PÔLE MONTRÉALAIS
D'ENSEIGNEMENT SUPÉRIEUR
EN INTELLIGENCE ARTIFICIELLE

Université de Montréal et du monde.

> TOWARD RESPONSIBLE USE OF GENERATIVE AI TOOLS IN HIGHER EDUCATION

SUMMARY OF THE DISCUSSIONS OF THE DAY OF DELIBERATION ON
"ARTIFICIAL INTELLIGENCE, STUDENT SUCCESS, AND INTEGRITY IN HIGHER EDUCATION"
HELD ON MAY 31, 2023, AT THE UNIVERSITY OF MONTRÉAL

Report presented to PIA member institutions
and to the Ministry of Higher Education

Montréal, August 23, 2023

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OPENING ADDRESS

Delivered by Ms. Pascale Lefrançois
Vice-Rector of Student and Academic Affairs
University of Montréal

Dear colleagues,
Dear representatives of colleges and universities,
Dear students,

Good morning, and welcome to this day of deliberation organized by the Pôle montréalais d'enseignement supérieur en intelligence artificielle!

On behalf of the Vice-Rectorate of Student and Academic Affairs of the University of Montréal, I am delighted to welcome so many of you here today. We could have been even more numerous, given the interest aroused by the theme of our day, but we had to restrict the number of participants per establishment in order to encourage quality exchanges. We would therefore like to thank you in advance for sharing your impressions of today's discussions with your colleagues. Before I forget, I would like to extend my warmest thanks to the organizing committee and the scientific committee, without whom this event would not have been possible.

Montréal is internationally renowned for its expertise in artificial intelligence. The *Montréal Declaration for a Responsible Development of AI* is proof of this. The University of Montréal is home to renowned and influential AI research teams. We are proud of it, and we have pretty much seen nothing but benefits from it... until AI made its way into our classrooms.

It is not just yesterday that humans were starting to look at ways of regulating AI to give it its proper place. In this respect, Isaac Asimov's *Three Laws of Robotics* of 1942, dating back more than 80 years, were prophetic. I would like to reread them for you, and I invite you, whenever I say "a robot", to replace the expression in your head with "ChatGPT" or the name of your worst nightmare of the same ilk:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

“A robot may not […] allow a human being to come to harm.” Can a tool that thinks for a human being harm a human being? We as educators, whose mission is to support the development of autonomous critical thinking in humans, are generally quite resistant to the idea of something taking the place of our students’ thinking. But if this tool supported the development of thought without replacing it, would we see it in a better light?

That is the kind of question you will be asking yourselves today. On the one hand, from an integrity perspective, how can we ensure that the performance we observe and evaluate in a student is really his or her own? On the other hand, from a pedagogical perspective, how can we use the power of generative AI to stimulate our students’ intellectual capacities?

The aim of the day is not to glorify AI. Rather, it is to take a lucid, pragmatic look at a reality that cannot be denied, and whose disappearance is not foreseeable in the short term. Whether we like it or not, AI is all around us, and it’s up to us to give it the place we want.

Moreover, we could easily discuss such crucial AI-related topics as the role of the education system in society, the transformation of the job market, and even the future of humanity. But if you don’t mind, we will stick more modestly to the reality of higher education and its pedagogical challenges... and save other, more existential topics of conversation for later!

You have no doubt already talked about AI at your departmental meetings, with colleagues worried that they have been fooled in their latest term papers, or with your parents, who were only just beginning to master the workings of Facebook and now feel overwhelmed by events, or with your teenagers, who look at you with a smirk when they think of all the things they will be able to do – or no longer have to do – thanks to applications that you don’t even know exist. Today, I invite you to put aside these very legitimate attitudes, of resistance, of fear of being overtaken, or of illusion with regard to novelty, and to adopt a realistic posture to put generative AI back to its place in our CEGEPs and universities. Your mandate will be to produce concrete recommendations for your colleagues, for decision-makers and for partners in education. I am very much looking forward to learning about the fruits of your labors and following up on them with you. And I am confident that, with all the human intelligence gathered in this room, artificial intelligence will have to watch out!

Have a wonderful day!

THE NINE RECOMMENDATIONS ARISING FROM THE DELIBERATIONS

1. Dedicate resources so that Québec and Montréal AI expertise can be put to good use in the development of AI tools adapted to the needs of teaching and learning, taking into account the following aspects:
   - accessibility and availability to the greatest number of learners and teachers;
   - sensitivity to issues of health and psychological well-being in the development of tools;
   - respect for academic integrity;
   - the adoption of an educational, institutional and professional capacity-building strategy;
   - the primacy of the objective of developing individual autonomy.
2. Set up an entity (advisory committee, observatory or other) bringing together experts and stakeholders from the education community (public authorities, educational institution leaders, representatives of teaching staff and the student community, etc.), to provide concerted, critical and informed guidance on the development of AI in teaching and learning
3. Develop and implement personalized support systems for learning and success, such as:
   - personalized tutors for teachers' professional development;
   - tailor-made help for students, accessible at all times;
   - AI systems that can be used in academic management, for example in supporting student success.
4. That higher education institutions adopt clear, concerted guidelines, adapted to different contexts and scales of action (for example, within or across institutions), with regard to generative AI tools
5. Allocate the financial and human resources needed to generate capabilities and manage the change brought about by the presence of generative AI tools
6. a) That the resources allocated for AI training and literacy be made available primarily to teachers and students;

   b) that easy-to-use tools be created (activity banks, decision trees, concise guides, charters, infographics, etc.);

   c) that these tools be shared freely, for example under "Creative Commons"-type licenses.
7. That program review mechanisms be more agile and that the impact of AI on skills related to ethics, integrity, information retrieval, creativity and critical thinking be addressed in a cross-disciplinary and concerted manner
8. Support research aimed at knowing and understanding the impacts of generative AI tools on the learning process, on the well-being of learners and teachers, and on student success, so that actions arising from the recommendations above can be supported by evidence.
9. Regulate the use of AI in CEGEPs and universities on the basis of values that are understood, deliberated, made explicit and, as far as possible, shared, including honesty, responsibility (with regard to people's autonomy, integrity, security and privacy) and learning.

