

Artificial Intelligence in Education: Adoption and Usage Patterns Among Technical and Non-Technical Students

Er . Yuba Raj Devkota

Lecturer, Department of ICT, Kathmandu Shiksha Campus, Nepal

E-mail: er.yubaraj@gmail.com

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Abstract

This paper discusses the adoption and usage patterns of Artificial Intelligence (AI) tools among technical and non-technical students at Kathmandu Shiksha Campus (KSC) . The data were drawn from 13 technical students studying in the Bachelor of Computer Applications (BCA) program and 10 non-technical students from Bachelor of Business Studies (BBS) and Bachelor of Education (B.Ed.) programs . A mixed-methods approach was adopted, combining questionnaires with interviews . This present paper investigates the frequency of AI tool usage, major purposes, the most commonly used tools, perceptions about the integration of AI into the curriculum, challenges in adoption, and perceived benefits . The results point the usage of AI tools among both technical and non-technical students, their opinion regarding frequency of usages, purpose of using, challenges faced or benefits from it . The study has also underlined that technical students usually use AI tools for coding, debugging, and fine-tuning their coding ability, while non-technical students use the tool basically in report writing, analysis, and presentation . This paper suggests curriculum developers and college management to make a policy or conduct frequent seminars regarding AI literacy and accessibility in various educational faculties.

Keywords: *AI adaptation, Usage pattern, Technical and non-technical students, Curriculum integration, AI literacy, accessibility*

Introduction

Artificial intelligence is a revolution in educational landscapes, providing innovative tools and opportunities for research, learning, project development, and knowledge management . Examples of personalized learning systems include intelligent tutoring systems, which are changing the way students engage in learning materials and educators deliver content . These technologies enhance learning experiences, improve classroom interactions, and streamline administrative tasks (Holmes et al., 2019) . Equipped with sophisticated decision-making, data analytics, and customized solutions, AI supports students in saving time, obtaining better academic results, and presenting themselves in a more effective manner.

AI tools are increasingly being adopted to enhance teaching and learning experiences, automate administrative processes, and personalize educational journeys (Zawacki-Richter et al., 2019) . For instance, students can learn new languages, complete assignments efficiently, and refine presentations with the help of AI-powered applications . Additionally, tasks such as grammar checks, content generation, and essay writing have become more efficient, leading to improved student productivity and learning curves . AI technologies have also influenced social media content creation, helping students foster creative and communicative skills.

However, significant barriers, such as limited accessibility to AI tools, ethical concerns, and overdependence on technology, hinder the full utilization of AI in education (Selwyn, 2019) . These challenges impact students' ability to conduct research, complete assignments effectively, and apply logical reasoning across diverse educational contexts . The increasing reliance on AI raises questions about its implications for creativity, trustworthiness of generated content, and preparation for AI-driven workplaces . Overdependence on AI tools may diminish students' critical thinking skills and creativity, emphasizing the importance of verifying AI-generated content for reliability and accuracy (Frey & Osborne, 2017).

This study examined the adoption and usage of AI tools by both technical and nontechnical students at Kathmandu Shiksha Campus, located at Chandragiri-10, Kathmandu, Nepal . It is a community-based college, running from Plus 2 programs to Master's degree programs . Bachelor level programs students are taken into account for this study . Students from Bachelors in Computer Application (BCA) are considered as technical students, as they are familiar with AI tools and are studying under their curriculum . Similarly, Students from Bachelors in Business Studies (BBS) and Bachelors in Education (B.Ed.) are considered as non-technical students, whose syllabus doesn't contain AI related contents . The aim here is to understand how frequently students use AI tools, the purpose for which they do so, what challenges they encounter in

doing so, and their perception of the role of AI in education . It also highlights to what extends does AI should be included in curriculum . Among these factors, the current study contributes to the wider discussion of how AI will be effectively deployed in higher education-in terms of both its potential and its limitations . These findings aim to inform college management and policymakers what sorts of policy or seminars to be conducted, or how to encourage students to get the benefits of growing technology like Artificial Intelligence.

