

Perceived Risk of Generative AI Adoption in Initial Teacher Education Programmes

Marian Carcary and Patrick Buckland

Mary Immaculate College, Thurles, Ireland

marian.carcary@mic.ul.ie

patrick.buckland@mic.ul.ie

Abstract: Generative AI (GenAI) is reshaping the paradigms of learning and creativity in higher education environments, presenting a host of benefits but also considerable concerns and challenges. One such challenge is that of perceived risk. This is a function of the extent to which an individual senses there to be potential threats or unfavourable outcomes, giving rise to varying apprehensions towards new technology use. New technology adoption involves a fine balance between confidently leveraging the technology's functionalities to deliver practical benefits and between weighing the potential risks of adoption. Previous studies investigating the impact of perceived risk on GenAI adoption in higher education have yielded mixed results, but overall limited empirical evidence exists. Some studies have found that perceived risk has a significant negative influence on the attitudes of higher education students' towards GenAI and consequently acts as a deterrent towards their behavioural intention to adopt. Others indicate that perceived risk is not a significant barrier to GenAI adoption intention, with the practical advantages of academic support, increased productivity, and ease of use outweighing student risk-related concerns such as data privacy, content authenticity and misinformation, academic misconduct, skill degradation, and the stifling of intellectual development. This study offers a more nuanced investigation of perceived risk in the context of students enrolled in undergraduate initial teacher education programmes in Ireland. This is an intriguing context given such students play a dual role – they not only need to consider the perceived risks of AI chatbot use within their own academic studies but also in the context of acting as student teachers within an external school environment. The paper presents a quantitative and qualitative assessment of 290 student responses in relation to the varying dimensions of perceived GenAI risk. It offers a number of theoretical and practical implications; from a theoretical perspective, it highlights the rationale to extend existing technology adoption models with perceived risk as a key exogenous variable, while from a practical perspective it offers a number of recommendations to mitigate perceived risks and shape more effective student engagement with GenAI in educational environments.

Keywords: Generative AI, AI Chatbots, AI Adoption, Perceived Risk, Initial Teacher Education.

1. Introduction

Ongoing developments in GenAI are reshaping the context of the higher education landscape (Bennett and Abusalem 2024), offering the potential to significantly enhance teaching and learning processes whilst also threatening existing learning paradigms and academic integrity (Le and Metzger 2024; Mao et al, 2023). From a beneficial perspective, GenAI offers students a personalised, interactive and dynamic learning experience that caters for diverse learning needs and modalities and thereby improves student learning outcomes (Bennett and Abusalem 2024; Cotton et al, 2023; Gundu 2023; Harry and Sayudin 2023; Wang et al. 2023). Acting as a learning companion or personalised tutor/dialogic partner that provides students with tailored explanations and real-time feedback enhances student learning autonomy (Schön et al. 2023) and their retention and understanding of complex concepts (Bennett and Abusalem 2024; Hadi Mogavi et al, 2024; Williams 2024). Application of GenAI within the classroom also supports collaborative problem solving, teamwork, student interactivity, engagement, and learning satisfaction, among other benefits (Mao et al, 2023). However, across higher education stakeholders, there are concerns that GenAI may diminish student motivation, critical thinking and writing skills, and their overall understanding of and engagement with subject matter; in essence the student learning process becomes bypassed in favour of quick results (Chan 2023; Duah and McGivern 2024). The impact of AI misinformation and encoded biases can also negatively affect students' understanding and their worldview (Mao et al, 2023). However, given GenAI's capabilities to produce sophisticated output in a fraction of the time it would take a student, the greatest concern centres on maintaining academic integrity and the challenges of academic misconduct (Cotton et al, 2023; Mao et al, 2023; Moorhouse et al, 2023). Beyond the impact of academic misconduct on individual students, there is a concern that GenAI may deplete trust and credibility in the higher education system, thereby eroding the value of academic awards (Bennett and Abusalem, 2024; Eke 2023; Moorhouse et al, 2023). Thus, from a student's perspective, while GenAI offers significant transformative benefits for their learning journeys, there are many risks associated with its adoption that need to be carefully evaluated.

