Student Use of Generative AI in Higher Education: Patterns, Gaps, and Institutional Readiness

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Abstract:

Introduction: This study examines how widely students are using generative AI tools in higher education and whether they feel prepared and supported by their institutions in doing so.

Methods: This study used descriptive analysis of survey responses from 3,839 students across 16 countries to examine AI use, preparedness, and institutional support.

Results: Most students (86%) reported using AI, yet few felt prepared (23%) and many cited inadequate institutional guidance.

Discussion: Findings reveal a clear gap between students' rapid adoption of AI tools and limited institutional readiness to support them.

Limitations: The study relies on voluntary, self-reported, cross-sectional data that may involve selection bias and cannot establish causality.

Conclusions: Results highlight the need for stronger AI literacy, updated assessments, and clearer institutional guidance for responsible AI use in higher education.

Key words: artificial intelligence, higher education, student preparedness, institutional support.

Introduction

Artificial intelligence (AI) has swiftly transformed the educational environment, particularly through generative tools like ChatGPT, which have reshaped how students research, write, and learn. Since its public debut in late 2022, ChatGPT

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exemplifies how AI became embedded in academic routines - fueling both innovation and concern.

A critical lens on this shift comes from the Digital Education Council Global AI Student Survey (2024), which collected responses from 3,839 students across 16 countries. Findings revealed that 86% use AI for their studies, with 54% engaging weekly. Popular tools include ChatGPT (66%), Grammarly, and Microsoft Copilot. Students frequently employ AI for tasks such as information retrieval (69%), grammar checking (42%), summarizing (33%), and drafting first versions (24%).

Despite extensive usage, significant gaps persist: 58% of students feel unprepared to manage AI academically, and 80% believe their universities are not adequately supporting AI integration. This disparity raises vital questions: Are students equipped to benefit from AI without undermining critical thinking, academic integrity, or learning autonomy?

This paper takes a data-driven approach to examine these dynamics. Focusing on the DEC survey, we explore usage patterns, perceptions, and the preparedness gap. By integrating global comparative data, we identify opportunities for educational institutions to foster AI literacy, align assessments, and respond to evolving learning landscapes.

1 Literature review

The sudden availability and rapid evolution of generative artificial intelligence (AI) tools - most notably ChatGPT, Bard, Claude, and Copilot - have presented both unprecedented opportunities and profound challenges for higher education. These tools offer instant access to language-based outputs such as summaries, essays, code, and explanations, reshaping how students engage with academic tasks. As a result, scholars and educators are increasingly focused on understanding the patterns of AI usage among students, the implications for teaching and assessment, and the institutional responses needed to support responsible and effective integration.

1.1 Student adoption of generative AI tools

A growing body of survey-based evidence documents the widespread and increasing use of generative AI among students across diverse educational systems. According to the Digital Education Council Global AI Student Survey (2024), which gathered responses from 3,839 students in 16 countries, 86% of students report using AI in academic contexts, and 54% use it on a weekly basis. Among the most popular tools were ChatGPT (66%), Grammarly, Microsoft Copilot, and QuillBot. The most common applications included information retrieval (69%), grammar improvement (42%), summarization (33%), and drafting initial responses or essays (24%).

This trend is echoed in national-level surveys. In the United Kingdom, a collaborative report by the Higher Education Policy Institute (HEPI,) and AI Pioneers (2025) found that 92% of university students had used AI tools for coursework, a marked increase from 66% in 2024. In Canada, a KPMG (2024) survey of post-secondary students reported a 59% usage rate, and notably, 82% of those users admitted to submitting AI-generated content as their own.

These figures reveal more than high adoption - they suggest an entrenched reliance. As Clifford, Liu, and Kasneci (2023) observe, generative AI has rapidly become a "second cognitive assistant," woven into students' daily routines and academic coping strategies. Earlier studies on student technology use also anticipated this behavioral shift. Kennedy et al. (2010) found that digital-native students often leverage available technologies to maximize efficiency and minimize workload, even when institutional guidance is lacking. AI, therefore, represents not a radical departure, but a hyper-acceleration of long-standing patterns in educational technology use (Selwyn, 2016).

