharing of practices.

Additionally, we recommend that the University:

- **Offer student-facing materials that instructors can adapt for their own course and discipline** (such as those being developed in a new GenAI Literacy Course Modules project aiming to provide customizable content[28])

- **Embed reflection about the influence of AI on teaching within formal and informal cycles of program review and renewal**

- **Update course descriptions and program outcomes as programs of study evolve to communicate to students and colleagues how courses and fields are responding to AI**

- **Continue to support pedagogical research and innovation into the impact of AI-engaged teaching practices on learning**

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28 *Gen AI Literacy Course Modules—Open UToronto*. (2025, January 24). https://ocw.utoronto.ca/innovation-projects/genai-literacy-course-modules/

Beyond the course and classroom

While outside the scope of the Working Group, we recognize that there is a need to explore and discuss the potential impact of AI on teaching and learning beyond courses and programs, and to collaborate with colleagues across the institution to provide holistic and consistent support for students and instructors. This includes:

- The work initiated by the Student Services Working Group to explore how AI might support or challenge student study and learning strategies and accessibility

- An exploration of how we might leverage AI to develop more sophisticated learning analytics, while respecting student privacy and autonomy

- How AI might support academic advising and student exploration of academic pathways and opportunities

Conclusion and next steps for teaching and learning with AI

The conversations and reflections of this Working Group have greatly deepened our own understanding of how AI might shape teaching in the years to come. We are grateful to all those who contributed to these discussions through formal and informal consultations.

It is clear that we still have much to learn, and to discuss as a community, about the impact of AI on teaching and learning, and about how we might support instructors, staff, and students as we explore implementation of the recommendations, emerging issues, and areas for reflection outlined in this report.

We would like to highlight the perspectives and approaches that we feel will be particularly important in the short term:

- We recognize that there is a wide range of comfort and interest in engaging with AI, and that while there are many members of our community who are enthusiastic about approaches and opportunities in teaching afforded by AI, there are likewise many who have significant concerns about the technology and its impact on students, the University, and the environment and society more broadly

- With so much experimentation taking place in different disciplines and teaching contexts, collecting and sharing examples of effective practice will be essential to identifying promising approaches

- The impact of AI is being felt unevenly across different disciplines and teaching contexts, and institutional responses must reflect the different levels of demands and urgency that faculty and staff might experience

- It will be helpful to explore opportunities to engage at the campus, divisional, and departmental levels to identify approaches that reflect disciplinary differences and local priorities

- We need to ensure that teaching and learning centres have the resources needed to stay up to date as AI progresses and to continue their active support of instructors and students

- It will be important for UTL librarians and staff to continue providing valuable services to students and faculty related to AI explainability, the critical analysis of LLM outputs (information literacy skills), prompt engineering, copyright questions, and the ethical use of generative AI tools in information-seeking and information generation

Additionally, our discussions with other Working Groups have identified many areas of shared priorities and efforts, including developing AI literacy resources and exploring priorities related to AI tools and data security.

Appendices

Appendix A: Research and reports on AI in university teaching and learning and related contexts

This Appendix offers reports and other resources that offer a broad perspective on questions or research related to AI in teaching and learning, potentially helpful as a starting point for those interested in learning more about AI in teaching and learning.

AI-PowerED: Will AI Change Post-Secondary Teaching and Learning? (Issue Briefing). (2024). Conference Board of Canada. https://fsc-ccf.ca/research/ai-powered-will-ai-change-postsecondary-teaching-and-learning/

Ethan Mollick, a professor at the Wharton School at the University of Pennsylvania, has been a leading contributor to discussions about the impact of AI on teaching and learning. This includes the book *Co-Intelligence: Living and Working with AI*, his newsletter, *One Useful Thing*, and, with Lilach Mollick, a library of prompts for instructors interested in using AI in their teaching.

Miao, Fengchun. (2023). *Guidance for Generative AI in Education and Research*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000386693

Navigating AI in Teaching and Learning: Values, Principles and Leading Practices. (2024). U15 Group of Canadian Research Universities. https://u15.ca/publications/statements-releases/navigating-ai-in-teaching-and-learning-values-principles-and-leading-practices/

Principles on the Use of Generative AI Tools in Education. (2023). Russell Group. https://russellgroup.ac.uk/media/6137/rg_ai_principles-final.pdf

Principles on the Use of Generative Artificial Intelligence. (2023). Group of Eight. https://go8.edu.au/group-of-eight-principles-on-the-use-of-generative-artificial-intelligence

The Future of AI in Higher Education. (2024). EDUCAUSE. https://www.educause.edu/ecar/research-publications/2024/2024-educause-ai-landscape-study/the-future-of-ai-in-higher-education

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Reports from other universities:

- McMaster: https://provost.mcmaster.ca/office-of-the-provost-2/generative-artificial-intelligence-2/task-force-on-generative-ai-in-teaching-and-learning/

- UBC: https://genai.ubc.ca/guidance/teaching-learning-guidelines/

- Cornell: https://teaching.cornell.edu/generative-artificial-intelligence/cu-committee-report-generative-artificial-intelligence-education

- Many more available through Higher Education Strategy Associates "AI Observatory": https://higheredstrategy.com/ai-observatory-home/

Appendix B: Current support and resources for AI in teaching and learning across U of T

Support for faculty and librarians:

VPIUE: Generative Artificial Intelligence in the Classroom: FAQ's https://www.viceprovostundergrad. utoronto.ca/16072-2/teaching-initiatives/generative-artificial-intelligence/

CTSI: Teaching with Generative AI at U of T https://teaching.utoronto.ca/teaching-uoft-genai/

University of Toronto Scarborough (UTSC): Using GenAI: Faculty https://www.utsc.utoronto.ca/ctl/ using-genai-faculty

University of Toronto Mississauga (UTM): Building AI Literacy https://q.utoronto.ca/courses/79548/ pages/building-ai-literacy

Faculty of Arts & Science: Assessment Design and Generative AI https://q.utoronto.ca/ courses/242937/pages/assessment-design-and-generative-ai; Generative AI Policies and Resources https:/q.utoronto.ca/courses/242937/pages/generative-artificial-intelligence-policies-and-resources

Example projects and initiatives:

LEAF+ Generative AI in Teaching and Learning

2024-25 LEAF projects: "Customized Generative AI Chat Tools for Large UG Molecular and Cellular Biology" and "Integrating Generative AI Tutoring Systems for Personalized and Timely Feedback to Enhance the Learning Experience"

VPIUE Discovery Series: Conversations with Students about AI

CTSI: U of T Teaching Examples

CTSI: Virtual Tutor Initiative

Libraries: AI for Image Research in Art and Architecture

For more information, please contact:

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