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<b>SUBJECT</b>	Generative AI – Issues and Impacts on Teaching and Learning
<b>SUBMITTED TO</b>	Learning & Research Committee
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<b>REQUEST</b>	For information only - No action requested
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**PRIOR SUBMISSIONS** This topic has not previously been discussed by the Learning & Research Committee.

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### EXECUTIVE SUMMARY

One academic term has passed since the release of ChatGPT created a sudden and divisive impact in the higher education sector. ChatGPT is a large language model that can respond to queries and requests in a humanlike manner. After GPT-3.5 was released in November 2022, GPT-4 followed in March 2023 and is currently available on ChatGPT Plus. Artificial intelligence (AI) technology may have already been present in our lives (Grammarly, autocomplete, voice recognition) but the scope and capabilities of ChatGPT get closer to blurring the distinction between human and machine and raise existential questions about the future of content creation. A brief look at [futurepedia](#), a directory of AI tools updated daily, shows the abundance of tools that have been created from AI technology. Amidst such expansive application, impacts on teaching and learning have been subject to scrutiny both within and outside of the academy, with concerns emerging about academic integrity, the end of writing, and possible threats to higher education.

Many postsecondary institutions have taken a forward-looking approach to AI tools, promoting acknowledged and ethical use. In rare cases, ChatGPT has been categorically banned by universities and countries.<sup>1</sup> Consensus has veered towards the acceptance of intentional and attributed use, an approach further nuanced at UBC as a course- and program-level decision. Careful and creative use and capacity building for instructors and students helps constitute a more balanced approach, in contrast to the moral panic that was common in the press and public discourse several months ago.<sup>2</sup> Early experiments provide valuable insight into promising modes of use.

This briefing note outlines some of the current impacts and issues for artificial intelligence in teaching and learning:

- **UBC's approach:** With the opportunity to define the use of AI tools, an overview of some initiatives underway at UBC, future opportunities, and what comes next.
- **AI Tools as Teaching Tools:** The consideration of how and when AI tools might be integrated into the classroom and assessments, and the opportunities they represent for student learning.
- **AI Tools and Academic Integrity:** Conversations around ways to regulate, deter and detect the unattributed use of AI.

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<sup>1</sup> ChatGPT is [currently blocked](#) in countries including Russia, China, North Korea, Iran, and Italy. Italy is the first Western country to ban ChatGPT over privacy concerns.

<sup>2</sup> [ChatGPT and Artificial intelligence in higher education, Quick Start Guide](#), UNESCO and International Institute for Higher Education in Latin America and the Caribbean, p. 13.

The briefing also provides an update on resources and activity around generative AI at UBC.

### UBC's APPROACH

UBC is taking a measured and balanced approach to the use of AI tools in the classroom. Generative artificial intelligence tools (“AI tools”) present both opportunities and risks. Using them in a thoughtful way means accepting their identity as a double-edged sword while working towards guidelines and best practices around ethical use. Using artificial intelligence tools to enrich the learning and research process (writing, brainstorming, reviewing, idea generation) and not to submit a product as one’s own work (except where this is specifically asked for) – with proper acknowledgement – could provide balanced engagement and exposure for students and instructors. Individual faculty members and program leads are the subject experts best placed to be able to determine if and how such tools are integrated into the curriculum. Maintaining openness to different degrees of engagement, communicated clearly to students, allows instructors, departments, and Faculties to develop individualized approaches.