INTRODUCTION

On May 31, 2023, nearly 130 people, mainly from public CEGEPs and universities that are member organizations of the Pôle montréalais d'enseignement supérieur en intelligence artificielle (PIA), as well as a few invited guests, gathered at the Jean-Coutu Pavilion of the University of Montréal for a day of collective reflection on the new tools of generative artificial intelligence, educational success and integrity in higher education.

Since November 2022, the launch of ChatGPT, a conversational agent using artificial intelligence and developed by the company Open AI, has caused quite a stir around the world. Numerous articles[1] have reported on the impressive capacity of this open-access tool to generate, among other things, texts on any subject covered by its vast database; at the same time, many of these articles point out the challenges that the arrival of these tools represents in academic circles. There is also considerable concern within higher education establishments. In addition to the possibility of new forms of plagiarism and fraud, the accessibility of this type of conversational agent, emulating human language, raises questions about fundamental dimensions of education, such as the assessment of learning and the very nature of teaching.

Apart from the regulation that states may exercise on the development and availability of generative AI tools, what are the implications of their arrival in teaching activities at the college and university levels? How does their introduction put education at risk? How can they improve our pedagogical practices and academic success? What principles should be established to guide the use of these tools in higher education?

These questions formed the basis of a day of reflection and deliberation organized by PIA and the University of Montréal aimed at the college and university education community, focusing on an issue that is both shared and structuring: the oversight of the use of AI systems in higher education.

Complementary to the May 15, 2023 event organised by the Ministère de l'Enseignement supérieur (MES) and the Institut de valorisation des données (IVADO), the goal of this day was to generate critical perspective and thought-provoking interactions among the participants, in order to collectively identify general recommendations for framing the use of generative AI tools such as conversational agents, in higher education.

The format was designed to encourage discussion in workshops, based on concrete use cases designed to trigger deliberation. In addition to the workshops, the day also included two panels: the first, in the morning, to understand conversational agents and generative AI, and the second, in the afternoon, to identify the challenges posed by the arrival of these high-performance algorithms.

[1] See for example *ChatGPT crée une onde de choc dans le monde de l'enseignement* by Anne-Marie Provost (*Le Devoir*, 14 December 2022), one of the first articles published on this topic in Québec

This report presents the deliberative process followed on May 31, 2023, describes how the day was organized and conducted, and brings together the recommendations resulting from the deliberations.

1. DELIBERATIVE APPROACH

The choice of a deliberative approach appeared to the organizing committee to be a potentially fruitful one, given three factors: the ethical issues raised, the context of professional practice involved (i.e., teaching) and the availability of knowledge to support the reflections.

Generative AI technologies, and in particular ChatGPT, are making their mark on our environment, eliciting a variety of reactions, often emotional, ranging from unbridled enthusiasm to skepticism and even fear. It's worth taking a step back to appreciate the challenges, risks and opportunities that these technologies represent.

The act of teaching takes place within a collective and institutional framework, where a set of rules, standards and values govern pedagogical relations and collaboration between the various players (students, teaching staff, educational advisors, administrators). It is therefore appropriate that the intrusion of a new technology should prompt collective reflection.

Since the advent of ChatGPT in autumn 2022, a significant number of higher education players have been led, either individually or collectively, to learn about what generative AI and language models are and what impact they have in higher education. This acquired knowledge is to be shared with a view to drawing up general recommendations, guidelines or even a program of institutional actions concerning these tools. This was the aim of the event.

In planning the day of reflection, the organizing committee drew on a guide produced by a team from Collège de Rosemont and the Algora Lab at the University of Montréal, a document entitled *Integrating the Ethics of Artificial Intelligence in Higher Education: A Toolkit*[2]. This work is the result of a CEGEP-university collaborative project funded by PIA in 2020 and 2021. The toolkit itself is inspired by the deliberative process that led to the Montréal Declaration for the Responsible Development of Artificial Intelligence[3], and is aimed at students and teachers who want to undertake reflection and action in their own environments.

The *Toolkit* defines deliberation as a "method of reasoned discussion through an exchange of arguments aimed at reaching a collective decision. It does not necessarily aim at reaching a consensus, but rather identifying preferences and shared formulations." (p. 28). It also specifies

[2] *Integrating the Ethics of Artificial Intelligence in Higher Education: A Toolkit* is available in English and in French on the PIA website: https://poleia.quebec/projet-f05/

[3] *The Montréal Declaration for a Responsible Development of Artificial Intelligence*, available under https://declarationmontreal-iaresponsable.com/wp-content/uploads/2023/04/UdeM_Decl-IA-Resp_LA-Declaration-ENG_WEB_09-07-19.pdf

that “deliberation is not merely a discussion; it must be guided by argumentation and rationality”. Consequently, it must be well prepared and accompanied by facilitators, whose role is crucial.

To achieve the objectives of deliberation and foster in-depth, well-argued exchanges, the organization must create the space for everyone to participate. The day’s participants were divided into smaller groups (with a target of 12 people per group), each of which was assigned a facilitator and a notetaker.

