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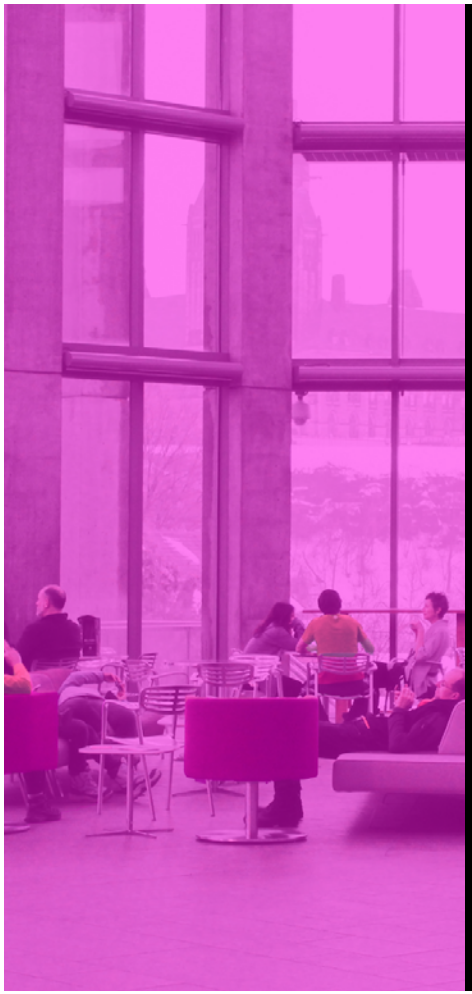
AI-PowerED

Will AI Change Post-secondary Teaching and Learning?

Issue briefing | December 12, 2024



Future Skills Centre | Centre des Compétences futures

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The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint, and The Conference Board of Canada.

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Key findings

- Many individuals leading or supporting the integration of artificial intelligence (AI) in post-secondary institutions (PSIs) stated that generative AI can become a tool for higher-order learning. Intentional, transparent, and critical engagement with AI could potentially reshape teaching and learning for the better.
- Avoiding rushed adoption is key. Understanding the capabilities and limitations of this technology is an important first step.
- Many interview participants highlighted that generative AI could offer tailored support, especially for students with diverse learning needs and challenges.
- AI training for students and educators is in high demand. Beyond practical skills like prompt engineering, AI critical literacy is needed to maximize the technology's benefits and fully comprehend its drawbacks.
- Some interview participants mentioned that PSIs face a dilemma. Providing access to the latest tools can imply endorsement, while limiting access might lead to unequal use and a growing digital divide. If PSIs choose to provide access to or support for AI use, a clear message on how educators, students, and staff are expected to engage with the technology will be important.
- Almost half of participants mentioned that their PSI has guidelines on AI use centred on academic integrity, but few have formal policies. Guidelines are often preferred over policies due to their more flexible nature.

Recommendations

PSIs that seek to make the most of generative AI for teaching and learning can consider the following:

- Provide AI critical literacy training to educators, students, and staff, starting with general guidance and then tailoring it to the needs of specific fields and professional practices.
- Establish processes that promote transparency and accountability in AI use. Create environments in which educators, staff, and students are comfortable saying why and how they used AI technology.
- Inform AI guidelines with perspectives of stakeholders in the post-secondary space who have different experiences with and attitudes toward AI. This approach ensures that concerns, opportunities, and limitations related to AI use are thoroughly addressed.
- Ensure equitable access to and use of AI tools for educators, staff, and students, along with a clear message on when and how these tools are expected to be used.

A tool for higher-order learning

What are the perceived impacts of generative AI on post-secondary teaching and learning?

To learn more about generative AI in higher education, we interviewed 42 individuals who are leading or supporting its integration in PSIs. Participants included leaders in AI research, administrators in PSIs, advisors from organizations supporting PSIs, and individuals of various academic backgrounds in AI working groups across PSIs.[1] Interviews were held between March and June 2024.

In these interviews, we heard that intentional, transparent, and critical engagement with AI could reshape teaching, learning, and assessment. Thoughtful use of generative AI can help students make connections between distant concepts, challenge their existing ways of thinking, and generate novel ideas or content.[2]

1 AI working groups consist of faculty, staff, and other post-secondary leaders who are at the forefront of academic policy or guidelines development and broader discussions on the integration of generative AI in post-secondary education. More information on our research methods can be found in Appendix A.

2 Eapen and others, "How Generative AI Can Augment Human Creativity."

Risks also surfaced in our findings. Most participants raised concerns about academic integrity, data privacy, and the biases inherent in AI tools. Some also questioned how the use of generative AI by students might affect the development of skills traditionally considered fundamental at the post-secondary level, such as writing.

