Guidelines for the Use of Generative Artificial Intelligence in Teaching and Learning

1st edition

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NOSM UNIVERSITY

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Territory Acknowledgement

In the spirit of Truth and Reconciliation, NOSM University respectfully acknowledges that our pan-Northern campus is on the homelands of First Nations and Métis Peoples. The university buildings we occupy in Greater Sudbury and Thunder Bay are located on the territory of the Anishinabek Nation, specifically Atikameksheng and Wahnapitae First Nations and Fort William First Nation.

Beyond a land acknowledgement, we understand that reconciliation is a practice. We gratefully acknowledge the Elders and Knowledge Keepers who share their gifts and teachings with us so that we may better understand and honour their wisdom, and that of all of the traditional keepers of this land. NOSM University will continue to practice reconciliation by listening, learning, and fostering a culture of mutual respect and trust.

Introduction

At NOSM University (NOSM U), our mission is to improve the health of Northern Ontarians by being socially accountable in our education and research programs and advocating for health equity. As per our vision of innovative education and research for a healthier North, we are committed to incorporating advanced technology into curriculum and day-to-day activities of the university.

With the rapid growth of generative artificial intelligence (GenAI) since 2022, artificial intelligence has now permeated every sphere of society. Since it has important implications for both the post-secondary education and the health sectors, it is crucial that we remain abreast of latest advancements, opportunities, risks and limitations, and provide adequate guidance to the NOSM U community.

This is why we created NOSM U's Artificial Intelligence (AI) Working Group, responsible for developing a university-wide approach to the use of AI. As a first step, NOSM U's AI Working Group decided to focus on the development of guidelines for the use of GenAI in teaching and learning. However, we recognize that there also needs to be institution-wide reflections related to how the growth of GenAI impacts other fields of activities at NOSM U, such as research and operational activities. Further guidance will follow.

The AI Working Group enlisted external consultants from Higher Education Strategy Associates to provide sector expertise and support NOSM U in the development of its *Guidelines for the use of GenAI in Teaching and Learning*.

These guidelines are the product of a rigorous process which spanned over the course of multiple months, and which included a scan of promising practices in comparable post-secondary institutions, a review of guidance published by relevant bodies, and meaningful community engagement. Eight focus group discussions and seven one-on-one interviews were conducted with NOSM U senior leadership, offices and units leads, division heads, phase directors, faculty (clinical and non-clinical), instructional designers, non-academic staff, and learners (undergraduate, graduate and residents) between May 2024 and July 2024 to better understand the current uses of GenAI by the NOSM U community, document the current concerns and opportunities for the integration of GenAI in teaching and learning at NOSM U, and inquire about what type of guidance should be included in institutional guidelines.

The guidelines are designed to offer insights into the potential application of GenAI in teaching and learning. They are meant to align with NOSM U's existing policies and Collective Agreements and, should confusion or conflict arise between these guidelines and NOSM U's policies and Collective Agreements, the latter shall prevail.

Supporting Resources, such as guidance provided by external bodies and training opportunities, will be made available to the NOSM U community to complement these guidelines. We invite you to consult these resources for a better understanding of the latest advancements in the sector, and to access practical tools that can support your implementation of these guidelines.

As the technology as well as sector response continue to evolve, an ongoing review of the guidelines is encouraged. For feedback or questions, please contact provost@nosm.ca.

We wish to thank the members of NOSM U's AI Working Group as well as the numerous members of the NOSM U community that contributed to shaping these guidelines.

NOSM U's AI Working Group is composed of the following:

Dr. Céline Larivière – Provost & Vice President Academic (Chair)

Miriam Cain – Registrar

Dr. Alex Moise – Assistant Dean, Graduate Studies

Dr. Jeff Bachiu – UME Administrative Director, Curriculum and Learning Environment

Dr. Natalie Lefort – UME, Instructional Designer

Mathieu Litalien – Director, CEPD

Dr. Mike Ravenek – Director, Health Sciences & Program Development

Steve Kelly – Director, IT

Dr. Tamara Varney – Professor

Dr. Yifan Zhang – Learner Representative (Graduate Studies)

Melissa Pafford – Accessibility Advisor

Dr. Marion Maar – Professor

Jennifer Dumond – Education Services Librarian

Brieanne Olibris – Learner

Heather Lex – Learner

What is Generative Artificial Intelligence?

