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The Future is Connection:

Collaboration, Creativity and Compassion in a Digital Society

Navigating the new Frontier: Early insights into student perspectives on Generative AI integration in Bhutanese higher education

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Generative Artificial Intelligence (GenAI) is increasingly influencing teaching and learning practices across higher education institutions worldwide. While universities in developed countries have begun exploring the pedagogical potential of GenAI tools such as ChatGPT, there remains limited evidence regarding their adoption within developing-country contexts. This paper examines students' perspectives on the integration of GenAI in teaching and learning at the Royal University of Bhutan (RUB). Using a quantitative survey design, the study examined students' awareness, patterns of use, perceived opportunities, challenges, and ethical concerns associated with GenAI. The paper provides the rationale for the study, outlines the research design, and discusses preliminary insights into students' perspectives from the online survey conducted. The findings indicate widespread use and generally positive perception of GenAI for supporting learning, alongside concerns about the reliability of AI-generated informations, academic integrity, and responsible use. The study contributes contextually relevant evidence to inform policy development, professional learning initiatives, and responsible AI governance within Bhutanese higher education.

Keywords: Generative Artificial Intelligence, higher education, teaching and learning, students' perspectives, Bhutan

Introduction

The increasing presence of generative artificial intelligence (GenAI) in higher education has generated significant interest among educators, researchers, and policymakers. As universities continue to respond to changing technological and societal demands, GenAI is increasingly being considered as a means of supporting teaching, learning, and student engagement. Recent studies suggest that GenAI can contribute to more personalised learning experiences, provide timely feedback, support student learning, and enhance the efficiency of educational processes (Abdelaal & Al Sawy, 2024; Lin & Chen, 2024). Alongside these opportunities, the adoption of GenAI has raised a number of pedagogical and ethical concerns. Researchers have highlighted issues relating to academic integrity, data privacy, algorithmic bias, and the potential impact of GenAI on students' critical thinking and independent learning skills (Cotton et al., 2024; Grassini, 2023; Kasneci et al., 2023). While GenAI may offer valuable support for educational activities, its effective implementation requires careful consideration of how these technologies influence teaching practices, learning experiences, and broader institutional objectives. Although research on GenAI in higher education has grown substantially, the majority of existing studies have been conducted in developed countries. Consequently, there is limited evidence regarding how GenAI is understood, adopted, and experienced within developing and emerging higher education contexts. Differences in institutional priorities, technological capacity, educational cultures, and resource availability may influence the ways in which GenAI is integrated into teaching and learning practices at the Royal University of Bhutan (RUB), therefore providing a relevant context for examining whether student engagement with GenAI reflects patterns reported internationally.

Background

RUB serves as the principal institution of higher education in Bhutan, offering academic programs across diverse disciplines, including engineering, technology, education, business, and the humanities. Traditionally, teaching and learning at RUB have been characterised by face-to-face instructional practices, with classroom-based teaching and assessment constituting the primary mode of educational delivery. While digital platforms and online learning resources were available, their integration into everyday teaching and learning activities remained relatively limited. The COVID-19 pandemic marked a significant shift in teaching and learning at RUB, requiring faculty and students to engage more extensively with online learning, remote assessment, and digital technologies. This accelerated the university's transition towards technology-supported and flexible learning

practices. GenAI has emerged within this evolving environment as a new form of educational technology that students can use for learning and other academic activities. Examining student engagement with GenAI in this context is particularly relevant because its adoption is occurring alongside RUB's relatively recent transition towards more digitally supported teaching and learning. Developments at RUB reflect this global transformation in higher education following the COVID-19 pandemic, with the expansion of online learning, digital resources, and technology-supported instruction contributing to a broader shift towards more flexible and learner-focused educational practices. Within the university, these changes have encouraged the adoption of digital tools and innovative teaching practices to support learning across a range of disciplines. This evolving digital environment has created new opportunities for the university to explore emerging technologies, including GenAI, to further enhance teaching and learning processes.

