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Use of Generative AI in Bhutanese higher education: Exploring prevalence, impacts, and institutional responses through students' lens

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ABSTRACT

The purpose of the study was to explore the emerging role of Generative Artificial Intelligence (GenAI) in Bhutanese higher education institutions, emphasizing its prevalence, perceived impact, and institutional responses. Employing a mixed-methods research design, the study gathered data from 535 students through survey questionnaires complemented by open-ended responses. The findings indicated widespread use of GenAI tools for academic tasks, suggesting that students increasingly rely on such technologies to support learning. However, the results also highlighted several concerns associated with this trend. Participants expressed apprehension regarding diminished originality in academic work, heightened risks of plagiarism, and broader ethical challenges arising from unregulated use of GenAI. These issues underscore the need for higher education institutions to develop comprehensive awareness initiatives, targeted training programs, and clear policies to guide responsible engagement with AI-driven tools. The study argues that such measures are essential not only for safeguarding academic integrity but also for ensuring that GenAI is integrated in ways that genuinely enrich learning outcomes. Additionally, it provides practical recommendations aimed at addressing ethical risks and promoting a balanced and informed incorporation of GenAI within academic environments.

Contribution/ Originality: This study is the first of its kind in Bhutan to explore GenAI in higher education, offering original insights into its prevalence, impact, and institutional responses. By foregrounding student perspectives, it uniquely highlights both the opportunities for enhanced creativity and learning and the risks to academic integrity that require urgent policy attention. Its contribution lies in positioning Bhutanese HEIs to lead regionally by framing GenAI as both a challenge and a transformative catalyst for authentic learning and academic excellence.

1. INTRODUCTION

1.1. Background

In recent times, higher education (HE) has witnessed substantial GenAI integration, transforming student engagement and academic performance (Chen, Chen, & Lin, 2020; Chu, Hwang, Tu, & Yang, 2022; Cotton, Cotton, & Shipway, 2024; Crompton & Burke, 2023). GenAI, which includes tools that generate text, images, videos, or audio content based on a set of instructions (Casal & Kessler, 2023; Crawford, Cowling, & Allen, 2023; Holmes et al., 2022) allows for personalised learning experiences through interactive and collaborative platforms (Brown et al., 2020; Lim, Gunasekara, Pallant, Pallant, & Pechenkina, 2023; Myers et al., 2024). While GenAI presents multiple gains for HE,

it also raises considerable academic integrity concerns (Chiu, 2024; Hwang & Chen, 2023; Kohnke, Moorhouse, & Zou, 2023). To address these risks, Higher Education Institutions (HEIs) worldwide are exploring comprehensive strategies to promote ethical GenAI use (Cotton et al., 2024; Lin, Huang, & Yang, 2023).

Bhutan's HE system, under the Royal University of Bhutan (RUB) and Khesar Gyalpo University of Medical Sciences (KGUMSB), is now facing these global issues within its unique educational setting. Recent discussions at the Bhutan Innovation Forum 2024 emphasised the possible benefits of integrating AI to promote students' higher order thinking skills, yet highlighted the need to responsibly manage AI's impact on academic integrity (Checho, 2024). There have been notable incidences of significant GenAI use in assignments among students, prompting discourse on the need to establish policies and regulations to channel this evolving context responsibly (Bhutan Broadcasting Service, 2024). Bhutanese HEIs now have the task to balance the potential benefits of GenAI with the responsibility of preserving academic values.

Previous studies have explored the impact and challenges of GenAI in HE (Bandi, Adapa, & Kuchi, 2023; Chan & Hu, 2023; Lim et al., 2023) worldwide but it is yet to be reported from the outlook of Bhutanese HEIs. This gap underscores the need for the study that informs the impacts and concerns of Bhutan's HE academic context. Therefore, this study intends to address this gap, presenting insights into the challenges and opportunities of using GenAI and aims to contribute to policy development, pedagogical approaches, and ethical guidelines. The following objectives and questions will guide the study:

1.2. Objectives

1. Investigate the extent of GenAI usage in Bhutanese HEIs.
2. Explore impact of GenAI on academic integrity.
3. Identify strategies to address challenges and enhance the effective use of GenAI.

1.3. Questions

1. To what extent is GenAI usage prevalent in Bhutanese HEIs?
2. What is the impact of GenAI on academic integrity?
3. How can Bhutanese HEIs mitigate the challenges and enhance the use of GenAI?

2. LITERATURE REVIEW

The integration of AI, predominantly GenAI, into education has ignited extensive research into its effects on academic integrity. This literature review comprises a conceptual overview of GenAI, academic integrity, implications, and institutional responses.

2.1. Conceptual Overview of GenAI

AI has advanced radically since its inception in the 1950s. It officially began with the 1956 Dartmouth Conference, where John McCarthy (Cordeschi, 2007) introduced the term "artificial intelligence." Initial AI system concentrated on symbolic approaches, knowledge modeling, and reasoning systems, leading to the development of expert systems and natural language processing (Karunananda, 2019). Recent developments include machine learning, which emerged in the early 2000s (Karunananda, 2019), and AI is applied in various domains, including robotics, big data, and expert systems (Prasad & Choudhary, 2021). There is no universally established definition of AI. UNESCO's approach to AI focuses on the imitation of human intelligence: "machines capable of imitating certain functionalities of human intelligence, including such features as perception, learning, reasoning, problem solving, language interaction, and even producing creative work" (UNESCO, 2019).

GenAI is a subfield of AI that produces different types of content, including text, images, audio, and videos, by learning patterns from existing data (OpenAI, 2023). The underlying technologies of GenAI belong to a system called

machine learning (ML), which uses algorithms to continuously and autonomously enhance its performance based on data (Alzubi, Nayyar, & Kumar, 2018; Delipetrev, Tsinaraki, & Kostić, 2020).