Adoption of any new technology involves a fine balance between confidently leveraging the technology's functionalities to deliver practical benefits and between weighing the potential risks associated with adoption.

This paper explores GenAI adoption from the perspective of student teachers – students enrolled in undergraduate initial teacher education programmes in Ireland. It presents a quantitative and qualitative assessment of 290 student responses in relation to the varying dimensions of perceived GenAI risk and its impact on their behavioural intention to adopt GenAI. The context investigated is intriguing given that such students not only need to consider the perceived risks of GenAI use within their own academic studies but also in the context of acting as student teachers. The research questions addressed are as follows:

- What risks do students enrolled in undergraduate initial teacher education programmes in Ireland perceive in relation to GenAI adoption?
- To what extent do these risks impact their behavioural intention to adopt?

This paper is structured as follows: Section 2 provides an overview of the literature centred on GenAI risks within the context of higher education. Section 3 details the methodological approach adopted. Section 4 provides an analysis and discussion of both quantitative and qualitative findings, while section 5 presents both theoretical and practical implications and recommendations from the study. Section 6 draws the paper to a conclusion.

2. Literature Overview

Perceived risk refers to the degree to which individuals sense potential threats, uncertainties, unfavourable outcomes, or negative events when adopting new technologies (Oc et al, 2024; Sharma and Singh, 2024; Zhu et al, 2024), and may be linked to a blending of behavioural insecurity (the lack of familiarity with how the technology works) and environmental insecurity (the unpredictable nature of the technology itself) (Chatterjee and Bhattacharjee, 2020; Sharma and Singh, 2024). Studies investigating the impact of perceived risk on GenAI adoption in higher education have yielded mixed results, but overall limited empirical evidence exists (Oc et al, 2024; Sharma and Singh, 2024). Some studies (e.g. Acosta-Enriquez et al, 2024; Oc et al, 2024; Kasneci et al, 2023) have found that perceived risk has a significant negative influence on the attitudes of higher education students' towards GenAI and consequently on their behavioural intention to adopt, with students reducing their AI usage when they perceive the associated risks to be high. Perceived risk was found to be the most significant negative effect on Chinese pre-service teachers' intention to use GenAI in their future teaching due to concerns over data security and privacy, stability of the technology, authenticity of content, and impact on their teaching effectiveness (Hu et al, 2025). Similarly, Chatterjee and Bhattacharjee (2020) found that perceived risk has a significant negative impact on the attitudes of higher education stakeholders in India towards AI adoption. Fu et al (2024) and Hsu and Silalahi (2024) investigated the related concept of perceived severity (defined as 'the potential harms individuals might experience') in the context of ChatGPT in Indonesia and Taiwan respectively. They found that high perceived severity is a deterrent towards ChatGPT's use in academic settings particularly when it is perceived to impede academic integrity, critical thinking, and soft skills development.

Contrary to these studies, Gulati et al (2024) found that perceived risk does not deter students' behavioural intention to use GenAI, despite recognition of the potential risks. In a study of Chinese journalism students, the impact of perceived risk on AI adoption within their course was negligible, indicating their perceived value from AI use is not impacted by perceived risk (Zhu et al, 2024). Similarly, Al-kfairy (2024) highlighted that perceived risk has a minimal impact on the adoption of ChatGPT, possibly implying that its perceived practical benefits outweigh its perceived risks. Nonetheless, they also note that perceived risk does play a role in understanding anxieties and apprehensions pertaining to new technology adoption.

In general, perceived GenAI risks relate to academic misconduct; misinformation and bias; confidentiality and data privacy; and overreliance – linked with the stifling of creativity (Chan and Tsi, 2024; Hu et al, 2025). These risks need to be balanced in order for potential benefits to be effectively harnessed (Hsu and Silalahi, 2024). The perception of risk is also often a function of the nature of the AI tool – for example, text generators may increase academic dishonesty and plagiarism anxiety, while image generators may have a greater impact on creative authenticity anxiety (Oc et al, 2024). We discuss key literature findings in relation to these specific risk categories in section 4, in comparison with the key findings from this study.

