UNIVERSITY OF CALGARY

FACULTY OF GRADUATE STUDIES

Guidelines for Generative AI Use in Graduate Studies

Generative artificial intelligence (GenAI) tools[1] are rapidly gaining adoption and recognition in academic settings due to their ability to streamline and enhance various research processes, thereby increasing academic productivity. When used properly, these tools offer immense potential in various aspects of graduate studies, such as strengthening the search for novel ideas, helping in conducting literature reviews, aiding in study design, generating illustrations, supporting complex data analysis, and crafting and refining academic texts. Furthermore, the future job market – be it academia, industry or the public sphere – will expect our graduates to have the skills for effective and ethical use of GenAI tools.

In graduate studies, GenAI technology should be used to enhance rather than replace human creativity and judgement. When approving graduate students' use of GenAI technologies, instructors and supervisory committees are expected to ensure that students can develop critical research and professional skills, augmented rather than substituted by the effective use of GenAI tools. For example, overreliance on GenAI in crafting texts might inhibit the development of students' graduate writing skills, which are essential for developing critical reasoning ability. Similarly, the overreliance on GenAI tools for conducting literature reviews creates the risk of superficial engagement with key studies in the student's research domain, inhibiting individual expertise development. In addition, GenAI tools can create non-trivial risks of providing inaccurate information, introducing biases in research, and violating the intellectual property and privacy rights of third parties.

Considering the potential benefits of the proper and ethical use of GenAI in research activities, banning such technologies in graduate studies today is impractical, largely unenforceable, and is not recommended. At the same time, establishing a comprehensive policy on GenAI use is challenging given the rapidly changing environment of developing technology and evolving academic consensus.

However, it is crucial to provide guidance on the ethical and effective use of GenAI to the University graduate community. Since the results of graduate studies (e.g., theses and academic publications) are perpetually available public documents, it is imperative to establish clear principles for allowing students, supervisors, instructors, and graduate program officers to make

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[1] Generative artificial intelligence (GenAI) is a subset of Artificial intelligence (AI) technologies aimed at creating new content, ideas, or data that were not explicitly programmed into the system. It involves AI algorithms capable of generating outputs such as text, images, sound and video by learning from a set of data inputs.

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decisions with respect to upholding academic integrity, avoiding misconduct, respecting privacy and intellectual property rights, and avoiding biases.

The following guidelines for the use of GenAI in graduate studies, including graduate coursework, candidacy components, and academic writing (including theses), have been developed by the Faculty of Graduate Studies (FGS) to support students and faculty in making GenAI-related decisions and to encourage the graduate community to learn and experiment with this advancing technology.

These guidelines supplement the University of Calgary's Student Academic Misconduct Policy, the Research Integrity Policy and the principles of academic integrity outlined in the UCalgary Academic Integrity Handbook. In cases of conflicts, the listed above policy documents take precedence over the current guidelines.

Additionally, the current guidelines are a living document and will evolve with the development of the technology, academic consensus on the use of GenAI in research and graduate studies, and the establishment of general university-level strategies and policies.

Graduate programs may develop additional guidelines regarding the use of GenAI in research and coursework in their specific disciplines, including:

(a) imposing restrictions on the use of such tools (up to the full prohibition when appropriate)
(b) creating lists of GenAI tools that are approved for use without declaring (e.g., spell-checkers), approved for use with declaring and authorization, and prohibited

When available, the graduate program guidelines supersede the current FGS guidelines. The program-specific guidelines for GenAI use in graduate studies must be consistent with the current FGS guidelines. Graduate students should ensure that they are familiar with the requirements of their programs.

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Guiding Principles:[2]

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1. Authorized Use

Unauthorized use of GenAI tools in graduate studies may be considered a violation of the University of Calgary's Student Academic Misconduct Policy.

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[2] The following guiding principles are implementing the general framework recommended in the Working Group Report "Generative AI and Graduate and Postdoctoral Research and Supervision," published by the Western Canadian Deans of Graduate Studies on Nov/24/2023.

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Students should consult with the appropriate faculty members to determine the appropriate use of GenAI tools in their graduate studies. This includes their instructors (for graduate coursework), and supervisors and supervisory committees (for candidacy components and thesis writing). The initial discussions of appropriate use of GenAI tools with the supervisors is expected to happen during the initial signing of the Checklist of Expectations for Graduate Students and Supervisors ("Student-Supervisor Checklist").

These discussions are essential for understanding the educational and research benefits and risks, potential to advance knowledge and produce a novel contribution, ethical implications, and academic integrity considerations associated with the use of GenAI technologies.

Students should obtain written, unambiguous authorization (from their supervisor or course instructor if not included in the course outline) prior to the planned use of GenAI tools in graduate work (coursework, candidacy components, thesis), including the following applications:

- Academic writing, including editing of the student-written text (with the exception of spell-checkers like Grammarly);
- Generating or adjusting images, sound and video content;
- Conducting literature reviews and meta-analyses;
- Research design;
- Data analysis.

Written authorization may be obtained via any mechanism allowing date verification (including email or instant message), or may be provided in the course outlines. It is the student's responsibility to preserve the record of this authorization.

For thesis-based students, if the use of GenAI tools is questioned by examiners during candidacy components or thesis examinations, the authorization records from supervisors and supervisory committees serve as support for their appropriate use, and should be considered for any discussion that results.

When making decisions about authorizing the use of a GenAI tool in graduate work, course instructors, supervisors and supervisory committee members are expected to assess the educational benefits and possible detriments of such use by the student, including:

- Will the use accelerate or slow down the progress towards achieving the graduate education outcomes for the student (including course-level learning outcomes, program-level learning outcomes (PLOs), requirements for passing the field of study (FoS) or thesis proposal, requirements for graduate thesis, established program's graduate competencies, or general discipline's core competencies for the professionals or

scientists[3])? Is there a risk that a crucial educational outcome will not be achieved if a student over-uses the tool?

