Academic Integrity and Artificial Intelligence in Higher Education Contexts: A Rapid Scoping Review Protocol

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Abstract

This paper presents a protocol with methodological considerations for a rapid scoping review of academic integrity and artificial intelligence in higher education. This protocol follows Joanna Brigg Institute's (JBI) updated manual for scoping reviews and the Preferred Reporting Items for Systematic reviews Meta-Analysis (PRISMA) reporting standards. This rapid scoping review aims to identify the breadth of the literature reflecting the intersection of academic integrity and artificial intelligence in higher education institutions. The included studies in the review will be analyzed for insight concerning this emerging area, particularly its ethical implications. Our findings will be relevant for academic staff, administration, and leadership in higher education and academic integrity researchers.

Keywords: *academic integrity, artificial intelligence, rapid scoping review, higher education, Canada*

Introduction

The presence of Artificial Intelligence (AI) tools for accessibility and inclusivity in education has increased rapidly, and it has expanded to a broader audience, opening new possibilities and posing novel questions for educators, administrators, and students. Immersed in this scenario, the development of algorithmic writing technologies, capable of developing human-like text with little or zero human input (Dans, 2019; Köbis & Mossing, 2021), has created new challenges to academic integrity for educational institutions, especially in online and blended learning

environments. The intricacies of AI in educational contexts also extend to their potential to disconcert educators who might be unprepared for these changes (Eaton, 2021); AI in education can be confusing to many since it offers tools that could either help student cheat (Dawson, 2020) or facilitate engagement, representation, and expression (Dawson, 2020; Delisio & Butaky, 2019).

As a response to these transformations, many scholars have recommended exploring the ethical implications of AI in teaching, learning, and assessment (Zawacki-Richter et al., 2019; Bearman & Luckin, 2020). Following this call, we intend to provide timely guidance for educators seeking to implement ethical, fair, just, and accessible teaching practices that can adequately support students' learning in relation to their program's intended learning outcomes and work even under the presence of algorithmic writing technologies. In doing so, we also seek to contribute to the understanding of AI's scope, benefits, and challenges in post-secondary teaching, learning, and assessment (Popenici & Kerr, 2017; Zawacki-Richter et al., 2019) and inform a student perspective on how artificial intelligence should be used in the post-secondary sector.

To achieve these purposes, we explain in this paper how we will implement a type of evidence synthesis called rapid scoping review intended to provide insight into the available literature in the intersections of AI and academic integrity and with a focus on text-generating technologies in post-secondary education. As is customary with systematic, scoping, and rapid reviews, a preliminary step we undertook was to ensure that no other similar literature reviews already exist. We found none, and by virtue of that search, we are confident this rapid review will add to the academic integrity research base with well-timed and relevant new information.

We selected a rapid scoping review because it has the potential to properly inform various stakeholders in emerging areas such as the one we explore in this study. This scoping rapid review is an example of a growing evidence synthesis method (Peters et al., 2020), which has expanded from health to educational topics in education and social sciences (Wollscheid & Tripney, 2021).

This protocol will establish the review's background, rationale, objective, research question, screening, searching, extracting data methods, and analysis procedure. This rapid scoping review meets recommendations that emphasize the significance of developing an a priori protocol (Munn et al., 2022; Peters et al., 2020), ensuring that it is transparent and systematic in its conduct (Peters et al., 2020).

Background and Previous Literature

Teaching and learning scholars describe AI as "computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks" (Popenici & Kerr, 2017, p. 2). The implications of AI for teaching, learning, research, and assessment remain unclear and complex (Zawacki-Richter et al., 2019). AI technology, such as the Generative Pre-Trained Transformer (GPT-3), is evolving and can

develop human-like text with or without user input (Dans, 2019; Mindzak, 2020). A significant example is that AI can now re-write full sentences in popular software (Zhang, 2020).

At the same time, AI advancements can facilitate accessibility and inclusivity (Popenici & Kerr, 2017) through text summarization, real-time captioning, machine translation, and built-in libraries of idioms and phrases (Martínez, 2021). The Universal Design for Learning (UDL) framework situates technology, in a broad sense, as tools that facilitate various modes of engagement, representation, and expression (Delisio & Butaky, 2019).