GenAI is arising as a transformative technology in education, offering various opportunities for educators and students. GenAI can craft personalised learning materials, boost student engagement, and support assessment processes (Bamford, 2020; Bonde, 2024; Forment, Peñalvo, & Camba, 2024; Keller, Baleis, Starke, & Marcinkowski, 2019). GenAI tools can create course content and provide feedback, potentially reducing the teacher's workload and improving learning outcomes (Forment et al., 2024; Sekli, Godo, & Véliz, 2024). However, the implementation of GenAI in education has certain challenges, including academic integrity issues and the need for responsible application (Bonde, 2024; Forment et al., 2024).

2.2. Academic Integrity

Academic integrity is a global concern in higher education (Bretag, 2016) and is correlated with principles such as honesty, fairness, and responsibility. According to the International Center for Academic Integrity (ICAI), 2021, academic integrity entails a commitment to honesty, trust, fairness, respect, and responsibility. Academic integrity is the keystone of educational establishments and denotes dedication and demonstration of truthful academic work (Poitras Pratt & Gladue, 2022; Sullivan, 2018). Students today encounter temptations to drift from the path of integrity owing to the proliferation of GenAI tools (Ellison & Patel, 2022; Perkins, 2023). Despite being developed to support research and offer quicker solutions, these tools can be easily misused (Chiang, Zhu, & Yu, 2022). This misuse compromises the central goal of education, which is to promote comprehension, critical thinking, and authentic learning. From the viewpoint of academic integrity, the progress and application of GenAI policies, authorship, plagiarism, and cheating are becoming more complicated because of the constant evolution of GenAI (Keith, 2023; Roe, Renandya, & Jacobs, 2023; Sabzalieva & Valentini, 2023). In summary, academic integrity is a core principle of higher education, emphasising honesty, fairness, and responsibility in academic work. However, the rise of GenAI tools presents new challenges, as their misuse can undermine authentic learning and complicate issues such as plagiarism and authorship.

2.3. Implications for Academic Integrity

The advent of Gen AI tools has raised substantial concerns regarding academic integrity in higher education (Bozkurt, 2024; Cotton et al., 2024; Eke, 2023; Susilawati, Lubis, Kesuma, Pratama, & Khaira, 2023). While these technologies offer potential benefits, such as increased student engagement and accessibility, they also present risks of cheating and plagiarism (Cotton et al., 2024). The European Network for Academic Integrity highlights that unauthorised content generation can undermine the educational process by permitting students to evade authentic learning experiences. This raises questions about the genuineness of submissions, as students might submit AI-generated content as their own, blurring the lines between original work and plagiarism (Sevnarayan & Potter, 2024; University College Cork, 2024). Traditional methods of detecting academic dishonesty, such as similarity checks, may demonstrate insufficient against the unique challenges posed by GenAI, which can yield new outputs that are identical to human work (Narayanan & Kapoor, 2024; Rudolph, Tan, & Tan, 2023). For example, GenAI tools, such as ChatGPT, pose a significant challenge because they can emulate students' work, making it complicated to distinguish between AI-produced content and students' novel contributions. This has led to reassessment of many traditional assessment methods (Farazouli, Cerratto-Pargman, Bolander-Laksov, & McGrath, 2024).

Therefore, HEIs are grappling with the need to develop policies, provide training, and implement detection methods to address these challenges (Cotton et al., 2024; Plata, De Guzman, & Quesada, 2023). To maintain academic integrity in this new setting, institutions must adopt proactive methods, including the transparent reporting of AI use and the development of innovative, AI-inclusive strategies (Bozkurt, 2024; Plata et al., 2023).

2.4. Institutional Responses to GenAI Use

Early studies on HEIs' responses to GenAI revealed a range of approaches adopted to maintain academic integrity, considering the rise of advanced GenAI tools (Sullivan, Kelly, & McLaughlan, 2023). Some HEIs have prohibited GenAI tools in their academic programs, viewing their use as cheating (Cassidy, 2023; Chan, 2023). In contrast, others have established guidelines permitting the use of GenAI, provided that it is disclosed and acknowledged, and on the other hand, some HEIs have developed training opportunities for faculty and students to effectively engage with GenAI (Eaton & Anselmo, 2023; Eaton, 2023; Shepherd, 2022; Tertiary Education Quality and Standards Agency, 2023).

Moreover, to promote academic integrity and discourage dishonesty, HEIs implement a dual approach of detection and prevention. Several tools, including GPTZero, Turnitin, ZeroGPT, and Winston.AI, are commonly employed to check students' works for plagiarism. However, many scholars have flagged concerns concerning the accuracy of these tools (Dalalah & Dalalah, 2023; Perkins, 2023). Kohnke et al. (2023) caution that the use of these tools may "lead to a game of cat and mouse" (p.544), with GenAI developers and detection tools constantly advancing to outdo one another, leaving users without any assurance of dependable detection. While HEIs were initially taken by surprise by the rise of GenAI (Sullivan et al., 2023), policies and guidelines for its application in teaching, learning, and assessment are being developed. Recommendations for the ethical use of AI include addressing emerging challenges, ethical considerations, values, and principles that should guide GenAI usage (Australian Academic Integrity Network, 2023; European Union, 2022; Foltynek et al., 2023; Sabzalieva & Valentini, 2023; Tertiary Education Quality and Standards Agency, 2023).

3. METHODOLOGY

3.1. Research Design

A mixed-methods convergent parallel design was adopted, wherein quantitative and qualitative data were collected concurrently and analysed in parallel. This design is based on a strong philosophical foundation and is commonly used to add information to a larger quantitative or qualitative dataset. One dataset is the focus, while the other is a supportive or secondary role (Creswell, 2014). In this study, the quantitative dataset was the main source of data, with qualitative data providing further insights.

3.2. Participants

A total of 535 students from both public and private institutions participated in this study. Participation was based on their willingness, and the detailed demographic information of the participants is presented in Table 1.

Table 1. Demographic information of the participants (N =535).

