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Adoption and Use of Generative AI Tools among College Students in Kashmir: Implications for Academic Libraries and Information Services

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Abstract

Higher education has seen a significant shift towards using Generative Artificial Intelligence (GenAI), which has revolutionized student learning and behavior by significantly improving their ability to engage with information. The effects of Generative AI tools on academic libraries are investigated in a study conducted among undergraduate college students in Kashmir. Google Forms was employed to implement a questionnaire that provided measurable research findings. In the study, undergraduate students from degree colleges in Kashmir were observed to adopt and use Generative AI tools. The analysis of 172 valid responses was carried out using descriptive statistics, with the data being analysed using frequencies and percentages, and then presented in tables and figures.

The results show that many students are familiar with Generative AI tools and ChatGPT is the most popular platform. Most of the students use Generative AI mainly for learning new concepts, studying to clear exams and doing homework. Additionally, students indicate that Generative AI can be beneficial in terms of improving learning efficiency and reducing time-wasting. Also, most respondents believed that academic libraries should be a key factor in improving literacy on AI by providing instruction and knowledge about the responsible and ethical use of Generative AI technologies.

The study suggests that academic libraries should enhance their AI literacy programmes and user education programmes to address the growing presence of Generative AI in student academic activities. The outcomes provide valuable information for librarians, teachers, and policy makers on how to make the use of Generative AI more responsibly in higher education.

Keywords; Generative Artificial Intelligence, ChatGPT, Academic Libraries, AI Literacy, Undergraduate Students, Higher Education, Information Literacy, Kashmir.

INTRODUCTION

Generation Artificial Intelligence(GenAI) has become one of the most impactful technological innovations in higher education. Higher education's teaching learning ,searching researching writing, and many other processes have been deeply changed and influenced by the innovative artificial intelligence-powered technologies, including the advanced large language models (LLMs). Innovations in LLMs have led to the prominent widespread use of AI-empowered tools, including ChatGPT, Google Gemini, Microsoft Copilot, Perplexity AI, DeepSeek, and more, which encourage users to generate content summarize analyze, generate ideas, give solutions to problems, assist writing, and perform other creative and innovative activities in higher education (Dempere et al. 2023; Kasneptic et al. 2023). The growing adoption of Generative AI in higher education institutions is affecting students information search behaviour as well as their academic performance in a positive way.

Undergraduate students are increasingly using Generative AI tools to enhance their understanding of academic content, generate ideas, develop essays, practice writing skills, get feedback to improve essay quality, and review their work.

The ready-to-use services provided by Generative AI applications have contributed to students improved academic efficiency and productivity. Though, the widespread use of Generative AI in higher education institutions has also caused serious concern over information correctness copyright students plagiarism and over-reliance on Generative AI, data personal protection, and copyright. This illustrates the importance of higher education institutions guidance of the responsible use of Generative AI and the formulation of its appropriate policies (Gill et al. 2024; Lo, 2023). Academic libraries have long been integral to teaching, learning, and research as resource providers by offering access to trustworthy information sources and encouraging information literacy among students.

As use of Generative AI increases, academic library services are shifting to encompass guidance on assessing AI-generated information, technology strengths and limitations, and developing skills for its ethical use. AI literacy programmes, workshops, and user education initiatives can help students incorporate Generative AI into their academic pursuits without compromising critical thinking, academic integrity, and ethical information practices (Aithal & Aithal, 2023; Tzirides et al. 2023).

While the usage of Generative AI in higher education has gathered much academic focus, very few studies explored its usage among undergraduate students in Kashmir and the role of academic libraries in such usage. In Kashmir, the higher educational, technological and socio-cultural environment might have led the students to operating knowledge, acceptance, and specific usage patterns of AI applications.

So, a detailed study of students thoughts and usage of Generative AI, is crucial to establish constructivist AI literacy programmes, enhanced services in academic libraries and evidence-based institutional policies promoting effective utilization of emerging technologies (Kasneci et al. 2023; Gill et al. 2024).

In this context, the current research examines undergraduate students adoption and use of Generative AI tools in Kashmir and its impact on the academic libraries. The results will inform librarians, teachers researchers, and policymakers to reinforce the AI literacy programs, promote ethical and responsible use of Generative AI tools and support the academic library services for teaching, learning and researching in a progressively digital educational landscape (Dempere et al. 2023 & Aithal & Aithal, 2023).