However, if educators can effectively address and manage these risks, AI has the potential to deepen students' understanding, enhance their analytical skills, and expand the boundaries of their learning.

"It's totally dependent on the use case. ... If you're teaching a course on classical philosophy, ... it would be a brilliant use of AI. Your essay is going to be so much stronger if you've had that role play and literally a Socratic dialogue. ... We're bringing the Socratic method through millennia of teaching back to the forefront because you can do it one on one. That's a great use of AI."

University professor and administrator

"If everyone's doing their pre-work with their [AI] tutor and comes to class already prepared and having gone through their arguments, the level of discourse, I think, is going to be that much higher."

University professor and administrator

"Writing is something that can be done with a computer, but thinking is still human. We just have to think of different ways to do that and to make our students want to think for us and demonstrate that thinking. That's the shift."

University administrator

Interview participants from universities were more likely to emphasize AI's potential to enhance learning, while those from colleges and polytechnics focused more on adapting teaching methods to address changing workplace demands.

Levelling the playing field

AI can assist students who are facing various challenges in their learning journeys.

Nearly half of participants noted that students with diverse learning needs and challenges could benefit greatly from AI-based assistive technologies. For example, text-to-speech tools can support students with dyslexia, while learning management systems can aid those with executive function or organizational difficulties.[3]

Generative AI tools can also support educators with disabilities in their professional practice, as a few participants mentioned.

"I see lots of opportunity for these tools to help to level the playing field for students with disabilities by presenting content in varied forms. [These tools] allow students to [have] more time if needed, to have that iterative practice and feedback in a less pressured environment, to have access 24/7 in ways that suit their learning."
University administrator

"Generative AI had a really negative stigma attached to it. But as a person with a disability, it felt really hurtful. It's one of these things where I saw it as access. I'm like, 'Oh my gosh, I can show you how well I can think.'"
University administrator

Educators can draw upon AI to support tasks such as course material ideation and development, as well as administrative and routine tasks such as grading. However, avoiding rushed adoption is key.[4] Understanding the capabilities and limitations of these tools is an important first step.

Generative AI could also help to level the playing field for students from different cultural backgrounds. In a survey we conducted for another part of this project, administered from December 2023 to January 2024, we found that AI usage is higher among segments of the student population that have been traditionally disadvantaged in post-secondary settings, such as students with non-European backgrounds.[5] Our interviews shed light on why.

"Students don't always have the language, or the culture, or the advocacy skills, self-efficacy skills. ... They might say to an instructor, 'I need help.' [The] instructor says, 'Well, what questions do you have?' They don't know the first thing about what questions to ask."
University administrator

3 Cunningham, "How Technology Can Help"; and Welker, "Generative AI Holds Great Potential."

4 Johnson, "California's Two Biggest School Districts."

5 Vanzella Yang and Stadnicki, *Who Is Using Generative AI in Higher Education?*

Sending the right message

A few participants noted that PSIs face a dilemma. Providing access to AI tools can imply endorsement, while discouraging access might lead to unauthorized use.

Currently, educators have complex and nuanced attitudes toward AI, often showing both concern and optimism about its integration into teaching and learning.[6] This ambivalence can result in mixed messages to students and users more generally, who might access some of these tools without having received guidance. Research suggests that students find current parameters for use unclear.[7]

It is, therefore, crucial for PSIs to provide a clear institutional message on how generative AI should be used across different roles and contexts in post-secondary settings.

"What's the message from the university about whether AI is acceptable to use in the papers you write for your classes? Well, we're giving you [Microsoft] Word and telling you to use it, and then it's got AI built right into it. No wonder they're confused."
University professor and administrator

New tech, new divide

Questions of access, equity, and inclusion are a concern when a new technology emerges.[8] Some participants suggested that encouraging AI use across PSIs could help prevent unequal access and narrow a widening digital divide. If PSIs provide or support the use of AI tools, it's vital to create environments and systems that encourage experimentation and effective use of these tools.