Demographic	Value	Frequency	Percentage
Gender	Male	159	29.7
	Female	374	69.9
	Other	2	0.4
Year of study	1st year	245	45.8
	2nd year	374	69.9
	3rd year	129	24.1
	4th year	29	5.4
Type of institution	Public	175	32.7
	Private	360	67.3

3.3. Instrument

The study used an online questionnaire disseminated via Google Forms to gather responses from the participants. A structured survey questionnaire with a five-point Likert scale varying from strongly agree to strongly

disagree was administered to obtain quantitative data. Open-ended survey questions were employed to gain deeper perceptions. To determine the validity of the survey instrument, content validity was carried out by subject matter experts who evaluated whether the items accurately measured the intended content areas. For reliability, internal consistency was examined using Cronbach's alpha. The resulting alpha coefficient was 0.73, demonstrating an acceptable level of consistency among the items and indicating that they reliably measured the same underlying construct.

3.4. Ethical Considerations

Participants' confidentiality and anonymity were strictly maintained. The institutions' authorities were informed of the purpose of the study, and consent was obtained to administer the survey questionnaire to students. Participation was voluntary.

3.5. Data Collection and Analysis

The Google Forms survey link was sent to students in public and private institutions in the country. Descriptive statistics were used to summarise and present the overall trends in the survey responses using frequency and percentage. Thematic analysis of qualitative responses was performed using Taguette, an open-source qualitative data analysis software. The results were then compared and triangulated to gain a comprehensive understanding of the research topic.

4. RESULTS

The results of the study are presented in two sections: the first part informs the quantitative findings, while the second part discusses the qualitative themes identified through open-ended survey responses.

4.1. Prevalence of GenAI usage in Bhutanese HEIs

To understand the prevalence of GenAI usage among students in Bhutanese HEIs, five targeted survey questions were administered. The findings indicated that ChatGPT was the most widely used tool, with (n=408, 76.3%) of respondents revealing its use for academic purposes, followed by Google Gemini (n=77, 14.3%). Respondents reported employing GenAI tools for various academic activities, including research (n=184, 34.4%), idea generation and brainstorming (n=137, 25.6%), and seeking answers to specific questions (n=118, 22.1%). Regarding the frequency of use, (n=177, 33.1%) of participants expressed agreement, and (n=56, 10.5%) strongly agreed with the statement that they regularly depended on Gen AI tools for academic purposes, but (n=236, 44.1%) remained neutral. Furthermore, a significant fraction of respondents admitted their awareness of their peers' use of GenAI tools, with (n=271, 50.7% agreeing and n=142, 26.5%) strongly agreeing with this assertion, as indicated in Figure 1.

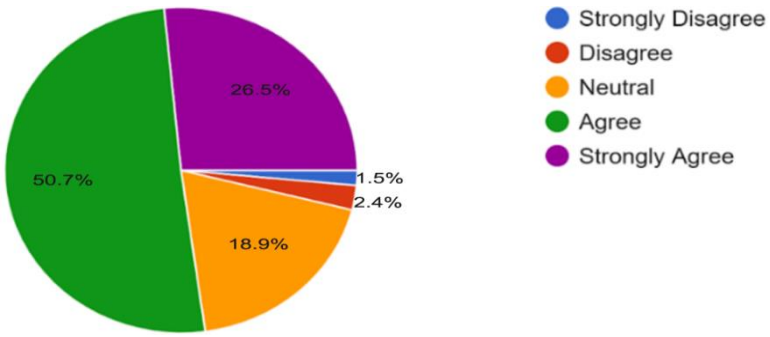

Figure 1. Awareness of GenAI usage by Peers.

The thematic analysis of the open-ended survey responses on the prevalence of GenAI usage in Bhutanese HEIs suggested two key themes.

4.1.1. High Prevalence of GenAI Usage

When asked how often and in what ways GenAI tools were used in academic work, participants acknowledged the widespread adoption of GenAI tools among students, with many using them regularly for academic tasks.

For example, one respondent stated, *"I use GenAI tools almost every day if anything new that I have not learned or heard before, then I just search it up for the meaning or for other purposes such as ideas and inspirations."*

Similarly, another noted, *"I use GenAI almost every day to learn about disease conditions related to my module, to gather information for my presentation and assignment."*

4.1.2. Main Purposes of GenAI Usage

The data revealed widespread adoption and purposes for which respondents employed GenAI tools, highlighting its use for academic tasks. Respondents frequently mentioned the use of GenAI for research and assignment writing, idea generation and brainstorming, exploring complex topics, clarifying concepts and gathering information.

For instance, one respondent reported, *"I use GenAI for multiple purposes such as answering questions, writing assignments, and for research purposes"*, while another added, *"I usually use GenAI for brainstorming a hard topic for my assignments and presentations, and they are quite useful for generating new and creative ideas."*

4.2. Impacts of GenAI on Academic Integrity

To understand the potential impact of GenAI on academic integrity, respondents were surveyed regarding their perceptions. A significant proportion of participants (n=188, 35.1% agreeing and n=90, 16.8% strongly agreeing) admitted that the use of GenAI tools compromises the originality of students' work, while (n=194, 36.3%) remained neutral on this concern. Additionally, (n=254, 47.5% agreed and n=91, 17 % strongly agreed) that these tools facilitate plagiarism but (n=151, 28.2%) remained uncertain, as illustrated in Figure 2. Furthermore, the findings show that the use of GenAI tools for academic purposes raises ethical concerns, with (n=180, 33.6%) agreeing and (n=45, 8.4%) strongly agreeing with this claim; however, a substantial majority of respondents (n=241, 45%) remained undecided.