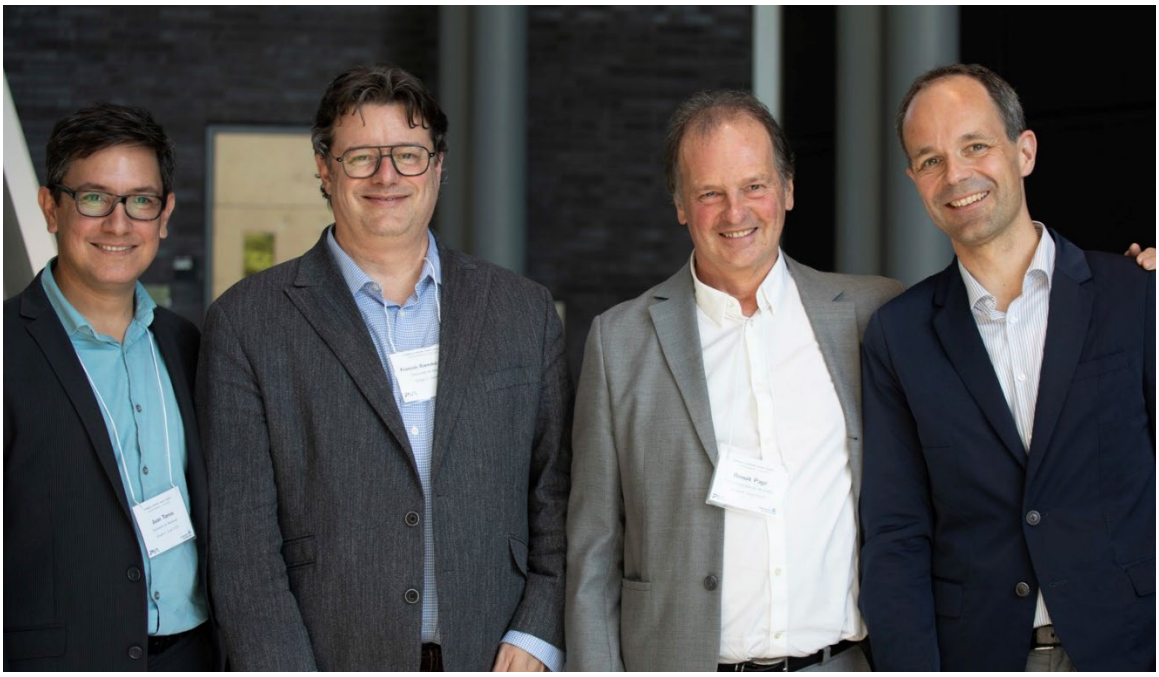
The role of the facilitators was to ensure that the rules of deliberation were clearly understood (mutual respect, active listening and a concern for argumentation in good faith) and to encourage the autonomy of the participants. They had to accompany the group, helping collective thought to emerge, which required good listening skills, a conciliatory attitude, neutrality and the ability to manage time. The group and the facilitator had to be in a position to welcome everyone’s contributions.

2. ORGANIZATION AND UNFOLDING OF THE DELIBERATION DAY

Conception and Preparation of the Day

The first step was to set up an organizing committee made up of members of the PIA steering committee: Juan Torres, PIA co-president, who came up with the idea for the day; François Barnabé-Légaré, PIA liaison officer for universities; Christian Stahn, PIA project coordinator, and Benoit Pagé, PIA director. A truly collegial team effort, it’s difficult to describe everyone’s roles precisely, but the overall organization was coordinated by Christian Stahn, while logistics at the University of Montréal were the responsibility of François Barnabé-Légaré, with the support of Nathalie Lecoq, executive assistant at the Vice-Rectorate for Student and Academic Affairs.

The idea of deliberative workshops emerged early on in the day’s design process. The organizing committee validated the approach with Professor Marc-Antoine Dilhac of the University of Montréal’s philosophy department, also director of the Algora Lab and researcher at Mila.



The organizing team. From left: Juan Torres, François Barnabé-Légaré, Benoit Pagé, Christian Stahn

The organizing committee then called on sixteen people from the worlds of teaching or research, college or university, recognized for their expertise in artificial intelligence, technopedagogy or didactics, to form a scientific committee whose role was to recommend and validate the various elements of the day: the objectives, the panel themes and their composition, the use cases and the workshop facilitation approach. The list of scientific committee members is appended. The committee met three times (remote meetings, 60 minutes each).

The workshops were animated by a number of members of the Scientific Committee and members of the PIA steering committee. The task of taking notes was assigned to students from the University of Montréal.

PROGRAM OF THE DAY AND *GUIDE FOR PARTICIPANTS*

The day's program included plenary sessions and workshops. The purpose of the plenary sessions was informative, while that of the workshops was deliberative. Participants were assigned to one of 9 groups, ranging in size from 10 to 14 people. Two workshops were held in English, all others in French.

A week before the May 31st event, those registered for the activity received a *Guide for Participants* by e-mail. It can be found in full in Appendix 2 of this report. The guide includes a presentation of the day's activities, as well as materials for the two workshops.

After the welcome and opening speeches, the first panel took place from 9.15am to 10am.

Under the title “Understanding the tools of generative artificial intelligence”, it brought together on the stage the following people:

- Dave Anctil, philosophy professor at Collège Jean-de-Brébeuf
- Guillaume Lajoie, professor at the Department of Mathematics and Statistics of the University of Montréal and researcher at Mila
- Chris Isaac Larnder, physics professor at John Abbott College and co-head researcher of the axis Education and Empowerment of the International Observatory on the Societal Impacts of AI and Digital Technology (OBVIA)
- The animator, Pascale Sirard, director general of Collège de Bois-de-Boulogne and PIA co-president

The morning panel. From left: Dave Anctil, Guillaume Lajoie, Chris Isaac Larnder, Pascale Sirard

The aim of the panel discussions was to “develop a common understanding of the capabilities and limitations of conversational agents based on generative AI.” Each panelist was invited to answer a specific question to shed light on the various dimensions of the phenomenon.

The panelists took it in turns to outline what generative AI tools are, highlighting their multimedia performance (text, images, sounds, etc.) and the ability of systems to develop emergent capabilities not foreseen at the time of their creation. A number of current uses for these tools were mentioned, emphasizing the opportunities they offer for cognitive development, as well as the risks they entail (such as dependency), particularly at certain stages in a person’s

development, such as adolescence. The importance of a cautious, critical approach was clearly expressed.

In the afternoon, a second panel brought together three facilitators on stage to report on the discussions of the nine groups around the four use cases presented in the *Guide for Participants*.

