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Résumé de l'article

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Article

# Examining AI Guidelines in Canadian Universities: Implications on Academic Integrity in Academic Writing

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## Abstract

Academic integrity is a crucial aspect of higher education that fosters intellectual honesty and upholds the principles of fairness and trustworthiness (Eaton, 2022; Kang, 2022; Stoez & Eaton, 2020). As the introduction and integration of artificial intelligence (AI) technologies become increasingly prevalent in educational settings, it is imperative to examine how Canadian universities are addressing the implications of AI on academic integrity (Eaton, 2022; UNESCO, 2023a). This study aimed to examine the existing AI guidelines and policies developed and implemented by Canadian universities and analyze their alignments and gaps in relation to their academic integrity policies, particularly in the domain of academic writing in Canadian higher education contexts. In this research study, sixteen Canadian universities were selected for document analysis, and through an examination of their existing policies and guidelines on AI, results revealed insights into both challenges and opportunities for faculty, students and stakeholders around teaching academic writing while upholding academic integrity in higher education.

## Introduction

The recent emergence of Artificial Intelligence (AI)[1], specifically powerful language models such as Chat Generative Pre-trained Transformer (ChatGPT), has revolutionized various sectors, including higher education (Cotton et al., 2023). As Canadian universities embrace digital transformation, the integration of AI and natural language processing tools like ChatGPT[2] has brought unprecedented opportunities for innovation in teaching, research and administrative tasks (Government of Canada, 2023). However, with these advancements also come profound implications for academic integrity, specifically in academic writing (Eaton, 2023; Möller, 2023). Currently, ChatGPT and other widely available AI applications allow students to generate an essay within seconds using simple or complex, clear and well-formulated prompts, which raises concerns and questions for educators around the use of AI tools in academic contexts because of the blurred line regarding who actually generated the texts. As a result, across Canada, universities have released guidelines, FAQs and communiques regarding the use of ChatGPT and AI with the goal of addressing the use of these ubiquitous technologies in teaching and learning contexts. Many of the concerns and questions lie with the potential implications related to academic integrity policies if students and faculty members were to use ChatGPT in their assignments and research. With the rapid onset of these AI technologies and tools, research in the field of higher education has begun to address the need for evidence-based inquiry to support students and educators in navigating the emerging complexities in ethical, cultural and pedagogical challenges. This paper aims to explore the multifaceted challenges and implications of the emergence of ChatGPT in the context of Canadian higher education based on the examination of publicly available policy documents, specifically concerning academic writing. By critically examining university AI guidelines and academic integrity policy documents, this research identifies gaps in the publicly available institutional documents and sheds light on the need to address AI use in the academic integrity guidelines and policies that will help maintain academic rigor and uphold ethical standards in the digital era.

## Literature Review

Academic integrity and plagiarism have long been significant concerns in higher education, with educators and institutions striving to promote ethical behaviour and maintain academic standards. The advent of AI has brought new challenges and opportunities in addressing these issues. Academic integrity policy analysis in both Canadian and other global educational contexts has provided integral

foundational research informing novel studies addressing academic integrity issues related to AI (Möller, 2023; Stoesz & Eaton, 2020; Stoesz et al., 2019). In this literature review, there are three main areas which have provided important insights into the development of this research study. The first provides an overview of some of the research into the area of AI technologies and ChatGPT in relation to language education and academic writing, including the opportunities, benefits, and challenges of these technologies with writing assessments in higher education. Following this, some of the many ethical considerations of AI and ChatGPT are explored with a specific focus on academic integrity. Finally, we address some of the key pedagogical challenges for educators and students for which there is a dearth of current research and provide a critical examination of some of the existing and novel research addressing the promotion of the ethical use of ChatGPT and AI in student writing assessments.

## Artificial Intelligence Technologies and Chat GPT

Throughout the past twenty-five years, AI technologies and their impact on educators and students have evolved and advanced significantly, and this progress has been evident through a growing body of both empirical and non-empirical research publications across learning domains, including humanities, STEM, social sciences and language learning (Jeon, 2024; Perkins, 2023; Rane, 2024; Roll & Wylie, 2016; UNESCO IESALC, 2023; Vetter, et al. , 2024). Similarly, specifically in higher education, there has also been a steady increase in the number of theoretical and classroom-based research studies over the past three decades highlighting the use of various forms and applications of such emerging technologies including AI, mixed realities (augmented and virtual reality) and other forms of these complex, advanced technologies for teaching (Lawrence et al., 2020; Marcel, 2020; Zawacki-Richter et al., 2019). Despite the continuing rise in AI research in all private and public areas of education, from K-12 to post-secondary, researchers have identified gaps among the innovations AI technology provides, theoretical perspectives and pedagogical applications to support educators and their students (Bates et al., 2020; Chen et al., 2020; Zhang & Aslan, 2021). Pedagogical applications and implications of the use of AI in the classroom have become topics of greater and more intense research interest upon the development and release of ChatGPT , an openly accessible large language model (LLM)-based chatbot developed and shared internationally by OpenAI in November of 2022, and subsequent derivatives of similar LLMs since the inception of ChatGPT (Perkins, 2023).

## Generative AI and Academic Writing in Higher Education

Generative AI uses "technology called deep learning, which leverages large amounts of data to train an AI system to perform a task" (OpenAI, 2023). Generative AI tools are capable of tasks including engaging in written conversational interactions with the chatbot as well as searching for information and defining terms or paraphrasing text. ChatGPT and other applications of similar LLMs are also capable of generating texts that are extensive in variety and appear both realistic and coherent. The ability of ChatGPT to generate texts includes but is not limited to an entire academic research paper (Alarie & Cockfield, 2021) or partial elements of any academic inquiry despite at times using formulaic language, which can, at times, be relatively easy to identify by educators as well as detection tools (Cotton et al., 2023; Nguyen et al., 2023). While it may be the case that identifying some text generated by AI can be facilitated through readily recognizable academic idioms or expressions, this is not always the case, and in higher education learning contexts, this raises a number of concerns in the context of student learning, including the potential for plagiarized assignments and assessments, and possible resulting consequences. However, there are also affordances of the use of AI tools for second language writers which may provide positive contributions to the learning process rather than hindrances and negative repercussions (Gašević et al., 2023; Warschauer et al., 2023). While the existing research on ChatGPT and AI technologies raises questions for student learning and possibly leads to a potential paradigm shift suggesting reform in education in light of the introduction of these technologies (Lim et al., 2023), it also necessitates theoretical and pedagogical support for educators and calls for thorough and in-depth discussions of the ethical considerations of AI in all educational contexts (Bates et al., 2020; Chen et al., 2020; Zhang & Aslan, 2021). In the following section, an examination of some of the key ethical considerations, specifically related to academic integrity, will be conducted along with a discussion of some of the key challenges educators are facing as a result of the emergence of ChatGPT and generative AI technologies in higher education.