In a world where AI is increasingly pervasive, educators face a blurry and entangled reality. Many educators might not yet be ready to address the challenges brought forward by AI technologies in postsecondary educational contexts (Eaton, 2021). Postsecondary teaching today requires knowing how to navigate the nuances of AI. Some authors have stressed the need to understand the difference between humans and AI and separate the uses of the latter as a support tool from those intended for cheating (Bearman & Luckin, 2020; Dawson, 2020b).

Furthermore, scholars have emphasized the significance of focusing on humans' capacity to solve problems, critique, and ask questions despite AI advancements (Popenici & Kerr, 2017). As Popenici and Kerr (2017) suggest, a scholarly discussion on AI in higher education is needed to inform the next steps. Most importantly, knowing how this technology could impact academic integrity is a critical issue in the current higher education context (Mindzak, 2020; Morrison & Mindzak, 2021; Wilder et al., 2021).

Bearman and Luckin (2020) echoed this critique about the rise of AI in higher education learning environments, urging educators to distinguish between the capabilities of human intelligence and AI when designing assessments of student learning. The authors offered examples concerning a) the role of computers in assessment procedures and b) tasks that point to capabilities exclusive to humans (Bearman & Luckin, 2020). As part of their exploration, Bearman and Luckin (2020) suggested that AI might influence education in ways that will push educators to reflect and analyze what is relevant in assessment.

Dawson (2020a) questioned the "boundary" (p. 89) between students seeking assistance from AI technologies and students cheating using such technologies. To do this, Dawson (2020) expanded on the concept of cognitive offloading, representing the use of physical actions to facilitate mental tasks. These physical actions could include the use of AI tools. The author proposed that educators should inform if they allow cognitive offloading in their course's learning tasks and assessments and provide students with the chance to use aids only when they have developed specific skills (Dawson, 2020a). Under Dawson's (2020a) perspective, mastery supported by cognitive offloading could be a suitable learning outcome if some considerations are met. Furthermore, Dawson (2020a) believed that students should know how to evaluate the outcomes of cognitive offloading.

Zawacki-Richter et al. (2019) underscored that AI is predicted to be soon adopted by higher education institutions. Likewise, they also explored the intricacies of AI in a higher education scenario characterized by budget cuts, with the potential to raise ethical implications soon. This systematic review identified that AI applications intended as support for faculty, students, and administrators could be described in four broad categories: 1) profiling and prediction, 2) intelligent tutoring systems, 3) assessment and evaluation, and 4) adaptive systems and personalization (Zawacki-Richter et al., 2019). The authors recommended that researchers discover "innovative and meaningful research and practice" (Zawacki-Richter et al., 2019, p. 20), as most studies were descriptive and quasi-experimental.

Another significant conclusion of this review was that critical reflection addressing the implications of AI from the point of view of ethics and teaching was lacking (Zawacki-Richter et al., 2019). This analysis also uncovered that most AI studies did not involve authors affiliated with Education faculties. Likewise, the studies were not explicit about the pedagogical and psychological learning theories that informed the AI implementations, which would help the advancement of this area (Zawacki-Richter et al., 2019).

Rationale

Scoping reviews allow researchers to identify the extent of the literature on a specific "topic, field, concept, or issue" (Munn et al., 2022, p. 950) while mapping the studies in that particular area (Munn et al., 2018; Munn et al., 2022; Peters et al., 2020). Researchers developing scoping reviews can meet various goals, such as identifying available types of evidence, clarifying concepts in the literature, examining how research is conducted on a specific topic, implementing it as a step before a systematic review, or identifying knowledge gaps (Munn et al., 2018; Peters et al., 2020). Thus, scoping reviews have specific methodological differences that set them aside from other kinds of knowledge synthesis, such as systematic reviews (Munn et al., 2018).

Opting for a scoping review implies that the evidence in a field is still vague and that specific questions cannot be asked at a certain point (Peters et al., 2020). Scoping reviews are most significant when the primary purpose of research is to map the available evidence on a specific area of knowledge or develop an understanding of the nature and diversity of the evidence (Peters et al., 2020).

