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Opportunities and Challenges of Generative AI in Pakistani Higher Education: A Qualitative Study on Student Perspectives in Learning, Integrity, and Innovation

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Abstract

Background: The rapid advancement of Generative Artificial Intelligence (GenAI) has significantly transformed various domains, including higher education. As academic institutions increasingly incorporate GenAI tools into pedagogical practices, it is essential to investigate their impact on student learning experiences. Despite the growing global discourse on AI in education, research remains limited in certain socio-cultural contexts, such as Pakistan. Understanding how students perceive and engage with GenAI is crucial for evaluating its potential benefits and challenges. This study explores the role of GenAI in shaping learning processes, academic performance, and skill acquisition among higher education students in Pakistan. Additionally, it addresses critical concerns regarding academic integrity, critical thinking, and the digital divide within a collectivist society where attitudes toward emerging technologies continue to evolve.

Methods: Employing a qualitative phenomenological approach, the study utilized a purposive sampling technique to recruit participants meeting predefined inclusion criteria. Data collection involved ten semi-structured interviews and a focus group discussion with six students from public and private universities in Lahore, Pakistan, conducted between October and November 2024. Thematic analysis was used to extract superordinate and subordinate themes.

Results: Thematic analysis revealed key superordinate themes, including (1) benefits and opportunities of GenAI, (2) challenges and concerns, and (3) strategies for balancing technology and creativity. Students reported that GenAI enhances research efficiency, provides personalized learning support, and aids in academic tasks such as summarization, tutoring, and brainstorming. However, significant concerns were identified, including GenAI-induced "hallucinations" (misinformation), biases in AI-generated content, and its potential to hinder critical thinking and creative problem-solving. Additionally, ethical concerns regarding plagiarism, academic dishonesty, and over-reliance on AI-generated content were highlighted. Participants emphasized the need for structured AI literacy programs and institutional guidelines to ensure the responsible use of GenAI in academia.

Conclusion: The findings indicate that while GenAI offers substantial advantages in research and learning efficiency, its integration into academic settings must be approached with caution. Addressing ethical concerns, mitigating cognitive dependency, and fostering critical engagement with AI-generated outputs are essential for maximizing its educational potential. The study underscores the importance of structured AI training and policy frameworks to harness the benefits of GenAI while preserving academic integrity and creativity.

Keywords: Generative AI, AI in academia, academic integrity, AI ethics, higher education, qualitative study

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Background

Artificial Intelligence (AI) is rapidly reshaping the educational landscape, with its integration into academia becoming increasingly widespread. While AI offers numerous advantages, such as personalized learning and data-driven decision-making, concerns have emerged regarding its potential impact on students' creative thinking abilities. Creative thinking is a critical skill for higher education, as it enables students to thrive in the modern workforce. The use of Generative AI (GenAI) gained significant traction in 2020 with the advent of GPT-3, when educators recognized that large-scale learning models could assist in tasks such as generating literature reviews, creating lesson plans, and performing data analysis. Currently, both faculty and students utilize GenAI for a variety of academic tasks.

Given this growing trend, it is essential to examine the perceptions of faculty and students regarding GenAI (Kim & Lim, 2020). Student attitudes towards AI differ across cultural and geographical contexts. In some regions, there is a greater openness to AI integration, while others remain more cautious, influenced by factors such as access to technology, concerns about data privacy, and cultural attitudes toward technology (Zawacki-Richter et al., 2019). In Western countries, students tend to hold positive views of AI; for instance, 73% of students in the United States believe AI has the potential to enhance their academic performance (Chen & Chang, 2021). Similarly, in the United Kingdom, students express appreciation for the automation of administrative tasks and the role of AI in improving time management and planning (Li et al., 2020).

In Asia, like China, Japan, and Korea, AI is rapidly integrated into classrooms such as intelligent tutoring systems, and assessments. Chinese students report a higher level of comfort finding it a natural extension of their learning environment. Students perceive it as a critical tool in the global economy (Zhou & Huang, 2020). Artificial Intelligence tools can facilitate individualized tutoring and assessment. Many students are interested in using AI but at the same time are concerned about losing critical thinking skills. Students like rapid feedback but at the same time, AI lacks higher-order skills (Haijing, 2024). Also, AI is useful in personalized learning, automated assessment, and effective tutoring (Holmes et al., 2019). This is promising in remote learning as it supports varying schedules and availability of asynchronous educational resources and assessments (Zawacki-Richter et al., 2019). Although students have a wide range of advantages, at the same time there are some ethical concerns, the most important of them is data privacy. Vast data is collected on students' performance. Students are concerned about how this data is stored and who can access it (Popenici & Kerr, 2020).

