CONSEIL SUPÉRIEUR DE L'ÉDUCATION

CEST

Summary

Generative Artificial Intelligence in Higher Education: **Pedagogical and Ethical Issues**

Québec

Summary

Generative AI is a type of artificial intelligence system (AIS) capable of generating new content very quickly, in response to a user's request (called a "prompt"). Examples include conversational agents such as ChatGPT (OpenAI) or Gemini (Google). In an academic context, some generative AIS can, among other things, produce short essays, complete examinations, develop lesson plans, correct papers, answer questions, generate computer code, summarize texts, create new images or synthesize music.

The release of ChatGPT to the public at the end of 2022 provoked strong reactions from people involved in higher education. In Québec, as elsewhere, media coverage has focused mainly on the issue of plagiarism and academic fraud, with higher education stakeholders concerned that generative AI facilitates these practices. Yet reactions to ChatGPT's arrival have been highly diverse, ranging from enthusiasm to fear. The higher education sector quickly mobilized to consider the many issues raised by the democratization of generative AI, which go beyond the question of plagiarism and fraud.

In May 2023, the Conseil supérieur de l'éducation (CSE) and the Commission de l'éthique en science et en technologie (CEST) took the initiative of bringing together a joint committee of experts to reflect on and analyze the pedagogical and ethical issues raised by the use of generative AI in higher education in Québec. Consultation with universities, colleges and other organizations involved in Québec's higher education ecosystem completed this reflection, which was based on both a multidisciplinary scientific perspective and realities experienced in the field.

Recommendations for managing the use of generative AI in Québec colleges and universities

The present report represents the culmination of this joint process. It is addressed primarily to the Ministère de l'Enseignement supérieur, but also to the college and university community as a whole. **The committee proposes 20 recommendations to ensure the judicious use of generative AI in Québec colleges and universities, should its use be normalized.**

Based on this work, the committee believes that a **cautious, unhurried approach to generative AI, based on the short-and medium-term needs of the various stakeholders in higher education, must take precedence** in order to respond to the technological transformation underway. The most salient needs and problems faced by the main stakeholders in higher education concern the following issues:

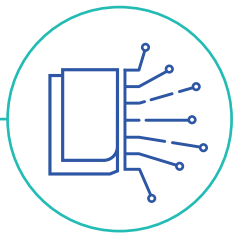
- alignment of generative AI with learning objectives (constructive alignment);
- academic and intellectual integrity and the evaluation of learning;
- ongoing digital competency training for all;
- the quality of information provided by generative AI;
- other ethical issues such as privacy protection and the environmental impacts of generative AI.

Importance of ministerial action and consultation with stakeholders

In the eyes of the CSE and the CEST, the current technological context provides an opportunity to update the steps already taken in relation to the use of digital technologies in education, by pursuing some of the objectives and enhancing the measures contained in the first Québec Digital Strategy (2017) and the resulting Digital Action Plan for Education and Higher Education (2018-2023). Organizations consulted emphasized the structuring role of the Ministère de l'Enseignement supérieur (MES) in guiding the system, and expect the implementation of measures that aim to:

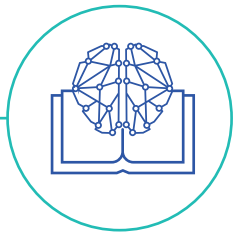
- meet the competency development needs of students;
- meet the professional development needs of teachers and pedagogical support staff;
- address digital inequalities.

However, the CSE and CEST reiterate that it is important for the Ministère to involve all college and university stakeholders in a **collaborative and co-constructive approach**. They also stress that any government initiative to regulate the use of generative AI systems in higher education should be implemented in a way that **respects institutional autonomy, professional autonomy of teachers, and academic freedom**. In this context, the CSE and the CEST propose 20 recommendations aimed at ensuring that, should the use of generative AI be normalized in Québec colleges and universities, it will be carried out judiciously. They also recommend a number of measures to support the Ministère's leadership in integrating generative AI in higher education.