How can and how are UBC instructors teaching with AI tools? How can students learn with AI tools and what is important for them to know? What are the limits and how should they be communicated? The discourse has changed even since late 2022. The most prevalent questions in early 2023 focus on how postsecondary educational institutions can optimize their use and tailor their approaches to various learning contexts, how they can engage with opportunities and mitigate risks in the teaching and learning space, and how they can contribute to building capacity for students and for instructors. A recent concept paper authored by a group of German universities takes this position and places ChatGPT on the continuum of past digital innovations, some of which, like MOOCs (Massive Open Online Courses), had already been said to be bringing about the “death of higher education.”<sup>3</sup>

There has been considerable activity in this space at UBC since late 2022. Several profiles have been written recently on the impacts of artificial intelligence, including [UBC's approach to academic integrity in the age of AI](#), considerations around [workload and productivity](#) and thoughts about [the future role AI could play in the job market](#). Researchers in the Faculty of Medicine and the School of Biomedical Engineering have [recently received](#) over \$3 million in federal funding to train the next generation of biomedical engineers in data analysis powered by artificial intelligence. This year’s [CTLT Spring Institute](#) is offering three separate sessions on ChatGPT use in the classroom, each tackling different dimensions including teaching and learning implications, ethical considerations and prompt engineering, and content evaluation. Academic departments have engaged in various initiatives, including creating recommendations around the use of AI tools for instructors. Outside the classroom, several initiatives in teaching and learning and academic integrity are aimed at continuing to explore their potential and promise. These include engaging students in dialogue around AI tools in the classroom, reflecting on instructor uses and focusing on capacity building and resources.

### ARTIFICIAL INTELLIGENCE AS A TEACHING AND LEARNING TOOL

The shift in mindset following the initial doomsday response has led to more creative and productive thinking about the opportunities that AI tools can present for students and instructors. There are many innovative ways for instructors to use generative AI tools in their courses and many [opportunities](#) for them to work with – rather than against – students in this area. In early June 2023, the UBC Vancouver Provost’s Office and the CTLT will host a [faculty forum on generative AI tools in the classroom](#) to share experiences and create interdisciplinary dialogue. If the ‘regulation’ of artificial intelligence tools is to occur at the instructor level, how can the institution best support them with information, new perspectives and creative ideas? What kind of institutional framework might be required as they expand?

<sup>3</sup> [Unlocking the Power of Generative AI models and Systems Such as GPT-4 and ChatGPT for Higher Education](#), p 10.

Since the release of ChatGPT in November 2022, several resources have been developed across UBC. The CTLT's [Assessment Design in the Age of Generative AI](#) outlines some of the impacts at the course level and UBC's cross-campus academic integrity website has published a [FAQ on ChatGPT](#) for students and faculty members to outline various approaches. Recommendations for faculty members include ways to integrate AI tools into course design, to communicate with students around use, and to ensure academic integrity of assessments. Some of these opportunities include:

- **Course and curriculum design:** Integrating ChatGPT into the curriculum and course design can support literacy around the use of the tool and around discipline specific applications.
- **Assessments:** Generative AI tools have raised questions around maintaining the integrity of assessments: integrating AI tools into assessments and designing assessments to deter use of AI tools are two possible approaches.
- **Learning tool for students:** Engaging with AI tools to learn about new topics, to utilize AI as a writing partner, to engage in a dialogue, to generate ideas, or to support curiosity are some of the ways for students to explore generative AI as a tool for learning.

Recent reports have compiled lists of possible roles that ChatGPT can play in student learning including as a Socratic opponent, personal tutor, motivator or possibility engine. Others have approached it from the perspectives of the activities that these tools can support including mind map creation, explanation of concepts, creation of flashcards, and self-testing. The *Chronicle of Higher Education* recently outlined several innovative ways that institutions have been engaging with their students, including to design and test policy around AI tools.<sup>4</sup>