3. Methodology

This study employed a quantitative research approach through the development and administration of an online survey instrument using Microsoft Forms. The survey constructs were informed by a systematic review of existing literature (Okoli, 2015) pertaining to the adoption of AI within higher education; these constructs were pilot tested with a sample of senior academics and students and refined to ensure their relevance within the

higher education environment. The survey gathered responses to a series of closed questions using 5-point Likert scales. A numerical score was associated with each response reflecting the degree of attitudinal favourableness, with 'strongly agree' associated with number '1' and 'strongly disagree' associated with number '5' on the scale. The survey also included a series of open-ended questions that provided a richer, more multifaceted understanding of the issue investigated. Purposive stratified sampling was employed (Silverman, 2021); the sampling frame was stratified according to the following criteria: 1) Respondents must be students enrolled in undergraduate initial teacher education programmes, and 2) Respondents must be located in Ireland. The study's sample consisted of 600 students. Data collection resulted in 290 usable responses, achieving a 48% response rate. Analysis of the quantitative closed questions was performed using SPSS, while the qualitative open-ended questions were coded and thematically arranged using N-Vivo.

4. Findings

4.1 Profile of Respondents

The survey provided 290 usable responses. Each student respondent was enrolled in a discipline specific initial teacher education programme in Ireland with a view towards qualifying to teach specific subjects in the Irish post primary school setting (catering for students ranging from 12-18 years of age). The majority of respondents (74 percent, n=215) were female, while 26% (n=74) were male (Figure 1). This break down is reflective of the profile of students who were enrolled in initial teacher education programmes at the time of survey administration. In terms of 'year of study' (Figure 2), the majority of student respondents were in their 4th and final year (39 percent, n=113), 25% percent (n=72) were enrolled in 3rd year, 35% percent (n=101) were enrolled in 2nd year, while a significant minority of 1% (n=4) were 1st year students. The low response rate from 1st year students is likely a function of the time of survey administration during a period when they were transitioning to university life and perhaps their limited exposure to GenAI within the university setting.

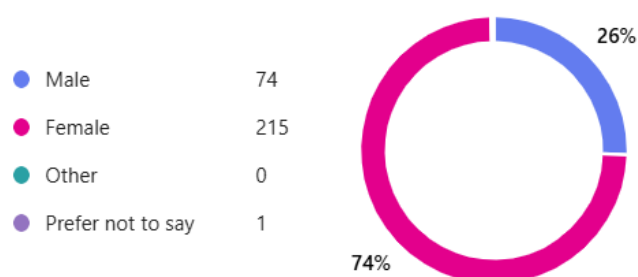


Figure 1: Profile of respondents – gender

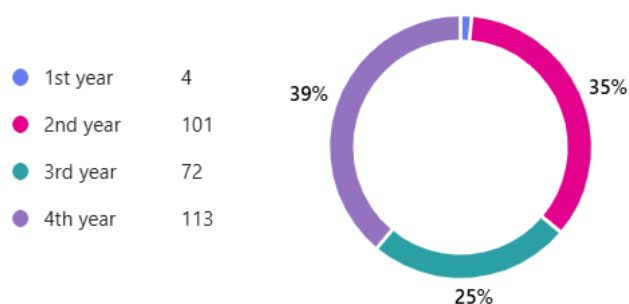


Figure 2: Profile of respondents – year of study

Among the survey respondents, there was a significant awareness of GenAI. 96% of respondents (n=279) had heard about AI chatbot technology; 75% (n=218) had observed the use of AI chatbots as demonstrated by their lecturers or peers; while 78% (n=225) had experimented with AI chatbots. However, only a significant minority (17%, n=49) were regular users of AI chatbots in their academic studies.