Building on these digital developments at RUB, GenAI has emerged as a potential next step in the ongoing transformation of teaching and learning practices. AI technologies offer opportunities to support a range of academic activities, including learning support, instructional design, and educational administration (Abdelaal & Al Sawy, 2024; Lin & Chen, 2024). For the university, understanding how these emerging technologies align with existing educational practices, institutional priorities, and the needs of academic communities is an important consideration for guiding future planning and digital development (Carvalho et al., 2022). Drawing on relevant literature and the study context, student engagement with GenAI is examined through three interconnected dimensions: perceptions and adoption, opportunities and challenges for learning, and ethical and academic integrity considerations. Together, these dimensions provide a conceptual framework for understanding students' engagement with GenAI and guide the research questions of this study.

The research questions are:

1. What are students' perceptions of the use of Gen AI in teaching and learning at the RUB?
2. What opportunities and challenges do students perceive in using GenAI for learning?
3. What ethical and academic integrity concerns do students associate with the use of GenAI?

Research design and methodology

This research adopted a quantitative survey design to examine students' perspectives on the integration of GenAI in teaching and learning at RUB. A survey-based approach was considered appropriate because it enables the collection of data from a large participant group and facilitates the identification of patterns and trends across different academic contexts (Abdelaal & Al Sawy, 2024; McGrath et al., 2023). The participants were students from four colleges of RUB, representing engineering, technology, education, and business. A stratified sampling strategy was employed to obtain representation across academic disciplines and levels of study. Based on the target population, a minimum sample of 360 students was targeted. Following data screening, 723 valid student responses were retained and included in the final analysis.

Data were collected using an online questionnaire administered through the Qualtrics platform. The survey was structured around five key themes: integration of AI in higher education, student perceptions of GenAI, benefits and opportunities of GenAI in teaching and learning, challenges and barriers to AI adoption, and ethical considerations and academic integrity. The questions within these themes examined students' awareness, experiences, perceptions, and use of GenAI in educational settings. The questionnaire was pilot tested prior to distribution to improve its clarity, relevance, and alignment with the study objectives. Survey data were analysed using Microsoft Excel. Descriptive statistics, including frequencies, percentages, and response distributions, were used to summarise students' responses and identify patterns across the key thematic areas. The results were then interpreted in relation to the research questions and the broader context of GenAI integration in Bhutanese higher education.

Preliminary findings on students' perspectives

Awareness and usage of GenAI tools

The survey findings indicate a high level of awareness of GenAI among RUB students. Of the 723 respondents, 47.7% (*n* = 345) reported being very familiar with AI technologies, while 35.3% (*n* = 255) were moderately

familiar. A further 12.0% (*n* = 87) described themselves as extremely familiar, while no students reported being unfamiliar with AI technologies, indicating widespread awareness among respondents (see Figure 1).

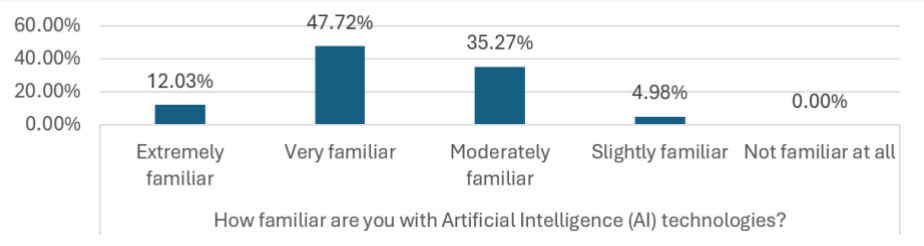


Figure 1. Students' level of familiarity with GenAI technologies

The findings further reveal that GenAI tools have become an integral part of students' learning. Of the 723 respondents, 99.3% (*n* = 718) responded that they have used GenAI tools to support their learning, while only three students responded not using GenAI. This reveals that AI-assisted learning has become almost universal among the surveyed students.

In terms of preferred tools, ChatGPT was the most frequently used GenAI platform, selected by 76.7% (*n* = 549) of respondents, followed by NotebookLM (Google) with 8.9% (*n* = 64). These findings indicate a strong preference for ChatGPT among students for supporting academic activities.