Subsequently, Ève-Marie Gendron-Painchaud, Scientific Editor at IVADO, and Sonia Gaudreault of the Ministère de l'Enseignement supérieur presented a summary of the day on *AI in higher education: impacts, issues and perspectives*, held on May 15, 2023 in Montréal.[4]

From 1.45pm to 2.45pm, another panel of experts, moderated by Juan Torres, discussed "Challenges in higher education". The four panelists were:

- Patrick Charland, professor, Department of Didactics of Science and Technology, UQAM, and co-holder of the UNESCO Chair in Curriculum Development
- Bruno Poellhuber, professor, Department of Educational Psychology and Andragogy, University of Montréal, and academic director of the Centre de Pédagogie Universitaire (CPU)
- Andréanne Sabourin-Laflamme, professor of philosophy, Collège André-Laurendeau, researcher at the AI & Digital Ethics Lab (LEN.IA) and affiliated researcher at OBVIA
- Ann-Louise Davidson, professor, Concordia University Education Department, Research Chair in Maker Culture, director of the Innovation Lab, and associate director of the Milieux Institute for Arts, Culture and Technology

[4] https://www.youtube.com/@enseignementsuperieurquebec/featured

The afternoon panel. From left: Patrick Charland, Bruno Poellhuber, Andréanne Sabourin-Laflamme, Ann-Louise Davidson, Juan Torres

The aim of this panel was to *highlight the pedagogical challenges posed by the arrival of generative AI tools, including conversational agents, and to explore avenues that could lead us towards a theoretical framework for making recommendations*.

During this exchange, panelists expressed their views on what, in their opinion, will distinguish higher education after the arrival of generative AI tools. In particular, the opportunity to automate certain coaching and mentoring tasks for both students and teachers was raised. The importance of AI literacy was also widely expounded, a literacy that is necessary for everyone and especially for teaching staff.

The morning workshop lasted 1h40. It was structured around use cases. Each of the nine teams was allocated just one of the four cases presented in the *Guide* to identify emerging ethical issues. The afternoon workshop was of the same duration, with the aim of formulating recommendations for the use of generative AI tools in teaching in colleges and universities, based on a number of questions. The following section reports on the workshop deliberations.

3. FINDINGS: AN UNPRECEDENTED SITUATION RAISING NUMEROUS CHALLENGES

The four case studies proposed in the morning workshops (reproduced in an appendix to this report) were designed to provoke discussion based on concrete situations, without setting standards or establishing an ideal beforehand. The discussions brought to light concerns, often shared, risks, wishes and even solutions. More specifically, this exercise highlighted four aspects of reflection on the use of generative AI in higher education, and set the stage for the formulation of recommendations.

Workshop led by Andréanne Sabourin-Laflamme, philosophy professor at Collège André-Laurendeau and member of the scientific committee

A. A Primarily Pedagogical Issue

Teaching in a world where AI systems are rapidly becoming powerful and accessible raises many challenges that, far from being merely technological, are above all pedagogical.

In several workshops, participants highlighted the risk of subordinating pedagogy to technology. To avoid this pitfall, it seems important to consider technological tools as a means of achieving training goals, i.e. knowledge acquisition, skills development and autonomy.

AI literacy is a prerequisite for this. By literacy we mean the ability to use the tools of generative AI in an enlightened, ethical, responsible and judicious way. With the accelerated penetration of these tools in higher education, students and teaching staff alike share the same challenge: learning, and learning fast, in a fast-changing context.

In fact, at present, teachers and students are learning together, and the latter are often ahead of supervised or planned integrations of generative AI tools. This underscores the need for lifelong learning, which must start very early (from childhood, as little ones are already exposed to AI systems) and continue beyond basic training. For the participants, teaching activities must be conducive to the acquisition of autonomy and the development of critical thinking skills.

B. An Opportunity for Renewal

Throughout the day, several participants acknowledged the "crisis effect" that the arrival of generative AI tools is having on higher education circles. At the same time, they also recognized that access to these tools can be an opportunity for renewal.

Part of educational work is aimed at learning tasks that these tools can now carry out powerfully and efficiently, or at acquiring knowledge that they now seem able to hold and provide. We therefore need to reflect on the meaning of education in an age of proliferating AI systems and abundant information. It is in the wake of such reflection that the arrival of these tools represents an opportunity to review the way in which we can cultivate learners' critical thinking, their autonomy and their ability to develop competencies: skills that will remain relevant after the time they spend in our establishments, in a context that will remain dynamic, evolving and demanding.

The opportunity and indeed the imperative for renewal in training is all the more present when it comes to learning assessment. More than ever, we need to design assessment tools that are sensitive to the progression of learner autonomy. In the same vein, reconsidering assessment methods means valuing integrity and updating practices that deter plagiarism and fraud, some of which are becoming obsolete in many respects with the democratization of generative AI.

C. Between Autonomy and Alienation

The power of generative AI systems and their ability to amplify human capabilities is widely acknowledged. However, there is just as much consensus on the risks of alienation.

Opinions converge on the potential contribution of these generative AI tools to increasing people's autonomy, but the risk of delegating too much, becoming atrophied, losing cognitive abilities, developing dependency... and that's the other side of the coin!

As part of greater AI literacy, the need to "keep control" of the tools has often been revisited. However, the economic model underlying the development of generative AI raises major concerns, particularly with regard to the risks of manipulation. This model seems generalized and undiversified, oriented towards objectives that are not those of human and social development or the collective good. The opacity of algorithms contributes to a climate of mistrust in this respect.

D. A Complex System of Actors

The discussions revealed not only the great diversity of the stakeholders involved (in terms of roles, objectives, etc.), but also their complex interrelationships.

While the authority and autonomy of certain stakeholders in higher education are recognized, the fact remains that all the actors involved (institutions, ministries, teaching staff, students, etc.) need to work together. Given the speed and depth of the changes brought about by the arrival of AI systems, cooperation and agility are essential.