In some cases, researchers who need to streamline decision-making processes in specific contexts with limited resources and timeframes can conduct rapid reviews (Hartling et al., 2017; Khangura et al., 2012; Tricco et al., 2015). A rapid review, in this case, would imply shortening or skipping some scoping review standard steps (Munn et al., 2018). Hence, analysis derived from a rapid review might have limitations due to its narrower scope (Hartling et al., 2017).

The quality of rapid reviews can be enhanced with some considerations, such as safeguarding the reliability of the sources and creating a relevant research question (Hartling et al., 2017). A rapid

review should also ensure the implementation of sound methods (Hartling et al., 2017). Wollscheid and Tripney (2021) add to these considerations by suggesting a clarification of priorities and strategies at the planning stages of the review. This aspect is also highlighted by Khangura et al. (2012), as non-transparent studies do not allow readers to gauge the rapid review's validity, appropriateness, and utility.

Rapid reviews in education are new, and their significance in the area is rising (Wollscheid & Tripney, 2021). In academic integrity research, researchers have also started implementing rapid reviews concerning contract cheating, academic integrity and mental health during COVID-19, and text-matching software (Eaton & Dressler, 2020; Eaton & Turner, 2020).

Objective

The rapid scoping review described in this protocol aims to identify the breadth of knowledge concerning academic integrity and AI in higher education settings involving faculty, students, teaching assistants, academic support for students, and educational developers. The data extraction and analysis of the included studies will aim to identify the ethical implications of AI, the uses of AI in higher education (for cheating/academic misconduct and teaching and learning), and the implications of AI for equity, diversity, and inclusion in higher education.

Research Question

In scoping reviews, questions are broad, exploratory, and oriented to provide an overview rather than answering specific questions (Munn et al., 2018; Munn et al., 2022). The proposed research question for this rapid scoping review is: What is known about academic integrity and AI in higher education involving faculty, students, teaching assistants, academic support for students, and educational developers? The most significant elements of this question are its participants, the concepts, and the context, which will inform the eligibility criteria of this rapid scoping review (Lunny et al., 2021; Peters et al., 2022).

Methods

Design

We designed this rapid scoping review protocol following the updated reviewer manual for scoping reviews by JBI (Aromataris & Munn, 2020). The reports will follow the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) (Page et al., 2021).

Eligibility Criteria

The eligibility criteria will follow the Population, Concept, and Context framework for scoping reviews (Peters et al., 2022). As this is a rapid scoping review, we have defined expansive

inclusion criteria (Munn et al., 2018) that can adequately inform readers and reviewers (Peters et al., 2020).

Population

The population must be clearly defined in scoping reviews (Peters et al., 2020). The population for this rapid scoping review are faculty, students, teaching assistants, academic student support staff, and educational developers in higher education. We will include various ranks in the faculty category, such as full professor, associate professor, assistant professor, a level below assistant professor, and others (Statistics Canada, 2022). Students attending various universities, colleges, and institutes (Government of Canada, 2022) are part of this inquiry's population. Teaching assistants refer to students who work as instructors in their field (Education USA, n.d.). The academic student support staff is connected to pedagogical support staff and other professional support available for students in the higher education system (UNESCO OECD EUROSTAT, 2001). The last category, educational developers, relates to staff collaborating with instructors, departments, and campus units in various teaching and learning activities (Kim, 2018).

Participants will be of any age and gender. Studies that are unclear about the involvement of any of these participants will be excluded. The main qualifying criterion (Lunny et al., 2021; Peters et al., 2022) is that these stakeholders have specific roles connected to teaching and learning in higher education. As Zawacki-Richter et al. (2019) recommended, we intend to contribute to a scholarship that offers a point of view of AI in higher education from teaching.

We will include studies developed in Tertiary-type A and Tertiary-type B postsecondary education (OECD, 2002). Type A programs are theory-based, and their design is intended to provide qualifications for students to enter advanced research programs and professions; this kind of program generally last four or more years (OECD, 2002). Type B programs focus on practical, technical, or occupational skills and might include theoretical foundations; type B programs usually last for two years (OECD, 2002). Consequently, studies on primary and secondary education contexts will not be included.

