

Who Is Using Generative AI in Higher Education?



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Key findings

- A total of 20 per cent of post-secondary students in Canada report using generative artificial intelligence (AI) most or all of the time. Another 35 per cent report using it sometimes, and 45 per cent report never or rarely using it.
- Men in our study were more likely to report frequent use of, familiarity with, and proficiency in generative AI compared with women and nonbinary students.
- Students with Southeast Asian, Hispanic, South Asian, African, East Asian, and Middle Eastern backgrounds were more likely to report higher use of, familiarity with, and proficiency in generative AI compared with students with European backgrounds.
- Use of, familiarity with, and proficiency in generative AI were lower among Indigenous students compared with students with other non-European backgrounds.
- Generative AI usage varies across students in different fields of study, with the highest uptake among engineering students.
- Power users—those who report using generative AI most or all of the time—have similar levels of concern as non-users about the potential drawbacks of generative AI, despite having more favourable attitudes toward its use in post-secondary settings.
- Although greater use is associated with better learning experiences, the conditions under which generative AI usage may lead to positive or negative learning outcomes are still unclear. Post-secondary institutions that want to understand how to optimize this tool should investigate the experiences of students with different needs and attitudes toward AI.

Inequalities in tech adoption

Generative artificial intelligence (AI) is changing post-secondary education, and the conversations about potential benefits and drawbacks for teaching and learning are ongoing.



While institutions scramble to craft policies for generative AI use, one in five students report using it most or all of the time, and 35 per cent report using it some of the time. But how does the uptake of generative AI vary across social groups in the student population?

Research suggests that student engagement with technology differs according to socio-demographic characteristics.¹ In this data briefing, we investigate how generative AI use varies across students of different genders, cultural backgrounds, and age groups and in different fields of study and types of institutions. We also examine how attitudes toward generative AI may differ depending on whether students are power users (i.e., individuals who use generative AI most or all of the time), occasional users, or non-users (i.e., individuals who rarely or never use generative AI).

Our analysis is based on a nationally representative survey of post-secondary students in Canada (n = 2,401), collected in December 2023 and January 2024. (See Appendix A: Methodology.) By understanding variations in engagement with generative AI, we provide post-secondary leaders with data-driven insights to promote equitable and responsible use of this new technology.

1 Owens and Lilly, "The Influence of Academic Discipline, Race, and Gender"; and Staddon, "Bringing Technology to the Mature Classroom."

Usage differences by gender, culture, and field

Men are more likely than women to report frequent use

We asked post-secondary students how often over the past year they used generative AI tools to help with tasks related to coursework and learning. Men were more likely to report using these tools most or all of the time. In contrast, women were more likely to report rarely or never using generative AI. (See Chart 1.) Men also reported higher levels of familiarity with and proficiency in generative AI. These findings are consistent with documented gender patterns in technology adoption.² Usage was considerably lower among respondents who identified as nonbinary or Two-Spirit or in an alternative category, compared with both men and women.

Cultural beliefs about gender and technology (e.g., the prevailing notion of men as more tech-savvy than women) may lead men to report greater abilities even when abilities are the same across genders.³ Differences in psychosocial characteristics between men and women could also potentially explain men's greater engagement with digital tools.⁴ For example, some studies show that men are less risk-averse than women,⁵ which could lead men to use technologies they don't know much about.

Chart 1

Generative AI usage varies across students of different genders (frequency of generative AI use, per cent)



Note: Weights were applied to ensure representativeness of the sample. Source: The Conference Board of Canada.

- 2 Qazi and others, "Gender Differences in Information."
- 3 Correll, "Constraints Into Preferences."
- 4 Owens and Lilly, "The Influence of Academic Discipline, Race, and Gender"; and Aguirre-Urreta and Marakas, "Is It Really Gender?"
- 5 Eckel and Grossman, "Men, Women and Risk Aversion."

Frequent use is more common among students with non-European backgrounds

Students with Southeast Asian, Hispanic,

South Asian, African, East Asian or Middle Eastern backgrounds reported greater use of generative AI compared with students with European backgrounds. (See Chart 2.) Reported levels of familiarity with and proficiency in generative AI were also relatively higher in these groups.

Racialized students have experienced persistent educational inequalities in Canada.⁶ It is possible that some students draw on generative AI to better navigate unfamiliar cultural contexts, language barriers, or other obstacles that hinder educational achievement.⁷ Technology can indeed mitigate inequalities in the classroom by functioning as a tutoring device and as a tool supporting collaborative and creative processes.⁸ However, the uptake of generative AI is low among Indigenous students. A total of 62 per cent of Indigenous students reported rarely or never using these tools. Indigenous students also reported lower levels of familiarity and proficiency, potentially reflecting broader inequalities in access to digital tools and resources.⁹

Chart 2

Generative AI usage varies across students of different cultural backgrounds (frequency of generative AI use, per cent)



Notes: Weights were applied to ensure representativeness of the sample.

*includes open-ended responses such as "Caucasian," "Canadian," "Quebecois," "white," "Caribbean" Source: The Conference Board of Canada.