LITERATURE REVIEW

Generative Artificial Intelligence (GenAI) has become rapidly one of the most disruptive innovations in the modern academic world since its appearance, with profound impacts on instruction learning scholarship, and information seeking. Because of the booming wide adoption of AI-powered tools like ChatGPT Recently, learners now have altered how they access information, generate academic content, address academic problems, and facilitate autonomous learning. As a result, academic researchers have started to focus more intensively on students utilization of GenAI, perception of its educational value and hazards, as well as its consequences for learning institutions and libraries. Johnston et al. (2024) explored students perception of the introduction of Generative AI technologies in Higher Education and reported "perceive AI as a rewarding academic resource for learning, idea generation, and boosted academic productivity".

On top of that, despite recognizing the educational advantages of the AI technology, participants also expressed concerns about academic integrity, originality of the works submitted, and the ethical use of AI generated content. Consistently, Abbas et al. (2024) analyzed the strategic factors framing the adoption of Generative AI by university students and concluded on the increased efficiency of AI technologies for academic learning, retrieval of information, assignment assist, and problem-solving. Yet, the study highlighted the importance of addressing the issues related to over-reliance on the AI tools and maintaining the students critical thinking skills. Damiano et al.(2024) investigated perceived challenges in early years of implementation of Generative AI in higher education teaching and learning context. Their results showed that students and teachers generally understood the educative values of AI tools that facilitated learning process, but researchers emphasized on institutional support, responsibility and appropriate educative applications. Equally positive perceptions for adoption of Generative AI in higher education have been discussed by Arowosegbe et al. (2024). Their study emphasized the importance of perceived usefulness of AI tools for students learning, and highlights the importance of ethical consideration and responsible use of AI.

Educational benefits of Generative AI have been also emphasized by Baidoo-Anu et al. (2024), who found that students regarded using AI applications as essential for personalized learning, academic writing, brain storming, and better learning outcomes while expressing worries over concerns about false information, biases in algorithms, and

over-dependence on AI generated responses. Conversely, Deschenes and McMahon (2024) discovered that students are adopting AI chatbots increasingly for searching, summarizing and interpreting academic research. Their evidence indicates the growing influence of AI tools on academic work, although highlighting the importance of developing ability to evaluate information sources.

Another factor promoting more research into the future of higher education is the increased uptake of Generative AI by higher education institutions. McGrath et al. (2025) summarised the current rapidly increasing research in this domain and assumed that Generative AI chatbots are beginning to affect teaching learning assessment, and student engagement in higher education. This review also highlights the importance of implementation of appropriate Educational setups, the guideline for ethical uses of Generative AI, and support for faculty staff to use AI technologies responsibly. Correspondingly, Contractor and Reyes (2025) investigated the current use of Generative AI in higher education and found that students utilise AI increasingly during research, writing, and task optimization on their academic journey. It notes that higher education institutions should create clear policies that foster AI positive use with an emphasis on integrity and autonomy.

Another emerging topic has been the effect of Generative AI on academic libraries and information services. Meakin (2024) explored the effect of Generative AI on the use of library services by students and found significant shifts in students information-seeking behavior. The research demonstrated that more students are using AI tools On top of traditional library resources, which presents new opportunities and challenges for academic libraries. It called upon the libraries to enhance their AI-literacy efforts, encourage responsible information usage practices, and assist in the validation of AI outputs to facilitate efficient academic decisions. Meanwhile, other review studies have been published to highlight the increasing role of Generative AI in higher education.

Based on a systematic study of previous research published in the past, Castillo-Martinez et al. (2024) found that AI has been increasingly adopted in the domains of instruction learning evaluation, and academic assistance. They identified many potential benefits of the applications reported in the literature, such as personalized learning, improved learning outcomes, greater accessibility, and enhanced learning effectiveness, while raising the awareness of ethical issues, transparency, and responsible deployment.

In a comparable vein, Andrade-Girn et al. (2024) examined the growing body of research around Generative Artificial Intelligence within higher education and found that numerous universities across the globe are investigating how best to incorporate AI tools into instruction and learning.