Students perceive AI as a collaborator and learning partner. They are open to the idea of using AI, especially for writing (Rudman et al., 2021). They take it as a supplement rather than a substitute for the conventional teacher. Students feel that AI speeds up the research process, however, critical evaluation and interpretation is important as it cannot be substituted by AI (Fletcher & Kaefer, 2023). The perception of AI as a tool rather than a substitute is important. Kumar & Raman (2022) studied students' perception of AI use in academia and revealed that AI could be effectively used to assist higher education in several ways including teaching, placement, and administrative e-tasks.

Asirit & Hua (2023) conducted a study in the Philippines and suggested that we need targeted AI education for college students who use it modestly to be prepared for the social system. The results showed that college students' awareness depends on their academic field, academic year, and age. As AI is becoming increasingly widely used it is important to understand students' perspective on its effectiveness and study the factors associated with their performance. It is important to shape students' thinking regarding AI. They should take AI courses at the undergraduate level. Schools need to arrange workshops and lectures. Teachers must be trained in the use of AI (Xu, 2023).

University students in Ireland have mixed perceptions about AI use as they fear critical thinking skills. The students of computer science and engineering showed great familiarity with AI tools due to their exposure, and they are familiar with the advantages. They have a positive attitude and are more comfortable using it. Humanities, art, and social sciences, on the other hand, use fewer AI tools and have a lower belief in their efficacy (Irfan, Murray, & Ali, 2023).

Students' perception is associated with a psychological condition, skillset, and socioeconomic condition. Where psychological readiness is associated with personal traits like initiative, knowledge, and skills required. AI-related courses are needed to empower the students to make them comfortable and confident. Male students are found to be more ready to use AI which is related to their wellbeing (Dai, Chai, Lin, Jong, Guo, & Qin, 2020). On the other hand, psychology students' acceptance of AI tools depends on their perceived usefulness, ease of use, social norms, and perceived knowledge about AI. This can be improved by including AI training in the curriculum and encouraging willingness to use AI technology (Gado, Kempen, Lingelbach, & Bipp, 2021). The rapid development of AI has affected higher education. Students are optimizing their performance with new tools. It can help in achieving the sustainable development goal 4, which is ensuring equitable quality education. More than 10 % of the Eastern European student's perception was that AI will replace university teachers in five years (Okulich-Kazarin,et al, 2023).

Gherheș and Obrad (2018) investigated how the development of artificial intelligence is perceived by students of technical and humanistic specialization in Timisoara, Romania, which has some developmental lag. The findings reveal a cheerful outlook about the emergence of AI - however, there were no significant gender or major differences in attitude. Students are interested in AI for its applicability, higher salaries, potential for growth, and trendiness. Where men are significantly more interested than women in high-level skills. The students did not like the mathematical aspect of AI. They were aware that it could be used unethically (Petrescu, Pop, & Mihoc, 2023).

Some recent research investigations with Pakistani students confirmed the findings of the international literature review (Rashid, Malik, & Abbas, 2024). It revealed that students have various perceptions regarding

AI in academia. Most of the students reported that AI has a positive effect on their writing skills. AI can be incorporated as a tutorial or pedagogical tool to facilitate students' understanding, productivity, and quality of writing. Ahmed, Mallah, & Shaheen (2024) also explored the learning practices and experiences through AI in Pakistani higher education using a qualitative research method, which included narrative and phenomenological research designs. The data was collected from various sources i.e. documents and interviews. The findings supported that AI can significantly enhance the educational system, and it will make it more efficient, accessible, and precise. It has impacted many disciplines such as industries, and business, including manufacturing and even engineering. The use of AI as a computer-assisted language learning system is growing exponentially and plays an important role in flipped learning which can improve the learning and teaching experience (Ali, 2020). However, the actual use of digital technology in education is limited because of the need for better skills to get maximum benefits in the academic field (Rashid et al. 2018). This can be dealt with through adequate training programs. AI can enhance learning of the English language with more extraordinary skills and a conducive environment aligned with the future (Ghafar et al. 2023).