- 6 Lyon and Guppy, "A Review of Research on Race, Ethnicity and Inequality."
- 7 Mesch, "Minority Status."
- 8 Aguilar and Pifarre Turmo, "Promoting Social Creativity in Science Education."
- 9 Schwientek, "First Nations High-Speed Internet Access."

Engineering students have the highest uptake of generative AI

Students in different fields of study have distinct attitudes toward the use of digital tools, and some disciplines are more tech-oriented than others.¹⁰ The unequal use of generative AI across fields reflects this disparity: up to 76 per cent of students in engineering and 62 per cent in business reported using generative AI sometimes, most of the time, or all the time, in contrast to 41 per cent of students in social sciences and 40 per cent of students in health. (See Chart 3.) The relatively low uptake among students in health is likely to change given the promising applications of a variety of generative AI tools across many domains within this field.¹¹

Chart 3

Uptake of generative AI is higher in some fields than others (students who report using AI sometimes, most of the time, or all the time, per cent)



Note: Weights were applied to ensure representativeness of the sample. Source: The Conference Board of Canada.

- 10 Collins, Bulger, and Meyer, "Discipline Matters"; and Owens and Lilly, "The Influence of Academic Discipline, Race, and Gender."
- 11 Bhasker and others, "Tackling Healthcare's Biggest Burdens"; and Ghaffar Nia, Kaplanoglu, and Nasab, "Evaluation of Artificial Intelligence Techniques."





Similar AI use across ages and institution types

Younger and older students reported similar frequency of generative AI use. (See Chart 4.) Despite the digital divide between generations, mature students and older adults more generally are developing favourable attitudes toward technology and are increasingly integrated into the digital world.¹² Still, government leaders can help Canadians prepare for this technological shift by acknowledging the importance of upskilling and anticipating potential age barriers in the general population.¹³ The government of Singapore, for example, is encouraging adults over the age of 40 to return to higher education so that its workforce keeps up with rapid AI advancements.¹⁴

In colleges and universities, around 20 per cent of students reported using generative AI tools most or all of the time over the past year, and around half reported using it rarely or never. Occasional use is only slightly higher among students in university (37 per cent) than among students in college or at polytechnics (31 per cent).

Chart 4

Generative AI usage is similar across students in different age groups (frequency of generative AI use, per cent)



Note: Weights were applied to ensure representativeness of the sample. Source: The Conference Board of Canada.

12 Staddon, "Bringing Technology to the Mature Classroom"; and Nash, "Older Adults and Technology."

13 Orduña, "Navigating Generative AI."

14 unnikrishna, "Singapore's Bold Al Policy."

The profile of power users

Gender, culture, and field uniquely predict frequency of use

The socio-demographic characteristics discussed above are to some degree associated with one another. For example, engineering students are majority men, which could explain greater usage within that field. To better understand the predictors of frequent usage, we investigated the unique relationship of each variable with generative AI use frequency while controlling for the other variables. To this end, we executed multiple linear regression analysis. (See Appendix B Table A1.)

Compared with women, men were more likely to report higher generative AI use, and nonbinary individuals were more likely to report lower use. Students from all backgrounds except Indigenous and "other" were more likely to report higher use than students with European backgrounds. Finally, students in engineering were more likely to report higher use than students in the arts. Gender, cultural background, and field of study were also associated with familiarity with, proficiency in, and favourable attitudes toward generative AI. (See Appendix B tables A1 and A2.)

Power users have more favourable attitudes toward AI but are still concerned

Participants who reported using generative AI most or all of the time (i.e., power users) were more likely to agree that students should be allowed to use generative AI, compared with students who reported using generative AI rarely or never (i.e., non-users). Power users were also more likely to agree that this technology is essential for the future of post-secondary education. (See Appendix B Table 2.)

Occasional users also had more favourable attitudes compared with non-users, but not to the same extent as power users. However, power users and non-users didn't significantly differ on ethical concerns surrounding generative AI and its potential threats to the integrity and reliability of knowledge.

Greater usage is associated with better learning

Around 30 per cent of students who used Al disagreed that it improved their learning experiences. (See Chart 5.) However, students who reported more frequent usage were more likely to agree that their overall learning experience was improved through their use of generative AI. They also reported a better understanding of course materials, better grades, and improved work quality thanks to their use of generative AI. (See Appendix B Table A3.) The correlation between frequency of use and these learning experiences and outcomes is strong and statistically significant.

Chart 5

Q: On a scale from 1 (strongly disagree) to 7 (strongly agree), indicate your level of agreement with the following statement: Overall, my learning experience has improved thanks to the use of generative AI (number of students)



Note: Weights were applied to ensure representativeness of the sample. Source: The Conference Board of Canada.

Implications for post-secondary institutions

Post-secondary institutions (PSIs) that want to harness generative AI's potential should consider investigating the conditions under which generative AI usage may lead to positive versus negative learning outcomes for different types of students. Students have differing learning needs and attitudes toward AI, as well as varying experiences of exclusion from technological innovations.