## Key Challenges and Ethical Considerations Educators Face

The emergence of AI tools, such as ChatGPT, has introduced new possibilities for the rapid production of written content in academic contexts, which has been the subject of extensive discussion regarding its potential influence on academic integrity and ethics of AI tools (Cotton et al., 2023; Perkins, 2023; Rahman & Watanabe, 2023; Rudolph et al., 2023; Uzun, 2023). ChatGPT is capable of generating

remarkably convincing content that is often indistinguishable from human-authored texts, and therefore poses significant challenges for educators in higher education institutions. Due to the convincing nature of content that is produced, in the absence of reliable AI detection tools, the AI-generated outputs further complicate the detection of AI-assisted work and raise substantial concerns with its ethical use in academic work (Cotton et al., 2023; Liang et al., 2023; Perkins et al., 2023; Tai et al., 2023). As these AI tools have already become widespread and accessible, they potentially increase the possibilities for misapplication of the tool and academic malpractice from students and researchers. For example, ChatGPT could be used to generate essays, research papers, or other academic work without proper citing of the tool, compromising the pedagogical value of these texts and ultimately undermining the credibility of academic institutions (Perkins, 2023). Therefore, comprehensive guidelines on the use of AI are crucial for educational institutions at this time for all stakeholders (Perkins & Roe, 2023; Sullivan et al., 2023). In addition to the current scholarly research examined here, UNESCO (2023b) has also called for higher education institutions to develop and update guidelines for the use of AI in different contexts. In order to effectively address pedagogical and ethical challenges that the educators may face, these institutional context-specific guidelines may help alleviate the individual educator's burden to address issues on a case-by-case scenario that they may have to deal with in classroom situations.

On a global level of effort in addressing ethics of AI, UNESCO (2022) encourages "research initiatives on the responsible and ethical use of AI technologies in teaching, teacher training and e-learning, among other issues, to enhance opportunities and mitigate the challenges and risks involved in the areas of education and research" (p.34). In higher education scholarly discussions, a nuanced and contextual approach on AI ethics has emerged, acknowledging ChatGPT's advantages while also addressing its impact on academic integrity (Vetter et al., 2024). In the Canadian context, Eaton (2022) cautions that using AI for schoolwork does not automatically equate to academic misconduct and states that it can be used ethically in teaching, learning and assessment. UNESCO (2022) suggests, nations and institutions should promote the acquisition of "prerequisite skills" for AI education, such as basic literacy, numeracy, coding and digital skills, and media and information literacy, as well as critical and creative thinking, teamwork, communication, socio-emotional and AI ethics skills. These "prerequisite skills" are fundamentals to develop AI literacy including AI ethics skills. Scholars believe that AI literacy promotes responsible and ethical use of AI in higher education and empowers individuals to leverage AI tools effectively for enhancing academic work (Liberanz et al., 2023; Tai et al., 2023). Besides above-mentioned possible threats of academic integrity and

concerns around ethical use of AI tools, one potential positive role that ChatGPT could play is addressing issues of linguistic injustice for non-native speakers (NNS) of English in academic publishing (Tai et al., 2023). Tai et al (2023) also assert that ChatGPT could provide linguistic and academic assistance to NNS scholars by providing translation, correcting accurate spelling and grammar, and enhancing overall flow of academic writing. It could ultimately help NNS of English effectively articulate their scientific discoveries by alleviating language difficulties (Chen, 2023; Tai et al., 2023). This mitigation of language barriers by gen AI tools could be beneficial for NNS learners in higher education institutions if learners are educated on these applications and they are applied well.

As a result of the challenges and ethical considerations discussed in our analysis, in higher education teaching and learning contexts, the work of educators in the era of ChatGPT will have to inevitably shift in many directions in terms of course design, assessment methods, and educators' choices of curriculum delivery. Recently, the Modern Language Association of America and Conference on College Composition and Communication (2023) released their joint task force report on Writing and AI, and the report indicates risks to teachers by warning how they may be asked to make significant changes to their teaching practice without adequate time, training, or compensation for their labor. They also highlight the importance of teachers developing "critical AI literacy - literacy about the nature, capacities, and risks of AI tools as well as how they might be used" (p.7). Another notable challenge the MLAACCCC (2023) report indicated was that post-secondary educators may face a lack of institutional support that is specific to their disciplines, which could lead to a massive confusion as well as paralysis when communicating with their students about the ethical use of ChatGPT. Research on AI and academic integrity points to challenges faced by educators and issues around ethical considerations that require further investigation, and this study addresses a gap in research, specifically in the Canadian higher education context, analyzing both AI guidelines and academic integrity policies since the emergence of AI in 2022.

## Methods

### Selection Criteria and Document Collection

The data selection and collection process consisted of four phases: exploratory data scanning and collection, selection of universities and initial data aggregation, refinement of data selection, and final document selection and analysis. In the initial phase of exploratory data scanning and collection, a

broad environmental scan of college and university websites across Canada was conducted to identify some of the types of documentation, including AI guidelines, academic integrity policies, and guidelines for assessments and research, which were shared publicly by each post-secondary institution. The scan also aimed to determine the general relevance of the content of these resources to artificial intelligence, academic integrity, and academic writing.

As this research is focusing on the Canadian higher education context, and both colleges and universities were part of the initial scanning phase, to narrow the scope of the research and quantity of data for collection, the 15 universities comprising the U15 Group of Canadian Universities /*Regroupment des universités de recherche du Canada* (Table 1.) were ultimately selected for the document collection in this study. The U15 Group was selected for this data aggregation phase as it is an association of universities across Canada, established in 2012 to support the advancement of research and innovation policy initiatives nationwide. Additionally, the U15 Group is a part of the Global Network of Research-Intensive University Organizations (U15, 2020). York University, a supplementary research-intensive institution, was included with the universities in the U15 Group because its documentation on AI use for faculty and students was notably robust, adaptive and detailed. This inclusion provided a broader perspective on the guidelines existing among the Canadian universities investigated in this study.

Table 1. Universities Selected for Inclusion in the Research Study

| The U15 Group of Canadian Research Universities (U15, 2020) |
|---|
| 1. University of Alberta |
| 2. University of British Columbia |
| 3. University of Calgary |
| 4. Dalhousie University |
| 5. Université Laval* |
| 6. University of Manitoba |
| 7. McGill University |
| 8. McMaster University |
| 9. Université de Montréal* |
| 10. University of Ottawa |
| 11. Queen's University |
| 12. University of Saskatchewan |
| 13. University of Toronto |

| |
|---|
| 14. University of Waterloo<br>15. Western University |
| Outside of U15 |
| 16. York University |

*The documents and the resources from the two francophone universities: Université Laval and Université de Montréal were translated into English.