The frequency of AI use demonstrates the extent to which GenAI has become part of students' learning practices. Among the 716 students who answered this question, 70.7% (*n* = 506) reported using GenAI tools daily, while 25.3% (*n* = 181) weekly. Only 1.8% (*n* = 13) indicated monthly use, and 2.2% (*n* = 16) rarely used GenAI. These findings indicate that GenAI has become a regular part of students' day-to-day academic work.

Students also reported a relatively high level of knowledge and confidence in using GenAI. Among 707 respondents who completed the perception items, 74.8% (*n* = 527) agreed or strongly agreed that they understood how GenAI can be applied in teaching and learning, while 70.2% (*n* = 496) felt confident using GenAI tools for academic or professional purposes. Additionally, 82.3% (*n* = 581) responded regularly using GenAI to support their studies.

Although students demonstrated strong confidence in using AI, they expressed more cautious views regarding the reliability of AI-generated information. Only 42.0% (*n* = 297) considered AI-generated information accurate and reliable in academic contexts, while 44.8% (*n* = 317) remained neutral and 13.2% (*n* = 93) disagreed or strongly disagreed. These findings suggest that, despite their frequent use of GenAI, many students remain cautious about the reliability of AI-generated content and recognise the need for critical evaluation when using it for academic purposes.

Perceptions of benefits and challenges

Students generally expressed positive perceptions of GenAI in academic settings. As illustrated in Figure 2, while views on the accuracy and reliability of AI-generated information were more cautious, with 42.0% agreed or strongly agreed and 44.8% remained neutral, perceptions of AI's contribution to teaching and learning were considerably more positive. More than three-quarters of respondents (76.8%) agreed or strongly agreed that AI tools can enhance the quality of teaching and learning at RUB. These findings suggest that students recognise the educational value of AI, although some uncertainty remains regarding the reliability of AI-generated information.

Students also expressed strong support for integrating GenAI into higher education. Overall, 82.5% (*n* = 565) expressed a positive attitude toward GenAI integration in teaching and learning. Furthermore, 80.7% (*n* = 553) agreed that GenAI tools can enhance traditional teaching methods, and the same proportion supported the idea of providing GenAI training for both faculty and students. In terms of perceived opportunities, respondents identified improved access to learning resources and information (*n* = 53) as the most significant

benefit, followed by quicker completion of academic tasks (*n* = 26), personalised learning experiences (*n* = 21), and enhanced support for research and academic productivity (*n* = 21).

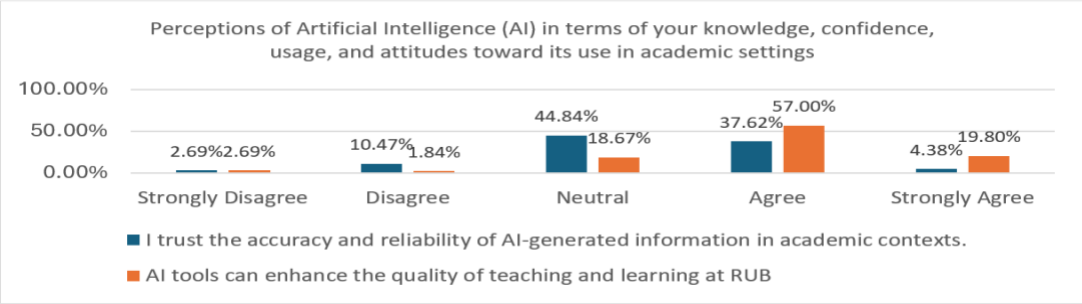


Figure 2. Perceptions of AI knowledge, confidence, usage, and attitudes

Despite these optimistic views, some concerns persist. Only 57.5% (*n* = 394) agreed that GenAI fosters creativity and critical thinking, while 42.0% (*n* = 297) expressed trust in the accuracy and reliability of AI-generated information. Additionally, 44.8% (*n* = 317) remained neutral, indicating that while students acknowledge the educational benefits of GenAI, they are still cautious about the reliability of content generated by GenAI tools.