Literature Review

While the use of AI tools has significantly improved learning experiences in educational institutions, attitudes, challenges, and effectiveness regarding the use of such tools may be significantly different to the cases of technical and non-technical students . Technical students, particularly those in the computer science field, have higher AI literacy and are more confident in using AI tools . These students are increasingly using AI technologies for assignment work, project development, and enhancement of their skills . For example, technical students use AI for programming logic, project design, and professional presentations, which shows their proactive attitude toward the integration of AI in their career development process (Holmes et al., 2019; Zawacki-Richter et al., 2019) .

On the other hand, the non-technical students are less aware of how to understand and make effective use of AI tools . They will most likely use AI in fairly basic ways: grammar and spell checkers, online translation tools, and text generators for essay writing . Their limited use in more advanced AI applications may signal a gap in their training and curriculum . Recent studies underscore that non-technical students perceive AI tools as accessible yet underutilized for higher-order tasks due to a lack of adequate training (Essel et al., 2022 and Schei et al., 2024) . Despite these differences, several challenges cut across both technical and non-technical students in their adoption of AI technologies, including data privacy concerns, over-reliance on automation, and ethical dilemmas (Chen et al., 2023; Jeffrey, 2023) . Besides the level of awareness of AI, institutional support and training are another major determining factor in how far the AI tools will be adopted . Recent studies show that students from all academic backgrounds benefit considerably when institutions provide structured guidance on how to use AI technologies effectively . Workshops, integrated courses, and practical training help bridge the gap in AI literacy and provide non-technical students with skills to leverage these tools for advanced tasks . Moreover, technical students also benefit from updated resources aligned with the rapidly evolving AI landscape, ensuring relevance to industry needs (Chen et al., 2023 and Gayed et al., 2022).

Motivation to use AI tools also differs according to career aspirations and individual attitudes toward technology . Studies have shown that technical students are motivated by the need to gain industry-relevant skills, while non-technical students tend to use AI tools because it saves them time and is more convenient (Dwivedi et al., 2021) . The divergences here indicate the demand for tailored interventions, thus calling forth different expectations and challenges to be faced by such groups . Understanding these differences in context is thus necessary for a holistic, effective, and more equal adoption of AI by diversified student populations . For technical students, the high cost of advanced AI tools and the steep learning curve associated with mastering them pose significant challenges (Faggella, 2020) . Non-technical students, on the other hand, struggle with integrating complex AI concepts into their studies, particularly when such topics are not aligned with their field of study or daily academic routines . These challenges underline the necessity of tailoring AI education to address the unique needs of different student groups.

AI technologies have widely been recognized as playing a critical role in facilitating personalized learning, real-time feedback, and administrative processes (Zawacki-Richter et al., 2019) . However, the effectiveness of AI depends on how well it is integrated into the curriculum for each stream of education . Technical students tend to emphasize algorithm design, machine learning implementation, and practical applications, whereas non-technical students focus more on ethical considerations, language processing, and writing aids (Holmes et al., 2019) . A well-rounded approach that incorporates AI education into diverse disciplines can bridge the gap between technical and non-technical students, ensuring equitable access and competence in using AI tools .

Moreover, research highlights that personalized learning powered by AI has the potential to improve student outcomes significantly, provided that educators are trained to integrate these technologies effectively (Fischer et al., 2020) . For technical students, this involves practical exposure to AI development, while for non-technical students, it requires incorporating user-friendly AI applications into their curriculum . This can only be addressed through more inclusive and adaptive AI educational strategies for enhancing digital literacy in preparing learners for a future of work characterized by AI . The use of AI tools also demands an address of the ethical implications of their use in education . While technical students are typically more familiar with the technological underpinnings of AI, their familiarity with the societal impacts of AI may be restricted unless they are specifically taught ethical issues such as algorithmic bias, data privacy, and accountability (Selwyn, 2019) . In contrast, non-technical students, who often bring a broader focus on the socio-economic and cultural implications of AI, might not have the technical background to evaluate such issues critically . Ethics being

woven into the education in AI, within and across disciplines, ensures a well-rounded approach toward this understanding.