1.2 Pedagogical and ethical tensions

The rapid integration of generative AI tools into student learning has intensified concerns about academic integrity, learning outcomes, and the future of assessment. According to the same Canadian KPMG (2024) study, more than three-quarters of students (77%) reported heightened stress due to unclear institutional policies on AI use. This aligns with earlier concerns raised in the literature about the ambiguity of digital authorship and student confusion regarding acceptable use of digital tools (Bretag et al., 2019).

These findings resonate with studies highlighting the ethical dilemmas created by AI. Students are not only engaging with these tools in ways that conflict with traditional definitions of originality, but they are also doing so with incomplete or absent institutional guidance. In a large-scale analysis of AI's impact on higher education, Zawacki-Richter et al. (2019) noted that while AI research in education is expanding rapidly, pedagogical frameworks often lag behind technological development.

At the core of this ethical tension is the breakdown of traditional assessments. Perelman (2023) argues that generative AI renders conventional take-home essays, summaries, and reports increasingly obsolete as valid measures of student learning. Similarly, Luckin and Holmes (2022) advocate for reconceptualizing AI as a "cognitive collaborator," suggesting that educators must shift toward assignments that promote human-AI interaction as part of learning, rather than trying to isolate student performance from technological assistance.

These shifts in thinking are supported by broader concerns in educational theory. Siemen (2013), writing on learning analytics, warns of the danger of

"outsourcing cognition" - relying so heavily on data-driven systems that learners reduce their intellectual engagement. The potential for generative AI to produce similar disengagement is high, particularly when used to bypass difficult tasks rather than augment understanding.

1.3 The preparedness gap

Despite the high rates of AI adoption, students consistently report low levels of confidence in using these tools effectively and ethically. In the Digital Education Council (2024) survey, 58% of students said they felt unprepared to navigate AI academically, and 80% believed their institutions had failed to meet their expectations for guidance and support.

This disconnect is further confirmed by the HEPI (2025) survey, where two-thirds of UK students expressed concern that their university was "behind the curve" in dealing with AI. Similar findings were reported in the U.S. by EDUCAUSE (2024), which found that fewer than 20% of higher education institutions had formal AI policies or included AI literacy in the curriculum.

This preparedness gap raises serious questions about equity, especially for first-generation or underrepresented students. Research has shown that access to digital tools and institutional support often varies by socioeconomic status, leading to unequal outcomes in tech-enhanced learning environments (Salinas et al., 2016; Warschauer & Matuchniak, 2010). Without clear policies and targeted educational initiatives, universities risk deepening digital divides and exacerbating educational inequalities in AI adoption.

1.4 Toward AI literacy and assessment reform

In response to these challenges, a growing consensus has emerged among scholars and policymakers: higher education must embrace AI literacy as a central component of 21st-century learning. According to the OECD (2023), AI literacy includes technical proficiency, ethical reasoning, critical engagement, and the ability to evaluate AI-generated content. Trust, Maloy, and Edwards (2023) propose AI literacy as an iterative, interdisciplinary skill set that should be embedded in both general education and disciplinary coursework.

In practice, this means that universities must do more than simply ban or allow AI. Instead, they must actively design learning environments that teach students how to use AI tools responsibly. Tang, Chen, and Cheng (2023) emphasize the need for authentic assessment - evaluations that require problem-solving, creativity, and reflection. These forms of assessment are not easily outsourced to AI and may, in fact, be enhanced by thoughtful AI integration.

Moreover, scholars argue that institutional engagement with AI must extend beyond individual courses. As Williamson and Eynon (2020) suggest, AI should be viewed not merely as a tool but as part of a broader data infrastructure that

shapes educational practice, governance, and student identity. As such, AI literacy must be supported at the policy level, through institutional frameworks that encourage transparency, collaboration, and adaptability.