The websites of each university were then thoroughly examined in the refinement phase between April 2023 to July 2023. Using key search phrases including *academic integrity policy, artificial intelligence, AI, AI guidelines and AI policies* in search engines, such as Google, and within each official university website, publicly available materials related to academic integrity and AI guidelines/policies were collected. Documents were selected from the following official channels of each university: Office of the Provost or Vice-President Academic, Centres for Teaching and Learning or Academic Excellence, Undergraduate or Graduate Studies, and University Library student and faculty research sections. The documentation selected included information from official university FAQ pages, blogs, newsletters and university-wide centralized communications included within the aforementioned official university channels. After 48 documents that met the initial selection criteria of AI guidelines and policy-related documents were identified based on the aforementioned keyword search for AI guidelines and policy-related documents, the data set was further refined in this final phase to include only documentation with relevance to topics specific to *AI, academic integrity policy principles* and *academic writing.* This resulted in the elimination of 17 items with a final selection of 31 items for inclusion and document analysis. A visualization of the data aggregation and selection process concisely illustrates each of the phases of the data collection procedures in Figure 1.

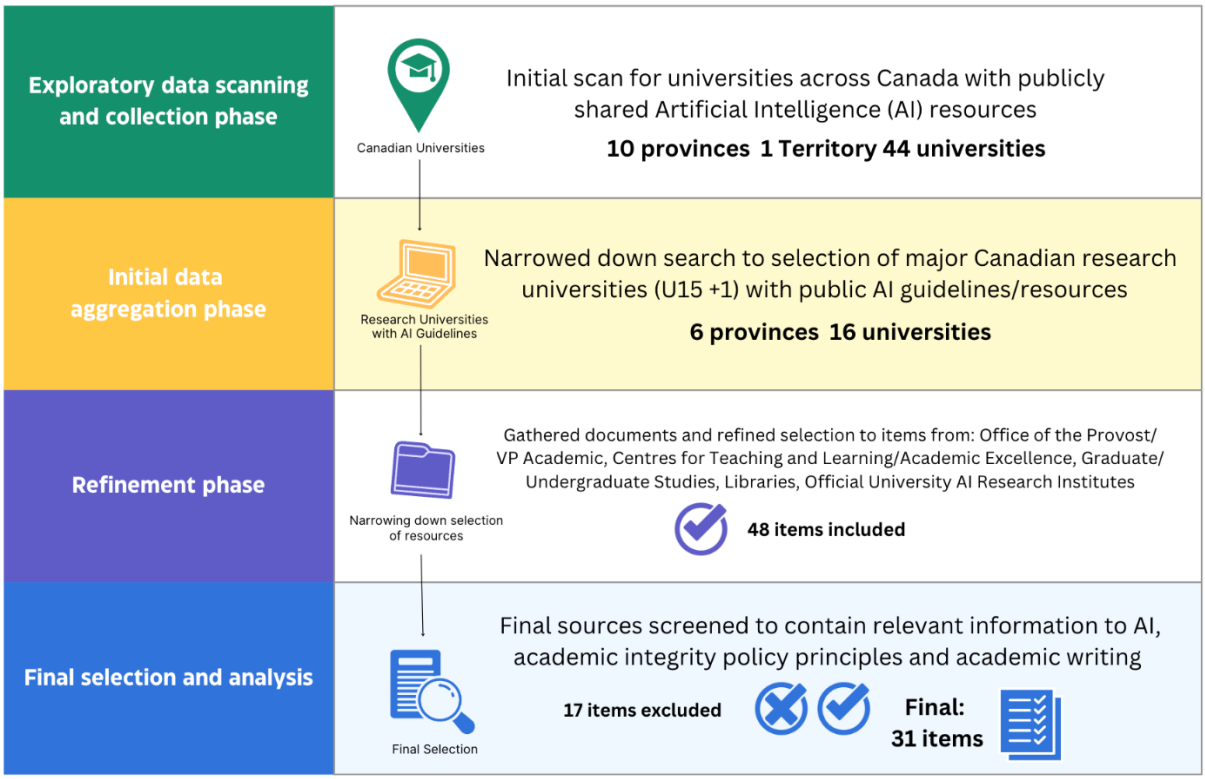


*Figure 1.* Data Aggregation and Selection Process Visualization.

## Research Questions and Data Analysis

In the current research study, upon selection of the universities, comparative document analysis was conducted on the existing Academic Integrity and AI guidelines and documentation developed and publicly shared by the major Canadian research-funded universities, the U15 Group and York University. This analysis aimed to answer the following guiding research questions:

1. What are common themes and key principles and strategies the publicly available AI guidelines and policies from Canadian universities portray?
2. How do these themes, principles and strategies align with their academic integrity policies?
3. What are the implications of AI text-generating software, such as Chat GPT, on teaching academic writing in Canadian higher education?

Upon collection and organization of the data set comprising 31 items for analysis sourced from each of the university websites, documents were analyzed and coded systematically based on each of the categories within the themes of the research questions drawing on iterative qualitative and thematic

coding methods (Charmaz, 2006; Saldaña, 2021). In the following section, the results of the analysis are reported in order of the research questions relating to common themes, key principles and strategies. These are drawn from the guidelines, implications of AI and ChatGPT on the teaching of academic writing in the Canadian higher education context and ways in which the themes, principles and strategies identified align with the selected universities academic integrity policies. The terms, *themes* and *strategies,* are used in identifying patterns from the AI guidelines. *Themes* refer to the recurring topics and overarching ideas present in the guidelines, such as ethical considerations, academic integrity and instructional methodologies for the use of AI. Strategies, on the other hand, refer to the specific approaches and recommendations provided by universities for managing, implementing, and preventing the misuse of AI tools in academic settings. These include policies for AI usage, training programs for faculty and students, and measures for ensuring academic honesty. The term *principle* is used when analyzing academic integrity policies in relation to the select AI guidelines for this study, drawing on the principles outlined in Stoez and Eaton's (2020) previous research on academic integrity (See Tables 2 and 3 for further reference).