Their review highlighted the importance of institutional policies, building digital literacy skills, preparing educators, and establishing procedures for governance when adopting new technologies. The authors contended that education institutions need to weigh technological advancements and responsible education to optimize students' learning benefits. Thus et al.(2024) examined the benefits and disadvantages of the implementation of Generative AI in higher education and indicated that AI tools might contribute A lot to student engagement, creativity and autonomous learning and simultaneously, the authors argued that it is crucial for educators to re-shape the process of academic assessment and foster critical thinking among students to make the AI tools a learning enhancement tool and not a replacement. Finally, the authors pointed out that equipping students with AI knowledge is essential to the ethical and most effective application of Generative AI tools.

In general, the existing literature indicates that Generative Artificial Intelligence is a highly influential technology, which could revolutionize higher education through enhancing support for learning, academic productivity, providing access to information, and assisting with research tasks. Even with the many opportunities that this technology offers, researchers still consistently point out problems like academic dishonesty, unreliability of information, and issues connected to misuse of AI, lack of digital literacy, privacy, and dependence on AI products. The reviewed papers mainly deal with ways in which libraries are developing their capabilities, e.g. promoting AI literacy, reinforcing information literacy, and helping students to use AI responsibly. Despite a huge amount of international research looking at the adoption of Generative AI for university education, there is very little empirical data on adoption and use of Generative AI among undergraduate students in Kashmir, and how it affects academic libraries and other information services. Because of this, the present research aims to fill this void by carrying out in-depth students survey on their awareness, the ways of using Generative AI, their impressions, difficulties, and future hopes in its incorporation as an academic library feature.

OBJECTIVES OF THE STUDY

The study was undertaken with the following objectives:

- Investigating the level of awareness and acceptance of generative AI (GenAI) tools by undergraduate students in Kashmir.
- Establishing the usage of generative AI tools for academic and learning purposes, including what they do and why among undergraduate students.
- Finding out what the students think about the usefulness, effectiveness and impact of generative AI tools on their academic learning?
- Understanding the hurdles and ethical difficulties, and how Generative AI tools can be responsibly used by the undergraduate students.
- Student's perceptions on the role of academic libraries in promoting AI literacy, giving ethical advises and supporting the efficient integration of Generative AI technologies into academic services will be studied.

METHODOLOGY

This research work was conducted through a quantitative descriptive survey method to assess the level of use and acceptance of Generative Artificial Intelligence (GenAI) tools by the undergraduate students of Kashmir and its impact on academic libraries and information services.

The survey method seemed appropriate to gather responses of students for their familiarity experiences perceptions, issues, and ethical concerns faced while using GenAI tools and expectations for the function of academic libraries in the age of Generative AI.

The study population included undergraduate students studying in various degree colleges of Kashmir. Various streams and disciplines like Commerce Science Paramedical Sciences, Arts/Humanities, and other streams, etc were studied.

A suitable sampling method named as a convenient sampling was used. Under this method, respondents were chosen from available respondents who were willing for participating in the study. Total 172 responses were received and used for final analysis. The responses of students from different streams and years were taken. Data were collected using a structured questionnaire consisting of 23 items divided into four sections

Section A: Demographic Information and Awareness (5 items)

Collected data on: Gender, Academic Stream, Year of Study, Access to Generative AI tools, Types of AI tools used by students.

Section B: Usage Patterns and Perceptions (11 items)

This section discussed how often GenAI was used, reasons for using it, channels of learning about AI tools, satisfaction and usefulness, ease of use, future importance of AI tools, and the impact of AI tools on learning and academic work.

Section C: Challenges and Ethical Issues (4 items)

In this part, the topics were about information accuracy, fact checking, dependence on AI tools, academic honesty, and the necessity of Generative AI ethics.

Section D: Academic Libraries and Information Services (3 items)

In this section, the students attitudes about the Academic libraries using to provide training on the AI related issues, encouraging ethical practices, conducting awareness programs, and the use of Generative AI applications in providing services in the library.

The questionnaire incorporated a mixture of categorical and frequency based questions, as well as some five point scale questions. The Likert scale had several possible outcomes: strongly agree strongly disagree; and other questions used responses categories as daily never, very satisfy very dissatisfied.

The questionnaire was created on Google form. There was a short introduction at the beginning of the questionnaire, and mention of the purpose of the investigation, voluntary participation, confidentiality and informed consent.