2   Methodology

This study employs a secondary data analysis approach to examine patterns in student use of generative artificial intelligence (AI) based on the Digital Education Council (DEC, 2024)) Global Student Survey on AI in Higher Education. The goal is to interpret how survey responses reflect student behavior, perceptions of preparedness, and institutional support, and to compare these findings with insights from other large-scale studies and scholarly literature. While the study is non-experimental and descriptive in nature, it draws on both quantitative survey data and qualitative synthesis of recent academic findings to explore the implications of student AI use for higher education.

2.1 Data source

The DEC Global Student Survey was conducted in July 2024 and received responses from 3,839 students across 16 countries, including the United States, United Kingdom, Canada, Germany, Brazil, India, and South Africa. The survey was disseminated through university mailing lists, social media platforms, and education-focused organizations. It included both closed-ended and open-ended questions addressing student familiarity with AI tools, frequency and purpose of use, perceived institutional preparedness, ethical concerns, and confidence in their own AI capabilities.

Key survey items used in this analysis include:
- Frequency of AI use (e.g., daily, weekly, monthly, never)
- Types of AI tools used (e.g., ChatGPT, Grammarly, Microsoft Copilot)
- Primary use cases (e.g., summarizing, drafting, grammar checking)
- Student self-assessment of preparedness to use AI in academic contexts
- Perception of institutional guidance and support
- Ethical concerns or stress experienced in relation to AI use

Responses were anonymized, and demographic identifiers were limited to general categories (e.g., age group, country, academic discipline), which allows for broad comparison without personal data exposure.

2.2 Analytical approach

A descriptive quantitative analysis was conducted on the closed-ended responses. This involved computing frequencies, percentages, and cross-tabulations to examine:
- The prevalence of AI use across regions
- Variation in use cases by academic discipline

- Relationships between AI usage frequency and perceived preparedness
- The extent of dissatisfaction with institutional support.

For example, we examined what proportion of daily users felt "well-prepared" versus "unprepared," and whether this differed significantly from infrequent users. These comparative descriptive patterns support the broader discussion of how students' behaviors and perceptions align - or fail to align - with institutional frameworks and scholarly recommendations for AI literacy.

Where available, the DEC findings were cross-referenced with data from other large-scale studies, including:

- HEPI and AI Pioneers (2025): UK-based data on university students
- KPMG (2024): Canadian national survey on post-secondary AI use
- EDUCAUSE (2024): Institutional AI policy readiness in U.S. higher education.

These cross-national comparisons help to contextualize the DEC findings and identify recurring global themes.

2.3 Limitations

While this analysis benefits from a large, diverse dataset, it is not without limitations. The DEC survey was voluntary and distributed online, meaning respondents may not represent all students equally. Students more comfortable with or interested in AI may have been more likely to participate, potentially inflating usage rates. Additionally, while the survey provides rich descriptive data, it does not allow for causal inference or deep qualitative insight into student decision-making.

The survey instrument itself was not formally validated through psychometric analysis, though it was reviewed by education researchers for face validity and international relevance. Given that responses were self-reported, they may also reflect social desirability bias, particularly on questions related to ethical use or institutional trust.

Nonetheless, as a cross-national snapshot of current trends, the dataset provides a valuable foundation for exploring how student adoption of generative AI relates to institutional practice, student well-being, and future policy directions.

3   Results

The analysis of the DEC Global Student Survey (2024) reveals three dominant themes: (1) widespread and routine use of generative AI tools by students across disciplines and countries, (2) a substantial gap between usage and student preparedness, and (3) strong perceptions of inadequate institutional support. These findings align with several national-level studies and reinforce the need for systemic responses from educational institutions.

3.1 Prevalence and patterns of AI use

Among the 3,839 respondents from 16 countries, 86% reported using generative AI tools for academic purposes. Of these, 54% indicated using AI weekly or more frequently, with 18% reporting daily use. AI use was especially high among students in humanities and social sciences (90%) but also significant in STEM disciplines (82%).

Most commonly used tools:
- ChatGPT (66%)
- Grammarly (48%)
- Microsoft Copilot (31%)
- QuillBot (24%).