- Will the use of the tool facilitate or impede the development of a graduate student as a future scholar or professional, considering the discipline-specific expectations?
- Is the student familiar with the limitations and risks of using the GenAI tool, including the privacy/intellectual property rights threats, possibility of biases, risk of obtaining the incorrect result/AI "hallucinations"?

When providing authorizations, supervisors should also:

- Consider equity and accessibility issues;
- Engage graduate students in research planning early on, including determining how and when GenAI tools will be used.

2. Transparent Use

Students must disclose the use of GenAI tools in their graduate study work to ensure transparency and adherence to academic integrity. This disclosure involves clearly indicating in their coursework, candidacy components, and theses:

(a) the specific GenAI tools employed;
(b) the purpose of their use;
(c) the extent of their influence on the content and specific measures taken to ensure accuracy.

Failing to fully disclose the use of GenAI tools in submitted work compromises proper assessment of a student's academic activities, and hence may be considered a violation of the University of Calgary's Student Academic Misconduct Policy.

Example of Transparency Statement that can be provided in the student's written work *(Western Canadian Deans of Graduate Studies, Generative AI and Graduate and Postdoctoral Research and Supervision, 2023)*:

> *"This document was created through a synergy between human skills and AI algorithms. Specifically, Perplexity.ai was used to find relevant material and suggest high-level categories for analysis. Additionally, prompts on specific topics were given to ChatGPT to generate ideas. The final document was comprehensively reviewed and edited by our team. Each element was written by our team, with copy-editing and phrasing help through Grammarly. The use of AI in this manner is consistent with the guidelines and*

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[3] See, e.g., the competency-based framework for PhD students: https://doi.org/10.7554/eLife.34801

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recommendations presented in this document, embodying a balanced approach to incorporating emerging technologies in academic settings."

3. Accountability and Authorship

Graduate students maintain full accountability for all work produced with the aid of GenAI, thereby ensuring the integrity, accuracy, and ethical standards of their scholarly contributions.

Students are expected to possess a comprehensive understanding of the GenAI tools employed in their research or writing process. This includes being able to critically evaluate the outputs generated by GenAI systems. This proficiency enables students to confidently defend and explain the results, interpretations, or conclusions derived from AI-generated content during academic assessments or scholarly discussions. Students are also expected to adhere to the University's Research Integrity Policy.

GenAI tools do not assume co-authorship status. While GenAI can assist in reviewing the literature, research design, theory development, and data analysis, the primary authorship of the work remains solely with the student. The student retains responsibility for ensuring the integrity of the content, including accuracy, balance (absence of biases), proper referencing, and attribution of sources. Inappropriate GenAI use has potentially serious implications for academic conduct violations, including fabrication (GenAI can fabricate facts, citations, as well as other information), falsification (GenAI can falsify facts, citations, as well as other information), and plagiarism (GenAI generates both de novo as well as replicates existing language in response to queries).

Although proper authorization and disclosure of GenAI tools is a pre-requisite for their use in graduate studies, students still maintain full accountability for the work produced with the aid of GenAI.

4. Privacy and Data Security

Most GenAI tools today retain and utilize for learning purposes any content provided by the user. This implies that any information provided to these tools, including private data, confidential materials and content protected by intellectual property rights, may be inappropriately exposed to third parties.

Graduate students are expected to be aware of how the use of GenAI can lead to potential breaches of privacy, confidentiality and intellectual property rights. It is essential for graduate students to exercise caution and adhere to institutional policies and guidelines concerning data handling and privacy.

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5. Ethical Considerations

Results generated by GenAI systems can reflect societal biases prevalent in the public data on which the system was trained. Using the GenAI output in graduate studies without critical reflection may lead to inequitable treatment, neglect, and violations of the human rights of various societal groups.

As such, graduate students should take proactive, informed measures to ensure that the use of GenAI tools does not perpetuate the existing biases and barriers. This implies the responsibility to understand the limitations of the applications of the GenAI tools.

Additional Considerations

Academic publications

Parts of the graduate student work may form the basis of academic publications (journal articles, book chapters, books). In the publishing process, graduate students should adhere to the rules of GenAI use of the respective journals/publishers.

As outlined above, when presenting university-required graduate work for assessment (course assignments, candidacy components, thesis), the current FGS guidelines or the program-specific guidelines (which have the priority if available) should be followed.

Admission applications

Unless otherwise specified by the program, graduate applicants at the University of Calgary are not prevented from utilizing GenAI in preparing their admissions applications. In such cases, it is the applicant's responsibility to ensure that their application possesses and clearly demonstrates:

    a. originality and authenticity; obvious similarities with other applications (resulting from the use of the same GenAI tool) would be noted, and may reduce the chances of admission;

    b. personalization to match the applicant's unique life history, achievements, and competencies;

    c. factual accuracy; and

    d. fit to the requirements of the target graduate program.

Scholarship applications

GenAI use in scholarship applications is guided by the terms of references (TOR) or rules and regulations of a particular scholarship competition. In the absence of such rules, the general guidelines for Admission applications above can be adhered to.

Additional University of Calgary Resources:

Centre for Artificial Intelligence Ethics, Literacy and Integrity.url

AI Research Guide Library and Cultural Services.url

Generative AI in Teaching and Learning | Teaching and Learning | University of Calgary (ucalgary.ca)

Copyright Laws and Info.url

Exploring AI and Assessments - Resource for Instructors.url

Student Academic Integrity: A Handbook for Academic Staff and Teaching Assistants