



Supporting Academic Integrity: Ethical Uses of Artificial Intelligence in Higher Education Information Sheet

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Overview

Various artificial intelligence applications are currently used in our day-to-day work with ‘positive purpose’ through activities like spelling and grammar checks, and library searches (Mount Royal University, 2023). Artificial intelligence software like GPT-3 and Bert, are large language models (LLMs), that use algorithms to create original text. Additionally, some artificial intelligence applications (e.g., DALL-E) can also create images, music, mathematical computations, and code. The sophistication and capabilities of artificial intelligence are progressing rapidly. As this technology evolves we expect that conversations will need to be fluid and ongoing as we consider artificial intelligence in educational, social, cultural, political, legal, and economic contexts.

Preserving academic integrity in our pedagogical approaches, in all educational contexts, should be carefully considered as the capabilities of these tools develop and evolve, impacting organizations in different ways. For instance, aligning our teaching practices and ways of assessing learning may need to be revised and adjusted. In the context of artificial intelligence, it is important to consider how it impacts our students and their learning, and how our courses activities and programs are designed to support that learning. We should be contextualizing our efforts at micro (faculty teaching courses), meso (programs) and macro (senior leadership/administrators in our institutions) levels. Each of these levels are synergistic and should inform our efforts with artificial intelligence in our educational contexts.

Consider Popenici and Kerr’s statement that “the real potential of technology in higher education is—when properly used—to extend human capabilities and possibilities of teaching, learning, and research” (2017, p. 3).

The intent of this document is to provide all higher education stakeholders general information about artificial intelligence as well as outline some considerations for its ethical use in higher education. Some opportunities and limitations of this technology will also be highlighted. *It is important to note we will attempt to update this document semesterly.* If you notice an error or would like to provide an update to the document, please connect any one of the AICO executive ([AICO](#)).

It is also worthwhile noting that there is potential for synergies with professional development on the educative use of artificial intelligence within, and across organizations that would benefit faculty/staff and other stakeholders in higher educational settings.

What is Artificial Intelligence?

In an educational context, Popenici and Kerr (2017) offered this definition of artificial intelligence: Artificial Intelligence are “computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks” (p. 2).

Stakeholder Considerations for the Ethical Use of Artificial Intelligence in the Higher Educational Learning Environment

First and foremost, it is important that faculty/staff and stakeholders consult their organization's approach to the use of artificial intelligence in learning settings.

Artificial intelligence may provide students the ability to offload academic work or academic skills; it is crucial to be clear with students when the use of this technology is acceptable while still accomplishing the established learning goals. Consider the following with regard to the use of artificial intelligence in your learning environments (*please note that this list is not exhaustive*). At the micro (faculty) and meso (program) levels stakeholders could:

- Explore the various software that students may use in their courses
- Think about how artificial intelligence applies to vocational learning outcomes (VLOs), course content, learning outcomes, experiential learning, learning assessment outcomes, and work integrated learning
- Connect with industry partners and professions to learn *how* or *if* artificial intelligence is/will be used in their day-to-day work and activities
- Consider the appropriateness of introducing artificial intelligence as a learning strategy if it is leveraged in the industries and professions students are studying toward so that we are preparing graduates for the careers they plan on pursuing
- Connect with other educational stakeholders to discuss the use of artificial intelligence in courses programs
- Be clear *if* and *how* course learning outcomes might be enhanced and met if using artificial intelligence applications
- Speak with students about artificial intelligence and let them know you are aware of these applications (e.g., brainstorm ideas for assignments)
- Communicate with students and teaching assistants/technicians as to how it may be used ethically and honestly to support learning in courses (programs), and ensure that both course, page content, and assessment instructions are aligned in detail for what is expected with appropriate use (what would be considered unauthorized use or reportable for academic misconduct within your organization)
- Discuss artificial intelligence in the context of academic integrity and learning
- Include integrity pledges that explicitly state students have completed their assignments with or without the use of artificial intelligence
- Model the ethical use of artificial intelligence by being transparent about how to use it in the learning environment
- Demonstrate best practices when using artificial intelligence with students (e.g., include citations, references to its use in class)
- Establish expectations for citing, referencing, or acknowledging the use of artificial intelligence applications in course work and assessments through assignment descriptions, rubrics, syllabi, critical paths, course outlines
- Establish expectations on how to describe/explain how, where, and when artificial intelligence is used in submitted work
- Consider building students artificial intelligence literacy by helping them develop their awareness of how to use it ethically (if applicable)
- Consider intrinsic motivators for the assessments you are creating - help students connect to the assignments, so they are interested and motivated
- Continue to monitor the evolution of artificial intelligence and its potential applications