It was mandatory for all questions to be answered to minimise missing responses. The Survey link was shared via WhatsApp groups and other online platforms: The Google Forms were used to collect data then exported to Microsoft Excel for the data cleaning and analyses. Once the data was cleaned, the data was checked by going through the Excel spreadsheet for duplicated answers, incomplete email addresses and inconsistent entries. While Microsoft Excel was used to analyze the data.

Frequencies, and percentage were used basically to understand the behavior, perceptions, problems attitude, and manner. These statistics were used to students knowledge of Academic Libraries for use in Generative AI, to interpret, and discuss the results using the descriptive statistical technique. The research was done in a manner consistent

with others in similar fields. Before data was gathered, all participants had given their consent to take voluntarily part in the study.

There was no personally identifiable information in the collected data (names, email addresses, student ID numbers). Participants had the option to withdraw from the experiment at any time before filling out the questionnaire without penalty. Data was kept confidential and distributed securely on password-coded drives for research use only and will be erased once the research is finished.

Gender Distribution of Respondents

Distribution of respondents by gender (N = 172).

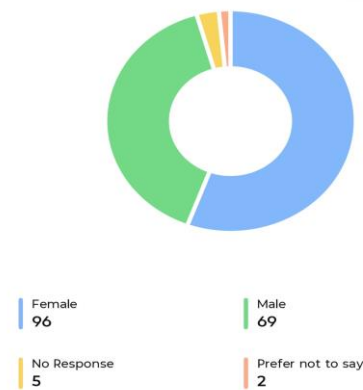


Table 1. Gender Distribution of Respondents (N = 172)

Gender	Frequency	Percentage (%)
Female	96	55.8
Male	69	40.1
Prefer not say	2	1.2
No response	5	2.9
Total	172	100

Interpretation

The study participants' gender distribution is depicted in Table 1 and Figure 1. Of the 172 undergraduate students, 55.8% were female, while only 69 were male. The percentage of respondents who didn't want to disclose their gender was only 2 (1.2%), while 5 (2.9%) did not respond. According to the results, female students made up a slightly larger portion of the study sample than male students. Nonetheless, the participation of both males and females provides a fair representation for assessing the utilization and implementation of Generative Artificial Intelligence (GenAI) tools among college students in Kashmir. By including both men and women, the study findings are more reliable and representative.

Figure 2. Academic Stream of Respondents (N = 172)

Academic Stream of Respondents

Distribution of respondents by academic stream (N = 172).

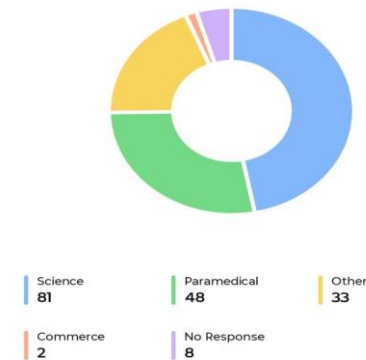


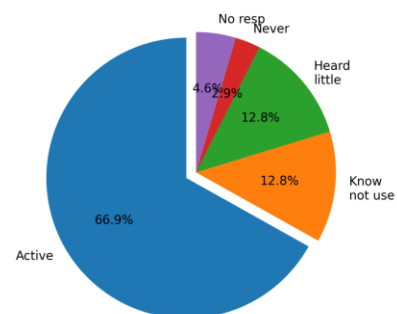
Table 2. Academic Stream of Respondents (N = 172)

Academic Stream	Frequency	Percentage (%)
Science	81	47.1
Paramedical	48	27.9
Other	33	19.2
Commerce	2	1.2
No response	8	4.6
Total	172	100

Students from Science, Paramedical, and other academic fields made up the majority of respondents, with 47.1%, 27.9%, or 19.2%, respectively in the study. Additionally. Only 1.2% of those surveyed identified themselves as Commerce stream members, while 4.6% didn't disclose their academic stream. According to this distribution, the study sample was primarily composed of Science and Paramedical students.