## Research Findings

### Research Question 1: Themes, Principles and Strategies

In analyzing the selection of guidelines provided from each university, key themes and strategies were identified from the data relating to AI, academic integrity and academic writing, and each is organized in order of frequency of appearance along with examples of specific representative content from within the documentation (See Table 2). Thirteen themes, principles and strategies were extracted from the data and indexed based on the number of occurrences throughout the documentation. Almost all (fourteen of the sixteen) universities examined have included informational AI resources introducing or outlining definitions and general information about Generative AI and ChatGPT for faculty, students, and university administration, and this was the most common theme among all the universities. The subsequent four most prevalent themes identified were: 1) references to existing university academic integrity policies, 2) assessment and essay-writing resources through connections to writing centres and academic writing resources, 3) decision-making guidance on the usage of AI and 4) pedagogical applications of the use of AI for both faculty and students. Less commonly highlighted themes found in the guidelines were plagiarism detection, proprietary plagiarism detecting software and ethical considerations. Western University,

University of Manitoba, University of British Columbia, University of Alberta, University of Saskatchewan, and York University all include guidance on these topics; however, while some universities, such as Western University, indicate that they provide access for faculty to proprietary detection software, such as Turnitin.com, which may include AI detection capabilities, there is also clear accompanying cautionary guidance for faculty and students in all instances that any existing plagiarism detection software will not accurately and reliably identify AI generated content. Other schools, including McMaster University, do not appear to offer these types of tools and state that plagiarism detection software is "not available or recommended". Instead, alternative strategies are offered, including the consideration of the implementation of an honour pledge for students to submit attached to their assignments to validate their commitment to academic integrity in their work in an official written form.

One of the unique topics mentioned by only one university (University of Saskatchewan) was the topic of AI and Indigenous knowledges, with reference to the ethical use of AI tools, specifically highlighting the topics of copyright and the importance of obtaining permission prior to their use. The inclusion of this information through this topic by the University of Saskatchewan showcases an example of "aligning cultural and computational competencies" (Lewis et al., 2020) and combining western and Indigenous perspectives often lacking in language education (Cho et al., 2018; Piccardo et al., 2022) demonstrating the potential to provide a synergistic connection with technical and cultural expertise related to AI. Upon the completion of the examination of themes, we turn to the analysis of strategies within the guideline documentation.

Throughout the document analysis process, some of the strategies for faculty that emerged were the following: teaching strategies related to the use of AI in the classroom, strategies for designing, creating and rethinking assessment, AI detection software use strategies, and decision-making guidance for faculty. These strategies reveal a trend towards comprehensive support for instructors in navigating AI integration in their teaching practices. The identified strategies not only aim to enhance pedagogical approaches but also to ensure academic integrity and support with assessment and decision making around the use of AI. Learning strategies for students include details on how to use AI as a tool for support in the learning process. Strategies are also provided for discerning the ethical use of AI through guidance on the decision-making process (e.g., see Appendix A). Additionally, strategies for critical thinking and proper citation conventions (e.g., APA, MLA and others) in the context of academic integrity and AI are included to ensure consistency in academic writing through ethical research and writing practices. These elements are detailed and illustrated

in Table 2, which highlights the emphasis and distribution of the strategies through the number of occurrences throughout the document analysis process.

Table 2. Themes, Principles and Strategies Identified within Publicly Shared University AI Guidelines

| Themes, Principles and Strategies | Content Examples within Shared University Documents | Number of Occurrences |
|---|---|---|
| Informational AI Resources | What is Generative AI? What is ChatGPT? Current uses for faculty and students, screenshots, informational screencasts and videos, webinars, conferences | 14 |
| Reference to Existing Academic Integrity Policies | Academic Integrity / Academic Misconduct, Compliance, Consequences | 11 |
| Assessment and Essay-writing Resources | Writing Centre support, reference support, copyright, documentation or links to official sites for citations (i.e., APA, MLA with modified AI reference requirements) | 10 |
| Decision-making Guidance for Faculty and Students | Q&As with experts, information about the technology, pros and cons of using AI/ChatGPT (maintaining academic integrity), digital literacy resources, no clear prohibition | 8 |
| Pedagogical Applications of AI for Faculty | Modified pedagogical applications of classroom-based activities with AI or in consideration of students' use of AI, teaching scenarios and accompanying strategies | 7 |
| Miscellaneous AI Resources | Other informational videos, generative AI videos, novel AI applications, browser extensions | 7 |
| AI Detection Software | Proprietary software for AI detection availability for use at the university | 6 |
| AI as a Tool for Learning for Students | Information for students about how it can be leveraged effectively for learning | 5 |
| Community Connections | Creation of AI labs, steering committees and networks, written resources with faculty publications, media and collaborations with other universities, industry and organizations on topics related to AI | 5 |
| Ethical Considerations | Information and links to resources in this area | 5 |

| | | |
|---|---|---|
| Communication Guidance | How to discuss use of AI in classes and how to communicate intentions or requirements on a course syllabus | 4 |
| Critical Thinking Information and Tools | Information and resources for students to help critically assess use of AI in their coursework | 1 |
| AI and Indigenous Knowledges | Resources and information related to AI and indigenous knowledges | 1 |

Within the literature on academic integrity in higher education, a detailed list of core academic integrity policy principles has been identified by researchers in the field (Stoesz et al., 2019; Stoesz & Eaton, 2020; Möller, 2023). The present research study draws on these principles to identify key elements of existing "exemplary" policies (Bretag et al., 2011). A list of the principles that we examined can be found in Table 3 below, and in the following section, we examine the AI guidelines identified through a lens of each of the specific academic integrity policy principles and their alignment with the university academic integrity policies.

## Research Question 2: Identifying Alignments with Academic Integrity Policies

Throughout the analysis process of the themes, principles and strategies for each of the universities, alignments were sought according to the existing research in this area. Specifically, the key principles in AI guidelines were tallied based on the synthesis of findings from two landmark studies: Stoesz and Eaton's (2020) research in Western Canada highlighting trends in academic integrity policies, and Möller's (2023) subsequent study, which was based on Stoesz and Eaton's work. We separated the principles that were originally used in Stoesz and Eaton's research and the adapted list from Möller's work. We further identified two additional key principles that were not part of the previous two studies. The AI guideline documentation disseminated and shared with faculty, students, university administration and stakeholders throughout official university channels aligned with the institution's existing academic integrity policies in three main areas: plagiarism/academic honesty, processes and support. Out of 16 universities we examined, 14 universities discuss academic integrity in conjunction with AI tools, such as ChatGPT. 11 universities emphasized creating fair assessment for students in the era of ChatGPT and AI technologies. Support and Compliance were

also identified as core academic integrity policy principles in the AI guidelines. Two universities had no resources related to AI and academic integrity at the time of the search. AI literacy resources, also within the category of support documentation for faculty and students, were explored, and three universities (University of Calgary, McGill and University of Waterloo) discuss AI literacy in an official manner while the literature is increasingly emphasizing the importance of developing AI literacy in students with the development and application of AI technologies in higher education (MLA/CCCC, 2023; Tai et al., 2023). Throughout this examination of the literature and the documentation providing institutional framing on AI guidelines and academic integrity policies, it became evident that developing AI literacy may be crucial as a preventive and proactive measure in dealings with potential AI uses in academic writing. These findings are consistent with Stoez & Eaton (2020) underscoring the need for revisions to academic integrity policies.

