

New Academics' Use of Generative AI in Teaching: Current Adoption and Challenges

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Abstract

This study explores the use of Generative Artificial Intelligence (GenAI) in teaching among new academics at a university in Hong Kong, focusing on their current adaptation and the challenges encountered. Data were collected via a questionnaire survey (n = 78). Findings reveal that nearly one-third of new academics had not used GenAI in their teaching. Among those who did, the majority employed it for content construction, with many expressing doubts about its efficacy. The major challenges identified were concerns over inaccurate information, a lack of skills and knowledge regarding GenAI, associated costs, and its negative impact on student learning. These results suggest that universities need to enhance their tailored professional development offerings and allocate funds to help new academics make the most of GenAI. At the same time, they should implement policies and guidelines to ensure that GenAI supports, rather than undermines, the core goals of education.

Keywords: New Academics, Higher Education, Generative AI, Faculty Development, Technology Adoption

1. Introduction

Generative Artificial Intelligence (GenAI) is significantly reshaping teaching and learning. The use of GenAI tools is becoming increasingly common in higher education (Chan & Hu, 2023), offering innovative opportunities for enhanced educational experiences. New academics, representing a diverse array of backgrounds and cultures, play a crucial role in shaping the future of higher education (Austin et al., 2007). While studies have investigated educators' perceptions and use of GenAI, there remains a gap in understanding new academics' experiences and evolving literacies with GenAI. This research aims to bridge that gap by conducting a study at The Hong Kong Polytechnic University (PolyU), addressing two key questions:

1. What is the current level of adoption of GenAI among new academics in their teaching practices?
2. What challenges do new academics encounter regarding the use of GenAI in teaching?

By gathering insights from new academics, higher education institutions can implement targeted policies and develop guidelines that address the unique training needs of new academics and support their effective use of GenAI to improve student learning outcomes.

2. Methodology

The study emerged from a mandatory training programme for new academics at PolyU designed to equip them with the skills necessary to support student learning effectively. To address the research questions, the teaching team developed a survey to investigate the use of GenAI in teaching practices among new academics. The survey consisted of multiple-choice and short-answer questions to gather insights on both adoption levels and encountered challenges. The questions were informed by relevant literature and previous studies on GenAI in higher education and were structured to capture the nuances of new academics' experiences.

Guided by the Technology Acceptance Model (TAM) (Davis, 1989), which is well-suited for exploring technology adoption, the finalised questionnaire was piloted in January 2025. All participants in the first two offerings of the programme in the 2025–26 academic year were asked to complete the survey. The survey was open for one week, starting in mid-October 2025. Throughout the week, reminders were sent to encourage completion. Eighty-eight responses were collected, of which 78 respondents provided consent ($n=78$). Upon collecting the data, thematic analysis was employed to identify key concepts and themes.

3. Results and Discussion

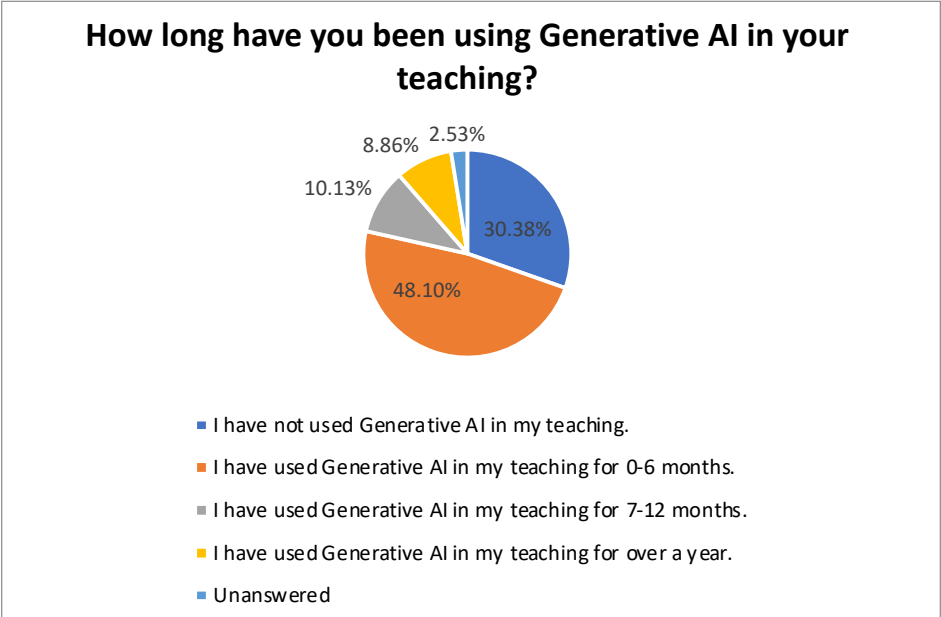
A total of 78 participants consented to use their data from the survey ($n=78$). In terms of teaching experience, 11 reported that they had never taught, while the others had varying levels of experience, ranging from a few guest lectures to having taught some undergraduate and postgraduate courses. The majority had served as teaching assistants during their postgraduate studies, and a few had taught for several years. One respondent remarked that his teaching “spanned multiple semesters from 2015 to 2023,” making him the most experienced among the respondents.