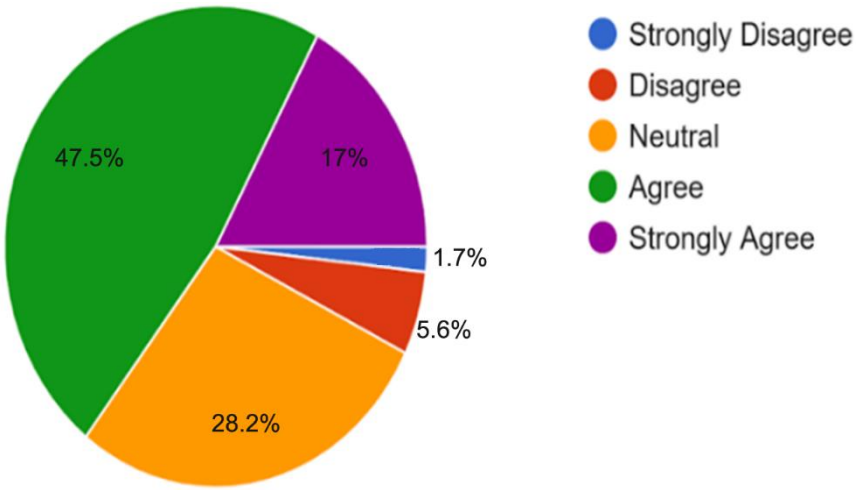

Figure 2. GenAI and Plagiarism.

The thematic analysis of data on the potential impact of GenAI on academic integrity identified two key themes based on recurring ideas and themes from the data:

4.2.1. Impact on Originality

A recurring concern stressed by the participants was the loss of originality in students' work due to over-reliance on such tools, which impact creativity and genuine academic contributions. Participants believed that excessive dependence on GenAI weakens creativity.

To illustrate, one respondent stated, *"It really affects the originality of the work as most students use GenAI to complete their assignments,"* and another mentioned, *"The originality tends to get dull as students progressively use AI more; they can't even think of a creative idea of their own."*

4.2.2. Risk of Plagiarism

Many respondents voiced that GenAI increases the risk of plagiarism, either through direct copying or by generating content. Respondents reiterated that the extensive reliance on GenAI has increased cases of both intentional and unintentional plagiarism.

For example, a respondent voiced, *"Most students copy the exact content from GenAI, leading to plagiarism issues."* Another expressed a similar concern, *"Students submit AI-generated work as their own, undermining the principles of originality and academic honesty."*

4.3. Addressing Challenges and Enhancing GenAI Use

The findings highlight strategies to address challenges and promote the effective use of Gen AI in academic settings. Respondents indicated that institutional support plays a vital role, with (n=138, 25.8%) agreeing and (n=59, 11%) strongly agreeing that their institutions afford clear guidelines for the academic use of GenAI tools; however, (n=98, 18.3%) of respondents disagreed with this assertion, and (n=214, 40%) remained neutral. Moreover, (n=121, 22.6%) agreed and (n=30, 5.5%) strongly agreed that institutions offer adequate training and support to enhance the effective use of these tools, while (n=152, 28.4%) disagreed with this claim and (n=232, 43.4%) were undecided for a definitive stance. In contrast, a substantial majority (n=255, 42.1% agreeing and n=200, 37.4% strongly agreeing) of respondents were of the view that when Gen AI is used responsibly, it can positively influence learning outcomes, as indicated in Figure 3:

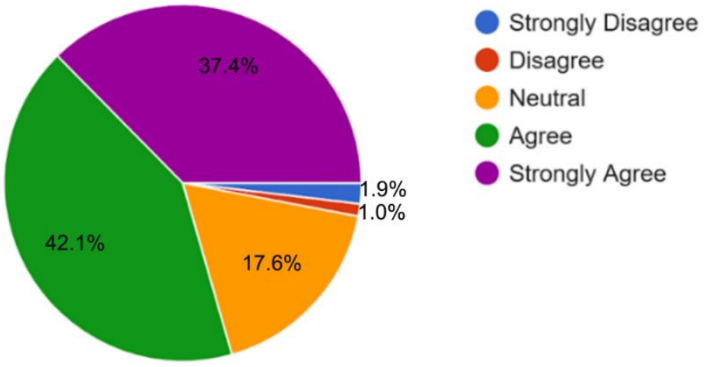

Figure 3. GenAI and learning enhancement.

From the qualitative aspects of the findings, the analysis of the data demonstrated three broad themes for addressing challenges and enhancing the ethical and effective use of GenAI tools in academic contexts.

4.3.1. Need for Awareness and Training

Many respondents highlighted the need for awareness programs, workshops, and training to educate them on responsible and effective GenAI use.

For instance, one respondent noted, *"Institutions must offer workshops on responsible AI use, including proper citation and ethical practices,"* while another stated, *"Institutions should conduct awareness programs to teach students how to use ChatGPT responsibly and in the right manner."*

4.3.2. Need for Policies and Guidelines

Many respondents called for institutional policies that define the acceptable and ethical use of Gen AI tools to maintain academic integrity. Respondents also emphasised the importance of clear guidelines for ethical GenAI usage to complement learning rather than undermining it.

To illustrate, a respondent shared, *"Institutions should establish clear policies on acceptable GenAI usage, defining boundaries to prevent misuse"*, while another remarked, *"Having guidelines to regulate GenAI use can help balance its benefits with maintaining academic rigor."*

4.3.3. Enhancement of Learning

Respondents noted that GenAI, when used responsibly, can augment learning by providing clarity, aiding research, generating ideas and promoting creativity. For instance, a respondent expressed, *"If used wisely, it enhances academic performance by brainstorming ideas and organizing responses"*, while another stated, *"If used properly, GenAI can help students enhance knowledge without compromising ethics."*

5. DISCUSSION

The purpose of the research was to study the use of GenAI in Bhutanese HE by exploring usage prevalence, impacts, and institutional responses. Three questions were framed to gain deeper insights.