Concept

In a scoping review, concepts are the key issues to explore (Lunny et al., 2021; Peters et al., 2022); in this case, we explore AI. AI, in this proposal, follows Popenici and Kerr's (2017) definition: "computing systems that are able to engage in human-like processes such as learning, adapting, synthesizing, self-correction and use of data for complex processing tasks" (p. 2). As AI is an umbrella concept that encompasses various kinds of technologies and methods, we will also explore other AI-related concepts that could be relevant, such as intelligent tutoring services, natural language processing, language prediction model, machine learning, and neural network.

Context

The last element, context, is connected to the "location and/or field of the concept and/or participants of the review" (Peters et al., 2022, p. 962). We will focus on AI in the context of academic integrity. We define academic integrity as an expectation and commitment to the values of courage, fairness, honesty, responsibility, respect, and trust (ICAI, 2014) that inform ethical decision-making in teaching, learning, research, and the advancement of knowledge (Bretag, 2016). Under this definition, concepts such as ethics, integrity assurance, and research integrity also reflect this understanding of academic integrity.

Study Design

We will include qualitative, quantitative, mixed methods, theoretical and opinion studies; this choice is possible in scoping reviews as they have a broad nature that allows sources' diversity (Peters et al., 2020). We will not restrict studies by geographic location. We will, however, only include sources written in English. The restriction on language emerges from feasibility reasons (Peters et al., 2020) since all authors speak English. Likewise, we will exclude social media postings, product information and advertising. We will also include grey literature, such as conference presentations and papers, to capture the recent unpublished research in this area. Concerning publication dates, we will follow Zawacki-Richter et al. (2019) and focus on articles written since 2007, as Siri was introduced that year. Siri is an algorithm-based personal assistant and began as an AI project from the US Defense Advanced Research Agency (DARPA). Siri is relevant to this search as it was an AI solution introduced for everyday use (Popenici & Kerr, 2017).

Information Sources

We will consider a limited number of library databases or bibliographic databases; the library or bibliographic databases are transparent and reproducible. We will focus on interdisciplinary databases to conduct a comprehensive search. These databases are Academic Search Complete (EBSCO), Education Research Complete, ERIC (EBSCO), Web of Science, and Scopus. Further, we will conduct targeted searching for grey literature, including searching Google Scholar for conference presentations, as well as reviewing relevant conference websites.

Search Strategy

The search needs to be "explicit, transparent, and peer-reviewed" (Peters et al., 2020, p. 411). The research team also includes an information scientist to ensure its appropriateness (Khangura et al., 2012; Peters et al., 2020). Following JBI recommendations (Peters et al., 2020), we first developed a limited search in ERIC (EBSCO). We analyzed text words in titles and abstracts, and subject headings from the sources we could retrieve. After this, we conducted a second search in ERIC (EBSCO) using keywords and subject terms, which we will adapt to other databases to ensure that keywords and subject headings are constant and responsive to each

database's vocabulary. Table 1 presents the proposed search terms for the ERIC (EBSCO) database.