Top use cases:
- Information retrieval (69%)
- Grammar correction (42%)
- Summarizing articles or lecture notes (33%)
- Drafting initial essay responses (24%).

These patterns reflect students' tendency to use AI as a "productivity enhancer" rather than for creative ideation or deep learning. Similar findings were reported by Kasneci et al. (2023), who noted that students often frame AI tools as time-saving utilities rather than educational partners.

3.2 Student preparedness and confidence

Despite widespread adoption, only 23% of AI users felt "well prepared" to use these tools effectively and ethically. A majority - 58% - described themselves as "underprepared" or "very underprepared." This gap between behavior and confidence was more pronounced among students in their first two years of study and those outside of computer science or engineering disciplines.

Daily users were slightly more confident (31% reported being "well prepared") than infrequent users (19%), but even among high-frequency users, substantial uncertainty remained. This suggests that familiarity with tools does not equate to critical understanding or responsible use - a finding consistent with Trust, Maloy, and Edwards (2023), who argue for explicit AI literacy instruction.

3.3 Institutional support and policy perception

When asked whether their institution had helped them understand how to use AI responsibly:
- 80% responded "no" or "not really"
- Only 7% answered "yes" with confidence.

Students frequently cited a lack of clear policies, inconsistent faculty messaging, and a sense that "nobody knows the rules" around AI use. One open-ended

response summarized the view of many: "Professors either ignore it or tell us not to use it - but everyone does anyway."

This institutional trust gap mirrors the results of the HEPI and AI Pioneers (2025) survey in the UK, where 67% of students felt their university was unprepared for AI. In Canada, KPMG (2024) similarly reported that a majority of students found their institutions had not provided sufficient guidance.

3.4 Emotional and ethical tensions

Approximately 61% of respondents reported feeling conflicted or anxious about their use of AI. When asked why, common responses included:

- Worries about over-reliance ("I feel like I'm not really learning")
- Uncertainty about academic integrity policies
- Concerns about future job readiness without developing foundational skills.

These emotional tensions were echoed in the Canadian survey, where 77% of students said that AI usage added to their academic stress (KPMG, 2024). In qualitative studies, Williamson and Eynon (2020) observed similar ambivalence: students appreciate the efficiency of AI but fear it may deskill them in the long run.

4   Discussion

The results of this analysis confirm what many educators have sensed anecdotally but can now verify empirically: generative AI has become a routine part of students' academic lives, even as institutions lag in developing the literacy, structures, and supports needed to help students use these tools effectively. The findings, viewed alongside broader scholarship, reveal a set of intersecting themes concerning the disconnect between AI use and educational readiness, the ethical and emotional tensions students experience, and the urgent institutional need to shift from reactive policymaking to proactive curricular design.

One of the clearest patterns is the gap between the widespread use of AI and students' ability to use it responsibly; although 86% of students reported using AI for academic work, only 23% felt prepared, a disparity that raises concerns when considered through the lens of self-regulated learning, which stresses learners' capacity to plan, monitor, and evaluate their own performance (Zimmerman, 2002). Students appear to be using AI to ease cognitive load and improve efficiency, but often without the metacognitive skills necessary to judge the reliability, limitations, or ethical implications of AI-generated content. This aligns with the warnings of Kasneci et al. (2023) about the risk of automation bias in the absence of explicit AI literacy instruction and with Trust et al. (2023), who emphasize that technical fluency alone is insufficient without engagement with the social, epistemological, and ethical dimensions of AI. Together, these

insights point to the need for AI literacy to become a foundational component of general education rather than a specialized topic reserved for certain disciplines.