"We're going to have more equity issues because some students are going to be in a position where they have a great deal of familiarity [with and] exposure [to generative AI tools]. They can integrate [them] and [the tools will help] bring them up to the next level. And we have other students who just aren't going to have the tools to be able to do that. Once again, we're going to have a really unequal playing field, and the cycle will continue."
Polytechnic administrator

A few participants mentioned that larger universities have AI-related institutes, resources, and administrative roles, whereas smaller PSIs are usually less equipped to provide a structured response to AI. In our previous survey, we found in that educators from colleges and polytechnics use AI less frequently than those from universities.[9]

6 Vanzella Yang and Stadnicki, *How Are Educators Navigating the AI Revolution?*
7 Janzen, Church, and Paleja, "Exploring AI."
8 Vanzella Yang and Stadnicki, *Who Is Using Generative AI in Higher Education?*; Wang and others, "The Artificial Intelligence Divide"; and Daepp and Counts, "The Emerging AI Divide."
9 Vanzella Yang and Stadnicki, *How Are Educators Navigating the AI Revolution?*

An appetite for training

In our previous survey[10] and interviews, we identified a strong desire for training on AI tools for educators and students alike.

Almost half of participants mentioned that training and guidance is necessary for responsible and equitable use of AI. Most emphasized that human judgment and critical thinking will remain a key component of learning in the AI era.

Without the know-how to implement AI in their teaching practice, instructors might ban these tools even if they're curious or willing to allow their students to explore this technology. Indeed, many educators have turned to delivering in-person exams as a way of reducing unauthorized AI use.[11]

"Learning about how to critically use and understand AI tools will be crucial for the future generation of students. Students with those skills from different disciplines, not necessarily computer science—could be business, philosophy, or [history], it doesn't matter—if you know those tools, you probably have a good chance of marketability in your work."

University professor and administrator

"We should be teaching students how to use it within the context of their discipline, our institution, the parameters of the program, the level of the program. It should be just another tool. And if we're not using it or treating it as another tool, then we've missed the boat 100 per cent."

Polytechnic instructor

"AI is simultaneously overhyped but also underhyped. I think training is absolutely necessary. There should be mandatory courses for students, some kind of training, maybe before a semester starts—but also at the same time [there should be training for] professors and instructors, because it's such an overwhelming thing."

College professor

10 Ibid.
11 Wiley Publishing, "The Latest Insights."

Institutions struggling to keep pace

Although few PSIs in Canada had guidelines or policies in the months following the launch of ChatGPT,[12] the landscape is changing quickly. Our review of institutional guidelines in the summer of 2023 revealed that a common position from PSIs is to let instructors decide on whether or how to use AI in their courses.[13] But most instructors we surveyed stated that they feel unprepared.[14]

Half of participants noted that their PSIs have AI guidelines, which are typically focused on academic integrity. They explained that guidelines are preferred over formal policies because they offer greater flexibility and can be implemented more quickly. Some also highlighted that academic freedom prevents some institutions from imposing strict policies, as they fear infringing on instructors' rights to teach as they see fit.

The prevailing sentiment? Many participants expressed that they feel PSIs are in the middle of a radical transformation.

"I think that we are going to, for a while, experience disruption after disruption, which is going to cause fatigue."
University professor and administrator

"Tools are going to change, features are going to change, capacities are going to change. If this trend continues, we're going to be lifelong learners. That's very hard. It's very hard to remain curious even when you think you have the answer. That's going to be the tough thing for a lot of us to grapple with—students, especially."
Polytechnic professor

12 Vanzella Yang, "AI and the Future of Post-secondary Education."
13 Ibid.
14 Vanzella Yang and Stadnicki, *How Are Educators Navigating the AI Revolution?*

Recommendations

Based on our interviews with individuals leading or supporting responses to AI in PSIs, we offer the following recommendations for institutions who wish to adopt an AI-positive approach.

Increase AI critical literacy

To fully embrace AI, PSIs should prioritize increasing AI critical literacy across their communities. AI critical literacy is about identifying when the AI exhibits bias and understanding how that bias is part of a larger system. This means recognizing how AI not only reflects existing prejudices but also makes systemic issues less visible, benefiting some people while harming others.

PSIs can enhance AI critical literacy by offering training sessions, workshops, and resources. These initiatives will help students, educators, and staff understand both the capabilities and the limitations of AI technologies, as well as their relationship with the broader societal context in which these tools operate.

While some general training may be needed across different stakeholder groups, tailored training specific to each role and academic discipline is essential. For example, instructors may benefit from training on integrating AI into curriculum design and assessment, while training for students may focus on using AI responsibly in research and assignments.

Being responsive and regularly evaluating the evolving AI landscape is crucial to ensure that training stays aligned with industry developments.

Practise transparency and accountability in AI use

Research shows that students are likely to continue using AI technology even if it's banned by their instructors or institutions.[15] PSIs can consider promoting transparency and accountability in AI use among educators, students, and staff.

