# What Artificial Intelligence Means to Us – Students' Insights

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**Abstract**

*This study explores students' perspectives on advancing Higher Education to equip them better not only for the evolving demands of the 21st-century labour market, but also for the societal challenges posed by the rapid development of Artificial Intelligence (AI). A total of fifty students from various European universities provided insights into the role of AI in education, articulating their views on AI potential, its ethical application within academic institutions and the necessity for caution due to a general lack of awareness regarding its potential risks. Employing a brainstorming technique to stimulate discussions and to expand responses, the study involved five groups of ten students each, with a facilitator guiding the discourse to foster a structured exchange of ideas on AI's educational applications. The findings align with contemporary research in the field: students emphasize the potential AI offers in education, the importance of familiarization with AI use, and the risks associated with the implementation of AI in Higher Education (HE) institutions. This study contributes to a better understanding of how the rapidly evolving technological landscape influences Higher Education, shaping the experiences and preparedness of future graduates.*

**Keywords**: Artificial Intelligence; Students' perspectives; Higher Education; Brainstorming

**JEL Classification:** I23; H80; O30

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## 1. Introduction

Artificial Intelligence (AI) is reshaping traditional educational models, pressuring Higher Education (HE) institutions worldwide to address both its transformative potential and the challenges associated with its implementation. Student interest in leveraging AI for academic and personal use has increased dramatically. While the benefits of AI are widely acknowledged, the consequences of its rapid integration into education—and beyond—remain under close examination. Key areas of ongoing research include its impact on cognitive development and critical thinking, ethical values and behaviour, as well as concerns around data manipulation and privacy.

This paper investigates learners' insights into the future of education in the light of the rapid development of AI technologies, with an academic focus on their expectations of AI and the concerns related to AI, as a tool in the educational process. The brainstorming technique has been used to stimulate and enlarge group idea generation. Five groups of ten students from different international universities were formed and the facilitator encouraged them to develop

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their ideas about the use of AI for educational purposes during the brainstorming sessions, with the purpose of obtaining extended comments and fresh insights into how students perceive these fast-developing technologies, what expectations they have of these advancements and what concerns/worries/challenges related to AI development and diffusion in HE they formulate. The results of this study align with the latest AI research findings, showing both excitement about future possibilities offered by AI for better and easier learning and concerns mostly about privacy, information manipulation or losing control on data security. Likewise, the results show that most of the universities are still in the course of defining a path to regulate the use of AI and to implement AI in the educational process in a coherent, convincing and impactful way, consequently addressing students' concerns about the potential drawbacks of AI.

The paper starts with a brief literature review on AI implementation in HE, highlighting the results of the studies that underline benefits and challenges of AI for educational purposes. Subsequently, the methodological part of the paper explains how data have been collected and why brainstorming was considered to be a suitable method for this study. Data have been analysed using Thematic Analysis and MAXQDA was involved for coding and grouping codes into clusters and subclusters, and interpretations have been provided. Based on these findings and discussions, conclusions end the paper.

## 2. Literature Review

These days, there is a growing interest in the use of Artificial Intelligence (AI) in education, especially since the introduction of ChatGPT in November 2022. This generative pre-trained transformer (GPT) changed and transformed the learning and teaching experience, holding the potential to revolutionize the educational landscape (Kamalov et al.2023, Kuleto et al. 2023, Rasul et al. 2023). At the same time, these technological developments addressed the needs of a diversified range of students, including traditional students (in-person education), online students, adult learners or career changers (Frechette, 2024). AI tools offer each the possibility to access educational resources suitable for their requirements, without the constraints of human availability.

Numerous studies have examined the advantages AI brings to education, emphasizing the value it offers to both students and professors. Learners, in particular, benefit from personalized tutoring (Kuleto et al., 2023; Rasul et al., 2023; Pisica & Zaharia, 2024), allowing them to access content tailored to their learning pace and specific needs (Baidoo-Anu & Ansah, 2023; Pisica et al., 2023; Rasul et al., 2023). This level of personalization enhances engagement and supports academic success (Frechette, 2024), while also helping manage the complex dynamics among educational stakeholders (Su & Yang, 2023). AI fosters collaboration between students and faculty, and well-designed prompts can contribute to effective instructional strategies. As such, AI is poised to become an accessible tool for improving comprehension, offering learners the flexibility to revisit and deepen their understanding of various topics as needed.