3.1. Current Adoption of GenAI Among New Academics in Teaching

Length of GenAI Adoption in Teaching by New Academics

Results reveal that a significant portion of new academics (30.38%) have not used GenAI in their teaching, implying that a large number of them may

be uncertain about integrating GenAI into their practices. Nearly half of the respondents (48.1%) are relatively new users, having utilised GenAI for less than six months. This suggests that many new academics are still in the early stages of adoption of GenAI in teaching. A small portion of the respondents (8.86%) have used GenAI for over a year. While this percentage is modest, it is still a positive indicator of adoption given that they are new academics. These results highlight the need for targeted support, resources, and tailored professional development to help new academics become more comfortable and proficient in utilising GenAI in their teaching.

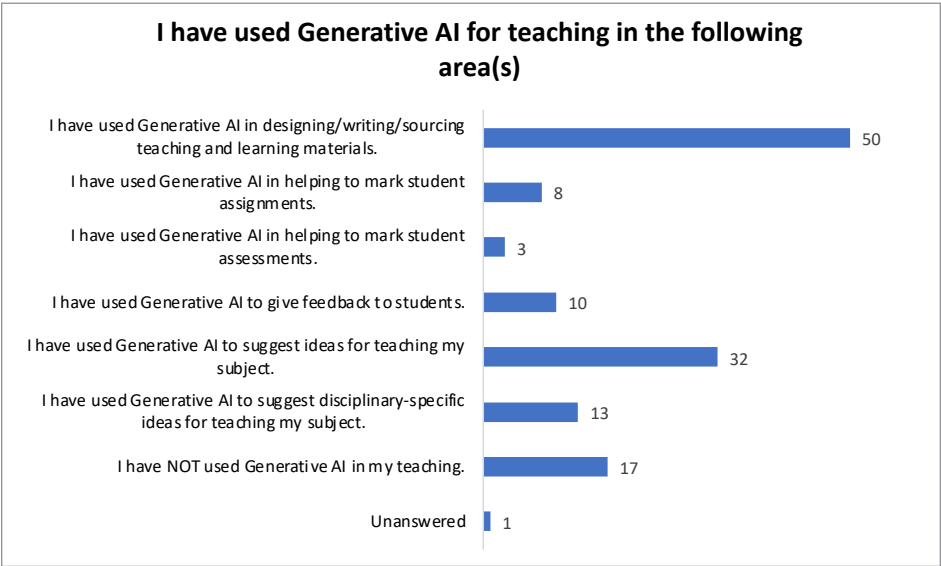


(Figure 1: Length of GenAI Adoption in Teaching by New Academics)

Application of GenAI in Teaching by New Academics

The findings highlight various applications of GenAI among new academics, listed in order of frequency. The most prevalent use, mentioned 50 times, was for “designing, writing, and sourcing teaching materials,” indicating a reliance on GenAI to enhance instructional content. The second most common application, with 32 mentions, was “suggesting ideas for teaching my subject,” implying that new academics see potential usefulness in leveraging GenAI for creative inspiration. Following this, “suggesting discipline-specific ideas for teaching” was mentioned 13 times, demonstrating a targeted application to meet subject-specific needs. Additional uses included “giving feedback to students” (10 mentions), “helping to mark student assignments” (8 mentions), and “helping

to mark student assessments” (3 mentions). Notably, 17 respondents indicated that they have not used GenAI in their teaching, aligning with previous findings that some new academics have yet to adopt GenAI in their teaching practices.



(Figure 2: Use of GenAI in Teaching by New Academics)

Reasons for Using GenAI in Teaching

Upon thematic analysis, the reasons for new academics’ utilisation of GenAI are categorised into three themes: enhancing instructional efficiency, leveraging specific functionalities, and promoting personalised learning experiences.

Many respondents emphasised the time-saving and user-friendly features of GenAI, especially in creating teaching materials. Frequently mentioned terms like “efficient,” “quick,” and “fast” underscore a strong reliance on GenAI to streamline preparation. Respondents reported that it significantly reduced their preparation time by generating “draft outlines,” “examples,” and “explanations for lectures and tutorials.” Comments like “faster search for various materials compared with traditional search engines” indicate the convenience of GenAI. Many respondents described AI tools as “very easy to use,” with specific references to “designing PowerPoint slides” and “drafting engineering teaching materials.” These results indicate that new academics view GenAI as essential for saving preparation time. This aligns with the Technology Acceptance Model (TAM), which emphasises that perceived ease of use and usefulness are critical factors in technology adoption.