Overall, institutional support is very crucial for the adoption of AI among students . It is found from the literature that access to adequate resources, such as training programs and AI-enabled platforms, significantly enhances students' confidence and capability in using these tools (Dwivedi et al., 2021) . Equitable access to AI tools and resources provided by an institution can reduce disparities between technical and non-technical students, thus creating a fertile ground for innovation and interdisciplinary collaboration . Finally, there is no avoiding the role of motivation and self-efficacy in AI adoption . The students who are more confident in their technological abilities will go on to explore more advanced AI applications, while others need assistance due to fear . In the literature, online gaming, active tutorials, and real-life project-based learning have emerged as promising approaches to engage and create better learning outcomes for all kinds of students, regardless of their prior background in technology (Creswell & plano, 2018).

Methods

A mixed-method approach was the methodological framework adopted for the study, combining both quantitative and qualitative methods to explore the level of adoption and usage pattern of AI tools among the technical and non-technical students at Kathmandu Shiksha Campus . Quantitative data was collected through a structured questionnaire on measurable insights into experiences with AI tools . Meanwhile, qualitative data were gathered via semi-structured interviews, providing an in-depth exploration of individual perceptions and contextual factors influencing AI adoption . This approach facilitates a comprehensive understanding, balancing statistical analysis with nuanced interpretive insights (Creswell & Plano, 2018 and Fetters & Molina-Azorin, 2020) .

The mixed-methods design aligns with recent recommendations for studying complex topics like technology adoption in education by capturing both breadth and depth of information . It enables integration of diverse perspectives and enhances the robustness of findings, addressing limitations of singular methodologies (Aschbrenner et al., 2022) . Sample population included in total of 23 students . 13 technical students from Bachelors in Computer Application (BCA) faculty and 10 non-technical students from Bachelors in Business (BBS) and Bachelors in Education (B.Ed . Faculties) were participated . A printed questionnaire was distributed to all the participants and the questionnaire comprised close ended questions focusing on frequency of AI usage, primary purpose of using AI tools, Inclusion of AI in curriculum, major challenges and benefits of adopting AI tools .

The questions asked to the included students about the Adoption and Usage Patterns of AI tools . The frequency in which AI tools were used, such as ChatGPT or Grammarly, was determined by the questionnaire, along with identifying the main purposes these tools were put to when used in their studies . Students' questions were also asked about the sort of AI tool they make use of most . Additionally, the survey asked whether students believe AI usage ought to be officially incorporated into the college curriculum .

Challenges in adopting AI tools were also examined, along with students' perceptions of the most significant benefits AI tools bring to education . This holistic approach searched to understand not only the practical dimension but also the attitudinal one in integrating AI in academic settings . To gather deeper insights into their attitudes and experiences with AI tools, 5 students, selected from technical and non-technical faculties were interviewed . Some of the sample questions included:

During the interview, the students were asked to describe their understanding of AI and its role in education . They were encouraged to describe how AI tools had enhanced or hindered their experiences of learning . In these interviews, the challenges faced by the students in adopting the AI tools for their studies were discussed, inviting the students to elaborate on the obstacles they had faced and the overcoming strategies adopted . Finally, the students were asked to suggest improvements or features they would like to see in AI tools, with the aim of making such technologies more effective and accessible for learners . In the paper, data from student interviews were interpreted qualitatively to gain deeper insights into their experiences, perceptions, and challenges related to AI usage . Responses were categorized by recurring themes, such as the purpose of AI tool usage, frequency of usage, perceived benefits, and barriers faced . A comparative analysis between the two groups helped in highlighting the differences in adoption patterns and informed recommendations for curriculum development.

Results

The data from the questionnaire were analyzed in five distinct categories: usage frequency, main purposes of using AI tools, preferred AI tools, curriculum integration, and challenges faced by students in adopting AI . This categorization provided a structured framework for understanding the interaction of students with AI tools . To add more depth and contextual richness to the findings, insights from semi-structured interviews were integrated into the analysis . Combining quantitative and qualitative data allowed for a nuanced interpretation of the results, reflecting both broad trends and individual perspectives (Creswell & Plano, 2018) . Such an approach is particularly effective in exploring the multi-faceted dimensions of technology adoption in educational settings.