Theoretical Framework

For the present research constructive paradigms followed along with phenomenology as the tradition of inquiry. To be more specific, in the context of present research Technological Pedagogical Content Knowledge (TPACK) was used for integrating Generative AI (Gen AI) into academia. It highlights the interaction between Technology, Pedagogy, and Content knowledge. Academicians must understand Gen AI tools along with their potential and risks. AI needs to be integrated effectively for accuracy and relevance (Mishra & Koehler, 2006). TPACK framework ensures that technology enhances the learning process by balancing technological, pedagogical, and content knowledge (Mishra & Koehler, 2006).

Students' perception of AI includes both concern and optimism. Although they feel that AI can enhance personalized learning and efficiency, at the same time, there are concerns regarding privacy, ethical accountability, and human learning. Understanding these perceptions is crucial for policymakers and educators. AI needs to be integrated so that it maximizes benefits while addressing concerns. It is crucial to understand the perception of Pakistani students for several reasons. First, it can help educationists customize teaching and curriculum to integrate tools and technologies of Gen AI which will prepare students for the job market in the future that excessively integrates AI (Rashid, Malik, & Abbas, 2024). Second by assessing students' perceptions we can identify gaps in the knowledge base and skill set that can facilitate targeted programs to develop competencies in the fields related to AI (Shafqat, & Amjad, 2024). Third the students' feedback can facilitate innovation by understanding their needs the developers can make effective and user-friendly tools to facilitate the learning experience. Lastly, the process of adopting Gen AI can vary across cultures significantly. Understanding the indigenous perspective of Pakistani students can create valuable insight into how it can be effectively implemented locally (Zia, Gul, & Janjua, 2024).

Considering the above literature, this study aims to explore university students' perspectives on the opportunities and challenges of AI in academia. By understanding the perceptions and experiences of university students, this study will provide valuable insights into the potential benefits and drawbacks of using AI in teaching and learning, and the strategies that research participants suggested adopting by all stakeholders of higher education to balance the use of AI and encourage creative thinking among students.

Method

Research Design

This study employed a qualitative research design, utilizing semi-structured interviews and focus group discussions. A phenomenological approach was adopted to explore participants' lived experiences and the meanings they ascribe to these experiences. This methodological framework facilitated a comprehensive examination of higher education students' perspectives on the opportunities and challenges posed by Generative AI in educational settings. Data collection occurred over a two-month period, from October to November 2024. The study was approved by the Institutional Review Board (IRB) of FCCU, under IRB reference number IRB-596/01-2024.

Participants

The sample for this study consisted of undergraduate and postgraduate students aged 18 to 26 years, enrolled in both public and private universities in Pakistan. Participants were required to have at least an intermediate level of knowledge about Generative AI and to use it at least once a week. Individuals who did not use Generative AI regularly or who had only a superficial understanding of the technology were excluded from the sample. This selection criterion ensured that the participants possessed a foundational understanding of Generative AI, its uses, and applications.

Participants were recruited using a purposive sampling technique, deliberately selecting individuals based on their familiarity with AI technology. Prior to each interview and focus group discussion (FGD), informed written consent was obtained from all participants. Phenomenological studies typically involve small sample sizes ranging from 5 to 25 participants. The goal of such studies is to prioritize the richness and depth of the data collected from each participant, rather than aiming for the generalizability of the findings (Sarfo et al., 2021).

Sample size

A total of 10 interviews and a focus group discussion with 6 participants (N=16) was deemed to be ample for the sample size as it achieved data saturation and ensured there were enough participants to thoroughly explore the research questions. This sample size was guided by previous phenomenological studies, wherein the objective is to emphasize the richness and depth of data collected rather than the generalizability of the findings (Sarfo et al., 2021).

Interview Process and Procedure

The interviews and focus group discussions were conducted using an interview guide. The interviews took place in person, whereas the FGD was conducted online. Participants were ensured their identities would remain

anonymous using pseudonyms. All data was securely stored and accessible only to the research team. The participants were asked questions about the use of Gen AI in academia, such as their perceptions, experiences, etc. The demographic information obtained consisted of participant's educational level, age, gender, academic major, and institutional sector. The FGD and interviews were audio-recorded with the participant's consent and transcribed verbatim. A debriefing session was conducted after every interview and FGD to ensure further explanation of confidentiality measures. The participants were given time to reflect on their experience at the end of the study to address any emotional concerns that arise and express gratitude for their contribution.