It is important to stress that, in the context of globalization and the proliferation of AI systems, the education sector is seeing the arrival of new, non-traditional players (such as producers of content and training solutions, often based outside the country), who will increasingly be able to deploy an educational offering outside institutional channels and outside existing quality control mechanisms.

4. Six Major Avenues for Action — Nine Recommendations

Following on from the work begun in the morning, the afternoon workshops led to the formulation of recommendations. Here again, opinions converged and priority actions were identified, covering six major themes.

A. Placing AI Expertise at the Service of Teaching and Learning

Québec and Montréal are internationally recognized as centers of expertise and innovation in artificial intelligence. They are home to leaders such as Mila and IVADO. It was against this backdrop that PIA was created, along with other initiatives concerned with the development of AI systems, such as the Observatoire international sur les impacts sociétaux de l'IA et du numérique (OBVIA), and that AI is being considered by the Conseil de l'innovation du Québec.

Recommendation 1

Considering the wealth of expertise in Montréal and Québec,

It is recommended that resources be devoted so that this expertise can be put to good use in the development of AI tools tailored to the needs of teaching and learning (including those mentioned in recommendation 3 below), taking into account the following aspects:

- accessibility and availability to the greatest number of learners and teachers;
- sensitivity to issues of health and psychological well-being in the development of tools
- respect for academic integrity
- the adoption of educational, institutional and professional capacity-building strategies
- the primacy of the objective of developing personal autonomy

Recommendation 2

Considering the speed with which AI technologies are being developed and disseminated to the public,

Considering that the various players in higher education (instructors, counselors, managers) have expressed the need for guidance

It is recommended that an entity (advisory committee, commission, observatory, etc.) be set up, bringing together experts and stakeholders from the education community (public authorities, heads of educational establishments, representatives of teaching staff and the student community, etc.), to guide the development of AI in teaching and learning in a concerted, critical and enlightened manner.

Recommendation 3

Considering that artificial intelligence systems can be allies in improving educational processes,

Considering that, in this sense, several participants expressed a desire for learning support in the use of AI,

It is recommended that learning and success support systems be developed and implemented, such as:

- personalized tutors for the professional development of teaching faculty
- tailor-made assistance for students, available at all times
- AI systems that can be used in academic management, for example to support student success

B. Taking a Position

According to several participants, an educational institution cannot remain indifferent to the use of AI systems by students and teaching staff. This idea can be summed up in an injunction: “neither ban nor trivialize” the use of AI systems. The aim here is to counter the opacity that surrounds the new generative AI tools, to demystify them, to understand their capabilities, but also their possible abuses.

Recommendation 4

> Considering that a better understanding is the basis of a climate of trust and a democratic spirit for informed decision-making,
>
> Considering the different levels of responsibility (from government to educational institutions),

It is recommended that higher education institutions adopt clear, concerted guidelines, adapted to different contexts and scales of action (e.g. internal to an institution or inter-institutional), with regard to generative AI tools.

Recommendation 5

> Considering that the positions and orientations taken collectively must be backed up by resources commensurate with the challenges involved,

It is recommended to allocate the financial and human resources needed to produce capabilities and manage the change brought about by the presence of generative AI tools.

C. Democratization and Accessibility

The theme of democratization and accessibility to tools came up again and again in the workshops. In this context, accessibility means both that the tools are available to all, but also that everyone has the opportunity to develop the competence to use them. Democratization, on the other hand, is not limited to universal accessibility, but also involves shared understanding, informed, deliberate, autonomous and responsible use.

The prerequisite for access to AI systems and their democratic use requires training in AI literacy. Training activities should be easily accessible, timely and effective.

Recommendation 6

> Considering that students and faculty are at the forefront of the issues raised by the deployment of generative AI tools,
>
> Considering the need to democratize access to AI tools,
>
> Considering the advantages of acting collaboratively and pooling resources,

It is recommended:

a) that the resources allocated for AI training and literacy be made available primarily to teachers and students
b) that easy-to-use tools be created (activity banks, decision trees, concise guides, charters, infographics, etc.)
c) that these tools be shared freely, for example under “Creative Commons”-type licenses

D. Updating the Educational Offering

Whether at college or university level, it was mentioned that the mechanisms for creating, reviewing or transforming academic programs do not allow for the agility and efficiency required in a context of rapid evolution and the deployment of disruptive technologies.

Recommendation 7

Considering the rapid development of generative AI tools,

Considering that these developments are being deployed across curricula and disciplines,

Considering the context of overabundant and virtually unlimited information,

It is recommended that program review mechanisms be more agile, and that the impacts of AI on skills related to ethics, integrity, information retrieval, creativity and critical thinking be addressed in a transversal and concerted manner.

E. Timely Research

It is understood that the development of training tools, program revisions, and the use of generative AI systems in academic management and support for success must be evidence-based. Research is therefore a fundamental resource, if only to understand the impact of generative AI tools on learning, on the well-being of learners and teachers, and on student success. In the course of the workshop discussions, this research was mentioned in a variety of forms: action research, creative research, intervention research, applied research, research and development, etc. Prototyping and case studies are necessary, as is partnership-based, cross-sectoral research, based on knowledge sharing.

Recommendation 8

Considering the need to base decisions and actions on evidence,

It is recommended to support research aimed at finding out about and understanding the impacts of generative AI tools on the learning process, on the well-being of learners and teachers, and on student success, so that the actions arising from the recommendations made above can be based on evidence.

F. Basing Actions on Shared Values

The recommendations formulated in the deliberative workshops touched upon the values to be promoted. Honesty is one of the most important: among other things, this means cultivating the reflex to declare the use of AI systems, and making explicit the permission or prohibition of their use for specific activities. Where it is forbidden, it is essential to design assessment activities accordingly (e.g., not requiring such tools, or in "AI-free zones").