For professors, AI offers significant advantages by reducing administrative workload, generating data-driven insights into student performance, and supporting the design of more effective and engaging instructional materials. It empowers educators to focus more on mentorship and critical thinking development, while AI handles repetitive tasks, content suggestions, and adaptive feedback for diverse learner profiles.

Intelligent tutoring systems are increasingly regarded as essential to achieving sustainable, tech-integrated education (Lin et al., 2023). Additionally, virtual reality tools show promise in boosting academic performance by promoting interactivity and expanding access to varied educational resources (Zamora-Antuñano et al., 2022; Pacheco-Mendoza et al., 2023). As these technologies continue to evolve, improvements in quality, accuracy, and user responsiveness are expected, especially as AI adapts based on human feedback (Mhlanga, 2023; Lee et al., 2024).

Despite its growing presence, the practical application of AI in Higher Education varies significantly across countries and institutions (Zawacki-Richter et al., 2019). Concerns among students and faculty differ as well, often centered on ethical implications, data security, and privacy (Ahmad et al., 2023; Su & Yang, 2023). Additional challenges include resistance to change (Masry-Herzalah & Dor-Haim, 2022) and a lack of digital competences, which can lead to anxiety when engaging with AI tools in academic contexts (Almaiah et al., 2022).

Implementation strategies differ widely among universities, depending on factors such as institutional priorities, access to funding, existing digital infrastructure, or faculty readiness. While some universities have fully integrated AI into teaching, assessment, and administrative processes, others remain in early exploratory stages. These disparities contribute to unequal experiences and outcomes for both educators and learners.

The lack of regulations towards AI-generated content creates confusion and worries. The AI generated content can be used to manipulate and deceive students, with socio-psychologically effects, as alienation and isolation, and alteration of the quality of the educational process (Idroes et al. 2023). Policies and regulations centered on the AI governance, use and accountability need to be drawn in the near future (Nguyen et al. 2023) in order to avoid lagging behind the fast development and improvement of smart technologies, which can be perfected to the point of creating backdoors in order to avoid legislation. Policymakers have to concentrate their efforts on issuing robust legislation in order to limit the risks, especially in view of the fact that AI poses a wide range of risks for society (Park et al., 2024). If regulatory efforts are outpaced by the continuous updating of AI technologies, society can be challenged to its very core values due to the fact that AI is perceived as a powerful force which can reshape people's lives, interactions and environments (Floridi et al., 2018). Universities must play an active role in shaping the regulatory framework for AI use in education and collaborate closely with students to design policies that reflect their needs and perspectives (Pitt et al., 2020). Open, transparent communication is essential for addressing concerns and building a safe and supportive learning environment. Given that AI algorithms can both absorb biases from the internet and develop their own (Kamalov et al., 2023), human oversight is crucial. Educators must remain involved in reviewing AI-generated content to reduce the risk of harm from automated decisions and to determine the level of explainability required in specific contexts (Davidovic, 2023).

The teacher's role remains indispensable in this evolving landscape. While technological adaptation is necessary, core human qualities—such as empathy, encouragement, and moral judgment—are still vital to effective education (Selwyn, 2019). Recent studies suggest that people often accept AI-generated suggestions not because they are the most accurate, but because they align with personal preferences (Leib et al., 2024). This tendency raises concerns about the potential for AI to manipulate decision-making (Pizzi et al., 2021), especially if users unquestioningly follow its outputs.

A growing dependence on AI tools could lead students to rely heavily—or exclusively—on generated content, risking a decline in creativity, independent thought, and critical problem-solving skills (Zhai et al., 2024). As such, the integration of AI into education must be accompanied by careful oversight, ethical consideration and an unwavering commitment to preserving the human dimension of learning.

## 3. Methodology

This study is a qualitative investigation aimed at exploring students' perspectives on the use of AI in Higher Education. Data were collected between March and May 2024. Fifty students from Romania (20), Georgia (5), Italy (10), The Netherlands (9) and UK (6) that participated in a summer program took part in this research. They were informed about the purposes of the research and about the fact that the purposes are purely academic. They were also assured that the anonymity will be kept and that they may step back from the discussions at any moment in time. The placement in the groups was random; they were asked to draw lots to decide which of the groups they would be part of. Five groups, each consisting of ten students, participated in brainstorming sessions lasting 30 to 45 minutes. During these sessions, two central topics were discussed:

1. Your expectations of AI implementation in Higher Education institutions
2. Your worries/concerns related to AI implementation in Higher Education institutions

Brainstorming is considered a good tool for group idea generation (Isaksen et al. 2005). In order to produce synergy, to foster new ideas and to facilitate the appearance of new associations, literature recommends to keep some rules in the process of brainstorming. Group or team members are guided to produce as many ideas as possible, to express freely all thoughts that come to mind, to build on existing ideas, to develop improved ones and to refrain from criticizing their own or others' contributions (Dzindolet et al. 2012).