Table 3. Experience with Generative AI Tools (N = 172)

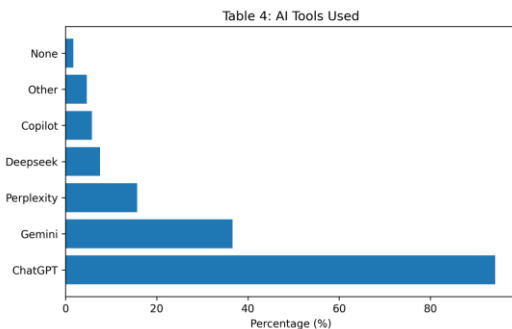
Table 3: Experience with Generative AI Tools



Experience with Generative AI Tools	Frequency	Percentage (%)
I actively use them	115	66.9
I know about them but don't use them	22	12.8
I have heard of them but don't know much	22	12.8
I have never heard of them	5	2.9
No response	8	4.6
Total	172	100

According to the survey, 66.9% of participants reported being actively using Generative AI tools, suggesting a high level of awareness and use among undergraduate students. In comparison, 12.8% of those who were aware of these tools but didn't use them had a negligible use case, whereas another 12.8% had only moderate knowledge. 2.9% of the population had no knowledge of Generative AI.

Table 4. Generative AI Tools used by Respondents (N = 172)



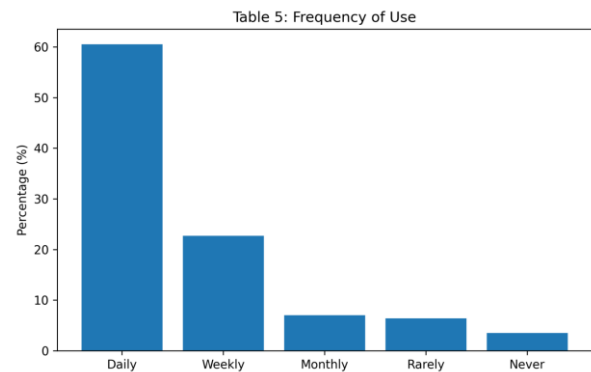
Generative AI Tools	Frequency	Percentage (%)
ChatGPT	162	94.2
Gemini	63	36.6
Perplexity	27	15.7
Deepseek	13	7.6
Copilot	10	5.8
Other	8	4.7
None	3	1.7

Note : Multiple responses were allowed;therefore percentages exceed 100%

ChatGPT was reported as the most commonly used Generative AI tool by 94.2% of respondents. The top three contenders were Perplexity (15.7%), DeepSeek (7.6%), and Copilot (5.8%), with Gemini coming in second place (36.6%) and Perterminty following closely behind. Only a few people responded by saying they use other AI tools, or none at all. These results show that ChatGPT is the most

popular AI platform among college students in Kashmir for their studies.?

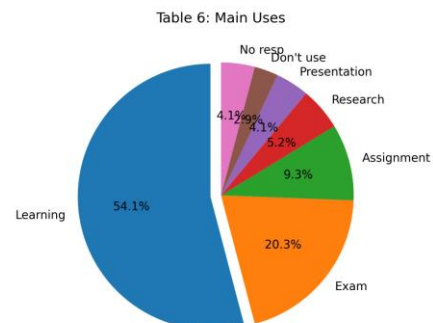
Table 5. Frequency of using Generative AI Tools for academic purposes (N = 172)



Frequency of use	Frequency	Percentage (%)
Daily	104	60.5
Weekly	39	22.7
Monthly	12	7.0
Rarely	11	6.4
Never	6	3.5
Total	172	100

The study reveals that Generative AI tools are used by 104 (60.5%) people on a daily basis and by 39 (22.7%) in ten weeks. A small proportion reported monthly, with few cases rare or none at all. Additionally, The outcomes demonstrate that students' use of Generative AI has become more prevalent in their classrooms, reflecting their increasing reliance on AI-assisted learning.

Table 6. Main uses of Generative AI Tools (N = 172)

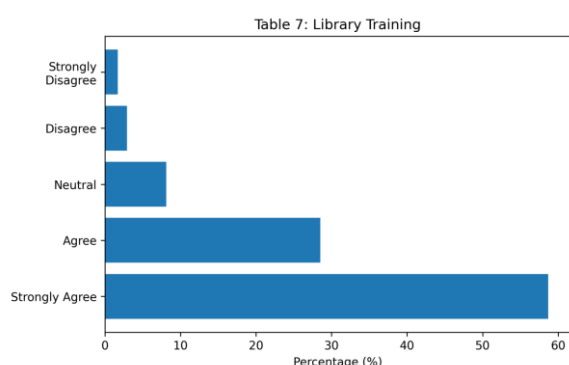


Main purpose	Frequency	Percentage (%)
Learning new topics	93	54.1
Exam preparation	35	20.3