5.1. What is the Prevalence of Gen AI usage in Bhutanese HEIs?

Quantitative data suggested that ChatGPT was the most extensively used GenAI tool, with 76.3% of respondents using it for academic purposes, followed by Google Gemini at 14.3%. Regarding frequency, 33.1% of respondents agreed and 10.5% strongly agreed that they regularly depended on GenAI tools for various academic purposes, but 44.1% remained neutral. Additionally, 50.7% of respondents agreed and 26.5% strongly agreed, that they were cognizant of their peers using these tools. The qualitative findings aligned with these findings, with participants frequently acknowledging the widespread adoption of GenAI tools for academic tasks such as research, assignments, clarifying concepts, brainstorming complex topics and gathering information. The study suggests that GenAI is widely used in Bhutanese HEIs, with ChatGPT leading for academic purposes, demonstrating a strong inclination for this tool in educational contexts, potentially due to its availability and varied range of capabilities. There is also a rising dependence on Gen AI tools, suggesting that these tools are becoming increasingly embedded in academic settings. Moreover, prevalent use also indicates a plausible shift in how academic work is conducted, reflecting the expanding significance of technology in education. Thus, it is probable that these tools are transforming how students in Bhutanese HEIs engage with their education, supporting both personal growth and collaborative learning.

These findings accord with prevailing research (Chan & Hu, 2023; Denejkina, 2023; Gruenhagen, Smith, & Johnson, 2024; Jeon & Lee, 2023; Stöhr, Ou, & Malmström, 2024; Yilmaz & Yilmaz, 2023; Yusuf, Khan, & Patel, 2024) where in recent years higher education globally has observed extensive adoption of GenAI with students resorting to tools such as ChatGPT and others for academic purposes.

5.2. How does GenAI Affect Academic Integrity?

Despite the positive viewpoint on the extensive use of GenAI for academic purposes, the study demonstrates a potential impact on academic integrity particularly in terms of loss of originality and facilitating plagiarism. Quantitative results indicated that 35.1% of respondents agreed, and 16.8% strongly agreed that GenAI compromises the originality of students' work while 36.3% remained neutral. Qualitative findings complemented this observation, with respondents raising concerns about the loss of originality in academic work relating to reduced creativity and authentic contributions. Quantitative data also revealed that 47.5% of respondents agreed, and 17.0% strongly agreed that GenAI facilitates plagiarism, while 28.2% remained unsure. Similarly, 33.6% agreed, and 8.4% strongly agreed,

that GenAI use raises ethical concerns in academic settings, while 45% remained uncertain of such concerns. The qualitative analysis aligned with these results, as participants described that GenAI tools increase both intentional and unintentional plagiarism. Although GenAI tools are widely used, most respondents believe that these tools compromise the originality of student work. This suggests a perceived risk that reliance on AI could weaken students' ability to generate genuine and creative work, potentially leading to a loss of individual contributions. Moreover, a notable proportion of respondents felt that GenAI tools facilitated plagiarism, signifying a strong belief that these tools could lead to dishonest practices, while others were uncertain concerning the scope to which GenAI contributed to plagiarism. This indicates that while many see GenAI as a potential risk to academic integrity, others may not yet fully understand or acknowledge the scale of this issue. Furthermore, many respondents expressed that GenAI builds ethical concerns in academic circumstances, while an equal number of them remained unsure of such concerns and uncertain about what constitutes ethical use in this context. This suggests the need for clearer actions on how to use GenAI responsibly in academic settings. These findings resonate with concerns in the literature about GenAI's potential to facilitate academic dishonesty, particularly in the form of plagiarism (Chan & Hu, 2023; Peres, Schreier, Schweidel, & Sorescu, 2023), which are unable to assess validity or identify falsehoods, thus necessitating human oversight (Lubowitz, 2023). These concerns also align with the findings of Malik, Kumar, and Shah (2023) and Booyse and Scheepers (2024), who suggested the potential loss of originality and innovation, and the risk of misinformation and unintentional plagiarism due to over-reliance on technology. Concerns about academic honesty and plagiarism among students of HEIs, which violate educational integrity principles, were also echoed in their studies (Cotton et al., 2024; Newton, 2018; Roe & Perkins, 2022). Plagiarism detection and prevention have long been challenges in education, and the introduction of GenAI technologies has added complexity to this issue (Ali et al., 2023).

5.3. How can Bhutanese HEIs Mitigate the Challenges and Enhance the use of GenAI?

The quantitative results revealed mixed opinions regarding institutional support for the use of Gen AI tools. While a significant section of respondents (25.8% agreeing, 11% strongly agreeing) felt that their institutions presented clear guidelines, a notable portion (18.3%) disagreed with this assertion, and 40% refrained from taking a determined position. Similarly, 22.6% agreed and 5.5% strongly agreed that institutions offered sufficient support or training; however, 28.4% of respondents voiced discontentment with the training provided, and 43.4% were uncertain about taking a clear stand. Qualitative findings reinforced the quantitative trends, with respondents highlighting the need for awareness programs and training to ensure the responsible use of GenAI and highlighting the necessity of institutional policies and guidelines. A substantial majority of respondents (42.1% agreeing, 37.4% strongly agreeing) viewed responsible Gen AI use as a positive influence on learning outcomes. This sentiment was echoed in the qualitative theme (Enhancement of learning), where participants identified Gen AI as a tool for enhancing learning when used responsibly. The findings suggest that while some respondents believe their institutions provide clear guidelines and adequate training for using GenAI tools, a large portion remains uncertain or dissatisfied with the support offered, highlighting a gap in institutional readiness to address the effective integration of such technologies. Many participants were unsure about the effectiveness of these measures, indicating a lack of clarity in institutional policies and practices. However, there is a strong belief that when used responsibly, GenAI can enhance learning outcomes. Respondents highlighted the importance of clear ethical guidelines to ensure that these tools contribute positively without undermining academic integrity. The data emphasizes the need for institutions to provide better awareness programs and training to promote the responsible use of GenAI in educational settings. These insights collectively point to the need for balanced institutional policies and practices that maximize the benefits of GenAI while addressing its challenges.

These findings are consistent with those of Perkins (2023), who discussed the ethical implications of AI in education in their systematic review, emphasising the need for robust policies to mitigate academic misconduct. This is also echoed in a similar finding by Yusuf et al. (2024), who advocate the importance of establishing clear guidelines

to ensure responsible and ethical usage of GenAI in HEIs. Perkins (2023) further explored the impact of AI on academic honesty, suggesting that educational institutions need to adapt their academic misconduct guidelines to better reflect the nuances introduced by AI technologies. Additionally, a substantial number of participants inclined toward the responsible use of Gen AI to enhance learning reflects the growing trend of integrating AI technologies into education (Glaser, 2023), aligning with the literature on adoption (Ali et al., 2023).