The opinions expressed by the students were analysed using Thematic Analysis. Thematic Analysis is an appropriate method for qualitative data, used to identify, analyse, and interpret patterns or themes within textual data, when data are not very large (Humble & Mozelius, 2022). It is flexible, prioritises the perspective of interviews and permits to identify, organise, and describe patterns in datasets (Delgosha et al., 2022; Clarke & Braun, 2016).

After reviewing the session transcripts, researchers coded the data during multiple sessions and uploaded them into the MAXQDA software for processing. The software was used to assign codes within the program and to identify these codes in the interview texts. Additionally, MAXQDA facilitated the generation of charts. This tool reorganises content analysis and supports the simultaneous examination of multiple texts, helping to reveal connections between concepts.

However, this study has certain limitations stemming from both the qualitative nature of the research and the participant selection method, which was based on convenience sampling. Although the chosen method is commonly used in exploratory research like this, it has inherent constraints. These include the fact that each participant may only speak once, which can limit the emergence of new ideas; some ideas may be forgotten; participants might refrain from sharing thoughts that seem too similar to previously expressed ones; or some individuals may feel inhibited and unable to express themselves freely. Particularly for this study, the use of

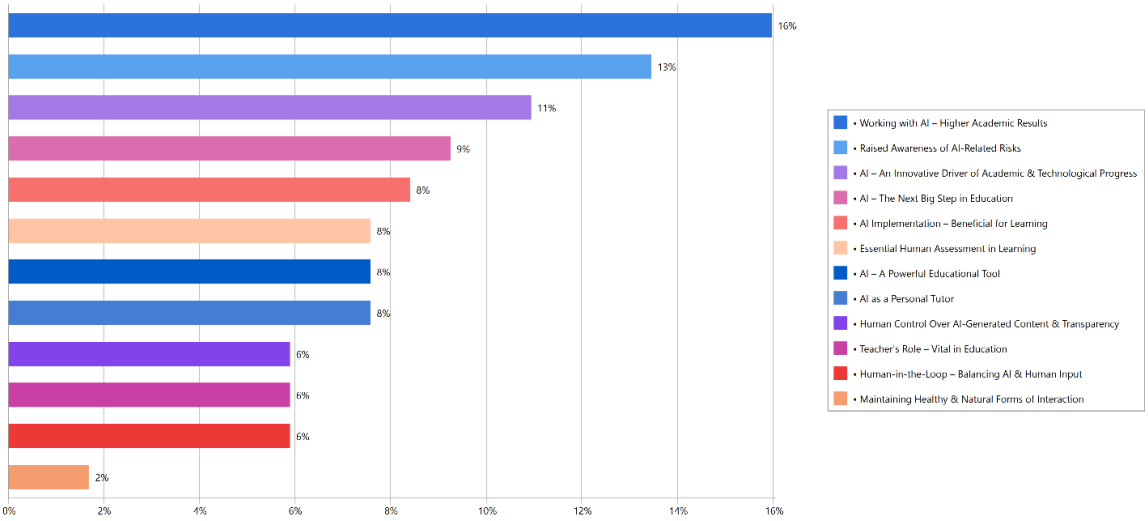
English as the language of communication, despite the fact that all students were proficient in English, probably induced a certain degree of shyness for the timid ones. There was not in the intention of this study to provide comparisons among students related to the country of origin, program involved in, or gender. No level of knowledge related to AI was a discrimination principle. Further studies may approach a more comparable vision on this topic and these findings can be a starting point for further inquiries.

## 4. Findings and Discussions

### 4.1 Coding the Conversation: Cluster Analysis of Student Insights

The codes that emerged from the discussions on the two main topics—expectations of AI in Higher Education and concerns about AI in this context—were organised into four main clusters and nine subclusters (with two clusters and four subclusters relating to expectations, and two clusters and five subclusters addressing concerns). The frequency of these clusters and sub-clusters is illustrated in Chart 1. As shown in the chart, the most frequently occurring theme was a positive outlook on AI in Higher Education, with these clusters appearing most often. The only exception was the subcluster related to awareness of AI-related risks, which ranked second in frequency and reflected participants' concerns about AI.

