

The Impact of Generative Artificial Intelligence on Higher Education Learning and Teaching:

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Abstract

The rapid proliferation of generative Artificial Intelligence (GAI) tools, most notably ChatGPT, has introduced profound and far-reaching consequences for Higher Education (HE) institutions worldwide. This qualitative and quantitative study investigates the perspectives of university educators regarding the impact of generative AI on learning and teaching practices. A mixed-methods design was employed, incorporating structured online surveys and semi-structured interviews with academic staff drawn from multiple faculties at a research-intensive Australian university. Thematic analysis of the collected data revealed three principal themes: the overwhelming dominance of ChatGPT as the generative AI tool of choice among educators; an urgent and largely unmet demand for institutional training and support; and the critical importance of transparent student engagement with AI technologies. Key findings indicate that while nearly half of participants had adopted AI within their teaching roles—predominantly through assessment redesign—fewer than a quarter felt adequately equipped by their institutions. Concerns surrounding academic integrity, though widespread, appeared to be partially overstated relative to actual student usage patterns. Participants unanimously anticipated continued advancement in AI capabilities, while expressing significant uncertainty regarding its long-term pedagogical implications. The study concludes with a call for sustained institutional commitment to AI literacy, policy development, and collaborative research, emphasizing universities' core obligation to prepare graduates for an AI-integrated professional landscape.

Keywords:

Generative Artificial Intelligence | Higher Education | ChatGPT | Educators' Perspectives | Academic Integrity | Assessment Design

1. Introduction

Artificial Intelligence (AI) is no longer a peripheral technology confined to research laboratories or science-fiction narratives. It has become an integral dimension of modern society, permeating sectors as diverse as healthcare, finance, marketing, and education. Within higher education specifically, AI's presence has accelerated substantially in recent years, driven in large part by the public release of OpenAI's Chat Generative Pre-trained Transformer—commonly known as ChatGPT—in November 2022. This Large Language Model (LLM) utilizes Natural Language Processing (NLP) to generate contextually coherent, human-like responses to user prompts, and its adoption across global academic communities has been both rapid and disruptive.

The velocity of ChatGPT's uptake is itself a matter of historical record: the application reached 100 million users within two months of its launch, making it the fastest-growing consumer software application ever recorded (Hu, 2023). This unprecedented diffusion has prompted widespread reflection within the higher education sector regarding the opportunities and threats that generative AI presents. Alongside ChatGPT, a constellation of related tools—including Midjourney, DALL-E, Microsoft's Bing AI Chat, and Google's Bard—has emerged, each offering distinct capabilities with implications for content creation, research, and pedagogy.

The potential of AI to fundamentally reshape educational practice cannot be overstated. Commentators have likened its transformative potential to that of the introduction of electricity (Thurzo et al., 2023), while scholars such as Bozkurt (2023, p. 199) characterize it as capable of triggering "transformative change" across virtually every domain of human endeavor. Within the academy, this transformation is already being felt: ChatGPT has demonstrated the capacity to pass professional examinations in medicine, law, and English comprehension, raising urgent questions about the integrity of conventional assessment practices and the nature of credentialed knowledge (Choi et al., 2023; Kung et al., 2023).

Despite this seismic shift, empirical research examining how educators themselves perceive and respond to generative AI remains in its early stages. Much of the existing literature is prescriptive or theoretical in orientation, offering policy recommendations without systematic investigation of practitioner experience. The present study addresses this gap by conducting a mixed-methods inquiry into the perspectives of academic teaching staff at a leading Australian university. Through surveys and in-depth interviews, the research explores how educators understand the implications of generative AI for their professional roles, their students, and the broader institutional ecosystem in which they operate.

The central research question guiding this investigation is: What are the perspectives of higher education educators on the impact of generative Artificial Intelligence on university-level learning and teaching? In pursuing this question, the study aims not only to document current attitudes and practices but to contribute empirical grounding to an ongoing policy debate that will significantly shape the future of tertiary education.

2. Literature Review

2.1 The Rise of Generative AI in Educational Contexts

The integration of AI into higher education has a history predating the ChatGPT era, encompassing adaptive learning platforms, automated essay scoring systems, and intelligent tutoring systems. However, the advent of large-scale language models has introduced a qualitatively different challenge. Unlike earlier educational technologies, generative AI tools are accessible to any user with an internet connection, require no specialized training to operate, and are capable of producing outputs that are frequently indistinguishable from those created by human experts (Walczak & Cellary, 2023). This democratization of sophisticated language generation capability has fundamentally altered the landscape within which educators work.