Table 3. Core Academic Integrity Policy Principles identified within Publicly Shared AI Guidelines of Universities in Canada

| **Core Academic Integrity Principles Analysis Chart** | |
|---|---|
| **Core Academic Integrity Principles: Stoesz & Eaton (2020)** | **Number of University AI guidelines and documents addressing the relevant principle** |
| Punitive | 0 |
| Academic integrity/values/standards | 13 |
| Fair investigation/procedural fairness | 2 |
| Educative; progressive discipline | 0 |
| Balance of probabilities | 0 |
| Confidentiality | 1 |
| Burden of proof | 0 |
| Due process/legal rights | 0 |
| Natural justice | 0 |
| Presumption of innocence | 0 |
| Restorative justice | 0 |
| Collaborative sanctioning | 0 |

| | |
|---|---|
| Compassion | 0 |
| Fair assessment | 11 |
| | |
| **Principles Identified from Möller (2023) Adapted List** | |
| Compliance | 10 |
| Reputation of institution/qualifications | 1 |
| Consistency in application | 3 |
| Beyond a reasonable doubt | 0 |
| Impact on well-being | 1 |
| Quality assurance | 0 |
| Community of practice | 6 |
| Support | 14 |
| | |
| **Additional Principles Identified in our Research** | |
| Limitations | 2 |
| AI literacy | 2 |

In the next section, we address the final research question. We draw on implications of AI on teaching academic writing in higher education contexts based on our document analysis and our own literature review.

## Research Question 3: Implications of AI on Teaching Academic Writing

From the documents examined related to the use of AI in teaching and learning in Canadian universities, the common thread was that all universities acknowledge AI tools as part of teaching and learning practices. All universities provide resources to equip both students and faculty with tools to manage the inevitable use of AI and potentially find ways to integrate AI into the curriculum. None of the universities ban the use of AI tools and all emphasize the importance of understanding what ChatGPT and AI tools are, what the limitations are, how they could be used in academic assessments, what the ethical considerations would be, including the implications on Academic

Integrity. These guidelines endeavor to address the concerns around plagiarism and authenticity of authorship of academic writing due to the use of AI by both faculty and students. Several universities (e.g., Western University, University of Waterloo) discuss possible use of AI-detection technology, but what is currently understood in practice is that there is no reliable and sophisticated AI-detection software yet; therefore, faculty will have to use other strategies and techniques to prevent students from using AI tools unethically and to guide students on how to use the tools appropriately. One way to detect possible AI- assisted work is the fact that "the text written by ChatGPT to any given prompt tends to be quite formulaic, and varies little if the prompt is altered slightly, or run again" (Cotton et al., 2023, p.9). Cotton et al (2023) further emphasize faculty would have to develop an eye to detect academic writing submitted by the students that appears to be formulaic and check the authenticity of the references, which may be falsified or invented. Even with a trained eye, however, both false positives and false negatives in AI detection can occur as new versions of AI have the ability to generate genuine references and summaries in more natural language. One strategy that could help ensure authenticity of writership is adopting a process writing approach and asking for multiple drafts from the conceptualization of the topic through the final draft of the student's work (Cotton et al., 2023). AI literacy includes understanding what AI tools are, what they can do, and how to use AI to enhance one's work in an ethical and responsible way (University of Calgary, 2023). Only two universities (University of Calgary and McGill University) mentioned AI literacy explicitly. Another approach could be, as the MLA/CCCC's report (2023) addressed, institutions and writing programs should make teaching AI literacy as part of course learning outcomes. Other universities, such as the University of Alberta, emphasized the importance of building one's own voice, sharing ideas and asking questions, and developing writing skills.

## Pedagogical Considerations for Teaching Academic Writing

Our findings from the examination of publicly available policy documents identified a lack of directly relevant pedagogical considerations specific to teaching academic writing. In the absence of this, in this section, we have made some recommendations for pedagogical considerations based on the literature and the identified gaps derived from the document analysis. As AI technologies, including ChatGPT, continue rapidly evolving, pedagogical considerations for faculty teaching academic writing in higher education are changing in creating teaching materials, designing assessments and educating students about academic integrity (Cotton et al., 2023; Kumar et al., 2023; Perkins, 2023). As students now have easy access to AI tools like ChatGPT, they may use them to create written

content in their assessments (Perkins, 2023). This may be an unavoidable reality that faculty will have to face in the coming academic years, and the university guidelines are clearly assuming the current use of AI tools, such as ChatGPT by students as evident by the sheer amount of information the majority of universities are releasing in the form of guidelines, FAQs and newsletters. One of the key pedagogical considerations at this time could be maximizing transparency of AI use by students in any submission. For example, as identified in our research findings, Université de Montréal, and McMaster University are recommending an AI use statement listing all the tasks and processes students may have used an AI tool in any given assignment. As a result of implementing such a measure, it may be possible to minimize breaches of academic integrity policies of higher education institutions and increase the awareness of academic integrity in relation to AI uses in academic work. On the bright side of the emergence of AI tools in higher education, with support from educational institutions on AI usage, including the documentation found in our research, AI based tools could be helpful for English Language Learners (ELL) writing English by improving lexical diversity of student work as these AI tools can help generate different versions of the same written texts, therefore ELL students can learn to express their ideas in different ways in their written work (Gayed et al., 2022; Perkins, 2023). As for the pedagogical implications specific to the ELL student population, proper training on any new Al guidelines, especially for 'international' students, could benefit those in pre-university language programs. This is especially crucial for international students with limited English language proficiency given their increased risk of cultural and academic challenges, which may unintentionally result in breaching academic integrity (Fatemi & Sato, 2020; Macgregor & Folinazzo, 2018; Perkins et al., 2018). To maintain pedagogically and ethically sound use of AI tools, Perkins (2023) asserts that educating ELL learners on how to use AI tools responsibly is essential to ensure their academic success and avoid accidental violations of academic integrity policies.