#### ARTIFICIAL INTELLIGENCE AND ACADEMIC INTEGRITY: DETERRENCE AND DETECTION

If generative artificial intelligence tools become standard in teaching, learning and research, how will they be recognized and what limitations should exist? Science journals tackled this question by banning the listing of ChatGPT as a coauthor: Springer-Nature indicated that while it can be used in the preparatory phase of the manuscript and as a writing tool, it cannot be listed as an author as it would not be able to assume the expected responsibilities and accountabilities. Recently, artificial intelligence has been added to bibliographical guidelines with the [American Psychological Association](#) (APA), [Modern Language Association](#) (MLA) and the [Chicago Manual of Style](#) all releasing recommendations in this area. On a national scale, Canada has proposed the Artificial Intelligence and Data Act (AIDA) and the National Telecommunications and Information Administration unit in the US is beginning to explore [potentially regulating tools like ChatGPT](#). For UNESCO, "AI cannot be a no law zone"<sup>5</sup> and there is a need for policies at the national and international level, as well as regulatory frameworks, to ensure the technology is benefiting humanity. Regulatory conversations can also apply to teaching and learning and the University has a key role to play in establishing guidelines for this space.

The fact that AI tools have potential does not mean their use should be unrestricted. Providing clear guidance, understanding the rationale for their use or limitation, and communicating clearly with students at the course and institutional level is vital. The spread of AI tools in higher education is not only connected with promise and potential: it brings about important concerns around academic integrity, lack of regulation, privacy, bias and accessibility. While academic integrity has been a focus of risk, [other risks](#) around accessibility, bias, intellectual property, originality, skill development, and harmful output are also important to address and to mitigate. As these tools can challenge and undermine learning if used improperly, conversations around deterrence, detection and response have accompanied those around the potential of generative AI in higher education.

<sup>4</sup> Beth McMurtrie, "[Teaching: What You Can Learn From Students About ChatGPT](#)", *The Chronicle of Higher Education*, March 30, 2023.

<sup>5</sup> Ethics of Artificial Intelligence, <https://www.unesco.org/en/artificial-intelligence/recommendation-ethics>.

## Academic Integrity

Over the past decades, academic integrity has been faced with the impacts of technological change: from the commercialization of the internet to the explosion of contract cheating to online assessments. The age of generative AI represents its most recent challenge, both as an independent development and as a factor intensifying past risks. Concerns about the use of generative artificial intelligence tools in academic misconduct was immediate. It remains important to clarify that artificial intelligence does not equate to academic misconduct, though it can be used to cheat. While AI tools should not be used to complete academic work, there may be times where instructors and students engage with them as part of learning. When this is the case, instructors should provide clear guidance to students around acceptable use and engagement with the tool. In the [syllabus](#), instructors can outline both their academic integrity expectations and the tools permitted in their courses (including AI tools). They may also clarify their approach to AI tools in class discussion, outlining use, limitations and forms of acknowledgement, or prior to an assessment.

Recent developments have occurred at the extremes of academic integrity. On the one extreme, Chegg has announced it will partner with OpenAI to create CheggMate, an enhanced tool branded as ‘homework help powered by AI’; on the other extreme, Turnitin has added an AI writing indicator to their Similarity Report. Higher education institutions have grappled with how to reflect new developments in their academic misconduct policies and how to articulate their position. Some have issued statements ([Guelph](#), [Melbourne](#)), while others have opted for FAQ pages ([Toronto](#), [Waterloo](#), [UBC](#)) or an information-based approach. Technological change has led to guidelines emerging across various sectors, such as the [recommendations on the ethical use of artificial intelligence](#) from the European Network on Academic Integrity (ENAI).

For students, limitations around the use of AI tools usually come from their instructor, but they should also consider how to self-regulate alongside course-level rules. An [adapted flowchart](#) on decision-making around the appropriateness of ChatGPT outlines key questions to ask. At the institutional level, UBC’s Academic Calendar provides guidance on what is considered academic misconduct. [Three scenarios](#) are currently outlined on the academic integrity website around the use of AI tools: 1) using ChatGPT and/or generative AI tools on coursework where it has been prohibited by the instructor, 2) using ChatGPT and/or generative AI tools where it has been permitted by the instructor, 3) using ChatGPT and/or generative AI tools where it has not been discussed or specified by the instructor. Artificial intelligence tools are not named in the academic misconduct regulation, but their use could be considered unauthorized means to complete an assignment or assessment, the accessing of a website that is not permitted, or other, depending on the specific case.