Tool development

An open-ended interview guide was developed based on the literature review and general perception of researchers. The guide was pilot-tested on two undergraduate and one postgraduate student to refine clarity and comprehension of the questions. According to their feedback, amendments in sentence structure and content were made.

Data analysis plan

Demographic characteristics

Of the participants, nine were female, six were male, and one was non-binary. Students from different academic levels and majors were interviewed. The demographic characteristics of participants are shown in Table 2.

Qualitative data analysis

The FGD and interviews were audio-recorded and transcribed verbatim in English. For data analysis, a thematic analysis was used to identify patterns and themes within the data set. This method comprised the following steps: (1) familiarization with the data and selection of quotations; (2) selection of keywords; (3) coding; (4) theme development; (5) conceptualization through interpretation of keywords, codes, and themes; (6) development of the conceptual model (i.e., the thematic map).

A series of strategies were adopted to enhance the validity of the data, such as (1) triangulation by utilizing multiple sources of data (i.e., in-depth interviews and focus group discussions); (2) maintenance of an audit trail for transparency (i.e., a detailed documentation of the research process such as data collection, coding, and theme development); (3) thick and detailed description of the context and participants to help readers understand the depth and applicability of the findings; (4) reflexivity on our own biases, assumptions, and how they influenced the data analysis process.

Results

The interview and FGD recordings were transcribed, ensuring the confidentiality and anonymity of the participants. Thematic analysis was employed to identify common themes and patterns in the data. The analysis involved coding the data, generating categories and subcategories, and interpreting the findings. Rigorous and iterative processes were followed to ensure the credibility and trustworthiness of the analysis.

Superordinate Theme 1: Opportunities of Generative AI in Academia

Many students expressed how AI has helped information become more accessible through its efficient and detailed outputs. They believe that AI can be an educational tool if used appropriately. It can help enhance their learning outcomes and facilitate understanding of course material and assignments. Many students also cited how AI has optimized their ability to carry out research. However, traditional research methodologies are also shifting, which can hinder academic research by eroding research skills.

Accessibility of Information

One of the notable benefits of generative AI in academia has been the accessibility of information it brings. AI tools like ChatGPT, ChatPDF and Gemini help students keep up with course readings by concisely summarizing research articles. These interactive chatbots can help dissect the article into sections, provide quick overviews, and explain any unclear parts. Students have found these tools particularly beneficial for classes with intensive reading (Quote 1).

Students believe that AI supports diverse learning styles by effectively converting information into the desired mode of learning. This particularly accommodates students who may struggle with traditional teaching methods (such as lectures and textbooks) by creating audiovisual aids for them. It can also support students coming from diverse educational backgrounds by generating information in ways that align with their level of understanding (Quote 2).

Moreover, because AI tools are compatible with multiple devices, they can be feasibly accessed by students in public universities who lack resources (such as necessary programs or software) or those from low-income backgrounds who may not have access to a laptop or computer. This prevents their learning from being hindered due to financial limitations and makes learning accessible for all (Quote 3).

Educational Aid

Many students use AI tools as an educational aid alongside traditional learning methods due to their efficiency in generating information, which allows students to save time in completing readings or assignments. Programs like ChatGPT were commonly cited as a source for acquiring simplified explanations of complex concepts. Its interactive nature is notably helpful in getting quick and accurate answers. Some students use it for creating summaries of their notes as well as revision material for assessments such as flash cards and quizzes (Qoute 4).

Additionally, these tools help to develop comprehensive outlines for assignments and research projects. They can help refine students' ideas through brainstorming and by providing contextualized perspectives that may not have been considered earlier, therefore improving research quality. It also provides a baseline for students who struggle to find a starting point (Quote 5&6).

One student particularly highlighted how AI tools can make class discussions more productive and interactive. Some instructors assign daily or weekly reading material to be discussed in class; for students who struggle with completing these readings, programs like ChatPDF can help them stay up to date (Quote 7).

Several students have utilized AI as an assistant for completing assignments that require a skillset or expertise they haven't developed. For instance, students who aren't well-equipped with design and video editing skills have found generative AI programs valuable to use for assignments that require making presentations, posters, models, or videos (Quote 8&9).