The *responsible use* of generative AI tools is also an important value. In the spirit of the Montreal Declaration, this means ensuring that the use of these tools contributes to people's autonomy, without compromising their learning process, their integrity, their security or that of their information.

Solidarity is another value to be considered, expressed in concerted collaboration between stakeholders, the sharing of resources and collective action in the face of the challenges posed by the new societal context.

Finally, the very idea of *valuing learning as a process of personal transformation* is also very important. In this context, making mistakes acquires a fertile meaning, not of failure, but rather of learning opportunity. Success, meanwhile, is measured not just in terms of grade point average, but in terms of progress in the process of gaining autonomy, empowerment and self-fulfilment.

Recommendation 9

> Considering the risks raised by the implementation of generative AI tools in higher education institutions (including the reinforcement of unconscious biases, misinformation, the dissemination of personal data and invasion of privacy, the increase in the digital divide, dependence on IT giants, etc.),

It is recommended that the use of AI in CEGEPs and universities be regulated on the basis of values that are understood, deliberate, explicit and, as far as possible, shared, including honesty, responsibility (with regard to people's autonomy, integrity, security and privacy) and learning.

CONCLUSION

The advent of a technology that leads us to imagine, and even fear, a rupture in the practices and operations of our university and college institutions has prompted a wide range of people (teachers, students, academic administrators, pedagogical counsellors, etc.) to come together to reflect on an issue that concerns them. We can only hope that this meeting of representatives from both levels of higher education will usher in new collaborations, sources of pedagogical innovation and educational success.

The objective shared by the participants at this event was to collectively draw up general recommendations for framing the use of generative AI tools such as conversational agents in higher education. The proposals that emerged from the workshops concern various bodies. As co-organizer of the event, the Pôle montréalais d'enseignement supérieur en AI (PIA) will ensure that this report is forwarded to the relevant stakeholders and the widest possible audience.

What's more, it turns out that PIA can play a role in the next steps to be taken. Admittedly, many of the recommendations arising from the retreat are addressed to the Ministry or to higher education institutions. But PIA can commit to playing a proactive role, where its mission of fostering collaboration and concerted action between Montreal's CEGEPs and universities can be put to good use. In the coming months, PIA will be setting a number of priorities for action in line with these recommendations. This will be done in the same spirit as its previous achievements, i.e. by encouraging CEGEP-university collaboration and actively disseminating results.

SUMMARY TABLE: RECOMMENDATIONS, STAKEHOLDERS INVOLVED, AND POTENTIAL ROLES OF PIA

Recommendations	Main Stakeholders Involved
1. *Dedicate resources so that Québec and Montréal AI expertise can be put to good use in the development of AI tools adapted to the needs of teaching and learning*	Ministries, AI organizations (research, development, etc.), CEGEPs and universities
2. *Set up an entity (advisory committee, observatory or other) bringing together experts and stakeholders from the education community (public authorities, educational institution leaders, representatives of teaching staff and the student community, etc.), to provide concerted, critical and informed guidance on the development of AI in teaching and learning.*	Ministries, AI organizations (research, development, etc.), CEGEPs and universities, student associations
3. *Develop and implement personalized support systems for learning and success*	Ministries, AI organizations (research, development, etc.), CEGEPs and universities, student associations
4. *That higher education institutions adopt clear, concerted guidelines, adapted to different contexts and scales of action (for example, within or across institutions), with regard to generative AI tools*	CEGEPs and universities

5. *Allocate the financial and human resources needed to generate capabilities and manage the change brought about by the presence of generative AI tools*	Ministries, CEGEPs and universities
6. a) *That the resources allocated for AI training and literacy be made available primarily to teachers and students;* b) *that easy-to-use tools be created (activity banks, decision trees, concise guides, charters, infographics, etc.);* *c) that these tools be shared freely, for example under "Creative Commons"-type licenses*	Ministries, CEGEPs and universities
7. *That program review mechanisms be more agile and that the impact of AI on skills related to ethics, integrity, information retrieval, creativity and critical thinking be addressed in a cross-disciplinary and concerted manner*	Ministries, AI organizations (research, development, etc.), CEGEPs and universities
8. *Support research aimed at knowing and understanding the impacts of generative AI tools on the learning process, on the well-being of learners and teachers, and on student success, so that actions arising from the recommendations above can be supported by evidence*	Ministries, AI organizations (research, development, etc.), CEGEPs and universities
9. *Regulate the use of AI in CEGEPs and universities on the basis of values that are understood, deliberated, made explicit and, as far as possible, shared, including honesty, responsibility (with regard to people's autonomy, integrity, security and privacy) and learning*	CEGEPs and universities

What role could PIA play as a Montreal cluster in higher education? Drawing on its network of partners, researchers and collaborators, as well as the members of its general assembly, PIA could contribute in three ways:

1. Promote concerted action, collaboration and networking in the implementation of certain recommendations.

2. Disseminate and publicize best practices, innovations, and resources through webinars, conferences, and workshops.

3. Initiate and fund projects in line with the educational and pedagogical issues raised by AI.

APPENDIX 1: SCIENTIFIC COMMITTEE AND ORGANIZING TEAM

SCIENTIFIC COMMITTEE

The event was prepared drawing on the ideas and generous contributions of the members of a scientific committee that embodies a wealth of expertise and diversity:

Anctil, Dave	Philosophy instructor	Collège Jean-de-Brébeuf
Brasseur, Lamiel	Director, direction de l'apprentissage et de l'innovation pédagogique	HEC
Bruneault, Frédérick	Philosophy instructor	Cégep André-Laurendeau
Charland, Patrick	Professor, education department	UQAM
Davidson, Ann-Louise	Professor, education department	Université Concordia
Deschamps, Jean-Marc	Computer science instructor	Cégep du Vieux Montréal
Dilhac, Marc-Antoine	Professor, department of philosophy, and director of Algora Lab	Université de Montréal - Mila
Dumouchel, Pierre	Director, technology transfer	IVADO
Kamga Kouamkam, Raoul	Professor, education department	UQAM
Laferrière, Thérèse	Professor, education department	Université Laval et Périscope
Larnder, Chris Isaac	Physics instructor	John Abbott College
Moukhachen, Madona	Adjoint director, technopedagogical innovation	Collège Ahuntsic
Peters, Martine	Professor, education department	UQ Outaouais
Poellhuber, Bruno	Academic director, Centre de pédagogie universitaire	UdeM
Prom Tep, Sandrine	Professor, marketing	UQAM
Sabourin Laflamme, Andréane	Philosophy instructor	Cégep André-Laurendeau

