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BACKGROUND

Generative artificial intelligence (GenAI) software applications are rapidly evolving, disruptive, and enabling technologies that have the potential to dramatically accelerate research and scholarly writing and various creative processes. The technology also has the potential to remove barriers – for example supporting individuals to write in a second language.

The release of open ChatGPT 3.0 in fall 2022 brought the issue of using such generative AI into the limelight. A great deal of the attention to date has been on issues of academic integrity.

Publishers, editors and granting agencies are now grappling with GenAI-driven issues as they emerge in real time. On November 8, 2023, the Tri-Agency announced an [ad hoc panel](#) to develop guidance for the use of GenAI in the development and review of research proposals with recommendations due in December. Important issues have surfaced with respect to data sovereignty and Indigenous communities. Important issues have surfaced with respect to data sovereignty and Indigenous communities. At this point, software to detect the use of GenAI in writing remains flawed (see [GMCTL Blog](#)).

Inappropriate or banned use of GenAI or use of GenAI without appropriate acknowledgement is considered an academic offense in terms of misrepresenting material as one's own work and an offense under the and dealt with through "Regulations on Student Academic Misconduct" under the Student Discipline policy. It will also be an offense in responsible conduct of research should rules for Journals be violated.

To educate students and postdoctoral fellows, a module titled "[Ethical and Responsible Use of Generative AI](#)" is already available within the Library Research Guide - Academic Integrity Tutorial and incorporated into GPS 960 – the required ethics and academic integrity course for all graduate students.

For research-based graduate programs, the fundamental question is what now and in future constitutes an original contribution to knowledge and exceptional oral and written communication skills.

To put this into context, the current [Degree Level Learning Outcomes](#) for doctoral work includes the demonstration of "exceptional written and oral communication skills" and "satisfactory defense of an original contribution to knowledge". For the master's level thesis-based programs currently the degree level learning outcomes specifies only that "the defense of a thesis on a subject that allows the student to make some contribution to knowledge within the discipline" and there is no mention of the level of written or oral communication skills.

As outlined in the Western Canadian Deans of Graduate Studies (WDCGS) report, program-specific guidelines are essential as well as providing ongoing training and forums for discussion.

There are at least two significant areas the graduate and postdoctoral level that need to be addressed:

1. Thesis/dissertation research and artefacts thereof (thesis/dissertation, publications, manuscripts, exhibitions, video, art, music, annual reports, etc...).
2. Evaluation of writing in applications to programs and scholarships

There is not a one size fits all set of rules that will meet the needs of programs and students due to disciplinary differences in research, the types of AI available, and the regulations by publishers.

CGPS can provide a general framework and support programs to establish their guidelines that are aligned with the discipline and field to enable good and creative use of generative AI. CGPS can support developing such guidelines by providing templates including examples of transparency statements.

As they become available, CGPS should make examples of guidelines available representing STEM, Life Sciences, Social Sciences, Humanities and Fine Arts.

Therefore, this framework and the information contained in program guidelines will need to be reviewed periodically to adapt as the systems evolve in capability and the landscape changes in terms of how they can be used in relation in research.

FOR PROGRAMS

Courses and Course-Based Programs (Diplomas, Certificates and Masters).

Teaching and Learning maintains and updates a [webpage on GenAI](#) and this includes templated language for course syllabi to reflect the expectations that exist in coursework¹. These resources will address common needs for these types of graduate programs.

Research-Based Degrees

As “Program Guidelines” are the equivalent to the syllabus for master’s and doctoral thesis/dissertation work, guidance on how generative AI can be used in the thesis/dissertation research process should be outlined in the Program Guidelines. To address this, CGPS Faculty Council should act as follows:

1. CGPS will post a statement regarding GenAI that is prominent on the website and the framework.
2. **Motion(s) for CGPS Faculty Council** “Be it resolved that CGPS Council deems it the responsibility of programs to determine whether and how generative AI may be used by graduate students and that CGPS Faculty Council instructs graduate programs to incorporate information on the types of generative AI that are permitted or not permitted for use in master’s and doctoral research and thesis/dissertation writing and have guidelines for use in applications to the program and for departmentally adjudicated scholarships by [date TBD].”
3. Suggested Wording in Graduate Program Guidelines
“Generative artificial intelligence tools are not permitted to be used in generating writing/code/illustrations/[type of] creative work as part of thesis research, providing written annual progress reports or in producing the thesis document. Any use of such tools will be considered academic misconduct for the assessment.”

OR
“Generative artificial intelligence tools are permitted to be used during the research and writing process for your thesis/dissertation. Students are responsible for verifying the accuracy of all sources cited in their work and appropriate acknowledgement of use.”

¹ **Suggested wording in syllabus template**

“Generative Artificial intelligence tools are not permitted to be used in any assessments for this course. Any use of such tools will be considered academic misconduct in this course.”