Empowerment

While AI can have some drawbacks, some participants shared how it became a tool of empowerment that enhanced their learning. This sub-theme showcases students' discussion on how AI is an accessible tool that helps in organizational activities, productivity, and creativity. As one student shared, AI can provide a useful framework that can save one's time (Quote 10). Particularly, these tools can be used to deal with repetitive and time-consuming tasks, such as making applications or outlines (Quote 11).

On the other hand, AI tools provide a streamlined search process that helps students find specific and niche information that they may not be able to find otherwise. This optimization makes acquiring knowledge and research a more accessible, especially for students with disabilities, because it allows an ocean of information to be organized in one database (Quote 12).

Superordinate Theme 2: Ethical and Intellectual Challenges of Gen AI

The rapid integration of AI in education and research has presented a range of complex challenges alongside its transformative potential. Key challenges extracted from participants' verbatims, such as the erosion of traditional research skills, diminished critical thinking, over-reliance on automation, as well as ethical implications like academic integrity and misinformation, highlight the need for balanced and responsible AI adoption. Addressing these challenges requires a nuanced understanding of both technological capabilities and human-centered educational values.

Erosion of Research Skills and Critical Thinking

The continuous development and diversification of generative AI has benefits and drawbacks. Various AI tools, such as Perplexity and Chat PDF, have made certain aspects of conducting research more straightforward. Literature reviews are time-consuming due to extensive searching of databases and reading lengthy articles that are packed with information, but this process can be expedited with AI. Rather than manually searching through libraries and online databases for articles and books, information becomes readily available in a single place (Quote 13). However, while AI can decrease the time and effort needed to conduct research, it can also oversimplify information to the extent that the final output lacks substance. Students who don't have preexisting knowledge to conduct academic research are at a further disadvantage due to the potential overreliance AI can create. Moreover, the foundation of academic research becomes threatened since AI can hamper students' cognitive development, especially their creative and critical thinking skills. Rather than abiding by the methods of science, which require intentional in-depth knowledge-seeking, AI can strip down this process by providing quick solutions that always carry a risk of being inaccurate (Quote 14 &15).

This diminished ability to solve problems can hinder students in their professional lives as they lack the practical knowledge needed to perform appropriately in the field. This is especially relevant for fields requiring analytical thinking, such as science and biochemistry (Quote 16).Where one student views the utilization of AI in academia as a means of making scientific research more objective by removing human biases, another student questions if using AI tools adds to researcher bias. While AI can provide information from a detached perspective, the prompts given by students can direct it to generate information that is strictly bound by the request rather than exploring outside perspectives. Moreover, AI is also prone to providing misinformation, therefore raising questions about its reliability (Quote 17 &18). Lastly, the lack of independent thinking, engagement, and reflection on the material can lead to intellectual stagnation. During classroom discussions, this may present itself as surface-level engagement with the topic, which prevents students from critically contributing to discussions and being able to think for themselves (Quote 19).

The Impact of Dependency on Academic Integrity and Creativity

The ability of AI to provide results immediately has made it a convenient resource for students to rely on, but over-reliance on AI for academic tasks has led to a reduction in effort, thinking capacity, and creativity. AI gives students the illusion of convenience and ease, therefore preventing them from engaging in meaningful learning. More specifically, students' extensive reliance on AI for tasks such as brainstorming is taking away their ability to think out of the box and produce novel ideas (Quote 20 & 21). They mentioned in the interview that AI has led to rigidity in thinking, completely nullifying the diverse creative thinking pattern (Quote 22). The dependency on AI to produce answers for creative tasks dilutes the user's actual voice and takes away the opportunity for creative learning and engaging in tasks that would permit them to grow. On the other hand, for students lacking motivation or those pursuing higher education due to external pressures such as parental influence, AI serves as a shortcut to complete work with low effort and low participation with the course material. Students are more concerned with convenience and accept answers that will secure a good grade, which can discourage them from taking creative risks. This ultimately poses a threat to their academic integrity by creating reliance on programs that not only sometimes give inaccurate responses, but also do not provide original work (Quote 23 & 24).