- Learn more about these tools by collaborating with colleagues through the Academic Integrity Council of Ontario, working with your organization’s various departments (e.g., Centres for Teaching & Learning, Writing Centres, Tutoring Centres, Libraries)
- Seek professional development opportunities in the content area.


Points to Consider when Clarifying Assessment Expectations

It is important we provide clear and timely explanations to our students regarding assessment expectations, including *what is and is not* permitted to use while completing assessments. Consider the following as guidance when communicating assessment expectations with your students:

Are you allowing students to use cognitive offloading tools during this assessment?

Examples of Cognitive Offloading Tools:

- Calculator	- Search Engines (e.g., Google Search)
- Textbook	- Artificial Intelligence (e.g., ChatGPT, DALL-E)
- Translation Tool	- Memory Aids
- Paraphrasing Tool	
- Course Notes	
- Power Point Slides	


NO


YES

- Consider the types of tools a student may use to gain an unfair advantage
- Explain to your students the parameters of the assessment, clarifying what **is** and **is not** permitted
- Explain these expectations on the Assessment Outline (i.e., clarify the goal(s) of the assignment and what specific outcome(s) you are measuring)
- Consider posting these expectations as a Course Announcement on your Learning Management System and discuss them in class
- Openly discuss your knowledge of the various tools that may compromise academic integrity and explain *why* they are not permitted on this particular assessment
- Explain possible repercussions if they *are* used (e.g., violates the institution’s Academic Integrity Policy, and/or other organizational policies, grade penalty, etc.)
- Direct students to appropriate services and resources that may be used on this assessment (e.g., calculators, dictionaries)

- Consider the types of tools a student may use to gain an unfair advantage *in addition* to the tools you are permitting for this assessment
- Explain *how* you expect them to use the permitted tool (e.g., description of how the tool is used if applicable). If there are limitations, explain them clearly (e.g., if students are allowed to use the internet, provide clear expectations around paraphrasing, citing, and referencing).
- Consider providing an example of how to best use the tool.
- Consider posting the above two points as a Course Announcement on your Learning Management System, discuss them in class, and include them on syllabi, critical paths, assignment descriptions, and rubrics
- Explain the learning outcome(s) you are assessing and how the tool will help support demonstrating the outcome(s) and clarify how their individual contributions will demonstrate the learning outcome(s)
- Consider accessibility issues for students (i.e., student access to artificial intelligence software)

Opportunities with Artificial Intelligence

The thoughtful use of artificial intelligence can enhance the learning environment and support learning. It is important to first think about whether artificial intelligence use makes sense in your course.

The guided use of artificial intelligence can help students to think broadly or help them focus their thinking. It can help students to think critically and at a higher level as they connect their ideas to synthesize their learning. It can also help personalize learning for students. As well, artificial intelligence is fast and convenient for anyone who has access to the technology. How this is realized in specific courses/programs must be carefully scrutinized by those in educative and leadership roles. Explore the following links to learn more about how you might use artificial intelligence in your learning environments:

Center for Engaged Pedagogy. (nd). *Generative AI & the college classroom*. Barnard College.

<https://cep.barnard.edu/generative-ai-college-classroom>

Center for Innovative Teaching & Learning Indiana University Bloomington. (2023, January 25). *How to productively address AI-generated text in your classroom*. Indiana University Bloomington.

<https://citl.indiana.edu/teaching-resources/academic-integrity/AI-Generated%20Text.html>

Eaton, S. E., & Anselmo, L. (2023). *Teaching and learning with artificial intelligence apps*. Taylor Institute for Teaching and Learning University of Calgary. <https://taylorinstitute.ucalgary.ca/teaching-with-AI-apps>

Georgian College. (nd). *Artificial intelligence-assisted work*. <https://www.georgiancollege.ca/ctlae/academic-integrity/#ai>

Mills, A. (2022). *AI text generators and teaching writing: Starting points for inquiry*. WAC Clearinghouse.