4.2 Perceived Risk of GenAI Adoption and Impact on Behavioural Intention – Findings and Discussion

83% of respondents (n=241) reported that use of AI chatbots for answering their academic queries was risky. The pivotal concerns surround academic misconduct, misinformation and bias, and confidentiality and data privacy (Figure 3). A further risk category of ‘overreliance on AI’ was uncovered through qualitative comments. Further exploration of the data collected indicates varying degrees of relationships between perceived GenAI risks and students’ behavioural intention to adopt GenAI tools. The degree of correlation between such variables was investigated using the non-parametric Spearman Rank Order correlation coefficient which is deemed appropriate in exploring relationships between two ordinal or ranked variables (Pallant, 2020). Characterisation of the relationship’s strength was interpreted according to Cohen’s (2013) guidelines on correlation coefficient size. The data indicates a negative correlation of moderate strength ($r = -.31, p < .001$) between students’ perceptions that using AI for academic queries is risky and their intention to use AI chatbots in their academic studies. This implies that when their perception of risk is high, their intention to adopt GenAI tools is reduced.

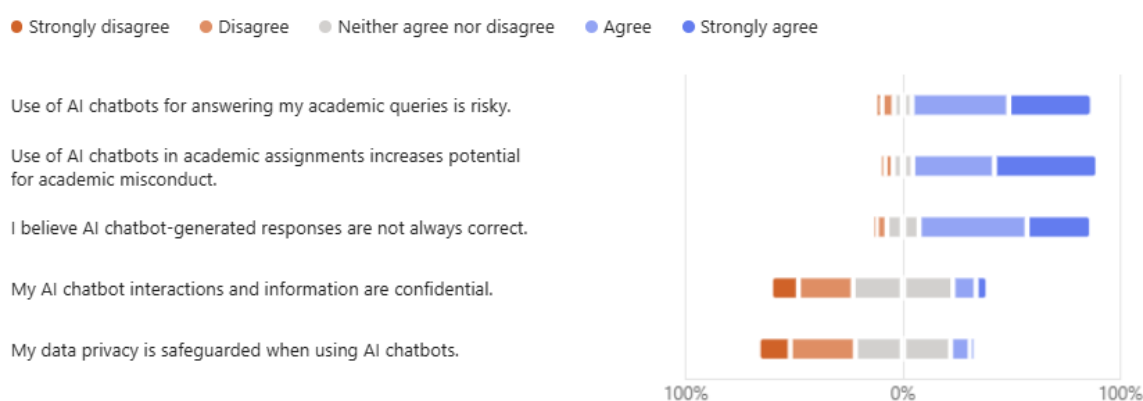


Figure 3: Perceived risk of GenAI use

4.2.1 Risk of Academic Misconduct

85% of respondents (n=247) suggested that use of AI chatbots in their academic assignments increased potential for academic misconduct. Respondents mention ‘plagiarism’, ‘using work that is not your own’, and ‘not referencing’ as key perceived risks. The unethical nature of this is recognised by some respondents. However, the majority of comments pertain to the consequences of academic misconduct and the severity of penalties or disciplinary action. Students discuss the ‘fear of repercussions’, the possibility of ‘getting caught’, ‘getting done for cheating’, and ‘detection by anti-plagiarism software’. The primary concerns include ‘the risk of failing a module, assignment, or course’; ‘the risk of having to repeat an assignment’; ‘the risk of action by the school board’; and ‘the risk of getting kicked out of college’. One student commented that ‘the chances of getting in trouble outweigh the reward of using it’. The data indicates a negative but weak correlation ($r = -.25, p < .001$) between students’ perception that AI increases potential for academic misconduct and their intention to use GenAI in their studies. This implies that when their perception of academic misconduct is high, their intention to adopt GenAI tools is reduced. This finding is in line with a study by Oc et al (2024) which suggests that academic dishonesty and authorship were pivotal concerns with some students particularly concerned that AI-assisted work may not be judged by assessors and academic institutions as being authentic, thereby impacting student grades and feedback and their intention to adopt AI tools.