Misinformation

Many AI tools are not able to accurately reference the source it is extracting information from. As a result, the validity and reliability of AI tools is questioned by multiple participants, who have experienced receiving false information and nonexistent sources from ChatGPT in particular. This frequent misinformation provided by AI, combined with over-reliance, can pose significant threats to students' knowledge-seeking. For instance, M.O. described her experience with using ChatGPT for an assignment: (Quote 25). Misinformation from AI is not limited to a singular field of study. He distinctly brought attention to the potential use of AI among medical professionals for diagnosing patients and warns of the dangers in doing so (Quote 26).

Superordinate Theme 3: Future of AI in Academia

There superordinate emphasizes universities to educate students and staff on AI digital literacy as well as introduce transparent and comprehensive guidelines on how AI can be appropriately and ethically employed in academic settings. These policies are considered necessary so students and faculty are aware of the good and the bad that AI can

bring. A.F.G also calls for a feedback mechanism to be in place within institutions to continuously assess AI's impact on students' learning outcomes.

AI as a Supplementary Tool

Although students acknowledge the limitations and drawbacks of using AI, they also acknowledge that students will inevitably continue to use AI in their studies. However, with the rapid development and advancement of AI, students' learning will be significantly compromised if the higher education landscape does not address the integration of AI in academic curriculums. Therefore, students express the need for universities to accept AI tools as an educational aid that supplements traditional teaching and learning methods, and to proportionately develop courses, training modules, and policies that provide a framework for ethical use of AI in the classroom (Quote 27&28). However, it can take years for institutions for implement changes into their curriculum and policies, so participants suggested universities to conduct seminars with experts in the field generative AI to help students, educators, and policymakers to understand the dangers and ethics of AI. The emphasis also lies with teaching students how to use AI with integrity, creatively, and as an aid, rather than developing complete reliance on it (Quote 29 &30).

Changing Role of Educators

Among all the interviews, a major theme was the evolving role of educators (Quote 31&32), However, the participants unanimously agreed that the human element teachers bring to education is necessary and irreplaceable (Quote 33).This stance poignantly underscores educators as essential as they bring depth and ethical grounding unavailable to AI – and the need to thoughtfully blend the two to minimize the erosion of the values of traditional education. In Quote 34, additionally, it was highlighted that AI enables teachers to leave time-consuming assignments to make sure they attend to essential guidance. With AI performing tasks that take a lot of time, educators can spend time nurturing a student's critical thinking, creativity, and people skills, which AI can't emulate.

Thus, the participants underline the potential of generative AI to enrich academic learning through personalized support, interdisciplinary collaboration, and novel ideas, provided institutions implement robust ethical guidelines, literacy programs, and regular assessments. This table format provides a structured overview of the thematic analysis, highlighting both positive and negative perspectives on AI in academia and the future integration of AI in academic settings. The details are listed below:

Superordinate Theme 1: Benefits and Opportunities

The first theme that was extracted from the focus group discussion content was the positive role AI can play in academia, according to the students. An in-depth dialogue between the participants showed that all acknowledge that equipping oneself with AI can lead to positive and negative consequences. However, overall, most participants agreed that with proper integration, AI use in academics can benefit students. Further analysis of the discourse revealed that students believe AI can increase task efficiency and enhance creativity.

The Positive Role of AI

This subordinate theme reviews the practical ways students can employ AI to work more efficiently in their academic lives. This section explores the ideas shared by students on how AI has served them well and made their student life easier. The primary and most important way in which AI has facilitated students is by saving their time. The focus group participants commended the speed of the responses AI gave them when they asked questions regarding their assignment tasks or study material. Most of the participants agreed that AI helped them maintain their work and student-life balance by making their assignments less time-consuming, which allowed them to focus on their job as well [Quote #1]. The benefits of AI include retrieving information through specific prompts, which have made life easier for students [Quote #2]. Moreover, students believe that AI tools like ChatGPT are considerably useful to teachers too, for tasks like designing course outlines and classroom activities [Quote #3].Some participants also cite AI's positive role in providing creative prompts and domains that help them explore their studies further. One participant refutes the beliefs of some of the other participants by saying that AI responses give one various "domains" to work on that serve as ideas and food for thought, thus aiding one's creative thinking [Quote #4].