## Policy Considerations in the Era of ChatGPT

The 16 Canadian universities that we examined are publishing guidelines, FAQs and sample course statements addressing the use of ChatGPT in their teaching and learning contexts while they seem to be reluctant or hesitant to release policy statements or policy documents. Some universities, such as University of Toronto and York University, have produced more comprehensive resources relevant to their own university contexts while others are sharing existing resources produced by other organizations, universities and publicly available articles to support faculty and students. A few universities (e.g., University of Alberta, McMaster University) have struck up Task Forces to address

the implications of AI tools in teaching and learning environments. The on-going work and conversations on this topic are evident; however, so far, no university identified has posted adjusted institutional-level academic integrity policies reflecting these changes in teaching, learning and assessment realities. As the existing research has demonstrated and drawing on the analysis of the findings in this study, we found that aligning with insights Perkins (2023) highlighted, detecting the use of AI tools in student writing may be difficult, necessitating a more nuanced approach in adjusting policies recognizing benefits of using AI tools to enhance teaching and learning in higher education, the ever-changing social understanding of the notion of academic integrity, and the changing nature of digital writing and human-AI co-creation (Chan & Hu, 2023). We further emphasize that to keep up with the rapid pace of changes in the area of AI, constant collection of feedback from students, faculty and all other university stakeholders on the use of AI tools and co-creating the healthy and ethical use of AI tools seems crucial in the process of adjusting the current academic integrity policies.

## Limitations and Future Research Directions

While the current research study includes both an investigation of academic integrity policies and AI guidelines within Canadian universities, for the purposes of this research, only openly accessible public documentation within these post-secondary institutions was selected for analysis. The objective of refining the focus of the research to this scope was to identify resources readily accessible to faculty, students and university administration within educational institutions in a Canadian context and to provide an analysis of the insights from this research to further support educators and students seeking informed guidance in this rapidly evolving area.

Another important limitation of the study is the number of higher education institutions selected for in-depth examination and analysis, which was limited to U15 Research Intensive Universities and York University. Additionally, the focus was on the Canadian sector of universities specifically, excluding publicly funded colleges and private universities and colleges. Further research is greatly needed in this area, both across Canada beyond U15 and globally, to address the pressing ethical, technological and pedagogical dilemmas facing educators and educational administrators in the development of guidelines and policies to support faculty and students in this new era of AI-enhanced education.

## Conclusion

The findings of this research revealed that universities across Canada have begun to address the urgency of creating guidelines, resources and materials for faculty and students navigating the use of AI technologies in their pedagogical contexts; however, few clearly developed guidelines or official policies have been found to exist or have been implemented at present due to a number of factors identified including the rapid changes and advances in AI technologies. Currently, while instructors in higher education institutions are encouraged to incorporate AI tools in their courses, the onus is on the instructors' decisions on how and which AI tools to use, and what constitutes 'authorized' use of AI tools for student assessments. More comprehensive support at institutional, departmental and other professional levels will have to be developed and provided to faculty and students to foster ethical use of AI tools, especially in academic writing. For academic integrity policies and practices for AI, institutions could benchmark and share best practices with other higher education institutions, develop ethical frameworks for AI use, and respect diverse, inclusive and equitable processes in policy development. Acknowledging the fact that AI is going to co-exist in teaching, learning and assessment in higher education moving forward, more critical discussions on AI literacy and writing ethically with AI's assistance are needed.

## Endnotes

1. To avoid confusion with terminology, throughout this paper, the abbreviation AI refers to Artificial Intelligence.
2. The version of ChapGPT throughout this paper generally refers to the free and publicly accessible Version 3.5.

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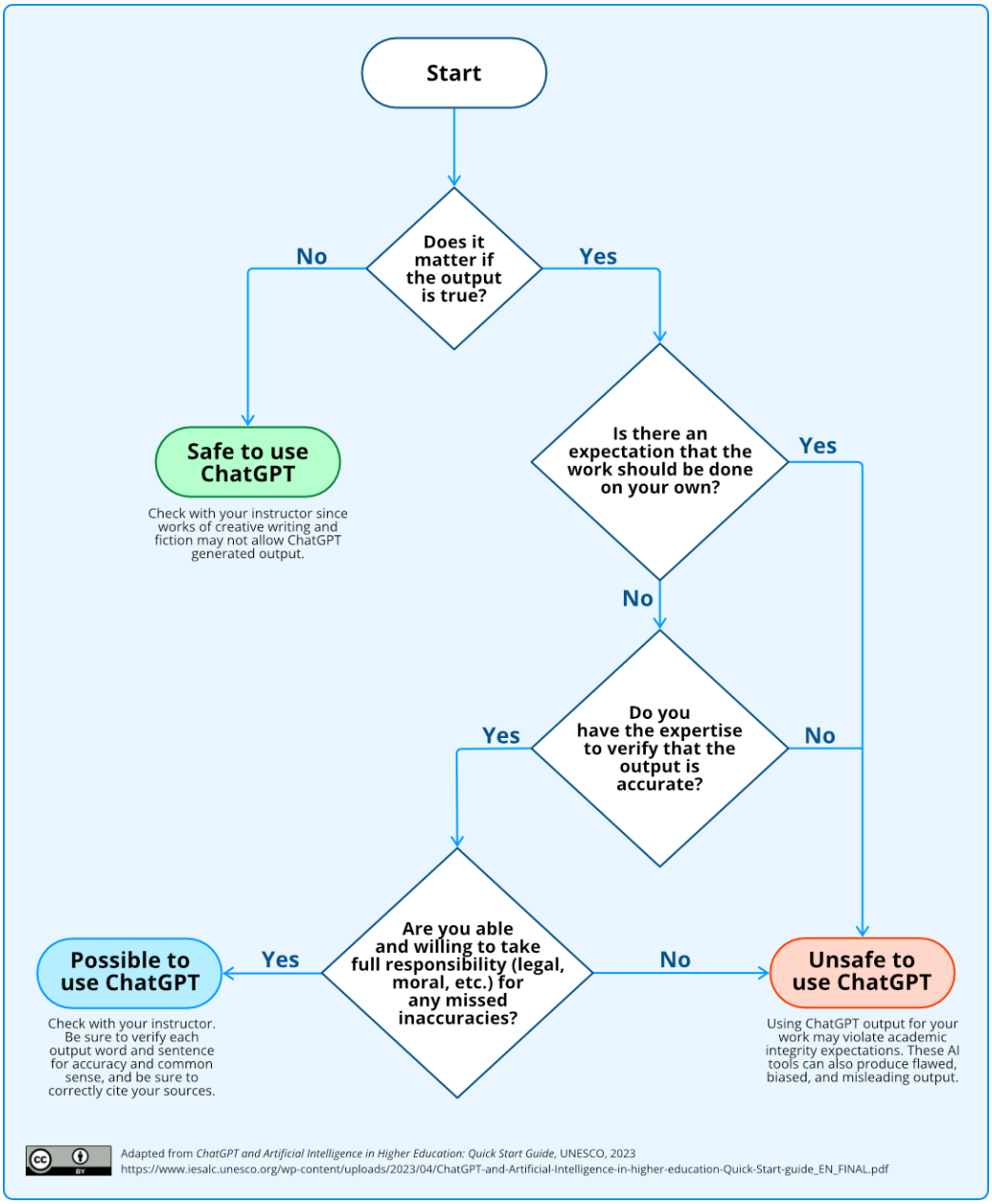
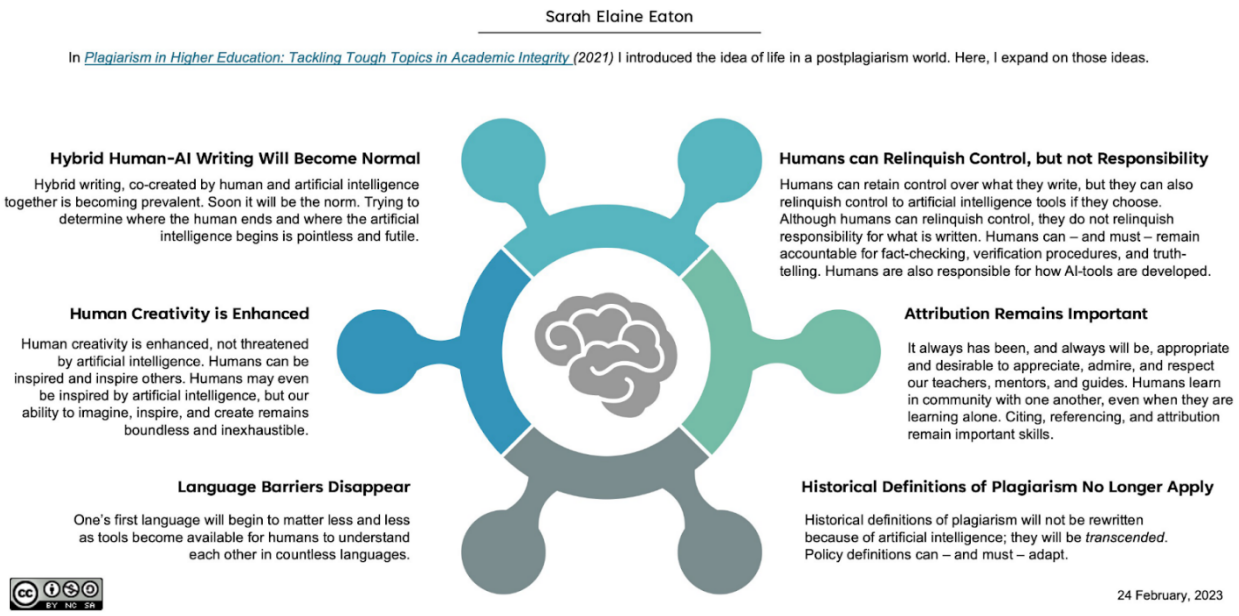
## Appendix A