"Generative AI (GenAI) is an artificial intelligence (AI) technology that automatically generates content in response to prompts written in natural-language conversational interfaces. Rather than simply curating existing webpages, by drawing on existing content, GenAI actually produces new content. The content can appear in formats that comprise all symbolic representations of human thinking: texts written in natural language, images (including photographs, digital paintings and cartoons), videos, music and software code. GenAI is trained using data collected from webpages, social media conversations and other online media. It generates its content by statistically analysing the distributions of words, pixels or other elements in the data that it has ingested and identifying and repeating common patterns (for example, which words typically follow which other words).

While GenAI can produce new content, it cannot generate new ideas or solutions to real-world challenges, as it does not understand real-world objects or social relations that underpin language. Moreover, despite its fluent and impressive output, GenAI cannot be trusted to be accurate. [...] Most often, the errors will go unnoticed unless the user has a solid knowledge of the topic in question."

UNESCO. (2023). Guidance for generative AI in education and research.

While ChatGPT, Gemini, Perplexity, Claude, DeepAI, Microsoft Copilot and DALL-E are currently amongst the most popular ones, there are already over 2 000 GenAI tools available, and new ones are created every day. Despite its rapid proliferation, not all tools have comparable capabilities, are trained on the same data sets, produce similar quality outputs, or are proven equally safe.

The main GenAI tools usually fall within one of the four following categories:

- Text: Text generation
- Visual: Image generation, Video generation, Design generation
- Audio: Voice generation, Music generation
- Code: Code generation

Some GenAI tools are hosted on standalone platforms. However, GenAI tools are also becoming increasingly prevalent on platforms that were already commonly used prior to the emergence of GenAI, for example Microsoft Copilot, Meta AI or even Grammarly. Since the use of GenAI tools comes with risks, using them without proper awareness of their capabilities and limitations can have pernicious impacts.

GenAI abides by the principle "garbage in, garbage out", which means that the quality of its output depends directly on the quality of the input data. With respect to GenAI, the input encompasses not only the data that the AI model is trained on, but also the prompts and the set of instructions that are given to the GenAI tool. Guidance on prompt engineering can be found in *Supporting Resources.*

GenAI in Health Care

GenAI is already permeating health care, with implications for health education, administrative operations, and clinical practice.

In health education, the impact of GenAI is evident in two primary areas: learning processes and learning outcomes. For example, GenAI introduces advanced tools and simulation platforms that enhance interactive learning and provide training environments. These technologies enable learners to gain practical experience through virtual scenarios that simulate complex medical conditions. Additionally, as medical practice evolves with the integration of GenAI tools, educational curricula are encouraged to adapt to equip future health professionals with the skills to utilize these emerging technologies effectively.

On the administrative front, GenAI can enhance operational efficiency, for example by automating scheduling, managing records, taking meeting minutes and optimizing resource allocation.

With respect to the clinical practice, participants from the consultation phase shared that the use of GenAI in healthcare is becoming increasingly prevalent but remains heterogenous between settings (notably, based on available digital infrastructure, common practices, etc.), and practitioners. Practitioners are already using GenAI tools as scribes or to write SOAP notes, to get some guidance with respect to specific clinical questions, or to build simulations. Using AI for predictive analysis is also an area with growing interest. This includes, for example, using health data to predict potential health outcomes and mortality rates (which supports decision-making with respect to prioritizing patient procedures), or monitoring procedures and predicting outcomes.

Opportunities and Concerns identified during the Consultation Phase

Consultations with the NOSM U community highlighted the shared desire to embrace new technology. Participants stated that they care strongly about ensuring that the NOSM U graduates are ready to enter the healthcare sector, which AI has already permeated. They also recognized that GenAI offers opportunities such as supporting learning (e.g., by offering personalised learning opportunities), increasing accessibility, enhancing operational efficiency, and improving patient care and health outcomes. All these opportunities were notably considered within the specific context of Northern Ontario. If used appropriately, GenAI tools could help supplement medical education and health care delivery in a context of physician shortage and scarcity of resources.