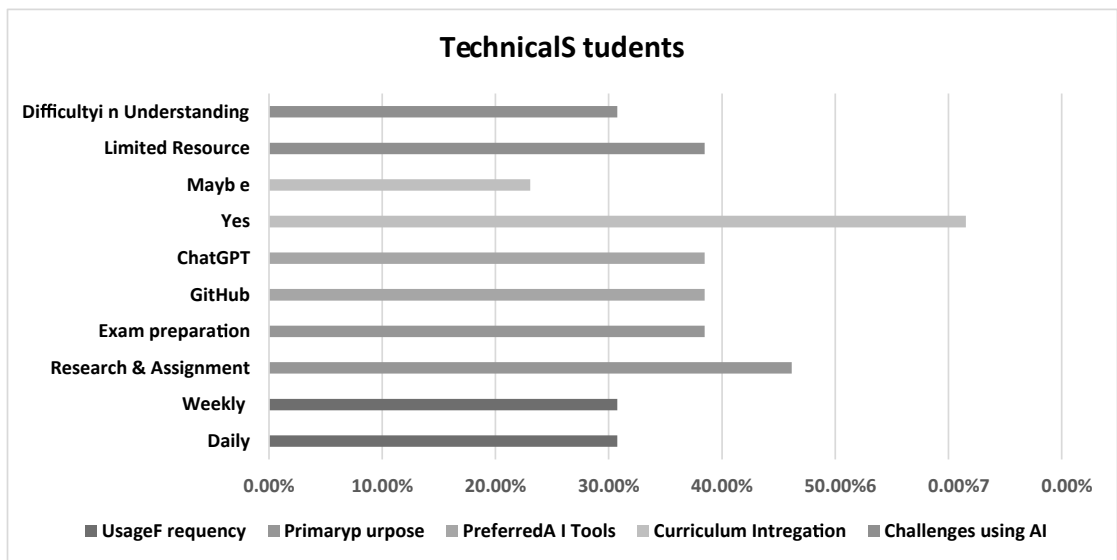


Figure 1

Technical Student 'Results for Various Questionnaire Categories

As per the results in Figure 1, Technical students are using AI tools more frequently. Over 60% students are using them in daily or weekly manner. BCA Students are using them mostly for exam preparations and research or assignments. Over 46% students are frequently using AI tools for their assignments and project works. Projects are easier with the help of code generators such as GitHub and daily assignments are done smartly using ChatGPT. More than 75% students are using GitHub and ChatGPT in regular basis for their studies and are learning new skills to improve themselves. However few students are yet not sure whether to include AI in their curriculum while most of the students, around 61% wants to see the AI topics in their curriculum. Although students are using these tools frequently, they still face challenges in using AI such as limited access to AI resources or difficulty in understanding complex AI terms. Over 38% students want to have better access to AI tools. Overall, Technical students consider AI as a new innovation that saves time during assignments, studies and summarizes complex algorithms in easy manner.