Respondents also valued the specialised functionalities of GenAI that enhance teaching effectiveness, such as its function to “summarise content and generate varied practice questions.” Many benefited from the language improvement feature, with one stating, “its English expression is better than mine.” This assists non-native speakers by refining content and communication. Several mentioned interactive features, such as “engineering simulations” and “dynamic quizzes,” highlighting how educators use GenAI to enhance learning experiences. These findings show that GenAI’s specialised functionalities not only streamline preparation but also foster an engaging learning environment.

Lastly, the findings suggest that new academics recognise GenAI’s role in facilitating personalised learning. Many reported using it to create “customised learning paths” and practice problems tailored to individual students, effectively addressing gaps in understanding while promoting advanced challenges. One emphasised generating tailored resources to “support students struggling with core engineering concepts,” while another noted the importance of “making content accessible across disciplines.” Overall, these findings reveal that GenAI empowers educators to tackle students’ unique challenges.

3.2. New Academics’ Challenges in Using GenAI for Teaching

This section explores the challenges new academics encounter when using GenAI in teaching. A thematic analysis identified four key themes: lack of relevant knowledge and skills; concerns about the accuracy and trustworthiness of GenAI; cost and accessibility issues; and the impact on student learning.

Lack of Knowledge and Skills in Using GenAI

Many respondents expressed uncertainty about effectively using AI tools, particularly with crafting suitable prompts. Comments like “the biggest challenges might be how to use effective prompts to make the most of it” illustrate that limited familiarity with GenAI may hinder adoption. This suggests the need for tailored training and opportunities to learn from experienced peers, which could facilitate more effective integration of these tools into their teaching practices.

Concerns Regarding Accuracy and Trustworthiness of GenAI

Skepticism about the reliability of AI-generated content is a prominent concern among respondents, particularly in technical fields such as Engineering, where precision is essential. One quote encapsulates the concerns of many: “the biggest obstacle that stops me from using Generative AI for teaching is the accuracy and reliability of the generated content.” This reflects that new academics struggle to ensure the quality of content produced by GenAI. This aligns

with the Technology Acceptance Model (TAM), which posits that perceived reliability is vital for the adoption of new technologies (Davies, 1989).

Cost and Accessibility of GenAI

Many respondents noted that GenAI applications often require costly subscriptions, limiting their accessibility. One quote succinctly captures this concern: “the biggest challenge I have about using GenAI for teaching is that many tools require a paid subscription.” Although some tools are provided by the university, they often come with limitations, such as token caps that restrict access. These barriers can hinder the effective integration of AI tools and lead to a digital divide in teaching quality.

Impact on Student Learning

The findings highlight concerns regarding the negative impact of GenAI on student learning in several ways. First, new academics struggle to assess genuine student understanding, as GenAI “can produce high-quality essays, code, and answers,” making it difficult to differentiate between original student work and AI-generated content. This ambiguity can hinder teachers’ ability to provide meaningful feedback, suggesting that a new approach to assessment may be necessary. Second, despite GenAI’s capabilities, it does not foster critical thinking. For example, one respondent stated, “it cannot replicate the tactile, problem-solving experience critical to engineering: it can explain machine assembly steps but not guide students through physical adjustments... leaving a key gap in building practical engineering skills that traditional labs prioritise.” Lastly, the convenience of GenAI tempts students, creating challenges for educators in preventing overreliance. As one respondent noted, the biggest challenge is “setting clear boundaries so AI supports learning without undermining academic integrity or deep thinking.” This perspective aligns with the observations of O’Sullivan et al. (2025): “While AI can scaffold or support some learning tasks, its widespread and uncritical use may erode the very capabilities higher education is intended to cultivate” (p. 19).

4. Implications

This paper investigates new academics’ adoption of GenAI for teaching and the challenges they encounter. The insights highlight the need for universities to establish clear policies on the appropriate use of GenAI. New academics need to reflect on the broader implications of GenAI for student learning. Besides technical proficiency, GenAI training for new academics should include reflective components to align their work with the core goals of education, and peer learning to share experiences and strategies. Alternative approaches, such as redesigning assessment, should be explored to help teachers move beyond

merely detecting the use of GenAI. Considering the institutional provision of premium GenAI tools can prevent a ‘digital divide’ in teaching quality, ensuring equitable access to resources for the effective integration of GenAI. PolyU is already making progress in this direction by implementing tailored professional development programmes and allocating funds to support new academics. Established frameworks and guidelines are in place to help educators use GenAI ethically and effectively. The rapid development of technology and the evolving needs of education, however, indicate that there is always room for improvement. Such a holistic approach will better equip new academics to navigate the complexities of technological integration, ensuring their efforts support the fundamental goals of university education.

Ethical Declaration Statement

The project has been approved by the Institutional Review Board of The Hong Kong Polytechnic University (Reference Number: HSEARS20240204001).

Generative AI Policy

The author(s) used ChatGPT during the preparation of this work to assist with language refinement and correct grammatical errors. After utilising the tool/service, the author(s) thoroughly reviewed and edited the content as necessary and assumed full responsibility for the publication’s content.

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