

## **A rapid scoping review on academic integrity and algorithmic writing technologies**

Beatriz Antonieta Moya, University of Calgary

Sarah Elaine Eaton, University of Calgary

Helen Pethrick, University of Calgary

Robert Brennan, University of Calgary

Jason Wiens, University of Calgary

Brenda McDermott, University of Calgary

Jonathan Lesage, University of Calgary

**Session type:** Original research

### **Abstract**

This presentation provides insight into the development and findings of a rapid scoping review centred on the intersections of academic integrity and artificial intelligence, with particular attention to algorithmic writing technologies (e.g., ChatGPT) involving faculty, students, teaching assistants, academic student support staff, and educational developers in higher education contexts. This rapid scoping review was developed by a transdisciplinary team including Communication studies, Education, Engineering, and English, and followed Joanna Brigg Institute's (JBI) updated manual for scoping reviews and the Preferred Reporting Items for Systematic reviews Meta-Analysis (PRISMA) reporting standards. JBI provides a high-quality, trusted framework for conducting these kinds of studies. This inquiry's study design includes qualitative, quantitative, mixed methods, theoretical and opinion studies; additionally, this inquiry did not restrict studies by geographic location and focused on sources written in English. This review's studies involved faculty, students, teaching assistants, academic support staff, and educational developers in higher education. It also included studies about artificial intelligence in the context of academic integrity, focusing on artificial intelligence tools that assist text generation and writing developed in Tertiary type A and B postsecondary education. Studies excluded from this review were related to primary and secondary education contexts, did not address the ethical implications of artificial intelligence, and focused on text plagiarism software. The protocol of this rapid review was published in the *Canadian Perspectives on Academic Integrity Journal*. Its implementation helped this team identify various ethical implications signalled by scholars between 2007 and 2022. Considering the expansive emergence of these

technologies and the multiple positionings derived from these new and unprecedented encounters with such technology, we believe that the implications identified in this rapid scoping review are particularly relevant to inform academic staff, administration, students, and academic integrity researchers' ethical decision-making and practices when teaching, learning, designing, and implementing assessments, and doing research. The findings of this rapid scoping review encompass nuanced perspectives concerning the ethical and unethical uses of these emerging technologies and insights into equity, diversity, and inclusion issues.

## References

- Aromataris, E. & Munn, A. (2020). JBI manual for evidence synthesis. JBI.  
<https://doi.org/10.46658/JBIMES-20-01>
- Bearman, M., & Luckin, R. (2020). Preparing university assessment for a world with AI: Tasks for human intelligence. In M. Bearman, P. Dawson, R. Ajjawi, J. Tai & D. Boud (Eds.), *Re-imagining university assessment in a digital world* (pp. 49-63). Springer International Publishing.  
<https://doi.org/https://doi.org/10.1007/978-3-030-41956-1>
- Bretag, T. (2016). *Handbook of academic integrity*. Springer Singapore.  
<https://doi.org/10.1007/978-981-287-098-8>
- Covidence. (2022). How does Covidence detect duplicates?  
<https://support.covidence.org/help/how-does-covidence-detect-duplicates>
- Covidence. (n.d.). Reviewers. <https://www.covidence.org/reviewers/>
- Critical Appraisal Skills Programme (2022). CASP Checklists [online]. <https://casp-uk.net/casp-tools-checklists/>
- Eaton, S. E. (2021). Plagiarism in higher education: Tackling tough topics in academic integrity. ABC-CLIO.
- Eaton, S. E., & Dressler, R. (2020). Multilingual essay mills: the need for research beyond English language commercial providers. In T. Bretag (Ed.), *A research agenda for academic integrity* (pp. 152-162). Edward Elgar Publishing.
- Eaton, S. E., & Turner, K. L. (2020). Exploring academic integrity and mental health during COVID-19: Rapid review. *Journal of Contemporary Education Theory & Research*, 4(1), 35-41.  
<http://doi.org/10.5281/zenodo.4256825> www.jcetr.gr©200
- Dans, E. (2019, February 6). Meet Bertie, Heliograf and Cyborg, the new journalists on the block. Forbes. <https://www.forbes.com/sites/enriquedans/2019/02/06/meet-bertie-heliograf-and-cyborg-the-new-journalists-on-the-block/?sh=669bf965138d>
- Dawson, P. (2020a). Cognitive offloading and assessment. In M. Bearman, P. Dawson, R. Ajjawi, J. Tai, & D. Boud (Eds.), *Re-imagining university assessment in a digital world* (pp. 37-48). Springer International Publishing. [https://doi.org/10.1007/978-3-030-41956-1\\_4](https://doi.org/10.1007/978-3-030-41956-1_4)

Dawson, P. (2020b). E-Cheating, assessment security and artificial intelligence. In P. Dawson (Ed.), *Defending assessment security in a digital world* (pp. 83-97). Routledge.  
<http://doi.org/10.4324/9780429324178>

Delisio, L. A., & Butaky, C. A. (2019). UDL and assistive technology: Utilizing technology beyond mere accessibility. In W. W. Murawski & K. L. Scott (Eds.), *What really works with Universal Design for Learning* (pp. 157-172). Corwin.