4.2.2 Risk of Misinformation and Bias

79% of respondents (n=230) believed that AI chatbot generated responses were not always correct. Respondents cite ‘unreliable information’, ‘incorrect/inaccurate information’, ‘false/fake information’, and ‘misleading information’ to reflect potential outcomes from GenAI use. The possibility of ‘relying on information that hasn’t been verified’ is recognised as a further risk. The data indicates a negative but weak correlation ($r = -.22, p < .001$) between students’ perception that AI chatbot generated responses are not always correct and their intention to use AI chatbots in their academic studies. This implies that when their perception of misinformation and bias is high, their intention to adopt GenAI tools is reduced. The literature supports this

finding - the 'AI hallucination effect' associated with inherent AI biases in training data and delivery of misleading information is widely discussed potentially resulting in unfair educational outcomes (Omughelli et al, 2024; Hsu and Silalahi, 2024). Oc et al (2024) highlight that lack of transparency surrounding AI algorithms and how AI content is generated can increase student mistrust and reduce their intention to adopt AI tools; while a study by Hsu and Silalahi (2024) suggests that the inaccurate or misleading nature of some AI generated content may compromise academic integrity.

4.2.3 Risk of Confidentiality and Data Privacy Issues

A significant minority, 16% of respondents (n=47) believed that AI chatbot interactions were confidential, while only 11% (n=33) believed their data privacy was safeguarded when using AI chatbots. Respondents mention the issue of 'data privacy breaches' and 'online safety'. They note that they are 'unsure of what data is being accessed' and 'not sure about the privacy of using AI and how information is stored'. The data indicates a negative but weak correlation ($r = -.23$, $p < .001$) between students' perception that their AI chatbot interactions weren't confidential and their intention to use AI chatbots in their academic studies. Similarly, there is a negative but weak correlation ($r = -.19$, $p < .001$) between students' perceptions that their data privacy is not safeguarded when using AI chatbots and their behavioural intention to adopt (note wording of original scales reversed). This implies that when their perception of confidentiality and data privacy breaches is high, their intention to adopt GenAI tools is reduced. Other studies have found that perceived risks surrounding personal data collection and processing, data privacy breaches, and data security deter students from engaging effectively with GenAI tools (Acosta-Enriquez et al, 2024; Irfan et al, 2023; Salloum, 2024). Given the strength of the relationships uncovered, our study's findings largely concur with those of Menon and Shilpa (2023), who found that privacy concerns were not a significant barrier impacting ChatGPT use in India despite study participants demonstrating caution in terms of what personal information they revealed. The authors suggest that this may be due to lower privacy expectations among individuals when using chatbots and a perception of the technology's benefits outweighing its risks – a trade-off referred to as the 'privacy paradox'. Similarly, Zhao et al (2024) findings suggest that within educational contexts, privacy concerns are less critical since the interactions with GenAI do not typically disclose sensitive information.

4.2.4 Risk of Overreliance on AI

Overreliance on AI is associated by respondents with 'lack of originality', 'lack of creativity', and 'lack of imagination', giving rise to 'student laziness' and a lack of 'authenticity' in students' work. Overreliance is also associated with 'poor grasp of a topic' and 'lack of student learning', where students 'don't understand the generated text provided by AI' and 'are not able to brainstorm ideas' or 'come up with answers/solutions on their own'. This is particularly so in disciplines such as mathematics: 'When using it for logical purposes (e.g. Mathematics) I may rely on AI help before engaging the problem-solving side of my brain for long enough' and 'I think that it does not improve my critical thinking'. Some students mention that 'AI gives a false representation of abilities'. These findings are in line with some previous studies that highlight students' recognition of the risks of overdependence on GenAI, including a negative impact on their problem-solving skills, critical thinking skills, and creativity (Habib et al, 2024). Chan and Hu (2023) suggested that the potential negative impact on students' ability to independently analyse academic challenges may be a concern for their overall skill development. While Oc et al (2024) regard AI as useful for routine tasks, its potential to stifle intellectual development was found to be a key concern.