ORGANIZING TEAM

Barnabé-Légaré, François	Senior Advisor for Academics	UdeM
Pagé, Benoit	Director	PIA
Stahn, Christian	Project coordinator	PIA
Torres, Juan	Deputy Vice-Rector, Undergraduate Studies and Lifelong Learning	UdeM

PÔLE MONTRÉALAIS D'ENSEIGNEMENT SUPÉRIEUR EN INTELLIGENCE ARTIFICIELLE

Université de Montréal et du monde.

Artificial Intelligence, Student Success, and Integrity in Higher Education: A Day of Deliberation

Guide for participants

Organized by PIA and Université de Montréal
Wednesday, May 31, 2023, starting at 8:30
Pavillon Jean Coutu, Université de Montréal
2940, chemin de la polytechnique, Montréal

Context

Since November 2022, the open-access launch of ChatGPT, a conversational agent using artificial intelligence (AI) developed by the company OpenAI, has highlighted both the power of generative AI tools, their availability to the general public, and the ethical issues they raise. Numerous articles report on the impressive capability of this type of tool to process different types of language and to generate, among other things, texts that emulate human writing skills; at the same time, many of these articles point out the challenges that the arrival of these tools represents for our societies and, in particular, in the education sector. Within institutions of higher education, recent and rapid developments in this area call for critical reflection. Beyond the risk of new forms of plagiarism and fraud, the accessibility of generative AI tools raises questions about fundamental dimensions of education, such as the evaluation of learning and the very nature of teaching.

Apart from the regulation that states may exercise on the development and availability of generative AI tools, what are the implications of their arrival in teaching activities at the college and university levels? How does their introduction put education at risk? How can they improve our pedagogical practices and academic success? What principles should be established to guide the use of these tools in higher education?

These questions form the basis of a day of reflection and deliberation organized by the Pôle montréalais d'enseignement supérieur en intelligence artificielle (PIA) and the Université de Montréal aimed at the college and university education community, focusing on an issue that is both shared and structuring: the oversight of the use of AI systems in higher education.

Objective of the event

Complementary to the May 15, 2023 event organised by the ministère de l'Enseignement supérieur (MES) and the Institut de valorisation des données (IVADO), the goal of this day is to generate critical perspective and thought-provoking interactions among the participants, in order to collectively identify general recommendations for framing the use of generative AI tools such as conversational agents, in higher education.

Target audience

The event is intended for faculty, administration and students from the Québec college and university network (PIA member institutions)

Format

The day is organized around plenary conferences, panels and deliberative workshops that will address both the characteristics of the new tools and the ethical issues raised by their use. The toolkit "Integrating the Ethics of Artificial Intelligence in Higher Education", developed by a team from Algora Lab and Rosemont College with the support of PIA, has been used as a reference for the design of the deliberative process.

Scientific committee and organizing team

See Appendix 1 of this report.

Program

8:30-9:00 Agora, pavillon Jean Coutu	Registration	
9:00-9:15 Amphitheater, Pavillon Jean Coutu	Welcome & Opening Remarks	*Pascale Lefrançois*, vice-rectrice aux affaires étudiantes et aux études, UdeM *Benoit Pagé*, directeur, PIA
9:15-10:00 Amphitheater, Pavillon Jean Coutu	Panel: "Understanding Generative AI Tools"	*Dave Anctil*, Collège Jean-de-Brébeuf *Chris Isaac Larnder*, John Abbott College *Guillaume Lajoie*, UdeM and Mila Animation: *Pascale Sirard*, director, Collège de Bois-de-Boulogne
10:00-10:20	Break	
10:20-12:00 Pavillon Claire-McNicoll	Workshop I: "Exploring issues related to the use of generative AI in teaching" (Group sessions)	
12:00-13:00 Agora, Pavillon Jean Coutu	Lunch and networking	
13:00-13:30 Amphitheater, Pavillon Jean Coutu	Panel: Workshop summary	Facilitators of workshop I

13:30-13:45 Amphitheater, Pavillon Jean Coutu	Report from MES/IVADO AI event (15 mai 2023)	*Eve-Marie Gendron-Pontbriand*, IVADO
13:45-14:45 Amphitheater, Pavillon Jean Coutu	Panel: "Challenges in higher education"	*Patrick Charland*, UQAM *Bruno Poellhuber*, UdeM *Andréane Sabourin Laflamme*, Cégep André-Laurendeau *Ann-Louise Davidson*, U. Concordia Animation: *Juan Torres*, UdeM
14:45-15:00	Break	
15:00-16:40 Pavillon Claire-McNicoll	Workshop II: "Towards a framework for using generative AI systems in teaching" (Group sessions)	
16:40-16:50 Agora, Pavillon Jean Coutu	Closing Remarks	*Pascale Sirard*, Bois-de-Boulogne, PIA co-president *Juan Torres*, UdeM, PIA co-president
17:00-19:00 Agora, Pavillon Jean Coutu	5 à 7 and Networking	

Workshop material

Workshop I: "Exploring issues related to the use of generative AI in teaching"

- Goal: Based on a concrete situation, identify the ethical issues at stake and collectively determine the three most important issues
- Each designated sub-group is randomly assigned one of the four prepared use cases, to trigger and structure the reflection, each case corresponding to a concrete situation
- **General questions: With reference to the ten principles of the *Montréal Declaration for a Responsible Development of AI* (see appendix),**
    - **What ethical issues can be identified in the concrete situation?**
    - **What are the three most important issues?**

Situation A
A teacher is preparing her course outline and wants to integrate the use of ChatGPT into at least one of the assignments scheduled for the session. While doing so, in order to become familiar with the tool, she asks ChatGPT to formulate pedagogical objectives and a rationale for using the tool itself as a learning medium in her course. The result is a very rich syllabus, but part of it was written with the support of the conversational agent.