However, participants also shared the need for NOSM U to be cautious and intentional in its integration of any new technology. The NOSM U community expressed concerns regarding the various limitations and risks of GenAI as well as potential misuses, such as plagiarism and academic dishonesty, erroneous outputs and hallucinations, inequitable access to the tools, data exposure, intellectual property infringement, the perpetuation of biases and health inequities, malpractice, and liabilities. Additionally, in alignment with our commitment to planetary health, we encourage members of our community to consider the environmental footprint associated with the development, training and use of GenAI tools. Additional information can be found in *Supporting Resources*.

We recognize that, because NOSM U operates within the health sector and grants health degrees, there are increased potential harms linked to the use of GenAI tools. Users should be informed about how the use of GenAI tools might circumvent learning, and how the misuse of these tools could put patient confidentiality, safety and lives at risk.

NOSM U encourages ingenuity and invites faculty to consider integrating GenAI in their teaching to ensure graduates are equipped to critically engage with AI in health care and enter the workforce properly apt to respond to the ever-growing technological changes of our times. However, precautions should be considered in the exploration and integration of GenAI tools. The guidelines within this document are meant as a supporting tool to both faculty and learners for the use of GenAI in their teaching and learning.

Values and Principles

NOSM U's values are the following:

INNOVATION:

NOSM University encourages ingenuity, creativity, a culture of inquiry and discovery, and the importance of learning from others in every aspect of the 'university's' education, research, social accountability, and corporate mandates. NOSM University uses innovative approaches to ensure continuous improvement of our distributed model of education and research.

SOCIAL ACCOUNTABILITY:

NOSM University adheres to the World Health Organization's (WHO) definition of the Social Accountability of Medical Schools as "the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region and the nation that they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and the public." As part of its social accountability mandate, NOSM University has the responsibility to engage stakeholders at all levels of its broad community.

COLLABORATION:

NOSM University pursues education and research goals in close partnership. Collaboration and partnership are important to NOSM University with its teaching hospitals, community physicians, health professional clinical teachers, health system stakeholders, and communities it serves. NOSM University values the insights, contributions, and support of its many partners that work to improve the health of the people and communities of Northern Ontario. NOSM University recognizes that collaboration is both a process and outcome that engages different perspectives to better understand complex problems and leads to the development of integrative solutions that could not be accomplished by any single person or organization.

INCLUSIVENESS:

NOSM University fosters inclusiveness by supporting an environment which embraces differences in staff, faculty and learners and respectfully creates value from the differences of all members of the NOSM University community, in order to leverage talent and foster both individual and organizational excellence.

RESPECT:

NOSM University's faculty, staff, and learners will learn and listen to one another respectfully and communicate openly. NOSM University's staff, faculty, and learners treat others and their ideas in a manner that conveys respect as differences are discussed, fosters an open academic debate, and which respects academic freedom.

In addition to the university's values outlined above, members of the NOSM U community should consider additional values and principles when determining the appropriate application of GenAI tools. These were identified by the NOSM U community during the consultation phase.

LEARNING:

Post-secondary institutions are places of learning, where institutions are meant to support the acquisition and production of knowledge by learners and faculty. Members of the NOSM U community are encouraged to explore GenAI tools and learn new ways of doing that could support or improve their practice. However, to avoid unreasonable or inappropriate use of GenAI tools and the circumvention of personal learning, individuals should consider how to use GenAI tools in support of, rather than in replacement of learning. GenAI cannot be used as a substitute for learning and/or demonstrating knowledge and skill.

SCHOLARLY INTEGRITY:

Members of the NOSM U community are required to uphold honesty and integrity in all academic endeavors, including but not limited to teaching and learning. The uses of GenAI tools in scholarly activity should be disclosed according to current common practices in the individual's academic discipline (see *Acknowledging Use of GenAI*). GenAI should not be used to engage in scholarly dishonesty. Scholarly dishonesty can lead to severe repercussions such as unfairness and fraud. Offences to scholarly integrity will be handled as per institutional policies (e.g., Academic Integrity Policy, Responsible Conduct of Research Policy, Professionalism for Clinical Faculty, Clinical Sciences Professionalism and Code of Conduct Policy, Procedures and Professional Attributes Guidelines and other relevant policies).

PROFESSIONALISM:

Professionalism includes demonstrating competence, responsibility and compliancy with existing regulations from professional bodies. For example, individuals who would like to use identifiable personal, private, or otherwise protected information about individuals, groups, organizations or institutions are required to seek informed consent from all parties whose information might be inputted in a GenAI tool.