6. CONCLUSION

This study explored the use of Generative AI in Bhutanese higher education. The findings present a nuanced understanding of its prevalence, impact, and institutional responses. This study yielded four key findings. First, there is a high prevalence of GenAI usage, particularly ChatGPT, with substantial acceptance among students, primarily for academic tasks such as research, brainstorming, and completing assignments. Second, the widespread use of GenAI has raised significant concerns regarding academic integrity. Issues such as compromised originality and increased risk of plagiarism were prominent in the findings. Third, institutional support in the form of training and awareness programs and the development of policies and guidelines is critical to navigating the complications of Gen AI responsibly. Fourth, despite the challenges, Gen AI holds transformative potential in education. When used responsibly, these tools can enhance learning outcomes by enhancing creativity, aiding research, and simplifying complex topics for students. This study has several limitations that should be considered when interpreting its findings. First, the participants were only students; subsequent studies should incorporate insights from lecturers to obtain a comprehensive understanding of the influence of Gen AI on academic integrity. The current study is cross-sectional, involving descriptive analysis, and lacks inferential analysis of the data to determine the causal relationship between GenAI and academic integrity. Undertaking comparative or longitudinal research will also yield a more profound understanding of the significance and influence of Gen AI on academic integrity. Despite these limitations, this study provides a starting point for further exploration of this rapidly evolving field. The results provide meaningful cues for stakeholders involved in integrating and regulating GenAI in higher education, underscoring the crucial role of student perspectives in the discourse on educational technologies.

Moreover, drawing parallels with the existing literature and insights from this study, two recommendations are proposed for HEIs in Bhutan. First, awareness programs and training should be provided due to GenAI's pervasiveness and progressive complication. Second, academic policies and guidelines should be updated to provide better guidance for students concerning GenAI use. Finally, this study underscores the transformative role of GenAI in HE and the critical need for balanced approaches to maximise its benefits while protecting academic integrity. Bhutanese HEIs are well positioned to lead by example in enhancing responsible GenAI use, ensuring that technology serves as a catalyst for authentic learning and academic excellence.

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Institutional Review Board Statement: This study was approved by the Institutional Review Board (Research Deans and Academic Deans) of [Gyalpozhing College of Information Technology, Sherubtse College, College of Natural Resources, Jigme Namgyel Engineering College, College of Science and Technology, Arura Academy of Health Sciences, Apollo Bhutan Institute of Nursing, Royal Thimphu College, Jigme Singye Wangchuck School of Law, Faculty of Traditional Medicine, Gedu College of Business Studies, Paro College of Education and Samtse College of Education, Bhutan, under protocol number [NA], dated 13.11.2024. Informed verbal consent was obtained from all participants, and all data were anonymized to protect participant confidentiality.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.
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REFERENCES

Ali, O., Abdelbaki, W., Shrestha, A., Elbasi, E., Alryalat, M. A. A., & Dwivedi, Y. K. (2023). A systematic literature review of artificial intelligence in the healthcare sector: Benefits, challenges, methodologies, and functionalities. *Journal of Innovation & Knowledge, 8*(1), 100333. https://doi.org/10.1016/j.jik.2023.100333

Alzubi, J., Nayyar, A., & Kumar, A. (2018). Machine learning from theory to algorithms: An overview. *Journal of Physics: Conference Series, 1142*, 012012. https://doi.org/10.1088/1742-6596/1142/1/012012

Australian Academic Integrity Network. (2023). *AAIN generative artificial intelligence guidelines*. Australia: Australian Academic Integrity Network.

Bamford, M. (2020). *Tracking technology aims to improve online learning for students during COVID-19*. Australia: ABC News.

Bandi, A., Adapa, P. V. S. R., & Kuchi, Y. E. V. P. K. (2023). The power of generative AI: A review of requirements, models, input–output formats, evaluation metrics, and challenges. *Future Internet, 15*(8), 260. https://doi.org/10.3390/fi15080260

Bhutan Broadcasting Service. (2024). *Embracing generative AI in education: Bhutan's approach to ethical use*. Bhutan: Bhutan Broadcasting Service.

Bonde, L. (2024). A conceptual design of a generative artificial intelligence system for education. *International Journal of Research and Innovation in Applied Science, 9*(4), 457-469. https://doi.org/10.51584/IJRIAS.2024.904034

Booyse, D., & Scheepers, C. B. (2024). Barriers to adopting automated organisational decision-making through the use of artificial intelligence. *Management Research Review, 47*(1), 64-85. https://doi.org/10.1108/MRR-09-2021-0701

Bozkurt, A. (2024). GenAI et al: Cocreation, authorship, ownership, academic ethics, and integrity in a time of generative AI. *Open Praxis, 15*(1), 45-58.

Bretag, T. (2016). *Handbook of academic integrity*. Singapore: Springer.

Brown, T., Mann, B., Ryder, N., Subbiah, M., Kaplan, J. D., Dhariwal, P., . . . Askell, A. (2020). *Language models are few-shot learners*. Paper presented at the Proceedings of the 34th International Conference on Neural Information Processing Systems (NeurIPS 2020), Vancouver, Canada, 2020.

Casal, J. E., & Kessler, M. (2023). Can linguists distinguish between ChatGPT/AI and human writing?: A study of research ethics and academic publishing. *Research Methods in Applied Linguistics, 2*(3), 100068. https://doi.org/10.1016/j.rmal.2023.100068

Cassidy, C. (2023). *Australian universities to return to 'pen and paper' exams after students caught using AI to write essays*. Australia: The Guardian.