**Chart 1. Code Clusters and sub-clusters Frequency (MAXQDA Chart)**




The cluster *Working with AI – Higher Academic Results* recorded the highest frequency. This is not a surprising outcome, as AI has already demonstrated its potential to enhance academic performance through its ability to process large datasets and perform advanced analyses. In particular, tools like ChatGPT and other AI-based chatbots developed in recent years offer substantial support for a variety of academic tasks. These include organising resources, synthesizing literature, translating, and rephrasing content—functions that are now commonly carried out by AI. Many universities actively encourage the use of such tools for these purposes.

The second most frequent cluster falls under the "worries/concerns" category: *Awareness of AI Risks*—again, an expected result. The rapid pace of AI development has outstripped human

ability to anticipate its consequences or assess potential negative impacts. Ethical guidelines and policies on AI use in Higher Education remain fragmented, with significant variation between institutions. While there is widespread societal consensus on the necessity of both AI adoption and regulation, current discussions tend to remain at a broad, principle-based level, which contributes to ongoing uncertainty. Concerns related to data security, privacy, and other ethical issues further fuel students' apprehensions about AI integration in academic environments.

Following in frequency are the clusters and subclusters reflecting a generally positive perception of AI in Higher Education. All students reported some level of interaction with AI—ranging from idea generation for specific tasks to conducting complex analyses. They recognized the opportunities AI presents and its potential to drive significant progress in education.

Clusters that reflect a more balanced view—such as those highlighting AI as a beneficial tool for learning or a powerful educational resource—appeared with similar frequency. These clusters also included concerns about preserving essential aspects of human involvement, such as the role of human judgment in assessment, maintaining control over AI-generated content and ensuring transparency.

The least frequently mentioned issue fell under the "worries/concerns" category: *preserving healthy and natural forms of interaction*. This lower frequency may be attributed to students' familiarity with digital communication. Many are already accustomed to interacting through platforms like WhatsApp, Instagram, or TikTok rather than face-to-face, and thus see these newer forms of interaction as normal (Siagian, 2023).

### 4.2 Thematic Insights from Students: from clusters to themes

The first topic discussed during the brainstorming sessions—expectations of AI—revealed findings that align with those reported in the literature review. The first cluster of codes centers on the theme that AI is elevating education to a new level – AI, the next big step in education. Within this, several subtopics emerged, including AI as Beneficial for Learning, AI as a Personal Tutor, AI as a Powerful Educational Tool, and Working with AI – Higher Academic Results. Participants across all five focus groups emphasised the positive impact of AI on education, describing it as "the next big step forward" (G2, S17), particularly in "the preparation of different teaching materials" (G2, S13) and the overall evolution of the educational system (G1, S7; G5, S43).

Students expressed high expectations of AI in Higher Education, citing its ability to enhance learning, broaden access to information, and provide diverse data sources. One participant noted that AI "increased the degree of involvement in learning and in seeking new information" (G4, S37). Many highlighted the potential of AI to personalise education, with AI assistants functioning as private tutors that adapt to each student's individual pace: "AI assistants as private tutors tailor educational content to each learning pace" (G2, S14).