## Detection

The moment ChatGPT was released, AI detectors began to pop up, as did stories that OpenAI was itself developing a watermark to allow identification of AI generated text.<sup>6</sup> At this time, there are several AI detectors in existence, including [Turnitin](#), [GPTZero](#) and [OpenAI’s AI Text Classifier](#) which is available for free “to spark discussions on AI”. Despite the availability of such tools, detection raises questions around both the efficacy of the tools and the very possibility of detecting AI-generated text. Tools might not be fully tested and the technology to potentially outwit them continues to evolve. The focus on detection also raises the question of whether there are indicators in AI-generated text that instructors will instinctively be able to detect, as they would with other assessments where misconduct is alleged to have occurred.

<sup>6</sup> Keith Collins, “[How ChatGPT could embed a watermark in the text it creates](#)”, *New York Times*, February 17 2023.

When Turnitin announced in March 2023 that they would automatically activate an AI detection feature as part of a student’s Similarity Report – without an opt-out option – universities around the world expressed concern.<sup>7</sup> The LTHub Leadership Team [articulated UBC's position](#), expressing concern about the lack of ability to review and validate the new feature, the lack of time to prepare the UBC community for the release, the emphasis placed on suspected misconduct without access to corresponding source material, and the possibility of bias. Turnitin eventually made an exception for a limited number of clients, and UBC was granted the ability to opt out. False accusations, as notes Sarah Elaine Eaton in [her recent review on detection tools](#), can be devastating to students. There is a difference between responsible reporting of academic misconduct and using tools that can create risk for students.

Detectors are not foolproof. They can produce false negatives and false positives and it may also be possible to modify content to avoid detection. Researchers have even pointed out that there is little scientific evidence that AI generated text can be effectively detected.<sup>8</sup> Beyond not making the Turnitin feature available at this time, UBC has recommended that AI detection tools not be used as the sole factor in decision-making around an allegation of academic misconduct. Privacy considerations might also exist around entering student work into third-party sites without their consent. While these types of detectors might be experimented with in certain situations, they should not form the basis of a decision. As with the more general move away from a policing approach for academic misconduct, the detection approach is not where the focus should lie.

## CONCLUSION

While ChatGPT started out as synonymous with generative artificial intelligence technology, multitudes of other tools have emerged including Microsoft’s Bing or Google’s Bard for generating text, DALL-E or Midjourney for images, or Synthesia for videos, to name only a few. The wide variety of uses of generative AI – from chatbot to translation to summarization to content creation – lends itself well to both classroom use and misuse. Whether generative AI tools are incorporated into teaching and learning or mitigated and viewed as threats to academic integrity, UBC must continue to engage with both the opportunities and risks they present. Ethical, intentional and acknowledged use has been UBC’s approach to date and seems a wise course to stay. Providing instructors with the training and tools to use generative artificial intelligence, such as sample syllabus statements, assignment tips and ethical considerations, as well as a flexible institutional framework, should continue to be a priority as the artificial intelligence tools evolve. We intend to provide students with clear guidelines and an understanding of tools and to invite them into the dialogue in a meaningful way. Recent conversation around the dangers of unregulated use and the move towards national and international regulations may be a sign of what is to come in the educational sector. UBC has both an opportunity and a responsibility, at the university level, to shape the use of these tools to align with the promise and goals of our teaching and learning objectives.

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<sup>7</sup> Liam Knox, [“Can Turnitin Cure Higher Ed’s AI Fever”](#), *Inside Higher Ed*, April 3, 2023.

<sup>8</sup> V. Sadasivan, et al., [“Can AI-Generated Text be Reliably Detected?”](#) arXiv:2303.11156 [cs.CL], cited in Sarah Elaine Eaton, “The Use of AI-Detection Tools in the Assessment of Student Work”.