5. Implications and Recommendations

The insights gleaned through the data analysis present a number of practical and theoretical implications. Notably, the perceived risks of GenAI adoption need to be effectively managed in order to enable the value of such tools to be realised. The groundwork for student teachers' adoption of GenAI in their professional practice lies within their university academic courses. In this regard, university educators need to be conscious of the role they play in terms of influencing students' perceptions. Previous research has found that supportive educators who adopt the technology in their work practices and provide sound educational guidance on its use instil confidence, while less supportive educators increase student anxiety and scepticism of GenAI tools (Oc et al, 2024). With respect to the risk categories identified, the following practical recommendations are proposed:

To mitigate risks of academic misconduct, academic institutions need to clearly define acceptable GenAI use and AI-facilitated behaviours (including student disclosure of AI assistance) in an unambiguous, institution-wide policy. Such a policy should be co-created by all university stakeholders to foster shared ownership and

responsibility. To embed this policy, academic institutions need to rethink their educational approaches towards the use of GenAI, where AI is coherently integrated within course content within a supportive guiding framework that educates students on GenAI features and provides practical guidance/tutorials on its acceptable, ethical, and responsible use. While this may be achieved on a module-by-module basis, a university-wide programme on GenAI literacy and academic integrity education is recommended as foundational to enable successful leveraging of the technology within students' academic courses and professional teacher practice. Educators need to model ethical GenAI practice and discuss misuse in order to demystify GenAI tools and build student confidence in tool adoption. They should also consider reducing opportunities for academic misconduct by rethinking their assessment approaches with a focus on more AI-resistant formats that necessitate higher-order thinking and authenticity in their performance e.g. reflective commentary, problem-based tasks. The boundaries of acceptable GenAI use on every assignment should be clearly stated.

To mitigate risk of misinformation and bias, as part of a GenAI literacy programme, academic institutions need to educate students on verification strategies, bias detection, triangulation, and so on. Educators should design tasks to force verification such as critiques of AI outputs and reflective commentaries on accuracy and bias. Students may be requested to annotate AI outputs and document details of AI assistance including tools used, prompts, use cases, and verification approaches and steps.

Because AI systems can handle large volumes of personal data, robust and trustworthy security measures are needed. To mitigate risk of confidentiality and data privacy issues, academic institutions require clear privacy notices regarding the processing of personal data by GenAI tools. Institution-wide GenAI literacy programmes and role specific training to comply with the EU AI Act need to be established and embedded. Educators need to select tools with privacy-preserving defaults and be explicit with their students about what is uploaded to third-party tools.

To mitigate risk of overreliance on AI, academic institutions need to embody a culture where human judgement, creativity, and independent learning are at the forefront of all academic programmes. GenAI should be positioned as a supplemental tool as opposed to a substitute for these graduate attributes. Institution-wide GenAI policies need to be continually reviewed to discourage unhealthy dependence and keep the boundaries of acceptable use in line with new developments. Educators can design assessments that focus on both process and end product, with requests for staged drafts, think-alouds, and reflective commentaries that link to sources used. Authentic tasks such as oral defences, live problem-solving, and artefacts linked to personal experience ensure GenAI use does not replace independent thinking.

This study also offers recommendations from a theoretical perspective. The findings detail the various categories of perceived GenAI risks and their impact on students' behavioural intention to adopt such tools. Within the education context, GenAI-enabled academic misconduct, misinformation, privacy issues, and overreliance are very real threats to the quality of students' education and the reputation of academic institutions. Thus, from a theoretical perspective, this study presents a rationale for the inclusion of perceived risk as an exogenous variable in technology adoption models e.g. UTAUT (Venkatesh et al, 2003) in order to present a more complete understanding of GenAI adoption and risk mitigation approaches.

6. Conclusion

This paper has presented a detailed exploration of the various categories of risks perceived by student teachers in terms of GenAI adoption. The analysis highlighted that students reduce their intention to adopt GenAI in their academic studies when they perceive use of GenAI for academic purposes is risky, increases potential for academic misconduct, gives rise to misinformation, or leads to confidentiality and data privacy issues. It should be noted, however, that the strength of each of these respective relationships are moderate or weak in nature. Nonetheless, the recognition of GenAI risks by students necessitates that effective strategies are considered by academic institutions to effectively mitigate.

Ethics Declaration

Ethical clearance for this research was obtained from MIC's Joint Faculty Research Ethics Committee.

AI Declaration

AI was not used in the paper's writing.

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