Encouraging faculty, students, and staff to clearly outline their AI usage—detailing why and how they used the technology—can be an effective strategy. This approach helps identify inappropriate applications and guides users toward more acceptable practices.

Inform AI guidelines with diverse perspectives

AI guidelines should incorporate the perspectives of diverse stakeholders (e.g., faculty, students, and staff) with varying experiences and attitudes toward AI in higher education. The development of these guidelines should involve broad consultation, making a deliberate effort to include equity-deserving groups and students from across an institution.

15 Bharadwaj and others, *Time for Class 2024*.

This is especially important given that AI knowledge itself could be biased and based on Eurocentric knowledge frameworks, as most of our interview participants noted.

Ensure equitable access to and use of AI tools

If PSIs endorse AI use, providing access to the tools is a crucial first step. But as AI becomes increasingly integrated into education, more will be needed to promote widespread adoption and improve access. To address digital exclusion, PSIs should recognize that a variety of barriers (e.g., situational, financial, educational) prevent many people from accessing and using these tools effectively.

To encourage engagement, institutions could create mechanisms for students, staff, and faculty to experiment with AI tools. For example, instructors could include course components in which students explore AI and reflect on their findings. Clear institutional guidelines on when and how to use these tools are also essential.

Appendix A

Methodology

Ethics

This research project was reviewed by Veritas, an independent research ethics board. All instruments were approved. Interview and survey responses were anonymous, and participants were guaranteed confidentiality.

Interview recruitment

To find potential participants, we conducted internet searches to identify leaders in AI research and knowledge, administrators leading responses to AI in PSIs, advisors from organizations supporting PSIs, and individuals of various academic backgrounds in AI working groups across Canadian PSIs. These working groups consist of administrators, staff, researchers, and educators of various fields who are at the forefront of academic guidelines development and broader discussions on the integration of generative AI in post-secondary education (PSE). To supplement recruitment and ensure representation of colleges and polytechnics, we relied on The Conference Board of Canada's executive networks.

The research team sent email invitations to potential interviewees over three months (March to June 2024). In total, 162 individuals were contacted for participation in the study. Of these, 42 individuals participated.

Target interviews by subpopulation

We sought to obtain representation across genders, provinces, and institutional types. A total of 24 participants were from universities, 16 were from colleges or polytechnics, and two were from organizations supporting PSIs in their response to the proliferation of generative AI tools.

Interview demographics

Table 1
Interview demographics
(number of people)

Province	Woman	Man	Two-Spirit	Prefer not to say
Alberta	3	3		1
British Columbia	4	4		
Nova Scotia		1		
Ontario	7	7		
Quebec		1		
Saskatchewan	1	2	1	
Other provinces	4	3		
Total	**19**	**21**	**1**	**1**

Source: The Conference Board of Canada.

Qualitative analysis

The interviews were carried out over Microsoft Teams between March and June 2024. Interviews lasted approximately one hour. Interviews were recorded and transcribed, yielding 2,152 pages (395,120 words) of text.

Interviews were coded and analyzed using NVivo software. Coding themes were first developed based on the research questions and literature review, followed by an exploratory examination within interviews. Interrater reliability was measured using Kappa's statistic. The Kappa coefficient was 0.83.

Aggregate terms used in this briefing

Table 2
Aggregate terms used in this briefing

Aggregate terms	Per cent
Some/a few	<30
Many	30–40
Almost half	41–49
Half	50
Most	>50

Source: The Conference Board of Canada.

Interview questions

1. Do you think generative AI has impacted post-secondary teaching? If so, how?
2. Do you think generative AI has impacted post-secondary learning? If so, how?
3. Does your institution have policies or guidelines for student or educator use of generative AI?
4. Does your institution provide formal training on how to use generative AI for teaching and learning?
5. Are there any benefits of generative AI tools for teaching?
6. Are there any benefits of generative AI tools for learning?
7. What skills do students need to use generative AI most effectively?
8. How do you think generative AI will impact learners with diverse needs?
9. Are there any drawbacks regarding the use of generative AI for post-secondary teaching? If so, what are they?
10. Are there any drawbacks regarding the use of generative AI for post-secondary learning? If so, what are they?
11. Are there any risks regarding generative AI use in PSE?
12. Are there ethical concerns regarding generative AI use in PSE?
13. Who do you think is more favourable toward the use of generative AI tools: students, or educators?
14. Do you think educators should encourage, allow, or ban student use of generative AI?
15. What can be done to better prepare PSIs for the equitable and responsible use of generative AI?
16. How do you see the future of generative AI in PSE?

Appendix B

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