Chan, C. K. Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education, 20*(1), 38. https://doi.org/10.1186/s41239-023-00408-3

Chan, C. K. Y., & Hu, W. (2023). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *International Journal of Educational Technology in Higher Education, 20*(1), 43. https://doi.org/10.1186/s41239-023-00411-8

Checho, D. (2024). *Leveraging AI for Bhutan's growth from education to sustainable agriculture*. Bhutan: The Bhutanese.

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access, 8*, 75264-75278. https://doi.org/10.1109/ACCESS.2020.2988510

Chiang, F. K., Zhu, D., & Yu, W. (2022). A systematic review of academic dishonesty in online learning environments. *Journal of Computer Assisted Learning, 38*(4), 907-928. https://doi.org/10.1111/jcal.12656

Chiu, T. K. (2024). The impact of Generative AI (GenAI) on practices, policies and research direction in education: A case of ChatGPT and Midjourney. *Interactive Learning Environments, 32*(10), 6187-6203. https://doi.org/10.1080/10494820.2023.2253861

Chu, H.-C., Hwang, G.-H., Tu, Y.-F., & Yang, K.-H. (2022). Roles and research trends of artificial intelligence in higher education: A systematic review of the top 50 most-cited articles. *Australasian Journal of Educational Technology, 38*(3), 22-42. https://doi.org/10.14742/ajet.7526

Cordeschi, R. (2007). AI turns fifty: Revisiting its origins. *Applied Artificial Intelligence*, *21*(4-5), 259-279. https://doi.org/10.1080/08839510701252304

Cotton, D. R., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, *61*(2), 228-239. https://doi.org/10.1080/14703297.2023.2190148

Crawford, J., Cowling, M., & Allen, K.-A. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). *Journal of University Teaching and Learning Practice*, *20*(3), 1-19.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approach* (4th ed.). United States: Sage Publications.

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. *International Journal of Educational Technology in Higher Education*, *20*(1), 22. https://doi.org/10.1186/s41239-023-00392-8

Dalalah, D., & Dalalah, O. M. (2023). The false positives and false negatives of generative AI detection tools in education and academic research: The case of ChatGPT. *The International Journal of Management Education*, *21*(2), 100822. https://doi.org/10.1016/j.ijme.2023.100822

Delipetrev, B., Tsinaraki, C., & Kostić, U. (2020). *Historical evolution of artificial intelligence*. Luxembourg: Publications Office of the European Union.

Denejkina, A. (2023). *Young people's perception and use of generative AI*. Australia: Student Edge.

Eaton, S., & Anselmo, L. (2023). *Teaching and learning with artificial intelligence apps Taylor Institute*. Canada: University of Calgary

Eaton, S. E. (2023). *Sarah's thoughts: Artificial intelligence and academic integrity*. Canada: Learning, Teaching and Leadership: A Blog for Educators, Researchers, and Other Thinkers.

Eke, D. O. (2023). ChatGPT and the rise of generative AI: Threat to academic integrity? *Journal of Responsible Technology*, *13*, 100060. https://doi.org/10.1016/j.jrt.2023.100060

Ellison, A. M., & Patel, M. V. (2022). *Success in navigating your student research experience: moving forward in STEMM*. United Kingdom: Springer Nature.

European Union. (2022). *Ethical guidelines on the use of artificial intelligence (AI) in teaching and learning for educators*. Belgium: European Union.

Farazouli, A., Cerratto-Pargman, T., Bolander-Laksov, K., & McGrath, C. (2024). Hello GPT! Goodbye home examination? An exploratory study of AI chatbots impact on university teachers' assessment practices. *Assessment & Evaluation in Higher Education*, *49*(3), 363-375. https://doi.org/10.1080/02602938.2023.2241676

Foltynek, T., Bjelobaba, S., Glendinning, I., Khan, Z. R., Santos, R., Pavletic, P., & Kravjar, J. (2023). ENAI recommendations on the ethical use of artificial intelligence in education. *International Journal for Educational Integrity*, *19*(1), 1-4. https://doi.org/10.1007/s40979-023-00133-4

Forment, A. M., Peñalvo, G. F. J., & Camba, J. D. (2024). Generative artificial intelligence in education: From deceptive to disruptive. *International Journal of Interactive Multimedia and Artificial Intelligence*, *8*(5), 45-58.

Glaser, N. (2023). Exploring the potential of ChatGPT as an educational technology: An emerging technology report. *Technology, Knowledge and Learning*, *28*(4), 1945-1952. https://doi.org/10.1007/s10758-023-09684-4

Gruenhagen, A., Smith, B., & Johnson, C. (2024). The integration of generative AI tools in higher education: A study of academic use and shifts in educational practices. *Journal of Educational Technology*, *45*(2), 134-145.

Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Shum, S. B., . . . Bittencourt, I. I. (2022). Ethics of AI in education: Towards a community-wide framework. *International Journal of Artificial Intelligence in Education*, *32*(3), 504-526. https://doi.org/10.1007/s40593-021-00239-1

Hwang, G.-J., & Chen, N.-S. (2023). Editorial position paper: Exploring the potential of generative artificial intelligence in education: Applications, challenges, and future research directions. *Educational Technology & Society*, *26*(2), 1-10.

Jeon, J., & Lee, S. (2023). Large language models in education: A focus on the complementary relationship between human teachers and ChatGPT. *Education and Information Technologies*, *28*(12), 15873-15892. https://doi.org/10.1007/s10639-023-11834-1

Karunananda, A. (2019). *Roadmap of artificial intelligence concepts to reality and future.* Paper presented at the SLAAI—International Conference on Artificial Intelligence.

Keith, T. (2023). Combating academic dishonesty, part 6: ChatGPT, AI, and academic integrity. *Academic Technology Solutions, 27*, 45-55.

Keller, B., Baleis, J., Starke, C., & Marcinkowski, F. (2019). *Machine learning and artificial intelligence in higher education: A state-of-the-art report on the German University landscape.* Germany: Heinrich Heine-Universität.