A better understanding of how students can benefitor not-from the use of these tools can help PSIs create inclusive learning environments aimed at boosting learning experiences with generative AI. Initiatives that PSIs could consider include outreach programs as well as information and training sessions specifically targeting non-users and occasional users, who still represent most of the post-secondary student population.

In parallel, collaborative efforts are necessary to facilitate the co-design of policies and guidelines that are responsive to the diverse needs and perspectives of different social groups in the student population. Awareness of uneven student engagement with AI is particularly important given that AI software itself can perpetuate a wide range of biases.¹⁵

To mitigate risks of an AI divide,¹⁶ PSI leaders should promote adequate representation in AI working groups and enhance access to information, training, and resources across all segments of the student population, in a way that is sensitive to the learning needs and sentiments of students across different socio-demographic groups. Doing so will help to ensure the AI revolution delivers on its promise to reduce educational inequalities.



¹⁵ Grassini, "Shaping the Future of Education"; and Newstead, Eager, and Wilson, "How AI Can Perpetuate – or Help Mitigate – Gender Bias."

¹⁶ Wang and others, "The Artificial Intelligence Divide."

Appendix A Methodology

We crafted an online survey to collect large-scale data on experiences, attitudes, and challenges regarding the use of generative AI among post-secondary students and educators. This data briefing draws exclusively on data collected from student responses. We used the services of Leger, a Canadian market research firm, which distributed the surveys in December 2023 and January 2024. We reached 2,401 students and 402 educators. Survey weights were applied to ensure that the data were representative of the post-secondary student population in Canada.

The survey included a mix of Likert-scale questions, multiplechoice questions, and open-ended questions on generative AI in post-secondary education. There were overlapping and distinct sets of questions for students and educators. The survey also captured demographic information for betweengroup analyses (e.g., gender, cultural background, region, age). All survey questions were reviewed and approved by Veritas, an independent research ethics board. Survey responses were anonymous, and participants were guaranteed confidentiality.

Chi-square tests were used to investigate the bivariate relationship between categorical variables. Pearson correlations were used to investigate the bivariate relationship between continuous variables. Multiple linear regression models were used to assess the relationship between a continuous dependent variable and multiple independent variables.

Survey questions

Frequency of generative Al use: "Over the past year, how often have you used generative Al tools (e.g., ChatGPT, Bard, DALL-E) to help you with tasks related to coursework and learning?" Response options were: *never*, *rarely*, *sometimes*, *most of the time*, and *all the time*.

Familiarity: "On a scale from 1 (not at all familiar) to 7 (very familiar), how familiar are you with generative artificial intelligence tools (e.g., ChatGPT, Bard, DALL-E)?"

Proficiency: "On a scale from 1 (strongly disagree) to 7 (strongly agree), indicate your level of agreement with the following statement: I have the knowledge and skills needed to effectively use generative artificial intelligence in my coursework and learning activities."

Gender: "How would you describe your gender?" Response options were: *woman, man, nonbinary, Two-Spirit, I prefer to identify as...,* and *prefer not to say.* **Cultural background:** "What is your cultural background? Select all that apply." Response options were: *African*, *European*, *East Asian*, *South Asian*, *Southeast Asian*, *First Nations or Indigenous*, *Hispanic or Latinx*, *Middle Eastern*, *other* (*please specify*), and *prefer not to say*.

Field of study: "Which of the following areas best describes your main program of study?" Response options were: arts and communication technologies, business, education, engineering, health, humanities, sciences, social sciences, and other (please specify).

Age: "What is your age?" Response options were: under 25, 25 to 35, 36 to 45, 46 to 55, over 55 years old, and prefer not to say.

Institution type: "What type of post-secondary institution are you enrolled in? Select all that apply." Response options were: *college/polytechnic* and *university*.

Attitudes on Al: "On a scale from 1 (strongly disagree) to 7 (strongly agree), indicate your level of agreement with the following statements:

- Students should be allowed to use generative AI to help them with their coursework and learning ("allowed to use").
- The use of generative AI is essential for the future of post-secondary education ("essential for PSE").
- The use of generative AI raises ethical concerns ("ethical concerns").
- Generative AI poses a threat to the integrity and reliability of knowledge ("threat to knowledge")."

Learning experiences and outcomes: "On a scale from 1 (strongly disagree) to 7 (strongly agree), indicate your level of agreement with the following statements:

- Overall, my learning experience has improved thanks to the use of generative artificial intelligence (e.g., ChatGPT).
- My understanding of course materials has improved thanks to the use of generative artificial intelligence (e.g., ChatGPT).
- My grades have improved thanks to the use of generative artificial intelligence (e.g., ChatGPT).
- The quality of my work has improved thanks to the use of generative AI (e.g., ChatGPT)."

Appendix B Multiple regression results

See our linear regression tables for more details on frequency of use of, familiarity with, and proficiency in generative AI, as well as attitudes surrounding its use in post-secondary education.

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