**SUPPLEMENTAL MATERIALS (optional reading for Governors)****Guidance from Universities**

Princeton: <https://mcgraw.princeton.edu/guidance-aichatgpt>

Radboud: <https://www.ru.nl/en/students/news/chat-gpt-what-does-this-mean-for-you-as-a-student>

UPenn: <https://ctl.upenn.edu/resources/tech/chatgpt/>

Montclair: <https://www.montclair.edu/faculty-excellence/practical-responses-to-chat-gpt/>

Delaware: <https://ctal.udel.edu/advanced-automated-tools/#syllabus-language>

Columbia: <https://ctl.columbia.edu/resources-and-technology/resources/ai-tools/>

Calgary: <https://taylorinstitute.ucalgary.ca/first-response-assessment-and-chatgpt>

Waterloo: <https://uwaterloo.ca/associate-vice-president-academic/faqs-chat-gpt-university-waterloo>

Toronto: <https://teaching.utoronto.ca/resources/generative-artificial-intelligence-in-the-classroom/>

**Generative AI Tools**

Sofia Barnett, "[ChatGPT Is Making Universities Rethink Plagiarism](#)", *Wired*, January 30, 2023

Sarah Chew, "[UBC professor tests AI tech for therapy](#)", *City News Vancouver*, March 9, 2023.

Open AI, [Educator Considerations for ChatGPT](#).

Sarah Elaine Eaton, "[The Use of AI-Detection Tools in the Assessment of Student Work](#)", *Learning, Teaching and Leadership Blog*, May 2023.

Lance Eliot, "[Those Schools Banning Access To Generative AI ChatGPT Are Not Going To Move The Needle And Are Missing The Boat, Says AI Ethics And AI Law](#)", *Forbes*, January 20, 2023.

Tova Gaster, "[ChatGPT has entered the chat, bringing UBC challenges and opportunities](#)", *The Ubyyssey*, March 23, 2023.

Gimpel, et al., "[Unlocking the Power of Generative AI Models and Systems such as GPT-4 and ChatGPT for Higher Education, A Guide for Students and Lecturers](#)", 2023.

Arianna Johnson, "[ChatGPT In Schools: Here's Where It's Banned—And How It Could Potentially Help Students](#)", *Forbes*, January 18 2023.

Samantha Murphy Kelly, "[ChatGPT p\[asses\] exams from law and business schools](#)", *CNN Business*, January 26, 2023.

Aaron Mok, "[A Wharton business school professor said Bing will get 'much higher grades' than ChatGPT](#)", *Business Insider*, February 15, 2023.

Megan Morrone, "[Was this written by a robot? These tools help detect AI-generated text](#)", *Fast Company*, January 9, 2023.

Kevin Roose, "[Don't Ban ChatGPT in Schools. Teach with It.](#)", *New York Times*, January 12, 2023.

Ian Sample, "[Science journals ban listing of ChatGPT as co-author on papers](#)", *The Guardian*, January 26, 2023.

Katherine Schulten, "[Lesson Plan: Teaching and Learning in the Era of ChatGPT](#)", *New York Times*, January 24, 2023.

Sciences Po, Paris, "[ChatGPT: Sciences Po Implements Rules and Opens up Discussion About AI in Higher Education](#)", 2023.

UNESCO and UNESCO International Institute for Higher Education in Latin America and the Caribbean (IESALC), [ChatGPT and Artificial Intelligence in higher education, Quick Start Guide](#), 2023.

Lakshmi Varanasi, "[ChatGPT could be a Stanford medical student, a lawyer, or a financial analyst. Here's a list of advanced exams the AI bot has passed so far](#)", *Insider*, February 11, 2023.

Anil Verma, "[How I would embrace ChatGPT in my class](#)", *Toronto Star*, March 7, 2023.

Wired, [How Wired will use Generative AI Tools](#).

PUPP, [Artificial Intelligence and Plagiarism](#), Partnership on University Plagiarism Prevention, 2023.