The COVID-19 pandemic served as an accelerant for the adoption of digital and AI-mediated learning modalities, a development that has been particularly pronounced in developing nations (Al Dhaen et al., 2022; Shaikh et al., 2022). As universities transitioned rapidly to online delivery, both institutional appetite for technological solutions and student familiarity with digital tools increased markedly. The arrival of generative AI tools in the aftermath of this period thus landed in a context already primed for disruption.

2.2 Educator Attitudes: Between Utopia and Dystopia

Academic responses to generative AI are characterized by a striking degree of ambivalence. Bearman et al. (2023, p. 376) describe a prevalent "dystopia-is-now" discourse in which AI is constructed as an existential threat to educational authenticity, professional identity, and institutional integrity. Central to this discourse is the fear of plagiarism facilitated by AI—a practice now acquiring its own nomenclature in the form of "AIgiarism" (Murugesan & Cherukuri, 2023, p. 119). Additional concerns include the potential perpetuation of algorithmic bias (Cooper, 2023), privacy violations (Crawford et al., 2023), and the undermining of scientific inquiry (Bozkurt, 2023; Dergaa et al., 2023).

Simultaneously, however, a more optimistic body of literature points to the considerable pedagogical affordances of generative AI. Research indicates its capacity to personalize learning pathways (Lodge et al., 2023), support students from equity-seeking groups including those with learning disabilities (McGrath et al., 2023), and enhance professional knowledge among teaching staff (Chaipidech et al., 2022). In the medical domain specifically, ChatGPT has been observed to facilitate higher-order conceptual learning by surfacing non-obvious connections that might otherwise elude learners (Kung et al., 2023).

A recurring theme in the literature is the inadequacy of institutional preparation. Educators report insufficient time to engage meaningfully with AI tools, a lack of formal training, and dependence on external incentives—such as institutional recognition or promotion—rather than intrinsic motivation for pedagogical innovation (Al Dhaen et al., 2022; Crawford et al., 2023). The gendered dimension of this digital divide has also been documented, with female educators self-reporting lower levels of AI knowledge than their male counterparts (McGrath et al., 2023).

2.3 Assessment, Integrity, and the Redesign Imperative

Among the most pressing practical concerns arising from the proliferation of generative AI is its impact on assessment validity. If AI tools can consistently produce work of undergraduate or even postgraduate quality, the evidentiary value of conventional written assessments is substantially diminished. This challenge has prompted a range of institutional and individual responses, from prohibitive bans on AI use to wholesale redesign of assessment methodologies toward tasks that foreground human experience, critical judgment, and contextual specificity (Pearce & Chiavaroli, 2023).

The reliability of AI detection tools has emerged as a related concern. Products such as Turnitin's AI detection module have been widely adopted but have also attracted significant criticism for their inconsistency and susceptibility to circumvention. The rapid pace of AI development means that any detection tool faces the prospect of near-immediate obsolescence (Alkaissi & McFarlane, 2023). This dynamic has led some educators to argue that detection-based strategies are fundamentally reactive and inadequate as a long-term policy response.

3. Methodology

3.1 Research Design

This study employs a concurrent mixed-methods design, integrating quantitative survey data with qualitative interview findings to produce a rich, multidimensional account of educator perspectives on generative AI. This design was selected in recognition of the complexity and novelty of the phenomenon under investigation, and in acknowledgment that neither quantitative nor qualitative methods alone would be sufficient to capture the breadth and depth of educator experience.

3.2 Participant Recruitment and Sample

A cross-faculty Community of Practice (CoP) was established among university teaching staff and students to facilitate collective inquiry into the implications of AI for learning and teaching. Recruitment for the study targeted members of the university's Education Academy—a body comprising academic staff who have demonstrated sustained excellence in teaching and who actively contribute to institutional governance of educational quality.

Participants represented a broad spectrum of disciplines, including the Health and Medical Sciences, Arts, Business, Law and Economics, and Science, Engineering, and Technology. This disciplinary diversity was intentional, enabling comparison across different epistemological traditions and professional cultures. A total of 30 survey respondents participated in the quantitative phase, and eight of these self-selected for follow-up semi-structured interviews in the qualitative phase.