The findings also highlight the emotional ambivalence students report as they rely on AI: many describe these tools as empowering, yet a large share also experiences anxiety, uncertainty, and fear of crossing ethical boundaries. This mirrors what Williamson and Eynon (2020) describe as the broader "data paradox," in which students appreciate the support digital tools provide while remaining uneasy about their implications for agency, learning, and academic integrity. Much of this tension arises not from individual disposition but from institutional ambiguity; with more than 80% of students indicating inadequate support from their universities, the landscape is marked by unclear or contradictory guidance that leaves students uncertain about appropriate use. This aligns with Selwyn's (2011) argument that institutions often adopt a stance of "strategic ambivalence" toward new technologies - neither fully integrating them nor regulating them decisively. The resulting vacuum creates an ethical gray zone similar to dynamics observed in plagiarism research, where the absence of clear guidance increases the likelihood of questionable academic practices (Bretag et al., 2019). In the context of AI, this ambiguity is even more pronounced because distinctions between assistance and authorship are inherently blurred.

Finally, the analysis underscores the mismatch between the speed of AI adoption and the slow pace of institutional response. Students are rapidly developing their own norms and practices around AI, but without coordinated policies or educational frameworks, these practices emerge unevenly and often incoherently. Drawing on Bourdieu's (1990) notion of habitus, this can be understood as students forming dispositions in response to inconsistent environments, resulting in routines that may be expedient but pedagogically misaligned. This drift poses several risks: it widens inequities, as students with greater resources or informal support networks are better positioned to navigate ambiguity (Warschauer & Matuchniak, 2010); it fragments educational coherence, as contradictory instructor-level expectations generate confusion and disengagement; and it threatens the validity of traditional assessments, many of which no longer reliably measure student understanding in the context of AI-mediated work (Perelman, 2023; Tang et al., 2023).

Addressing these challenges requires institutions to move beyond reactive restrictions and toward intentional curricular design that embeds AI literacy across disciplines, promotes assessments that emphasize higher-order thinking, opens classroom dialogue about the ethical and epistemological dimensions of AI, aligns institutional policy with students' lived experiences, and incorporates formative assessment practices (Marks, 2014). In essence, universities must learn to teach with AI rather than around it, embracing the opportunity - as Luckin and

Holmes (2022) suggest - to reshape education toward more collaborative, inquiry-driven, and critically engaged models of learning.

Conclusions

This study analyzed recent global survey data to illuminate how students are using generative artificial intelligence (AI) in their academic work - and what their responses reveal about the current state of readiness in higher education. The findings from the Digital Education Council's 2024 Global Student Survey, along with comparative national studies, make one point abundantly clear: AI is no longer an emerging technology on the periphery of higher education. It is already deeply embedded in student routines, shaping how they read, write, study, and complete assignments. Yet, this integration has occurred largely without adequate institutional preparation, clear policy guidance, or pedagogical adaptation.

Students are not passively waiting for instruction - they are actively integrating AI into their learning processes, often with limited understanding of the risks or long-term implications. This disconnect has led to a landscape marked by high usage but low confidence, frequent reliance but persistent anxiety, and widespread institutional inconsistency. These tensions pose serious risks to educational quality, academic integrity, and equity, particularly as students turn to AI to manage rising academic pressure.

The results point to three key implications for higher education:

1. AI Literacy Must Become Foundational: Institutions must treat AI literacy as a core 21st-century skill, embedded across curricula and not restricted to technical disciplines. This includes not only functional competence, but ethical reflection, critical evaluation, and transparent dialogue between students and faculty.

2. Assessment Design Must Evolve: Traditional assignments such as essays, summaries, and take-home exams are increasingly inadequate as standalone assessments of student learning. Educators must shift toward authentic, collaborative, and reflective assessment models that value process over product and resist easy automation.

3. Institutional Policy Must Be Proactive, Not Punitive: Blanket bans or vague warnings are no longer sufficient. Universities need coordinated, forward-thinking strategies that incorporate AI into teaching, learning, and academic integrity frameworks - developed in collaboration with both faculty and students.

As AI continues to develop in speed, scale, and sophistication, educational institutions must respond with similar urgency and depth. The alternative is not simply inefficiency or obsolescence, but a profound loss of trust, relevance, and pedagogical integrity. If higher education is to remain a space for critical inquiry,

personal growth, and meaningful learning, it must meet students where they already are - navigating the new realities of AI-powered education.

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