Using constructive alignment as a guide

As to whether or not generative AI should be integrated into learning activities, given the absence of tangible evidence of the large-scale effectiveness of the use of generative AI in higher education, the CSE and the CEST propose using the notion of **constructive alignment** as a guide. This means that teachers must begin by asking themselves what problems need to be solved using technology, thinking first about the pedagogical objectives of using (or not using) digital technology, and then determining how, if applicable, digital tools can contribute to learning and teaching.



Fostering intellectual and academic integrity

Each institution should be able to make decisions about the integration of generative AI according to its own approach and adapted to its specific circumstances, to develop is own guidelines for effective and ethical use, and to update its institutional policies and local curricula, in a spirit of experimentation and innovation. It is also critical for higher education institutions to revise their policies relating to intellectual honesty and to reconsider evaluation practices, in a context that calls for a rethinking of the very notion of academic integrity. In this regard, the CSE and CEST underline the importance of preserving the **trusting relationship** between students and teachers. They recommend that institutions develop and promote strategies to facilitate discussion and openness between students and teachers on the use of generative AI, through the development of institutional policies and evaluation practices that keep pace with these new realities.

However, it is up to the MES **to formulate, in collaboration with each of the stakeholders in higher education, general directives and guidelines on the responsibilities of institutions, teachers and students with respect to generative AI in the context of the evaluation of learning**. It is equally important for these ministerial guidelines to encourage institutions to adjust their internal policies or rules relating to academic integrity, or to specify how the use of generative AI should be interpreted within existing frameworks. To higher education institutions, the CSE and CEST recommend that they **adopt clear, concerted guidelines, adapted to different contexts and scales of action**. Greater support should also be given to pooling expertise in this area, notably through ongoing and coordinated monitoring. Local professional development initiatives, the production of specialized training courses and the sharing of practices, initiatives and guidelines concerning the use of generative AI must also be promoted between institutions.

Ongoing development of digital competency

In view of the varying degrees of digital competency among education system stakeholders, as well as the need to train not only through or with generative AI, but also to empower people in relation to digital technology, the CSE and CEST recommend an updating of the **Digital Competency Framework** (Ministère de l'Éducation et de l'Enseignement supérieur, 2019) **in the form of a continuum** (from preschool to higher education), in response to developments in generative AI. The CSE and CEST also call on the Ministère to affirm, across the board, the essential nature of digital competency development in its policies, regulations and other frameworks, and to place the issue of generative AI at the core of the next ministerial strategic planning. To this end, the MES could ensure that the ability of institutions to anticipate digital developments is sustainable, ongoing and articulated in its various budgetary and financial regimes. The MES could also fund local training initiatives that support digital competency development for teachers, students, managers, professionals and support staff at higher education institutions.

Information quality

Despite their impressive capabilities, some generative AI tools, including ChatGPT, often produce false or inaccurate statements (misinformation). The information produced by generative AI tools is also sometimes biased. It may reflect values, beliefs or interpretations that reproduce or amplify certain social biases. These risks, which affect the quality of information provided by generative AI, seem particularly problematic in a context where students or teachers may tend to place exaggerated trust in AI, to the detriment of their own judgment. The CSE and CEST therefore recommend that the risks posed by these tools in terms of information quality be explained to students in a clear and transparent manner. They also recommend that students be encouraged to diversify their sources of information by relying, in particular, on primary sources and the expertise of teachers whenever possible.

Other ethical issues

Finally, the CSE and CEST highlight other issues relating to generative AI which, although beyond the scope of this report, are still important to consider in higher education. For example, an institution or teacher may conclude that ChatGPT is a tool that offers many pedagogical benefits, but refrain from using it because of the privacy risks it raises, or due to social or environmental concerns. The CSE and CEST therefore propose that the following issues be taken into consideration, while stressing the importance of further research:

- quality and accessibility of psychosocial services;
- privacy protection;
- intellectual property and copyright;
- environmental impact of generative AI.

This joint initiative of the CSE and CEST involved the participation of many higher education stakeholders, starting with the organizations that took part in the consultation. The two bodies hope this work surrounding the arrival of generative AI will contribute to its judicious integration into Québec's higher education institutions, in the wake of the publication of the Conseil de l'innovation du Québec (CIQ) report *Prêt pour l'IA* (*Ready for AI*) (CIQ, 2024) and of UNESCO's *Guidance for generative AI in education and research* (2023).