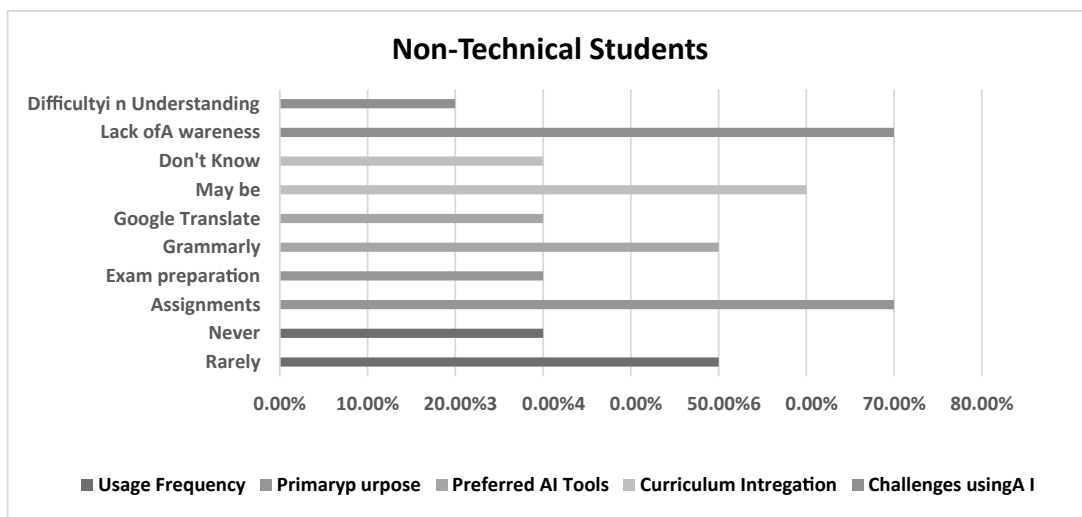


Figure 2
Non-technical Student's Results for Various Questionnaire Categories

As mentioned in Figure 2, Non-technical students are not using AI tools more frequently. Over 50% students are using them very rarely. Students from BBS or B.Ed. are using them mostly for exam preparations and assignments, if used. Around 30% students are using AI tools for their assignments and exam preparation. Common uses of AI tools include using Grammarly for grammar corrections and google translators for translating languages. 50% students are using Grammarly and 30% students are using google translators. Most of the students are yet not sure whether to include AI in their curriculum while few students are unaware of how AI will be useful in their academics. Major challenges students face while using AI tools is difficulty in using AI tools and most often, lack of awareness about AI and how it performs. 70% students claim lack of awareness about AI being the major challenges while using AI. Overall, non-technical students consider AI as a new innovation that saves time during assignments, easily solving tasks during grammar check and language conversion. The summarized results in various categories are mentioned,

Frequency of Using AI Tools

Frequency-wise, the students in the technical group reported the use of AI tools once a week, while for non-technical students, it is very rarely, reflecting more exposure to and frequency of these technologies in their everyday interactions.

Main Purposes of Using AI Tools

Another point of variation between the two groups was the purpose of using AI tools. Students from technical disciplines mostly used AI for research and assignments,

applying the tools for innovative and technically problem-based activities . Non-technical students focus on exam preparation and use AI to assist in studying rather than exploring or creating anything.

Academic Performance Enhancement through AI & Preferred AI Tools

Both groups believe that AI boosts academic performance and therefore adds great hopes for its benefit, whatever the field . However, preferences of AI tool usage turn out to vary highly: whereas technical students prefer using ChatGPT and GitHub due to tasks related to programming, coding, and development, non-technical students think the opposite . On the other hand, non-technical students use Grammarly and Google Translate more often for their language improvement and communication . This contrast points out their variable academic demands of both groups.

Inclusion of AI in Curriculum

While technical students strongly support making the curriculum include AI in their studies, non-technical students adopt a cautious approach towards its full integration into the curriculum, which indicates that it may be done but with limitations, thus showing skepticism over its applicability and practical implementation in their fields.

Challenges Faced in Adopting AI

The challenges faced by these groups also diverge . Technical students cite limited access to AI tools and resources as the main barrier, highlighting infrastructural or financial constraints . In contrast, non-technical students point to a lack of awareness about AI tools, indicating the need for orientation and training to familiarize them with AI's potential in academic contexts.

Results from interviews on various questions are discussed here for more insight into the topic . The technical and non-technical students answered differently when asked about their perception of AI and its purpose in schools . Some of the students expressed that AI is helpful in designing personalized learning environments and therefore aids them in learning something new and also makes life easier, such as project work or documentation of research information . Others said that AI allows access to information with speed, but they are not as knowledgeable about how it all works.

Regarding how the AI tools have helped or hindered their studies, students' experiences varied . For example, a BCA student shared using GitHub for coding and ChatGPT for documentation, which he found very helpful in learning new things and getting to understand problem-solving more comprehensively . At the same time, another student commented that sometimes irrelevant answers were given by chatbots, which

frustrates them more by making them verify the information further . In this light, when discussing the challenges faced while using the AI tools, students furthered that some found them to be a bit over their heads since they were doing some simple programming, while some claimed their phones sometimes could not bear with the AI tools and, thus, disrupted their usage.

The overall interview session summed that technical students have knowledge regarding AI and are confident to learn new skills while non-technical students are more confused where to start and basically focusing with grammar checks and language conversions . Students are benefited from using AI by saving time in their assignments, project works or grammar checking but still students are having concerns over it such as getting irreverent answers or difficulty in getting started with using AI friendly tools.