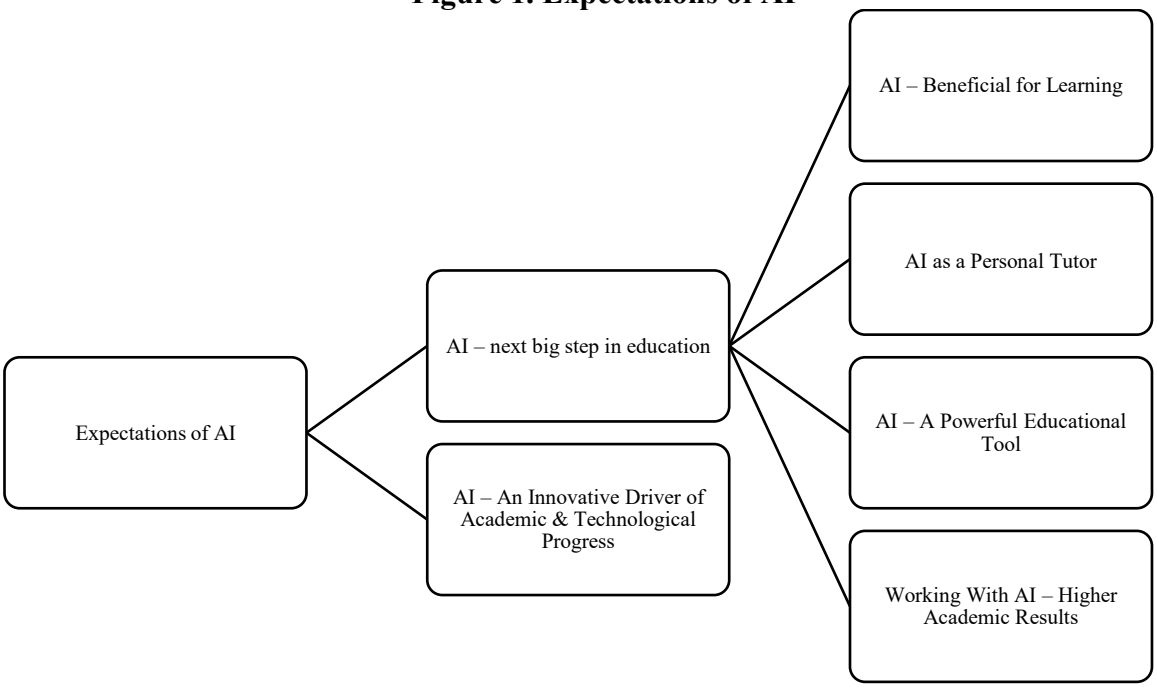
Participants also emphasised AI's role in supporting continuous learning and skill development, with comments such as AI leads to "constant evolution" (G5, S43) and helps students acquire "important skills for the future" (G1, S10). Others praised AI's capacity to create dynamic and engaging learning environments: "AI creates interactive presentations, involving multimedia elements, fostering learning and engaging students" (G3, S8; G5, S2). For digital-native generations, who respond best to familiar digital formats, such methods of content delivery are particularly effective. Students believe that education must incorporate

new technologies to facilitate deeper learning, improved performance, and increased engagement. One participant remarked that "through interactive simulations and virtual assistance, this approach brought excitement to the classroom" (G5, S4).

Supporting this view, existing literature points out that today's students tend to favour entertainment-oriented content and often show less interest in traditional learning formats (Vinichenko et al., 2021). As a result, there is a growing need to innovate teaching methods to maintain student engagement.

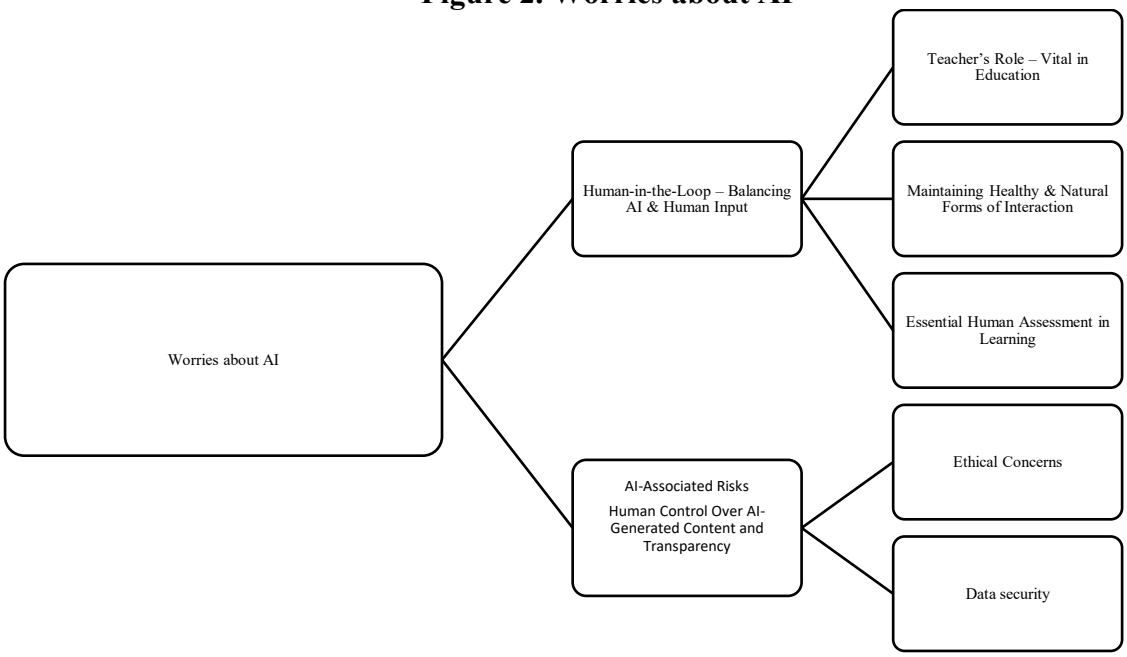
The second cluster, entitled AI – An Innovative Driver of Academic & Technological Progress, highlights AI's potential to act as a catalyst for broader advancements. According to participants, AI contributes to both academic and technological success, not only on an individual level but also in terms of national development: "AI has the capacity to contribute to academic and technological success" (G2, S20), including progress "at the level of the country" (G4, S40). An illustrative summary of the discussions under the first topic is presented in Figure no.1.