Ethical considerations and academic integrity

Students expressed strong support for institutional measures to guide responsible GenAI use. 77.4% (*n* = 497) agreed that GenAI may create risks to academic integrity, including plagiarism and over-reliance on GenAI tools. In addition, 78.3% (*n* = 503) supported the need for clear institutional policies, while 79.8% (*n* = 514) agreed that AI-generated content should be acknowledged or cited in academic work. Furthermore, 78.2% (*n* = 502) supported ethical GenAI training for faculty and students, and 76.9% (*n* = 494) agreed that institutions should monitor GenAI use to maintain academic integrity standards. Overall, 75.7% (*n* = 486) viewed ethical considerations as an important factor in deciding whether to use GenAI tools in teaching and learning.

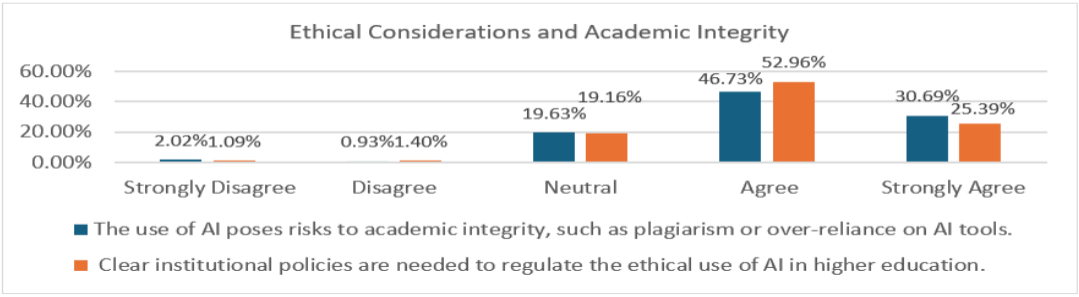


Figure 3. Ethical considerations and academic integrity

Students also strongly supported responsible AI practices. Among 642 respondents, 80.1% (*n* = 514) agreed or strongly agreed that GenAI use should be properly acknowledged or cited in academic work, while 78.2% (*n* = 502) supported training for faculty and students on ethical and responsible AI use.

Discussion and implications

The preliminary findings indicate that GenAI has become an important part of students' learning at RUB. High levels of awareness, frequent use, and positive perceptions show active integration into their academic activities. While these findings are consistent with international trends, they are significant in the Bhutanese context, where the transition towards digital teaching and learning has been relatively recent. Despite this, 99.3% of surveyed students reported GenAI tools and 70.7% used them daily. The findings therefore show that rapid GenAI adoption is also occurring within the higher education context in a less-studied developing country. Despite these positive perceptions, students also recognised challenges associated with GenAI adoption. Concerns about the reliability of AI-generated information, its influence on critical thinking, and its implications for academic integrity are consistent with concerns reported in the wider literature. Strong

support for institutional policies, ethical guidelines, and AI literacy initiatives suggest that students recognise the need for clear guidance as GenAI use expands alongside RUB's broader digital transformation. These findings have important implications for higher education in Bhutan. RUB may need to strengthen institutional guidance, AI literacy, and assessment practices to support responsible GenAI use while maintaining academic quality and integrity. Such measures should be adapted to Bhutan's educational and institutional context.

Conclusion

This study provides preliminary insights into students' perceptions and use of GenAI in teaching and learning at RUB. The findings demonstrate high levels of awareness and widespread use of GenAI together with generally positive perceptions of its potential to support learning. At the same time, students expressed concerns about the reliability of AI-generated information, academic integrity, and responsible use. The study adds further evidence on the need for AI literacy and institutional guidance to support responsible implementation. These findings suggest that the educational value of GenAI can be realised most effectively when technological innovation is supported by appropriate policies, ethical frameworks, and capacity-building initiatives. By providing empirical evidence from the Bhutanese higher education context, this study contributes to the growing body of research on AI integration and offers practical insights for institutions seeking to implement GenAI in a responsible and sustainable manner.

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