<https://wac.colostate.edu/repository/collections/ai-text-generators-and-teaching-writing-starting-points-for-inquiry/>

Mollick, E., & Mollick, L. (2022). New modes of learning enabled by AI chatbots: Three methods and assignments. *University of Pennsylvania & Wharton Interactive*. 1-21. <https://ssrn.com/abstract=4300783>

Monash University. (nd). *Using artificial intelligence*. <https://www.monash.edu/learnhq/build-digital-capabilities/create-online/using-artificial-intelligence>

Prochaska, E. (2023, January 23). *Embrace the bot: Designing writing assignments in the face of AI*. Magna Publications. <https://www.facultyfocus.com/articles/course-design-ideas/embrace-the-bot-designing-writing-assignments-in-the-face-of-ai/>

Teachonline.ca Contact North Nord. (nd). *AI in higher education resource hub*. <https://teachonline.ca/ai-resources>

York University. (nd). *AI technology and academic integrity*. <https://www.yorku.ca/unit/vpacad/academic-integrity/ai-technology-and-academic-integrity/#leveraging>

Limitations of Artificial Intelligence

LLMs generate meaningful text not as a product of reasoning but rather as a product of statistical prediction (Floridi, L., & Chiriatti, M., 2020; Mahowald et al., 2023). LLMs have no relationship to concepts like truth or

accuracy. While ChatGPT isn't connected to the internet, there are several applications that do search the internet and pass that information to an LLM, so LLMs can and are being used to process language about current events.

LLMs are trained on raw data, text that is drawn directly from massive datasets without curation or documentation. Humans subsequently play a role in "labeling" some of that text to improve the model's performance and/or to restrict its ability to generate potentially offensive content (OpenAI, 2023; Perrigo, 2023).

Because it's difficult to identify AI generated text, future models may be trained on text generated by AI, thereby compounding possible misinformation or biases.

How to Cite Artificial Intelligence

It is recommended that you check the appropriate citation manuals for the most up-to-date reference on artificial intelligence and experts in your organizations (e.g., librarians, writing centers). Other links you may access are listed below.

It is important to establish clear guidelines for students about how to acknowledge the use of artificial intelligence in their academic work. Review the *develop rules for accountability* section of the post by van Dis et al. (2023, February 23) for more ideas <https://www.nature.com/articles/d41586-023-00288-7>

American Psychological Association (APA)

https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/reference_list_electronic_sources.html

Modern Language Association (MLA)

<https://style.mla.org/citing-artificial-intelligence/>

<https://style.mla.org/citing-source-code/>

References

Floridi, L., & Chiriatti, M. (2020). GPT-3: Its nature, scope, limits, and consequences. *Minds and Machines (Dordrecht)*, 30(4), 681-694. <https://doi.org/10.1007/s11023-020-09548-1>

Mahowald, K., Ivanova, A., Blank, I., Kanwisher, N., Tenenbaum, J., & Fedorenko, E. (2023). *Dissociating language and thought in large language models: a cognitive perspective* arXiv:2301.06627.

Mount Royal University Library. (2023, January 23). *Artificial intelligence*. Mount Royal University. <https://library.mtroyal.ca/ai>

OpenAI (2022, November 30). ChatGPT: Optimizing language models for dialogue. *OpenAI*. <https://openai.com/blog/chatgpt/>

Perrigo, B. (Jan 18, 2023). Exclusive: OpenAI Used Kenyan Workers on Less Than \$2 Per Hour to Make ChatGPT Less Toxic. *Time Magazine*. <https://time.com/6247678/openai-chatgpt-kenya-workers/>

Popenici, S.A.D., & Kerr, S., (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*. 12:22. <https://link.springer.com/content/pdf/10.1186/s41039-017-0062-8.pdf?pdf=button>

Revised March 2, 2023

Van Dis, E., Bollen, J., Zuidema, W., van Rooij, R., & Bockting, C. (2023, February 3). *ChatGPT: Five priorities for research*. Nature. <https://www.nature.com/articles/d41586-023-00288-7>

You can follow any updates or changes to this document by going to <https://sites.google.com/view/ai-council-ontario/about-us>



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Revised March 2, 2023