SAFETY:

Safety in this context refers both to the protection of confidential, sensitive and/or other data that has a potential to cause harm if disclosed, as well as always ensuring high quality provision of care.

ACCOUNTABILITY:

Due to issues related to accuracy and biases, GenAI tools should never be used to make decisions in lieu of humans (e.g., grading, diagnosing, etc.). Individuals remain responsible and liable for their actions and decisions, and the work they submit, notwithstanding the contribution of GenAI tools, and human review of GenAI outputs is critical.

EQUITY AND ACCESSIBILITY:

GenAI tools can support the provision of personalized learning experiences. Their role in improving accessibility should be explored. However, any use of GenAI tools for accommodation purposes (e.g., to support language equity) must be approved prior to use by the appropriate authority. Additionally, members of the NOSM U community should be aware of the limited data sets that various GenAI models are trained on. The output data may therefore be incomplete or faulty and in turn may perpetuate biases and stereotypes and exacerbate health inequities. For example, GenAI tools can contribute to the exploitation or misuse of information and/or data, intellectual property, and cultural heritage. This might lead to misappropriating Indigenous knowledge, lacking consideration for Indigenous data sovereignty, and misrepresenting or erasing communities, identities and knowledge.

WORKFORCE READINESS:

AI has already permeated the healthcare sector, and it is our responsibility to ensure that learners and graduates are provided with opportunities to develop the necessary literacy and occupational skills to succeed in their careers and provide care in an ethical and high-quality manner.

NOSM U strongly encourages its units and programs to embed education and literacy building opportunities about the opportunities and concerns of GenAI tools, as well as values and principles that might be considered when determining the appropriate use of these tools, within its training and policies.

Data Security

Data privacy and security are key concerns to take into consideration when using GenAI tools. Indeed, most GenAI tools rely on data inputted into them to train their models, with the aim, notably, of improving the quality of future outputs. Even when explicitly stated otherwise by the provider of the GenAI tool, some risk of data exposure might remain, which would put the confidentiality and privacy of any data inputted in these tools at risk. This is especially of concern with respect to private and confidential information related to an individual (for instance, NOSM University members' personal information, or patient information), or NOSM University's governance.

This is why we ask of our community to be particularly careful of the type of information they input in any GenAI tools. Before inputting any information in a GenAI tool, ask yourselves the following questions:

- Does this information belong to someone else (i.e., another individual, group of individuals, organization, or institution)?
- Is this information confidential, and/or do I have proper authority to determine if this information is confidential?
- Would the disclosure of this information risk causing any type of harm, either for an individual, group of individuals, organization, or institution?

If the answer is **yes** to any of the questions above or if you are unsure, data should not be copied into a GenAI tool.

- Is the information already publicly available on an open access platform? If not:
- Is the use of confidential information the only way to achieve my intended purpose?
- Do I have appropriate permissions to use that confidential information, and are appropriate protections in place?
- Is my use of this information consistent with existing law, policies and other applicable regulations?

If the answer is **no** to any of the questions above or if you are unsure, data should not be copied into a GenAI tool.

For more information, members of NOSM U should consult the institution's **Handling Sensitive Electronic Information Policy** and its Appendix A on Data Classification, as well as the **Acceptable Use of Information Technology Policy.**

Responsibility of Faculty

Faculty responsible for a course can determine if and how the use of GenAI tools is allowed within their course and **should include instructions regarding the permitted or prohibited use of GenAI tools for each assignment**. Sample statements are provided in *Supporting Resources*. The rationale behind the decision to allow or not certain uses should also be explained, to encourage buy-in from learners.

Suspicion of Academic Misconduct

The reliability of AI detection tools is variable, and allegations of academic misconduct can have serious repercussions. Limitations of AI detection tools in general, as well as disproportionate risks of false positives for individuals whose first language is not English and for neurodivergent individuals, need to be carefully considered in case of allegations of academic misconduct.

In case of suspicion of academic misconduct related to the use of GenAI tools in the completion of academic requirements for a program, faculty should refer to their specific unit.

Since procedural clarity is beneficial for learners and faculty alike and a unified approach might be preferred, units may consider developing additional, program-specific guidance regarding how to address suspicions of academic misconduct related to the use of GenAI.