Student Decision Making Process when using ChatGPT (University of British Colombia)



# Appendix B

6 Tenets of Postplagiarism: Writing in the Age of Artificial Intelligence (Eaton, 2021)




# Appendix C

| Summary of AI Guideline Analysis Data | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Language** | **Focus in AI Guidelines** | **Audience** | **Themes Concerning Academic Writing** | **Specific documents selected** | **University area** | **Number of Sources** |
| 1 | English | Information and reference to existing academic integrity guidelines | Mainly students and faculty | Use of ChatGPT on all assignments including academic writing Refers back to the existing university Academic Integrity policy AI Tools and what they can do; ethics and privacy; understanding ways in which AI and | 1)Academic Integrity - Chat GPT and Other Generative AI Tools (Q&A) 2) Assessment Design in an Era of Generative AI | 1) Academic Integrity- Office of the Provost and VP Academic 2) Centre for Teaching, Learning and Technology | 2 |

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| | | | | Academic Integrity can "co-exist"; designing assessments; communicating with students; additional resources | | | |
| 2 | English | Explains what it is Use of ChatGPT in teaching and learning | Students and Faculty For Faculty specific resources for course materials | To use or not to use; questions to help in the decision-making process; 6 Tenets of Postplagiarism: Writing in the Age of Artificial Intelligence (Eaton, 2021) Appendix B; dialogue with students; options for continuing the conversation with students<br>Risks of using information from Gen AI; citing (in-text, reference list, for publication) | 1) Provost's Taskforce on Artificial Intelligence and the Learning Environment<br>2) AI-Squared - Artificial Intelligence and Academic Integrity<br>3) Citation and Reference Management | 1) Office of the Provost and VP Academic (Provost's Taskforce)<br>2) Centre for Teaching and Learning<br>3) Library | 3 |
| 3 | English | Informing the audience what AI / ChatGPT are. Promoting Ethical use of ChatGPT Cautioning the use of | Instructors and students | AI and Academic Integrity (Eaton, 2022); how to engage in conversations with students about it<br>How to explain to students; guiding questions and considerations; resources and references<br>For students: citation information, | 1) AI Research Guide<br>2) Teaching and Learning with AI Apps<br>3) Articles and Resources for ChatGPT | 1) Library and Cultural Resources<br>2) Taylor Institute for Teaching and Learning | 3 |

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|---|---|---|---|---|---|---|---|
| | | AI detecting software | | considerations (ROBOT test for reliability); critical thinking information; tools, AI literacy; books and databases | | | |
| 4 | English | Copyright, academic misconduct regulations, teaching and learning implications | Students and Faculty | Academic misconduct, copyright parameters for use of ChatGPT for student assignments<br>Links to resources: Teaching and Learning; Citation and copyright; AI and Indigenous Knowledges, Languages and Data | 1) Academic Integrity Students<br>2) Academic Integrity Instructors<br>3) Writing Help: ChatGPT & Artificial Intelligence Writing Tools<br>*Writing Centre Policy (expired doc) | 1) / 2) Academic Integrity area<br>3) University Library | 3 |
| 5 | English | Can students use AI? What happens if something goes wrong? Can you cite AI? | Students and Faculty | Use of ChatGPT in student assignments - refers to openai.com guideline https://openai.com/policies/sharing-publication-policy Resources adapted from University of Toronto and UBC<br>6 Guiding principles for maintaining academic integrity | 1) Academic Integrity > Artificial Intelligence<br>2) Academic integrity and artificial, intelligence: what students need to know | 1) Centre for Advancement of Teaching and Learning<br>2) UM Today News (for Students) | 2 |