Assignment preparation	16	9.3
Research work	9	5.2
Presentation preparation	7	4.1
I don't use AI tools	5	2.9
No response	7	4.1

Out of the 93 respondents (54.1%), learning new things was found to be the most common reason for using Generative AI tools, according to their findings of the survey. Exam preparation (20.3%) and assignment preparation (9.6%) came after this. Fewer students than those who used GenAI for research and presentation preparation, suggesting that these tools are primarily utilized to enhance learning and comprehension rather than specific academic tasks.

Table 7. Academic Libraries should provide training on the use of Generative AI Tools (N = 172)



Response	Frequency	Percentage (%)
Strongly agree	101	58.7
Agree	49	28.5
Neutral	14	8.1
Disagree	5	2.9
Strongly disagree	3	1.7
Total	172	100

The findings indicate that, most respondents agreed that academic libraries played a crucial role in providing training for Generative AI tools. Specially, 101 respondents strongly agreed with the statement. The outcomes demonstrate that academic libraries are now more inclined to prioritize the active promotion of AI literacy and the responsible utilization of Generative AI technologies among students.

CONCLUSION

This study focused on the use of Generative Artificial Intelligence (GenAI) tools among the undergraduate college students in Kashmir and the impact of GenAI on college academic libraries and Information Technology (IT). The

survey determines that many students are aware of the use of GenAI, and the majority of students are using it for educational activities. The students mainly used Generative AI for learning, revision for exams, and obtaining new knowledge, and ChatGPT was the most popular platform. The majority of respondents believe that GenAI enhances learning efficiency through time saving and assisting in learning activities.

The study is an illustration of the changing nature of academic libraries in the digital learning context. Many participants felt academic libraries should provide education and guidance on the ethical use of Generative AI tools. The proposal suggests that libraries should step up their game in enabling AI literacy, digital competencies, and responsible information practices.

In summary, the results indicate that Generative AI has become part of the students' experiences in the learning process. AI-related technologies should be adopted by academic libraries by establishing a user education program promoting ethical use of AI and implementing AI services as part of their information support systems. By adopting these initiatives, libraries can remain relevant and continue providing teaching, learning, and research in the digital age.

RECOMMENDATIONS

Based on the findings of the study, the following suggestions are recommended:

1. Academic libraries should initiate regular training initiatives and workshops. In the interest of raising the awareness and expertise of students in effectively utilising Generative AI tools.
2. Libraries should establish more AI literacy programs within colleges and have programs that teach students about ethics, responsibility, and critical usage of Generative AI, such as plagiarism, academic integrity, misinformation, and copyright.
3. Higher Education institutions should incorporate Generative AI into information literacy programs to help students interact with AI in an effective and responsible manner and enhance their research and critical thinking capabilities.
4. The librarians need to proactively lead students to choose suitable AI tools, cross-check the AI-generated information and integrate trusted academic resources with AI technology.

5. Academic libraries should establish institutional guidelines and best practices for educational, learning and research applications of Generative AI, that are grounded in ethical principles.

LIMITATIONS OF THE STUDY

This study has some limitations which should be taken into consideration while interpreting the findings. Initially, the study was carried out among 172 undergraduate students from degree colleges in Kashmir, which might restrict the generalizability of the findings to other areas or educational institutes. Second, the use of a convenience sampling technique might not represent the entire student population. Third, the data were gathered by using a self-administered questionnaire, hence the results are based on the perception and honesty of the respondents. Lastly, the study was conducted with students only and not with those of faculty members, librarians, or researchers, which could yield a more complete picture of Generative AI use at higher education institutions.

FUTURE RESEARCH DIRECTIONS

This research can be extended to further studies by involving students from various colleges and universities in various parts of India to make comparisons broader. Faculty, librarians, and researchers perceptions may also be studied for their use of Generative AI in higher education. To gain insights into the patterns of AI adoption across the academic subjects and educational institutions, comparative studies between different academic disciplines and educational institutions could be conducted. Future study could also explore the impact of AI literacy programs and library training sessions on responsible and ethical use of Generative AI technologies. Lastly, longitudinal studies can be employed to track the development of students experience and perception of Generative AI over time.

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