Table 1

Block Method used in the Rapid Scoping Review Search

#	Query	Limiters/Expanders	Results
S1	DE "Cheating" OR DE "Plagiarism"	Search modes - Find all my search terms	2,828
S2	DE "Ethics" OR DE "Integrity"	Search modes - Find all my search terms	19,925
S3	TI (academic N2 (integrity or conduct or misconduct or mis-conduct or honesty or dishonesty or dis-honesty)) OR AB (academic N2 (integrity or conduct or misconduct or mis-conduct or honesty or dishonesty or dis-honesty)) OR KW (academic N2 (integrity or conduct or misconduct or mis-conduct or honesty or dishonesty or dis-honesty))	Search modes - Find all my search terms	1,413
S4	TI ((research or assurance or educational) N2 (integrity or misconduct or mis-conduct)) OR AB ((research or assurance or educational) N2 (integrity or misconduct or mis-conduct)) OR KW ((research or assurance or educational) N2 (integrity or misconduct or mis-conduct))	Search modes - Find all my search terms	308
S5	TI ((research or academic or educational) N2 ethics) OR AB ((research or academic or educational) N2 ethics) OR KW ((research or academic or educational) N2 ethics)	Search modes - Find all my search terms	1,039
S6	TI contract N2 cheat* OR AB contract N2 cheat* OR KW contract N2 cheat*	Search modes - Find all my search terms	65
S7	TI ((cheating or plagiarism or eplagiarism or e-plagiarism or echeat* or e-cheat*)) OR AB ((cheating or plagiarism or eplagiarism or e-plagiarism or echeat* or e-cheat*)) OR KW ((cheating or plagiarism or eplagiarism or e-plagiarism or echeat* or e-cheat*))	Search modes - Find all my search terms	2,446
S8	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7	Search modes - Find all my search terms	22,769
S9	DE "Intelligent Tutoring Systems" OR E "Artificial Intelligence" OR DE "Natural Language Processing"	Search modes - Find all my search terms	3,078
S10	TI ((artificial or computational or machine) N2 intelligence) OR AB ((artificial or computational or machine) N2 intelligence) OR KW ((artificial or computational or machine) N2 intelligence)	Search modes - Find all my search terms	1,472
S11	TI ("ai" or "a.i.") OR AB ("ai" or "a.i.") OR KW ("ai" or "a.i.")	Search modes - Find all my search terms	797

#	Query	Limiters/Expanders	Results
S12	TI ((machine or deep) N2 learning) OR AB ((machine or deep) N2 learning) OR KW ((machine or deep) N2 learning)	Search modes - Find all my search terms	2,163
S13	TI (("natural language process*" or "language prediction model*" or "neural network*")) OR AB (("natural language process*" or "language prediction model*" or "neural network*")) OR KW (("natural language process*" or "language prediction model*" or "neural network*"))	Search modes - Find all my search terms	1,208
S14	TI (((intelligent or artificial) N3 (assistant* or tutor* or system*))) OR AB (((intelligent or artificial) N3 (assistant* or tutor* or system*))) OR KW (((intelligent or artificial) N3 (assistant* or tutor* or system*)))	Search modes - Find all my search terms	1,586
S15	TI (("text generat*" or "plagiarism detect*" or "automatic paper generat*") OR AB (("text generat*" or "plagiarism detect*" o "automatic paper generat*") OR KW (("text generat*" or "plagiarism detect*" or "automatic paper generat*")	Search modes - Find all my search terms	194
S16	TI (chatbot* or "chat bot*" or bot or bots) OR AB (chatbot* or "chat bot*" or bot or bots) OR KW (chatbot* or "chat bot*" or bot or bots)	Search modes - Find all my search terms	141
S17	TI ((exam* or test* or remote or online) N3 proctor*) OR AB ((exam* or test* or remote or online) N3 proctor*) OR KW ((exam* or test*) N3 proctor* or remote or online)	Search modes - Find all my search terms	823
S18	TI (Algorithm* N2 (write or writing or technolog* or proctor* or "text-match*" or "plagiarism detect*")) OR AB (Algorithm* N2 (write or writing or technolog* or proctor* or "text-match*" or "plagiarism detect*")) OR KW (Algorithm* N2 (write or writing or technolog* or proctor* or "text-match*" or "plagiarism detect*"))	Search modes - Find all my search terms	55
S19	TI ((paraphras* or translation or "text generat*") N3 (tool* or software* or "computer-assist*" or "computer-aid*" or internet)) OR AB ((paraphras* or translation or "text generat*") N3 (tool* or software* or "computer-assist*" or "computer-aid*" or internet)) OR KW ((paraphras* or translation or "text generat*") N3 (tool* or software* or "computer-assist*" or "computer-aid*" or internet))	Search modes - Find all my search terms	150
S20	S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19	Search modes - Find all my search terms	8,703
S21	DE "Higher Education" OR DE "Postsecondary Education" OR DE "Graduate Study" OR DE "Undergraduate Study" OR DE "Colleges" OR DE "Graduate Students" OR DE "Undergraduate Students" OR DE "Universities" OR DE "College Students"	Search modes - Find all my search terms	540,944
S22	DE "Faculty" OR DE "College Faculty" OR DE "Deans" OR DE "Department Heads" OR DE "Nontenured Faculty"	Search modes - Find all my search terms	55,742