OR

“Generative Artificial intelligence tools are permitted in this course following specific guidance on proper use as provided with assessment instructions. Improper use of such tools will be considered academic misconduct in this course. Students wanting to connect their assessment in this course to assessments they have completed in another course must get explicit permission of the instructor to avoid potential academic misconduct or self-plagiarism.”

OR

“Select generative artificial intelligence tools are permitted to be used during the research and writing process for your thesis/dissertation as specified below. Students are responsible for verifying the accuracy of all sources cited in their work and appropriate acknowledgement of use.*provide information on what can be used and how it may be used.....*”

4. A program will want to specify what is relevant to their area in terms of particular types of generative AI, modes of curation, information about publisher and journal regulations, sample transparency statement, privacy and data security concerns, and training expectations.

FOR ADMISSIONS

For admissions, many programs require a statement of intent, research interest and/or an “original writing sample”.

As a first step, CGPS could add a place to indicate whether generative AI was used in preparation of the application in the declarations section of all application forms. This will allow programs to take the information into account when adjudicating the applications. Programs may wish to not allow such use and that must be made clear instructions for the application.

The soonest such a declaration could be implemented for the admission cycle starting in spring 2024 for admission to winter 2025.

FOR SCHOLARSHIPS AND POSTDOCTORAL FELLOWSHIPS

Internal and external scholarship applications often require a description of the research project as well as other written components.

External Awards – students are advised to read all the instructions from external agencies. At this stage, CGPS is not aware of anything precluding using generative AI in writing an application for external scholarships.

Internal Scholarships – as a first measure build a declaration into the applications. Review scholarship applications and methods of adjudication and alter if necessary to create equitable and meaningful evaluation.

APPENDIX

Considerations For Developing Guidelines on Generative AI in Research

- Various Journals and Publishers have developed rules on use of generative AI. They range from outright ban (Science Publishing), to use with transparency statements required, to restricted use with curation requirements.
- For the traditional master's thesis and doctoral dissertation, there is an implicit expectation that the document being examined has been predominantly written by the student with editorial input from the supervisor and advisory committee. However, in many STEM areas paper-based thesis/dissertations are more the norm meaning that the principal investigator (typically the more senior author and supervisor of the student) has collaborated on all aspects of the work including the writing process and these documents stand as an original contribution to knowledge.
- To determine what the program defines as an original contribution to knowledge consider that different disciplines and fields within disciplines are taking different approaches on the use generative AI or have the emphasis on different types of generative AI. For example, an MFA in Fine Arts – consideration of the use software of various types to generate images or animations may have restrictions or expectations (e.g. curation of the process - prompts) that would not be deemed necessary for using AI to generate a schematic in a thesis or paper in the field of Genetics.
- Students who rely heavily on generative AI for research design, literature review or writing prose may not be able to defend the work as readily as when they have constructed the prose themselves. Similarly, students in the mathematical and computational sciences may not be able to fully assess or testify to the veracity of argumentation and coding produced by GenAI.
- Students in all disciplines will need to be vigilant about the veracity, or even the very existence, of bibliographic references exhibited by GenAI.
- Aside from the limitations that each GenAI software application has including perpetuation of biases from the training data, there are several caveats to using generative AI in academic work relating to defining original work (writing – summaries of literature, drawing, design) including the possible infringement on intellectual property rights and compromising the ability to protect intellectual property.
- Many generative AI programs, and the better versions of free ones, require a subscription and that creates issues of equity for applicants/students who lack the financial means or access through institutions.
- Recently a ruling in the U.S. said that AI-generated text cannot currently be protected by copyright². This could preclude a student's retaining copyright on their thesis/dissertation and unclear the implications with publishing with Journals or various editors.
- Concerns about data security, data retention / ownership, and privacy when using AI for data analysis.
- It is possible that submission of unpublished or confidential information to an AI could constitute a public disclosure, thereby negatively affecting the patentability of new inventions and/or breaching confidentiality obligations.
- Currently there is ambiguity on whether use of generative AI in particular areas will impact patentability (e.g. software that designs a new drug) in terms of ownership of the IP.

² United States District Court Judge Beryl A. Howell said creative direction and control through human involvement is essential to include it under copyright law. United States District Court Judge Beryl A. Howell ruled that AI-generated content cannot get copyrighted. Aug 21, 2023.

- It is not possible to accurately predict how quickly these applications will improve and what new types of software or other platforms will emerge. Policies that preclude or allow use should be crafted in such a way as to accommodate such change. For example, a particular program might allow/not permit use of a list of generative AI programs with certain capabilities and provide examples as opposed to exhaustive lists of all programs available.
- Recently, [CIHR provided guidance](#) in terms of use in grant applications discouraging reliance and indicated it was not allowed in reviewing of grants due to confidentiality.