Specific questions
At what point does the use of the conversational agent compromise the teacher's contribution? What is the true role of the teacher when a generative AI tool is available and used? How does the teacher's role change? What impact can the use of this type of tool have on the work of other teachers, on the program, and on the institution? What abuses can be triggered by the integration of these tools into the work of teaching?

Situation B

As part of an assessment for his final term course, a student has to prepare an 8,000-word essay. To write the first draft of one of the sections of this assignment, he follows the lead of many of his colleagues and uses ChatGPT. His experience with the tool allows him to capture the most effective prompts to get a series of highly relevant elements from the conversational agent, which he then puts into his hand, reworking the text, expanding on certain ideas, and adding to it to fit well with the rest of the material already prepared.

Specific questions

How might the use of generative AI tools be legitimate or not? How would access to the conversational agent advantage or disadvantage the student in the learning process? What does the use of the conversational agent allow us to do better or, on the contrary, prevent us from doing well in our colleges and universities? Beyond its impact on the individual learning process, what would be the effects of using these tools on higher education?

Situation C

The members of the plagiarism committee received a report: the work submitted by a team of students had been produced using a conversational agent; however, the use of this type of tool was prohibited in the context of the exercise, the evaluation of which counts for a significant part of the final grade. The report is based on the result of a similarity detection tool that has recently been able to detect with a certain level of reliability the contribution of conversational agents with AI in the production of texts.

Specific questions

How would the treatment of this case be different from or similar to other forms of plagiarism or fraud? What value should be placed on detection tools in a context of constantly evolving technologies? What impact might the advent of generative AI tools have on the way we think about integrity, plagiarism, and fraud? How does the role of the committee change with the arrival of these tools?

Situation D

A working group is preparing a video to educate the student community about the issues of using generative AI tools. The working group includes representatives from faculty, the student community, and academic administrators. The members' opinions diverge as to the main message to be conveyed through the video: for some people, it should focus on digital literacy and advocate responsible use of the tools; for others, the main message should be to discourage the use of these tools.

Specific questions

What other stakeholders would need to be represented in the group to make such an awareness-raising tool? What could they contribute? How would the issues raised by access to generative AI tools be common or different among stakeholders? What should be the main message to the target audience and why? How would this message be different if the video were aimed at teachers instead?

Workshop II: "Towards a framework for using generative AI systems in teaching"

- Goal: develop recommendations for the use of generative AI tools in teaching in colleges and universities.
- Each sub-group of the workshop meets again, this time to brainstorm about a desirable future and the conditions to bring it about.
- **General questions: In a 5-10 year time frame (2028-2033),**
    - **What would be the characteristics of an ideal scenario with respect to the place generative AI tools should occupy and the role they would play in higher education?**
    - **What recommendations could be made to make such a scenario a reality and what would be the top three recommendations?**

Appendix to the Participants' Guide:

Principles of the *Montréal Declaration* *for a Responsible Development of AI*

1. Well-Being	The development and use of artificial intelligence systems (AIS) must permit the growth of the well-being of all sentient beings.
2. Respect for Autonomy	AIS must be developed and used while respecting people's autonomy, and with the goal of increasing people's control over their lives and their surroundings.
3. Protection of Privacy and Intimacy	Privacy and intimacy must be protected from AIS intrusion and data acquisition and archiving systems (DAAS).
4. Solidarity	The development of AIS must be compatible with maintaining the bonds of solidarity among people and generations.
5. Democratic Participation	AIS must meet intelligibility, justifiability, and accessibility criteria, and must be subjected to democratic scrutiny, debate, and control.
6. Equity	The development and use of AIS must contribute to the creation of a just and equitable society.
7. Diversity Inclusion	The development and use of AIS must be compatible with maintaining social and cultural diversity and must not restrict the scope of lifestyle choices or personal experiences.
8. Prudence	Every person involved in AI development must exercise caution by anticipating, as far as possible, the adverse consequences of AIS use and by taking the appropriate measures to avoid them.
9. Responsibility	The development and use of AIS must not contribute to lessening the responsibility of human beings when decisions must be made.
10. Sustainable Development	The development and use of AIS must be carried out so as to ensure a strong environmental sustainability of the planet.

APPENDIX 3: LIST OF FACILITATORS AND NOTETAKERS

Cardinal, Stéphane-Sophie	Director, Campus Life & Engagement	McGill University
Déri, Catherine	Postdoctoral researcher, Education Science	UQO
Godbout, Stéphane	Director general	RCM
Marchand, Nicolas	Director, Office of the Vice-Rector, Academic Life	UQAM
Larnder, Chris Isaac	Physics instructor	John Abbott College
Stahn, Christian	Mathematics instructor	Vanier College
Peters, Martine	Professor, Education Science	UQO
Sabourin Laflamme, Andréane	Philosophy instructor	Cégep André-Laurendeau
Vallée, Nathalie	Director general	Collège Ahuntsic

Six students from the Faculty of Environmental Design of the University of Montréal took notes of the workshop proceedings. Chris Isaac Larnder, Benoit Pagé, and Christian Stahn have also taken on this role in their respective workshops.

The student notetakers surrounding PIA co-president Juan Torres at the end of the day of deliberation. From left: Élie Leblanc (participating as a member of the FAECUM), Aye Assui Henri Okoman, Marie-Françoise Chassi Touko, Juan Torres, Léa Dorlet, Benito Bakadisuila, Elisabeth Meunier. Garance Bergeron (not shown on the photo) was also part of this team.