Artificial Intelligence and Academic Integrity: 
The Ethics of Teaching and Learning with Algorithmic Writing Technologies

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Invited talk for Bournemouth University
We would like to acknowledge the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), as well as the Tsuut’ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The City of Calgary is also home to Métis Nation of Alberta, Region 3.
Research Team (University of Calgary)

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Topics

1. Research Team
2. Project Beginnings
3. Gaps in Research
4. Main Research Question
5. Key Terms
6. Key Consideration
7. Projects Involved
8. Expected Impacts and Outcomes

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There once was a robot so smart
It could ace any course right from the start

But it raised some concern
When it couldn't learn

That academic honesty was an art
Emerging questions concerning algorithmic writing technologies and their related ethical complexities

Interest in developing evidence-based recommendations in contexts impacted by AI text-generating technologies

Informed by a perspective on academic integrity as a teaching and learning imperative (Bertram Gallant, 2008) and as a transdisciplinary research area (Eaton, 2021)
Key Terms

Artificial Intelligence

- “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)

Algorithmic text-generating software

- Writing technologies capable of creating original texts either from scratch or with user input (Dans, 2019)
Natural Language Processing
Gaps in Research

- Little scholarship addressing AI tools’ ethical and pedagogical implications (Zawacki-Richter et al., 2019).

- More research is needed to differentiate human and AI capabilities (Bearman & Luckin, 2020; Mindzak, 2020; Popenici & Kerr, 2017; Zawacki-Richter et al., 2019).

- Lack of clarity in differentiating students’ seeking to cheat from those trying to find assistance (Dawson, 2020).

- Need to explore how new AI tools will challenge educators (Eaton et al., 2021) and raise new questions about ethics, justice, and fairness.
Main Research Question

What are the ethical implications of artificial intelligence technologies for teaching, learning, and assessment?
Key Consideration – Equity, Diversity, and Inclusion (EDI)

Benefits offered for EDI

• NLP development has increased accessibility to learning tools, such as text summarization and real-time captioning (Martínez, 2021).
• AI tools provide multiple modes of engagement, representation, and expression (Delisio & Butaki, 2019).

Drawbacks created for EDI

• NLP and other AI tools are developed using unrepresentative data sets, resulting in bias or poor user experience (Smith and Smith 2021).
• NLP reproduces biases in language (Al Amin & Kabir, 2022).
Research Design

• Part 1: Modified Turing Test
  • Participants to identify if sample of writing is by Human Being, Computer/AI, or unsure
  • Write samples from a variety of disciplines (ranging from Education to Engineering)
  • Building on survey designed by Mindzak & Kumar
  • Participant demographic information includes questions about identities impact on English reading and writing skills.

• Part 2: Interviews
  • Participants ask about AI awareness, Perceived Ethical Uses of AI, AI Roles in support equity and access, and perspective on human generated text.
Early Knowledge Mobilization


Project Funding

• Artificial Intelligence and Academic Integrity: The Ethics of Teaching and Learning with Algorithmic Writing Technologies (2022 University of Calgary Teaching and Learning Grant)
• International Researcher Partnership Workshop Grant Awarded (2023 University of Calgary)
• Internal University of Calgary VPR Catalyst Grant – Application under review
Expected Impacts and Outcomes

- Promote a deeper understanding of what text-generating software can do.
- Academic staff and teaching assistants can apply this understanding in the context of intended learning outcomes.
- Some assumptions might lead to restricting the technology.
- Support faculty to reflect on their assumptions about AI tools.
- Help educators better focus their learning outcomes.
- Mechanics of writing versus conceptual organization.
Policy/Curriculum Considerations

- Defining learning technologies to future proof academic integrity policies for on-going advancement
- Integrating Natural Language Processing (NLP) programs into the digital literacy education to increase informed use of tool
- Building the ethical and academic integrity use of AI-based across the curriculum tools
- Consider the impact of prohibiting technology use or "beat the bot" options on a diversity of learners
Recommendations for the Classroom

Teaching and Learning with Artificial Intelligence Apps

https://taylorinstitute.ucalgary.ca/teaching-with-AI-apps
Wrap up

• Questions?
• Thoughts?
• Reflections?
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References


Images

• Dall-e generated images
  • an inclusive equitable diverse and technological learning environment
  • a student working with an algorithmic text-generating software