Summary Table of Recommendations

Recommendation	Relevant Actors
Constructive alignment	
1 Support public research and knowledge transfer activities that aim to, among other things: a Document the nature of generative AI use, and its scope, by the various stakeholders in higher education, as well as the factors motivating this use; b Collect data on the impacts of generative AI use on the learning and cognition of students in higher education, and support multidisciplinary research projects seeking to better understand these multiple impacts as well as the associated ethical issues; c Identify and foster uses of generative AI that are likely to support academic success in higher education; d Carry out pilot projects and experiments in educational institutions, with a goal to validating or developing pedagogical integration practices for generative AI that support educational success; e Document alternative approaches to the use of generative AI to support teachers in situations where students refuse to consent to its use, under the conditions planned by teachers or institutions.	Government of Québec
2 Provide leadership for the use of generative AI in Québec colleges and universities, notably by: a Establishing a collaborative body for provincewide consultation and collaboration, involving all stakeholders in higher education, to develop a common vision and define basic guiding principles for the responsible and safe use of generative AI in higher education, as well as strategic priorities and system-wide orientations; b Initiating and promoting a process to develop a framework for governing and managing the use of generative AI, in collaboration with all higher education stakeholders;	Ministère de l'Enseignement supérieur

Recommendation	Relevant Actors
c Raising awareness in the higher education community of the importance of a well thought-out and ethically responsible use of generative AI, for the benefit of educational success, in particular by supporting the development of tools to support decision-making by the various members of the academic community to help them use generative AI in a responsible, autonomous and contextual manner; d Ensuring that any initiative to regulate the use of generative AI in higher education takes account of its evolving nature; e Ensuring that its integration: i is not driven by commercial interests, as higher education remains a common good; ii is subject to a verification process to assess its effectiveness, benefits, risks and safety.	
3 Use constructive alignment as a criterion for assessing the appropriateness of integrating generative AI into higher education by avoiding, in particular, uses of generative AI that result in cognitive discharge that compromises the acquisition of knowledge or competencies deemed necessary to achieve learning objectives.	Teachers and higher education institutions
4 Support the pooling of expertise, practices, initiatives and guidelines concerning the use of generative AI, in particular by ensuring ongoing and coordinated monitoring, as well as a transfer of knowledge concerning experiences in various teaching settings and developments in generative AI.	Higher education and research institutions
5 Reassert the prerogative of teachers to decide whether or not to use generative AI in their teaching activities, as well as the types of use they will make of it, so as to respect their professional autonomy and the principle of academic freedom.	Ministère de l'Enseignement supérieur

Recommendation	Relevant Actors
Academic integrity	
6 Mandate a provincewide collaborative body to formulate guidelines for the responsibilities of institutions, teachers and students with regard to generative AI in the context of the evaluation of learning. These guidelines should respect professional autonomy and academic freedom, and encourage pedagogical experimentation and innovation. It is equally important that these ministerial guidelines encourage institutions to adjust their institutional policies or rules relating to academic integrity, or to specify how the use of generative AI is to be interpreted with regard to existing frameworks, for example: a By ensuring that course outlines and assessment guidelines systematically provide indications as to the permitted and non-permitted uses of generative AI, and whether or not there is a requirement to report its use; b By specifying that, unless otherwise indicated by the teacher, full transcription of content produced by generative AI without acknowledging the source will be considered a breach of academic integrity; c By specifying that students remain responsible for making every effort to ensure the accuracy of the content of their productions, in compliance with the criteria for academic integrity.	Ministère de l'Enseignement supérieur
7 Support the pooling of initiatives, expertise, practices and guidelines concerning the use of generative AI, both in terms of tools and strategies conducive to its use in the context of assessment for learning purposes, and in terms of the means to promote its judicious use in accordance with the principles of intellectual honesty and academic integrity, in particular by: a Supporting and encouraging the creation of communities of practice; b Promoting the sharing and dissemination of best-practice guides and examples of guidelines in the form of Open Educational Resources (OER), for use by institutions, teachers and students; c Assessing the impact of the uneven use of generative AI within the student population on academic results, as well as on college R scores.	Ministère de l'Enseignement supérieur and higher education institutions
8 Promote and develop strategies to facilitate discussion, openness and trust between students and teachers regarding the use of generative AI in the context of learning assessment.	Higher education institutions