Education USA. (n.d.). The U.S. educational system - Glossary.  
<https://educationusa.state.gov/experience-studying-usa/us-educational-system/glossary#T>

Government of Canada. (2022). Education in Canada: Post-secondary.  
<https://www.canada.ca/en/immigration-refugees-citizenship/services/new-immigrants/new-life-canada/education/types-school/post-secondary.html>

Hartling, L., Guise, J. M., Hempel, S., Featherstone, R., Mitchell, M. D., Motu'Apuaka, M. L., Robinson, K. A., Schoelles, K., Totten, A., Whitlock, E., Wilt, T. J., Anderson, J., Berliner, E., Gozu, A., Kato, E., Paynter, R., & Umscheid, C. A. (2017). Fit for purpose: Perspectives on rapid reviews from end-user interviews. *Systematic Reviews*, 6(32). <https://doi.org/10.1186/s13643-017-0425-7>

ICAI. (2014). The Fundamental Values of Academic Integrity.  
[https://academicintegrity.org/images/pdfs/20019\\_ICAI-Fundamental-Values\\_R12.pdf](https://academicintegrity.org/images/pdfs/20019_ICAI-Fundamental-Values_R12.pdf)

Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: The evolution of a rapid review approach. *Systematic Reviews*, 1(1).  
<https://doi.org/10.1186/2046-4053-1-10>

Kim, J. (2018, April 25). Are the professions (disciplines?) of educational developer and learning designer merging? Or not? *Inside Higher Ed*. <https://www.insidehighered.com/digital-learning/blogs/technology-and-learning/are-professions-disciplines-educational-developer-and>

Köbis, N. C., & Mossink, L. D. 2021. Artificial intelligence versus Maya Angelou: Experimental evidence that people cannot differentiate AI-generated from human-written poetry. *Computers in Human Behavior*, 114(106553).

Lunny, C., Antony, J., Ríos, P., Williams, C., Ramkissoon, N., Straus, S. E., & Tricco, A. C. (2021). Safety and effectiveness of dose-sparing strategies for intramuscular seasonal influenza vaccine: A rapid scoping review. *BMJ Open*, 11. <https://doi.org/10.1136/bmjopen-2021-050596>

Martínez, C. (2021). Artificial intelligence and accessibility: Examples of a technology that serves people with disabilities. <https://www.inclusivecitymaker.com/artificial-intelligence-accessibility-examples-technology-serves-people-disabilities/>

Mindzak, M. (2020, February 17). What happens when a machine can write as well as an academic? *University Affairs*. <https://www.universityaffairs.ca/opinion/in-my-opinion/what-happens-when-a-machine-can-write-as-well-as-an-academic/>

Morrison, R., & Mindzak, M. (2021). Exploring the impacts of text generating technologies on academic integrity. Taylor Institute for Teaching and Learning webinar series: Academic integrity

— urgent and emerging topics. <https://taylorinstitute.ucalgary.ca/series-and-events/academic-integrity-urgent-emerging-topics>

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(143).  
<https://doi.org/10.1186/s12874-018-0611-x>

Munn, Z., Pollock, D., Khalil, H., Alexander, L., McInerney, P., Godfrey, C. M., Peters, M., & Tricco, A. (2022). What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. *JBIE Evidence Synthesis*, 20(4), 950-952.  
<https://pubmed.ncbi.nlm.nih.gov/35249995/>

OECD. (2002). Education at a glance: OECD indicators 2002. <https://www.oecd-ilibrary.org/docserver/eag-2002-en.pdf?expires=1660686371&id=id&accname=guest&checksum=91C5FA8FBA74551E2A1C380F1079D47F>

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hrobjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372(71).  
<https://doi.org/10.1136/bmj.n71>

Peters, M. D., Godfrey, C., McInerney, P., Munn, Z., Tricco, A., & Khalil, H. (2020). Chapter 11: Scoping reviews. In E. Aromataris & Z. Munn (Eds.), *JBIE manual for evidence synthesis*. JBI.  
<https://doi.org/10.46658/jbimes-20-12>

Peters, M. D. J., Godfrey, C., McInerney, P., Khalil, H., Larsen, P., Marnie, C., Pollock, D., Tricco, A. C., & Munn, Z. (2022). Best practice guidance and reporting items for the development of scoping review protocols. *JBIE Evidence Synthesis*, 20(4), 953-968. <https://doi.org/10.11124/JBIES-21-00242>

Popenici, S. A. D., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, 12(22).  
<https://doi.org/10.1186/s41039-017-0062-8>

Sriharan, A., Ratnapalan, S., Tricco, A. C., Lupea, D., Ayala, A. P., Pang, H., & Lee, D. D. (2020). Stress, burnout and depression in women in healthcare during COVID-19 pandemic: Rapid scoping review. medRxiv. <https://doi.org/10.1101/2020.07.13.20151183>

Statistics Canada. (2022). Table 37-10-0076-01 number of full-time teaching staff at Canadian universities, by rank, sex, inactive.  
<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3710007601>

Tricco, A. C., Antony, J., Zarin, W., Strifler, L., Ghassemi, M., Ivory, J., Perrier, L., Hutton, B., Moher, D., & Straus, S. E. (2015). A scoping review of rapid review methods. *BMC Medicine*, 13(224).  
<https://doi.org/10.1186/s12916-015-0465-6>

UNESCO OECD EUROSTAT. (2001). 2001 Data Collection on Education Systems: Definitions, Explanations and Instructions.

Wilder, N., Weßels, D., Gröpler, J., Klein, A., & Mundorf, M. (2021). Who is responsible for integrity in the age of artificial intelligence? An analysis using the example of academic writing. Proceedings of the European Conference on Academic Integrity and Plagiarism (ECAIP).

Wollscheid, S., & Tripney, J. (2021). Rapid reviews as an emerging approach to evidence synthesis in education. *London Review of Education*, 19(1). <https://doi.org/10.14324/lre.19.1.32>

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), 1-27.  
<https://doi.org/10.1186/s41239-019-0171-0>

Zhang, L. (2020). Updated rewrite suggestions in Microsoft Word – sentence-level writing suggestions. <https://techcommunity.microsoft.com/t5/microsoft-365-blog/updated-rewrite-suggestions-in-microsoft-word-sentence-level/ba-p/1316392>