3.3 Data Collection

The primary data collection instrument was an online survey administered through the Qualtrics platform. The survey comprised seven demographic items and twenty substantive questions examining AI usage, perceptions, concerns, and support needs. Question formats included binary yes/no items, five-point Likert scales, drop-down menus, and open-ended text fields. The average response rate across all items

was 78.6%. Survey data were collected during the first academic semester of 2023, between May and July.

Semi-structured interviews were conducted with eight self-selected participants in August 2023. Interview schedules were informed by themes emerging from the survey data and were designed to elicit nuanced elaboration of participant perspectives. All interviews were audio-recorded and transcribed verbatim.

3.4 Data Analysis

Survey data were analyzed using descriptive statistics to identify patterns in responses across the sample. Qualitative data from both open-ended survey questions and interview transcripts were analyzed using the Inductive Thematic Analysis procedures established by Braun and Clarke (2006, 2022). This approach was selected for its epistemological flexibility and its capacity to surface meaning from data without imposing predetermined theoretical frameworks. Analysis proceeded through iterative cycles of coding, theme generation, and theme refinement, with all coding conducted manually from Excel-formatted transcripts.

4. Findings

4.1 AI Adoption Across Work Domains

Participants were asked whether they were using, or planned to use, generative AI across three professional domains: teaching, research, and administration. Teaching emerged as the most common domain of AI integration, with 48.3% ($n = 14$) of survey respondents indicating active use. Administrative applications were reported by 33.3% ($n = 9$), while research-related AI use was the least frequent at 28.6% ($n = 8$). Notably, none of the interview participants reported using AI in any substantive capacity in their research practice.

When asked to specify their frequency of use, only one respondent reported never having used generative AI. Two reported daily usage, while the most common response—selected by 38.5% of respondents—was "very infrequently" (a few times per semester or less). These figures suggest that, at the time of data collection, AI integration into professional practice was exploratory and episodic rather than systematic or embedded.

4.2 Tool Preferences: The Dominance of ChatGPT

All twelve respondents who specified which AI tools they had used in the preceding six months identified ChatGPT. This finding was powerfully reinforced in the interview data: as one participant observed, "When people say AI, everyone just immediately assumes it's ChatGPT" (SP). Other tools mentioned included Bing AI, Midjourney, DALL-E, Grammarly, Research Rabbit, Otter, and Elicit, but each was referenced by only a small minority of participants. ChatGPT's dominance in the data corpus reflects its unrivaled cultural visibility as the default reference point for generative AI within this academic community.

4.3 Skills Development and Institutional Support

A striking and consistent finding across both phases of data collection was the significant gap between educators' desire for AI-related professional development and the support actually provided by the institution. Only 23% (n = 6) of survey respondents agreed that the university had adequately equipped them with the knowledge and skills necessary to use AI effectively. By contrast, 78% (n = 21) indicated they would like additional support—a proportion that underscores the scale of unmet training need.

Despite 66.6% of respondents (n = 18) reporting some engagement with professional development activities related to AI during the semester, fewer than 58% felt confident in their capacity to discuss AI tools substantively with students. This divergence between development activity and developmental outcome may indicate that available professional development was poorly targeted, insufficiently scaffolded, or too generic to meet disciplinary-specific needs. Interview participants expressed this frustration directly: "We need more professional development... there's just not enough information getting out there to academics about what they can do with it and what is safe" (SV).

4.4 Student Use of AI: Perceptions and Realities

Survey participants were asked to estimate how frequently their students were using AI. No respondent selected "never," and 78% (n = 21) believed students were using AI at least monthly. This perception of high and near-universal student AI use was, however, called into question by parallel data from a concurrent student survey, in which 31% (n = 109) reported never having used AI, and a further 25.5% (n = 90) indicated very infrequent use.

Interview participants corroborated this gap between perception and reality. A lecturer in Agricultural Studies described student-expressed reluctance to use AI for fear that it might "diminish the value of their degrees," while a lecturer in Journalism expressed surprise when a poll of their students revealed lower uptake than anticipated. These findings suggest that educator anxiety about student AI use, while understandable, may be calibrated to a threat that is currently less prevalent than feared.