Recommendation	Relevant Actors
9 Offer greater support for the professional development of teachers and other professionals (e.g. digital pedagogy specialists) in learning assessment by providing them with the time, training, resources and professional support they need to adjust their evaluation practices, as well as to develop training and tools tailored to the various courses and programs of study.	Ministère de l'Enseignement supérieur
10 Ensure that they: a With regard to the possible delegation of tasks to generative AI, maintain their professional judgment and act in accordance with their professional responsibility, in particular for tasks where there is a risk of prejudice, e.g. when correcting work; b In line with the criterion of constructive alignment, refer to their course objectives to determine what types of contributions are expected from students; c Using the tools acquired through training, revise the learning assessment methods of their courses as necessary, so as to promote an integrated and appropriate use of generative AI, while preserving the assessment of knowledge deemed appropriate, such as declarative knowledge.	Teachers
Digital competency	
11 Ensure that institutions' ability to anticipate digital developments is sustainable, ongoing and articulated in the various budgetary and financial regimes.	Ministère de l'Enseignement supérieur
12 Update the Digital Competency Framework (2019) in the form of a continuum (from preschool to higher education), taking into account developments in generative AI, and affirm the essential nature of AI literacy and digital competency development in its policies, regulations and other frameworks.	Ministère de l'Enseignement supérieur in concertation with the Ministère de l'Éducation

Recommendation	Relevant Actors
13 Provide financial support to: a Local training initiatives that support digital competency development for teachers, students, managers, professionals and support staff at higher education institutions; b The production of varied content and specialized training on generative AI in general, and its uses in learning and teaching contexts.	Ministère de l'Enseignement supérieur
14 Ensure that the development of teachers' digital competency is accompanied by a rebalancing of tasks that promote recognition of the profession, in particular by: a Providing for more training time in teaching tasks and fostering the hiring of support staff; b Ensuring equitable access to their digital competency development.	Higher education institutions
15 Support the ability of higher education institutions to maintain and develop their technological infrastructures, in order to meet emerging needs.	Ministère de l'Enseignement supérieur
16 Support public research and knowledge transfer activities aimed at studying the potential impact of the use of generative AI in higher education, in terms of inequities among students, in particular by: a Verifying whether the use of generative AI exacerbates the inequities observed among certain groups in vulnerable situations, or whether it could, on the contrary, help to reduce certain inequalities; b Identifying, where appropriate, measures that can be put in place by higher education institutions to mitigate these inequities.	Government of Québec

Recommendation	Relevant Actors
Information quality	
17 Ensure: a That the risks to information quality posed by these tools is clearly and transparently explained to students; b That students be encouraged to diversify their sources of information by relying on primary sources and the expertise of teachers whenever possible.	Higher education institutions, teachers and support teams
Other ethical issues	
18 Support the development and deployment of ongoing activities to raise awareness among students and teachers about the protection of personal information and cybersecurity.	Ministère de l'Enseignement supérieur
19 Offer higher education stakeholders generative AI solutions that are responsible (e.g. protection of personal information, digital sobriety), local and designed for the reality of higher education in Québec.	Government of Québec, in collaboration with Québec AI ecosystem
20 That if generative AI is integrated into their pedagogical activities or practices, teachers: a Ensure that the risks posed by these tools with respect to personal information and copyright are explained to students in a clear and transparent manner; b Obtain, where applicable, students' consent before sharing their productions with a generative AI system, or before imposing on students an activity that involves sharing their productions, parts of their productions or information with such a system, in compliance with best practices relating to intellectual property and the protection of personal information; c Plan alternative solutions in case students refuse to share content with generative AI tools, where such refusal is reasonable given the learning objectives. These alternative solutions should be equivalent in terms of learning objectives, evaluation criteria, time and work effort, for both teachers and students. Moreover, students must be informed of the existence of these alternatives, prior to the request for consent.	Teachers

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