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| 6 | English | News, media contacts, expert guidance | Faculty, Students | Referred to Western Academic misconduct policies and departmental pages (AI and Chat GPT embedded in main page only) Ideas and Strategies for Academic Integrity and ChatGPT/AI; Talk to Your Students<br>Minimize Tasks that Can be Accomplished Using AI Technologies<br>Incorporate ChatGPT/AI into Activities and Assessments;<br>What to Western U faculty use to protect Academic Integrity: Turnitin detection software, scantron exams | 1) Assessing Student Learning > Academic Integrity (part of the guidelines include AI)<br>2) How Western profs are changing their courses for ChatGPT | 1) Centre for Teaching and Learning<br>2) The Gazette (News for Students) | 2 |
| 7 | English | Resources-overview (privacy, risks, copyright), provisional principles & guidelines, capabilities, limitations | Faculty/Admin (more for faculty, admin and students-forthcoming) | Copyright, forthcoming resources for digital literacy,<br>Instructors are not required to use AI for teaching;<br>Academic integrity policy applies when using generative AI;<br>communicating with students; plagiarism detection software not available or recommended; | 1) Generative Artificial Intelligence in Teaching and Learning<br>a) Provisional Principles b) Provisional Guidelines (web)<br><br>Provisional Guidelines: The Use of Generative | 1) MacPherson Institute for Leadership, Innovation and Excellence in Teaching | 1 |

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| | | | | guidelines for courses incorporating gen AI (consider learning outcome, discuss with students strengths, limitations and ethical considerations); assessment alternatives less susceptible to gen AI us; consider honour pledge; training and resources will be available for students and instructors, will collect feedback from both, will review guidelines before next course outlines are due | Artificial Intelligence (AI) in Teaching and Learning at McMaster University (doc) | | |
| 8 | English | Resources for students and faculty, academic misconduct | Students, Faculty | Students: Academic misconduct, Resources (academic writing centre help, library support, usage in courses, usage in research) Faculty: academic misconduct (detecting misconduct, detectors, other tools for detecting AI), communication with students,<br>Academic integrity policy includes one mention of AI only: "committing plagiarism, cheating, or failing to properly | 1) Academic Integrity for Students<br>2) Policies and Regulations: Academic Integrity and Academic Misconduct | 1) Current Students: Academic Integrity for Students<br>2) Office of the Provost and VP Academic Affairs | 2 |

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| | | | | attribute sources. This includes, for example, failure to identify content generated by any technological means, including artificial intelligence." | | | |
| 9 | English | Code of behaviour, scenarios, strategies, consequences | Students, Faculty | Academic integrity issues, scenarios, strategies, consequences, syllabus language, guidance for use in the classroom | 1) 2) 4) Webpage including FAQs 3) Links to News articles | 1) Academic Integrity- Office of the Provost, Innovations in Undergraduate Education 2) School of Graduate Studies 3) News 4) Centre for Teaching Support and Innovation | 4 |
| 10 | English | Course (f2f/online) and assignment (re)design, strategies to encourage students to work with integrity, citational practices for ChatGPT and AI | Students, Faculty, Curriculum designers | Course (f2f/online) and assignment (re)design, strategies to encourage students to work with integrity, citational practices for ChatGPT and AI, instructor resources, tips for students | 1) FAQ: ChatGPT and generative AI in teaching and learning at the University of Waterloo 2) Academic Integrity: Artificial intelligence and ChatGPT | 1) Associate Vice-President Academic 2) Office of Academic Integrity | 2 |

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|---|---|---|---|---|---|---|---|
| 11 | English | - | - | - | | | 0 |
| 12 | English | News, media, information, articles, videos (AI in education) | Students, Faculty | Videos- ChatGPT and academic writing, browser extensions and apps for AI and ChatGPT, library resources | 1) Library Guides: Artificial Intelligence | 1) Library > Guides | 1 |
| 13 | French | - | Faculty | Information about ChatGPT only on library website for students | 1) Artificial Intelligence overview webpage (Intelligence artificielle) Just informational about initiatives happening at the university and with collaborations, no info with resources about using AI for faculty or students<br>2) Informational- What is ChatGPT, Evaluating with ChatGPT and Considering Academic Integrity (no policy, just bullet points for consideration) | 1) Main site: Artificial Intelligence area<br>2) Pedagogical Resources | 0 |

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| 14 | French | 1 (for the Declaration )- Develop an ethical framework for the developme nt and deployment of AI; Guide the digital transition so everyone benefits from this technologic al revolution; Open a national and internation al forum for discussion to collectively achieve equitable, inclusive, and ecologically sustainable AI | Faculty, Students, Admin, All who are using AI | 2) Plagiat ou fraude concernant les étudiants du premier cycle (règlement disciplinaire): "l'utilisation totale ou partielle, littérale ou déguisée, d'un texte, d'un tableau, d'une image, d'un exposé, d'un enregistrement ou de toute autre création, générée par un système d'intelligence artificielle, à moins d'autorisation explicite à l'occasion d'une Évaluation."<br><br>Trans: Plagiarism or fraud concerning undergraduate students (disciplinary regulations): "the total or partial use, literal or disguised, of a text, a table, an image, a presentation, a recording or any other creation, generated by an artificial intelligence system, unless explicitly authorized during an assessment." | 1) The Montréal Declaration for a Responsible Development of Artificial Intelligence (initiated by Université de Montréal)<br>2) Plagiarism or fraud concerning undergraduate students (disciplinary regulations) | 1) Mila research institute centre in AI<br>2) Academic Integrity > Rules (Policy for undergraduate/gr aduate students- 1 doc for each, same language used for both) | 3 |

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| | | developme nt. | | | | | |
| 15 | English | - | Faculty | Pros and cons of using AI, reliance on these tools, opinions (overreacting?), regulation?, legislation? | 1) Dal News > News and Events | 1) Dal News | 1 |
| 16 | English | About Artificial Intelligence (AI) Technology<br>Addressing AI Technology with Students<br>Leveraging AI Technology as a Learning Tool<br>Detection and Future Considerati ons<br>Further Resources | Faculty and students | About Artificial Intelligence (AI) Technology<br>Addressing AI Technology with Students<br>Leveraging AI Technology as a Learning Tool<br>Detection and Future Considerations<br>Further Resources | 1) Academic Integrity and Generative Artificial Intelligence Technology (Clarification of policy guidelines regarding the use of AI technology for academic work)<br>2) AI Technology and Academic Integrity | 1) York University Senate Academic Standards, Curriculum and Pedagogy Committee<br>2) Academic Integrity | 2 |

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| | | | | | | **Final Source Selection** | 31 |

*The numbers in column 1 correspond with the U15 universities in Table 1.