Transparency emerged as a pivotal value in participant discussions of student AI engagement. Multiple educators described policies requiring students to disclose AI use, document their interactions with AI tools through appendices or reflective summaries, and demonstrate their own intellectual contribution to AI-assisted work. As one interviewee summarized: "If you're going to use it, that's fine, but make sure I know you're using it, and also to demonstrate how you've used it" (SA).

4.5 Assessment Redesign and Curriculum Innovation

Approximately half of survey respondents (48.1%, n = 13) reported modifying their course or assessment design in the preceding semester in response to generative AI. The most frequently cited adaptation was the development of new or diversified assessment tasks—including fieldwork-based essays, application-of-knowledge activities, and in-class examinations. Some educators had moved to closed-book, device-free assessment conditions, while others were experimenting with AI-integrated pedagogical models.

One particularly promising assessment approach—independently developed by several interview participants—involved providing students with an AI-generated essay draft and requiring them first to

critique it formatively, then to produce a revised final submission that demonstrably surpassed the AI's output. This model was seen as simultaneously building AI literacy, developing critical evaluation skills, and maintaining standards of authentic intellectual engagement.

Concerns about AI detection tools were consistent and emphatic across the interview data. Half of interviewees expressed low confidence in Turnitin's detection capabilities, and no participant offered an unqualifiedly positive assessment of currently available detection technologies. The view that detection tools will inevitably be outpaced by AI development—summarized by one participant as meaning "any detection tool that is developed would be out dated within months" (SV)—signals a need for more structurally sophisticated institutional responses.

4.6 Concerns Regarding AI in Higher Education

The item asking participants whether they had concerns about generative AI in teaching and research elicited the strongest consensus response in the entire survey: 89% (n = 24) selected yes. Concerns were heterogeneous in nature, encompassing academic integrity, the accuracy and reliability of AI-generated content, threats to student literacy and critical thinking development, copyright and intellectual property issues, data privacy, and the erosion of disciplinary depth in assessment outputs.

Interview participants expressed concern not only about current student behavior but about the longer-term societal consequences of AI dependence. One educator predicted a decline in population-level writing ability resulting from AI-mediated composition, while another cited a notable grade inflation in a multiple-choice test—with the average rising from the historical range of 70–75% to 84%—as evidence of suspected AI-assisted cheating. Others expressed anxiety about regulatory lag, the opacity of data practices among AI providers, and the risk that institutional governance would prove too slow to respond meaningfully.

4.7 Perceived Benefits and Future Outlook

Notwithstanding the prevalence of concerns, participants also identified substantial potential benefits in the integration of generative AI. Efficiency and time-saving were the most commonly cited advantages, mentioned by half of survey respondents. Specific applications included automating administrative reporting, generating multiple-choice questions to free educators for higher-order teaching activities, rapidly synthesizing disciplinary literature, and peer-reviewing drafts and assessment rubrics.

Looking toward the future, participants' views were deeply divided. While 63% of respondents did not anticipate that AI would dehumanize education, 70% expressed concern about the risk of excessive student reliance on technology. The single most consistent emergent theme across all data—and the one area of genuine cross-participant consensus—was the expectation that AI tools will continue to improve in sophistication and capability. As one participant noted with characteristic understatement: "Well, it's only going to get better" (SP). This shared expectation of improvement paradoxically intensifies both the urgency and the difficulty of institutional policy planning.

5. Discussion

5.1 ChatGPT as the Generative AI Reference Point

The dominance of ChatGPT in the perceptions and practices of study participants reflects broader patterns of technological diffusion in which early-mover advantage, user-friendly design, and cultural saturation combine to create a de facto standard. The implications of this concentration are significant: when educators and students conceptualize "AI," they are effectively conceptualizing a single tool with specific characteristics, limitations, and behavioral tendencies. Policy frameworks, assessment redesign strategies, and professional development programs that are calibrated to ChatGPT specifically may prove poorly adapted to the diverse and rapidly expanding ecosystem of generative AI applications.

The study data also reveal a concerning gap in institutional and educator knowledge about the breadth of available AI tools. Educators who are aware only of ChatGPT are likely to miss both risks and opportunities presented by tools with different capabilities, different training data, and different relationships to issues of accuracy, bias, and intellectual property. Expanding AI literacy beyond ChatGPT-centrism should be a priority for institutional professional development.