Responsibility of Learners

- Learners shall follow the instructions provided by the faculty responsible for a course regarding the allowed use of GenAI tools for each assignment. In case of doubt, it is the responsibility of learners to verify with the applicable authority what is allowed, and to ask for further guidance if needed.

- Learners are responsible for abiding by existing laws, regulations and policies (e.g., NOSM U's Academic Integrity Policy), as well as ethical and professional standards of medical practice.

- In addition to respecting what is permitted and what is not, learners should also consider the values and principles outlined earlier in this document when determining whether, and how to use GenAI tools.

- Any use of GenAI tools must be properly cited following the guidance detailed in Acknowledging Use of GenAI. Any use of GenAI tools outside of those explicitly allowed by the faculty responsible for a course for the assignment at hand will be considered academic misconduct and will be treated as such as per NOSM U's policies.

- If no guidance is provided, learners must presume that the use of GenAI tools is not permitted for the completion of academic requirements for a program.

- Learners are advised to keep a detailed record of the prompts and any sort of data inputted, as well as the outputs produced, and all interactions with the GenAI tool used, as these might be requested to attest the authorship of the work produced. Similarly, learners are strongly encouraged to also keep evidence of their own contributions leading to the final product. These records may be required by faculty responsible for a course to provide evidence of the learner's work, should the integrity of the work come under scrutiny.

- Teaching and learning materials provided to learners during their program (e.g., PowerPoints) remain the intellectual property of the individuals that developed them. Learners cannot input material that is not their own and that is not already publicly available on open access platforms on a GenAI tool without the explicit consent of the author(s). Learners cannot use GenAI tools to alter teaching and learning materials or to claim ownership of any intellectual property rights and cannot use teaching and learning materials to train GenAI tools, without explicit consent of the author(s).

GenAI tools can be explored as potential accommodation for learners in need. However, any use of GenAI tools for accommodation purposes must be approved prior to use by the appropriate authority.

Continuum of Uses and Examples

It is impossible to list all potential uses of GenAI tools, as they are ever evolving. However, here are a few types of uses that might be considered in different instances, depending on uses explicitly allowed by relevant authorities.

Note-taking

Generating ideas and brainstorming
(e.g., identifying strategies to solve a given problem, relevant articles about a certain topic, etc.)

Structuring ideas
(e.g., creating an outline for an essay or a course)

Summarizing key points
(e.g., summarizing readings, PPTs, data sets, etc.)

Transforming input into different formats
(e.g., text into infographics, articles into a podcast, etc.)

Generating codes or identifying problems within a code

Transforming data sets

Proof-checking statistical analysis of data sets

Generating content, either text, audio, photo or video (e.g., generating emails, essays, speeches, cover letters, course material, etc.)

Proofreading
(e.g. identifying and correcting mistakes)

Rewriting
(e.g., improving grammar, changing tone, cutting down wordcount, etc.)

Translating existing work
(e.g., course material, published articles, online content, etc.) to one's preferred language

Translating one's own work into the required submission language

Providing formative feedback
(e.g., asking for feedback on a draft)

Providing summative feedback
(e.g., grading assignments)

Tutor or study buddy (e.g., answering questions about concepts, generating cue cards or formative quizzes, creating case studies or simulations, etc.)

Acknowledging Use of GenAI

As per the *Scholarly Integrity* principle outlined at the beginning of these guidelines, the use of GenAI tools should always be properly acknowledged, even if the author did not use a direct output produced by a GenAI tool (e.g., if a GenAI tool was used for brainstorming purposes).

Failure to properly acknowledge the use of GenAI tools may be considered academic dishonesty and can result in an academic misconduct and/or breach of professionalism.

> There are various ways to acknowledge the use of GenAI. *Supporting Resources* include further guidance on how to adequately cite the use of GenAI tools following different citation methods. The preferred citation method should always be confirmed with the faculty responsible for the assigned work.

When using GenAI tools, users are advised to keep a detailed record of the prompts and any sort of data inputted, as well as the outputs produced, and all interactions with the GenAI tool used, as these might be requested to attest the authorship of the work produced. Similarly, it is strongly advised to also keep a record of the user's own contributions, should the integrity of the work come under scrutiny.

Finally, it is not advised to use GenAI tools to format references or sources, as GenAI tools might produce false or inaccurate references. Inappropriate referencing might lead to suspicions of academic dishonesty.