#	Query	Limiters/Expanders	Results
S23	DE "Teaching Assistants" OR DE "Research Assistants" OR DE "Librarians"	Search modes - Find all my search terms	11,333
S24	TI (universit* or college* or "higher education*" or "post-secondary" or postsecondary) OR AB (universit* or college* or "higher education*" or "post-secondary" or postsecondary) OR KW (universit* or college* or "higher education*" or "post-secondary" or postsecondary)	Search modes - Find all my search terms	413,739
S25	TI (professor* or instructor* or faculty or librarian*) OR AB (professor* or instructor* or faculty or librarian*) OR KW (professor* or instructor* or faculty or librarian*)	Search modes - Find all my search terms	141,725
S26	TI academic N2 staff OR AB academic N2 staff OR KW academic N2 staff	Search modes - Find all my search terms	2,516
S27	TI (education* N2 (consultant* or developer*)) OR AB (education* N2 (consultant* or developer*)) OR KW (education* N2 (consultant* or developer*))	Search modes - Find all my search terms	1,211
S28	TI ((teaching or research) N2 assistant*) OR AB ((teaching or research) N2 assistant*) OR KW ((teaching or research) N2 assistant*)	Search modes - Find all my search terms	3,264
S29	TI (undergrad* or student*) OR AB (undergrad* or student*) OR KW (undergrad* or student*)	Search modes - Find all my search terms	757,117
S30	TI (graduate N2 (student* or study or studies)) OR AB (graduate N2 (student* or study or studies)) OR KW (graduate N2 (student* or study or studies))	Search modes - Find all my search terms	20,226
S31	S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30	Search modes - Find all my search terms	1,047,963
S32	S8 AND S20 AND S31	Search modes - Find all my search terms	236
S33	S8 AND S20 AND S31	Limiters - Date Published: 20070101-20221231 Search modes - Find all my search terms	201

Study Selection

The study selection will have two phases. The reviewers will first do a study selection pilot of 50 records. Two screeners will review these records' titles and abstracts independently in Covidence and determine if the results should be included or excluded, following the eligibility criteria (Lunny et al., 2021). This step ensures that all screeners use the same criteria and clearly define them. Attention to criteria applied to every piece of evidence is a considerable component (Khangura et al., 2012). The research team could decide to refine and develop a further

description of the inclusion and exclusion criteria if they detect consistency issues throughout the screening process.

After the pilot, two research team members (R1, R2) will screen all titles and abstracts independently (Hartling et al., 2017; Lunny et al., 2021). If the two reviewers disagree, a third reviewer will resolve the discrepancy (R3) (Lunny et al., 2021; Sriharan et al., 2020). Only the studies that meet or potentially meet the inclusion criteria will be considered for the next phase.

The second phase includes screening full texts using the inclusion and exclusion criteria. Two reviewers will screen these texts independently (R1, R2). A third reviewer will support the process if any disagreement emerges to ensure consensus (R3).

The reviewers will document the rapid review's search, screening, and retrieval processes with the PRISMA flow diagram, which will be automatically created in Covidence during the search and screening processes.

Data Extraction

The three reviewers (R1, R2, and R3) will develop a calibration exercise to identify if everyone understands the extraction table (Table 2) using five studies selected at random. The reviewers will determine if the data extraction template effectively summarizes the main elements of each study (Lunny et al., 2021; Tricco et al., 2015). The calibration exercise will finish once the team reaches a consensus since data extraction needs to be standardized (Peters et al., 2020). Full data extraction, using the agreed-upon table, will include two independent reviewers (R1 and R2) who will organize the information (Hartling et al., 2017; Tricco et al., 2015) and the third reviewer (R3) will help resolve disagreements if necessary (Lunny et al., 2021).