Discussion

The study conducted on the adoption and usage pattern of AI tools among technical and non-technical students indicates a huge difference in understanding, frequency of use, challenges, and benefits . Such differences are based on the academic background, technological exposure, and structure of the curriculum . Complementing previous research on domain knowledge and technology acceptance, the findings stress the need for targeted interventions to improve AI integration . Detailed tables outline category experiences and preferences that are highly valid for effective strategy design in manifold educational settings.

Table 1

Top Answers from Technical and Non-Technical Students for Questionnaire

| SN | Title / Questions | Top answer from | |
|----|--|--|----------------------------------|
| | | Technical Students | Non-technical Students |
| 1 | Frequency of using AI tools | Weekly | Rarely |
| 2 | Primary purpose of using AI tools on study | Research and Assignments | Exam Preparations |
| 3 | AI will enhance academic performance | Agree | Agree |
| 4 | Most often used AI tools | ChatGPT, GitHub | Grammarly, Google Translate |
| 5 | Inclusion of AI in curriculum | Yes | May be, but with limitations |
| 6 | Challenges of using AI | Limited Access to AI tools and resources | Lack of awareness about AI tools |

It has been established through research that technical students are regular users of AI tools like GitHub, online coding assistants, and ChatGPT . They use these tools primarily for assignments, project work, documentation, and skill development, especially in programming and problem-solving . This corroborates the findings of Jones et al . (2023), who established that technical students are more engaged with AI tools because of curriculum demands and the nature of their study, which is more practical and skill-based . On the other hand, Gupta and Sharma (2022) establish that AI tools improve programming skills as well as problem-solving among technical learners since the students are trained on how to use technology for learning purposes.

On the contrary, non-technical students make less use of AI tools due to the fact that their curriculum does not have specific content which incorporates AI . However, they benefit from tools used in grammar checking, essay writing, as well as translation of content into various languages . This corresponds to the findings of Lee et al . (2021), who noticed that non-technical students use AI for text-focused applications rather than technical tasks . Furthermore, Johnson (2020) points out that non-technical students are more likely to view AI tools as auxiliary rather than core elements in their work, leading to less frequent and less specialized usage.

Technical students utilize AI systems such as GitHub, coding helpers, and ChatGPT in solving assignments, developing skills, and solving problems motivated by practical-based curricula . Non-technical students use AI mainly for grammar checking, essay writing, and translation because their studies have minimal AI topics . Challenges associated with AI use involve overdependence, ethical issues, and AI literacy . Technical students have requested courses and training on AI while non-technical students are indifferent about the inclusion of AI in the curriculum . Both groups acknowledge AI saves time and enhances productivity . The study, limited in scope and sample size, calls for broader research, AI-related curriculum updates, faculty training, and ethical AI use awareness . By implementing these strategies, an AI based frameworks among technical and non-technical students can be established to adapt to AI driven world.

Conclusions

This study about Adoption and Usage Patterns Among Technical and Non-Technical Students has provided useful insight into how students perceive and use AI tools in their academic purpose . The findings bring out that while both technical and non-technical students acknowledge the growing importance of AI in education, their patterns of adoption and challenges vary . AI technologies such as ChatGPT and Grammarly can regularly be used for tasks involving rewriting, simplifying complex material, and maximizing efficiency . Yet, obstacles concerning narrow technical knowledge, opportunities for access, and a lack of formal training in AI technologies hinder broader and more effective use.

Students showed a keen interest in the introduction of AI education within a formal curriculum, so that it can provide a better understanding of using these tools to full potential . They also pointed out the potential of AI for personalization, efficiency, and bridging knowledge gaps . At the same time, limitations regarding access and understanding, and limitations concerning usability issues, were points that they saw as challenges . This research calls for the addressing of these challenges through extended training, improved tool accessibility, and enhanced curriculum . Although the scope of this study is relatively narrow, its findings suggest that AI has transformational potential in education but requires further research that takes into account wider contexts and divergent student groups . A well-rounded and inclusive approach to AI development will help students adapt more effectively to the rapidly changing digital world.

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