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *Relc Journal, 54*(2), 537-550. https://doi.org/10.1177/00336882231162868

Lim, W. M., Gunasekara, A., Pallant, J. L., Pallant, J. I., & Pechenkina, E. (2023). Generative AI and the future of education: Ragnarök or reformation? A paradoxical perspective from management educators. *The International Journal of Management Education, 21*(2), 100790. https://doi.org/10.1016/j.ijme.2023.100790

Lin, C.-C., Huang, A. Y., & Yang, S. J. (2023). A review of ai-driven conversational chatbots implementation methodologies and challenges (1999–2022). *Sustainability, 15*(5), 4012. https://doi.org/10.3390/su15054012

Lubowitz, J. H. (2023). ChatGPT, an artificial intelligence chatbot, is impacting medical literature. *Arthroscopy, 39*(5), 1121-1122.

Malik, A., Kumar, R., & Shah, P. (2023). Ethical implications of generative AI in academia: A review of risks and perceptions in higher education. *Journal of Academic Integrity, 18*(4), 299-312.

Myers, D., Mohawesh, R., Chellaboina, V. I., Sathvik, A. L., Venkatesh, P., Ho, Y.-H., . . . Jararweh, Y. (2024). Foundation and large language models: Fundamentals, challenges, opportunities, and social impacts. *Cluster Computing, 27*(1), 1-26. https://doi.org/10.1007/s10586-023-04203-7

Narayanan, A., & Kapoor, S. (2024). *AI Snake oil: What artificial intelligence can do, what it can't, and how to tell the difference.* United States: Princeton University Press.

Newton, P. M. (2018). How common is commercial contract cheating in higher education and is it increasing? A systematic review. *Frontiers in Education, 3*, 67. https://doi.org/10.3389/feduc.2018.00067

OpenAI. (2023). *Educator considerations for ChatGPT.* United States: OpenAI.

Peres, R., Schreier, M., Schweidel, D., & Sorescu, A. (2023). On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice. *International Journal of Research in Marketing, 40*(2), 269-275. https://doi.org/10.1016/j.ijresmar.2023.03.001

Perkins, M. (2023). Academic integrity considerations of AI large language models in the post-pandemic era: ChatGPT and beyond. *Journal of University Teaching and Learning Practice, 20*(2), 1-24.

Plata, S., De Guzman, M. A., & Quesada, A. (2023). Emerging research and policy themes on academic integrity in the age of chat GPT and generative AI. *Asian Journal of University Education, 19*(4), 743-758. https://doi.org/10.24191/ajue.v19i4.24697

Poitras Pratt, Y., & Gladue, K. (2022). *Re-defining academic integrity: Embracing indigenous truths in Academic integrity in Canada: An enduring and essential challenge.* United States: Springer.

Prasad, R., & Choudhary, P. (2021). State-of-the-art of artificial intelligence. *Journal of Mobile Multimedia, 17*(1-3), 427-454.

Roe, J., & Perkins, M. (2022). What are Automated Paraphrasing Tools and how do we address them? A review of a growing threat to academic integrity. *International Journal for Educational Integrity, 18*(1), 15. https://doi.org/10.1007/s40979-022-00109-w

Roe, J., Renandya, W. A., & Jacobs, G. M. (2023). A review of AI-powered writing tools and their implications for academic integrity in the language classroom. *Journal of English and Applied Linguistics, 2*(1), 3. https://doi.org/10.59588/2961-3094.1035

Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning & Teaching, 6*(1), 342-363.

Sabzalieva, E., & Valentini, A. (2023). *ChatGPT and artificial intelligence in higher education: Quick start guide.* France: UNESCO.

Sekli, G. M., Godo, A., & Véliz, J. C. (2024). Generative AI solutions for faculty and students: A review of literature and roadmap for future research. *Journal of Information Technology Education: Research, 23*, 1-23.

Sevnarayan, K., & Potter, M.-a. (2024). Generative Artificial Intelligence in distance education: Transformations, challenges, and impact on academic integrity and student voice. *Journal of Applied Learning and Teaching, 7*(1), 104-114. https://doi.org/10.37074/jalt.2024.7.1.41

Shepherd, T. (2022). *New AI tools that can write student essays require educators to rethink teaching and assessment [Blog post]*. London: London School of Economics and Political Science (LSE Impact Blog).

Stöhr, C., Ou, A. W., & Malmström, H. (2024). Perceptions and usage of AI chatbots among students in higher education across genders, academic levels and fields of study. *Computers and Education: Artificial Intelligence, 7*, 100259. https://doi.org/10.1016/j.caeai.2024.100259

Sullivan, M., Kelly, A., & McLaughlan, P. (2023). ChatGPT in higher education: Considerations for academic integrity and student learning. *Journal of Applied Learning & Teaching, 6*(1), 31-40.

Sullivan, W. M. (2018). Work and integrity: The crisis and promise of professionalism in America. *Journal of the American College of Dentists, 85*(2), 1–40.

Susilawati, E., Lubis, H., Kesuma, S., Pratama, I., & Khaira, I. (2023). Exploring the antecedents of student academic integrity: the impact of using digital technology automated short essay scoring (ASES) assessment models in learning. *Eurasian Journal of Educational Research, 103*(103), 125-144.

Tertiary Education Quality and Standards Agency. (2023). *Artificial intelligence.* Australia: Tertiary Education Quality and Standards Agency.

UNESCO. (2019). *Beijing consensus on artificial intelligence and education.* France: UNESCO.

University College Cork. (2024). *Toolkit for the ethical use of GenAI in learning and teaching: Academic integrity and use of GenAI.* Ireland: University College Cork.

Yilmaz, R., & Yilmaz, F. G. K. (2023). Augmented intelligence in programming learning: Examining student views on the use of ChatGPT for programming learning. *Computers in Human Behavior: Artificial Humans, 1*(2), 100005. https://doi.org/10.1016/j.chbah.2023.100005

Yusuf, A., Khan, R., & Patel, N. (2024). Generative AI tools in higher education: Shaping academic engagement and collaborative learning in the digital era. *International Journal of Educational Technology, 56*(3), 198-212.