Table 2

*Proposed Data Extraction Table**

Component	Description
Citation	Source's citation data according to APA 7 guidelines
Country	Source's country (where it was implemented)
Geographical location	Source's specific city(ies) or town(s) and campus
Year of Publication	Source's specific publication year
Type of document	Source could be a (1) blog, (2) book, (3) book section, (4) conference paper, (5) conference proceedings, (6) journal article, (7) magazine article, (8) newspaper article, (9) thesis, and (10) webpage

Component	Description
Participants	Source could include: (1) faculty, (2) students, (3) teaching assistants, (4) academic support staff, and (5) educational developers
Purpose(s)	Source's purpose(s) as indicated by the author(s). This section could also include the research objectives, if included by the authors.
Research question(s)	Source's research question(s) as indicated by the author(s).
Intervention/Implementation (if applicable)	Source's intervention details.
Data collection	Source's information in how the data was collected. Other details concerning data collection, such as variables and instruments can also be included.
Results	Source's findings
Limitations(s)	Source's limitations, as communicated by the author(s)
Conclusion(s)	Source's conclusions, as outlined by the author(s)
Other data extraction elements	Source's information: (1) Ethical implications of artificial intelligence in teaching, learning, research, and assessment in higher education, (2) Artificial intelligence used for cheating in higher education, (3) Artificial intelligence for ethical support in writing in higher education, and (4) Equity, diversity, and inclusion elements in artificial intelligence for teaching, learning, research, and assessment in higher education.

* Adapted from Dobbins (2017), Khangura et al. (2012), Lunny et al. (2021), and Tricco et al. (2015).

Risk of Bias Assessment and Critical Appraisal

Since this is a rapid scoping review, we will not assess the risk of bias. However, we have managed bias in other ways. For example, we defined clear inclusion and exclusion criteria to select the sources; we also determined to have multiple screeners who will carry out independent screening processes and will use interdisciplinary resources to prevent publication bias. Furthermore, we will conduct a critical appraisal to evaluate the quality of the study methods since it can improve confidence in the study's validity (Wollscheid & Tripney, 2021). To achieve this purpose, we will use the tools from the Critical Appraisal Skills Programme (2022), which will help us determine the quality of the evidence through independent reviews (R1 and R2).

Data Analysis

The reviewers will develop descriptive thematic summaries (Lunny et al., 2021; Sriharan et al., 2020; Wollscheid & Tripney, 2021). The research team will ensure that the limitations and biases

are adequately communicated (Peters et al., 2020; Wollscheid & Tripney, 2021). We also intend to develop recommendations of implications for future research in this area (Peters et al., 2020).

Future Directions

This rapid scoping review will focus on exploring the breadth of the literature, mapping and clarifying the boundaries (Peters et al., 2020) of the intersections of academic integrity and AI in higher education. The results of this review will provide insight into the evidence in the area, which could benefit various educational stakeholders in teaching, learning, assessment, and research processes.

For instance, the findings of this rapid scoping review could help faculty, teaching assistants, academic support staff, staff from disability support offices, and educational developers identify the implications of AI-generated writing for academic integrity to be better positioned to analyze and discuss these aspects with upper-level administrators, colleagues, and students. This scoping rapid review findings could also offer them greater insight into the ethical and unethical uses of algorithmic writing technologies to prepare them to articulate the boundaries between cheating and assistance and ultimately inform the design of intended learning outcomes and assessment tasks in the undergraduate and graduate courses they teach or support. These stakeholders could also properly provide students with novel learning opportunities to use AI writing tools in ways that promote access, equity and inclusion in course-related activities and supplementary instruction instances.

Additionally, librarians could raise their awareness of the benefits and challenges of AI to contribute through their roles to educational and preventative institutional efforts to uphold research integrity, and students could identify how to benefit from this emerging technology when writing assignments and assessments in ways that are fair and just to their peers.

Overall, we see potential in this future scoping rapid review findings to impact learning, teaching, and assessment through a first evidence-based response that the post-secondary sector can use to react to the rapid spread of these AI writing tools.

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