5.2 The Institutional Support Imperative

The finding that fewer than one in four educators felt adequately equipped by their institution to engage with generative AI constitutes a serious indictment of current institutional responsiveness. This is particularly striking given that the data were collected from a cohort of distinguished educators—members of a teaching academy who might be expected to be among the most proactive and self-directed learners in the institution. If even this group reports feeling underserved, the challenges facing the broader academic workforce are likely to be considerably more acute.

The apparent ineffectiveness of the professional development activities that were undertaken—as evidenced by the gap between participation rates and reported skill gains—suggests that a mere increase in the volume of training will be insufficient. What is required is a fundamental rethinking of the design and delivery of AI-related professional development: disciplinary contextualization, peer learning communities, iterative experimentation, and sustained reflective practice are likely to be more effective than one-off workshops or generic informational webinars.

5.3 Transparency as Pedagogical Principle

The emphasis that interview participants placed on transparency in student AI engagement is theoretically and practically significant. Rather than attempting to prohibit AI use—a strategy that is simultaneously impractical and pedagogically counterproductive—these educators are developing norms of AI citizenship that acknowledge the ubiquity of the technology while

expressed by participants must be understood in light of the empirical finding that student AI use may be substantially lower than educators perceive. This discrepancy is instructive: it suggests that some of the anxiety surrounding AI and integrity is driven by anticipatory alarm rather than preserving the integrity of academic learning. This approach aligns with frameworks from digital literacy education and with emerging scholarly consensus that generative AI competency should be treated as a graduate attribute.

The assessment models described by participants—in which students critique AI-generated drafts and demonstrate their capacity to add intellectual value to AI-produced text—represent genuinely

innovative pedagogical responses. These approaches do not merely accommodate AI; they transform it into a learning object, making the limitations, biases, and epistemic characteristics of AI-generated content the substance of disciplinary inquiry. This pedagogical inversion has significant potential for curriculum development across a wide range of disciplines.

5.4 Rethinking Academic Integrity in the AI Era

The pervasive concern about academic integrity documented evidence of widespread misconduct. This is not to minimize the real risks that AI poses for assessment validity, but it does suggest that responses premised on assumptions of near-universal student AI use may be disproportionate.

A more evidence-based approach to academic integrity in the AI era would begin with systematic investigation of actual patterns of student AI use—disaggregated by discipline, year of study, assignment type, and institutional context—before designing regulatory responses. It would also involve reconceptualizing integrity not merely as the absence of prohibited behavior but as the presence of authentic intellectual engagement, measured through assessment designs that are inherently resistant to AI substitution.

6. Conclusion

This study has investigated educator perspectives on generative AI in higher education through a mixed-methods inquiry combining surveys and interviews with academic staff at a research-intensive Australian university. The findings reveal a sector in active and uncertain transition: educators are simultaneously curious and concerned, adaptive and overwhelmed, optimistic and anxious. There is no homogeneous sentiment toward generative AI among the participants, and this heterogeneity itself constitutes an important finding—one that should caution against the development of one-size-fits-all institutional policy responses.

Three themes emerge with particular clarity from the data. First, ChatGPT dominates the generative AI landscape as educators experience it, with important implications for the breadth of AI literacy that professional development programs must cultivate. Second, the gap between institutional support provision and educator support needs is substantial and must be urgently addressed through disciplinarily responsive, sustained professional development frameworks. Third, transparency—in student-AI interaction, in institutional communication, and in academic culture more broadly—emerges as both a practical mechanism and a principled value for navigating the AI transition.

The study also reveals that educator concerns about student AI use, while legitimate, may be partially overstated relative to current usage patterns, and that innovative assessment models already being trialed by participants offer promising templates for AI-integrated curriculum design. Looking forward, the universal participant expectation that AI tools will continue to improve reinforces the urgency of establishing institutional research agendas, policy frameworks, and pedagogical cultures that are adaptive, evidence-informed, and oriented toward the long-term flourishing of student learning.

As one participant perhaps most cogently summarized the challenge: the task ahead is not merely

to respond to the AI we currently have, but to prepare for AI we cannot yet envision. That demands nothing less than a fundamental reimagining of what higher education is for, and what it means to teach and to learn in the twenty-first century.

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