**Figure 1. Expectations of AI**




Source: authors' own compilation

**Figure 2. Worries about AI**




The second topic explored during the brainstorming sessions focused on students' worries and concerns regarding AI in Higher Education (Figure no.2). Using MAXQDA, the identified codes were organized into two main clusters and four subclusters, which were interwoven and converged around a central theme: the need for continued human oversight in the implementation and use of AI.

Participants from all five groups expressed concerns under the cluster Human-in-the-Loop – Balancing AI and Human Input. Within this cluster, three key themes emerged: the Vital Role of Teachers in Education, Maintaining Healthy and Natural Forms of Interaction and the importance of Essential Human Assessment in Learning. There was strong consensus that AI tools should not be passively adopted, but rather actively taught and guided. As students noted, "it is important to learn how to use them correctly" (G1, S1), "to proceed with caution" (G4, S31), and "to understand and adapt to the impact of AI on students' lives and society" (G3, S26).

Educators were seen as essential in this process, responsible for helping students "find information and content suited to their interests" (G5, S42), "adapted to various tasks" (G5, S50), and "combine ideas generated by AI with their own" (G1, S4). This guidance is considered vital to ensuring a "holistic and qualitative learning experience" (G2, S2). Many participants stressed the importance of preserving the educator's role, warning that without it, "human interaction can be destroyed" (G5, S44) and AI might be used "excessively and irresponsibly" (G3, S27), ultimately "damaging the educational process" (G3, S29). One participant summarised this concern by stating that "humans, through their personality and uniqueness, make things happen based on thinking and feeling" (G3, S29), underscoring the need to "promote healthy and natural forms of interaction" (G2, S13). Educators, they believe, are uniquely positioned to train students in critical thinking and help them evaluate and build upon AI-generated content.

The second major theme, AI-Associated Risks, combined with the theme Human Control Over AI-Generated Content and Transparency, addressed ethical concerns and data security.

Participants highlighted the importance of managing these issues carefully: "ethics and data security require careful management" (G2, S19; G4, S33), and there is a need to remain "vigilant about its potential negative impact" (G2, S20). Suggestions included developing "defensive mechanisms" (G3, S25) to mitigate risks. Some students expressed deeper concerns, describing AI as "a nebula that we cannot control at the moment, a non-essential extension in human evolution" (G3, S27), reflecting broader uncertainty and unease about the long-term implications of AI in education and society.

## 5. Conclusions

This study sheds light on students' perspectives regarding the alliance between humans and intelligent machines. Its exploratory nature offers insights into both "great expectations" of AI and concerns related to AI use for educational purposes. The views expressed during the brainstorming sessions reflect current research interests in the field of AI and education and are in line with similar results of other studies.

The research reveals that while students are generally familiar with AI, their levels of understanding and ability to engage with it vary. As AI continues to reshape the educational landscape, students increasingly look to educators, university leadership, and policy-makers for direction, support, and responsible implementation. It is critically important to design policies related to AI use in the educational process and to promote these regulations among all those involved in the process. Professors need to be trained for using AI, in order to align their courses with the new environment, thus inducing more security and more confidence in students in relation with AI. The lack of this guidance keeps confusion, misuses and misinterpretations on technological discoveries for students and professors alike, blocks the huge potential that AI, as a tool, can have on the development of education.

The findings underscore the importance of understanding learners' key opinions and concerns about AI integration in education. These insights can spark meaningful dialogue at university level and provide valuable guidance for stakeholders aiming to incorporate AI into academic settings in a way that maximizes benefits while minimizing risks.

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