Superordinate Theme 2: Challenges and Concerns

The rise of Gen AI, according to most of the participants, presents significant challenges and concerns across various domains. Ethical dilemmas emerge from their potential to generate misinformation, deep fakes, and biased content, raising questions about accountability and trust. Technical limitations hinder reliability, such as the reliance on extensive training data and the inability to consistently produce accurate or context-aware outputs. Additionally, concerns about data privacy, intellectual property rights, and the displacement of jobs due to automation highlight its societal impact. Effective governance and responsible use are crucial to mitigating these challenges while harnessing Gen AI's transformative potential.

Limitations of AI

Apart from focusing on the freedom and vastness of the AI world, the participants also contributed to the discussion about the limitations these tools bring. One of the participants remarked that the limited answers given by AI are a product of the data they have on "the backend." [Quote #5]. The participants discussed that ChatGPT has data up until the year 2023 stored in its database. Thus, if one asks questions to ChatGPT about political situations, it will provide incorrect responses based on old information. On the contrary, searching on Google or Wikipedia gives more varied and recent perspectives with broader context.

Furthermore, a major concern expressed by the participants was the inaccuracy of answers displayed by AI, particularly relating to research-based queries. All of them talked about the dummy references and citations that tools like ChatGPT curate when asked to provide evidence for the answers it generates. One of the participants exclaimed that software like Turnitin sometimes mis-detected AI use [Quote #6]. Hence, students are aware of the degree of inaccuracy possible by artificial intelligence. Additionally, it is seen that, depending on the type of question asked, AI gives general

and positive only [Quote #7]. It will always justify the response, depending on the type of prompt given.

Negative Impact on Learning

When analyzing the role of AI in academia, the participants talked primarily about the impact of AI on learning. According to them, the more students seem to rely on artificial intelligence to get the job done, the more it hampers their memory retention and their abilities to think critically and deeply [Quote #8 and #9]. Moreover, the students paraphrase and rephrase the answers AI produces and submit them as their work. Such practices stop them from thinking actively which then hinders critical thought. S.S and A.H explained that when people take time and effort to look for answers, they end up discovering new things, something that can't happen with AI-generated answers. Hence, limited information also limits one's creative process [Quote #10]. As students get immediate gratification through AI-curated answers to their questions, they do not look further or think beyond the "generic" answer given to them. In this manner, students' reliance on AI puts a stop to their creativity. The students explain that AI answers give them tunnel vision and promote the habit of not working hard to further their understanding.

Ethical Concerns

The ethical use of AI is debated on all platforms. The research participants were thus asked about their views regarding the ethical considerations of AI in academics. This section explores the views that emerged as a result. All the participants agreed upon the ethical violations committed by students, and they are also aware of the privacy concerns regarding AI use that can be detrimental. When questioned about the problems associated with AI use, all the participants unanimously discussed the ethical dilemma of using AI for plagiarism, rephrasing work, and passing AI-generated content as original [Quote #11]. Most of the participants provided more examples of AI misuse for research purposes, as students' paraphrased content given by AI, and pasted references and citations given by AI without verifying their authenticity. It is a trend that all the participants have seen across all subjects. They believe that it's not the tool (AI) but the user's (students') fault for operating the system unethically.

On the other hand, participants also raised concerns about the potential misuse of personal data by AI tools and issues like data leaks by companies owning the AI models. Participants expressed concerns that phones can be hacked, and the resulting data can either be sold on the Dark Web or can be used as blackmail material [Quote #12]. Moreover, according to them, we do not know where our personal information is being stored by different websites or app companies. Using an example of scam calls, they explained that some companies illegally sell consumer data to other parties like insurance companies [Quote #13]. On the contrary, one of the participants felt that such matters aren't applicable here as students use AI for academic purposes - hence, no such data is generated that can be used against them [Quote #14]. Thus, there were mixed views, some calling AI a potential threat to security, while others think it is more problematic for its ethical use.

Superordinate Theme 3: Future of AI in Academia

At a time when AI is becoming the norm and further innovations are being made in artificial intelligence, the question of the future of AI is debated. When asked about the future of AI, the participants expressed the belief that AI will be integrated more into society, even with the existing drawbacks.

AI Dominating Academic Processes

A few participants feared that AI could dominate academia, making students overly dependent on it and reducing the role of traditional learning. Participants believed that even with AI putting people's jobs at risk, there is a job market for people to create and maintain AI models [Quote #15]. Hence, there is a need for people to increase their skill set for jobs in the future. However, some believe AI and traditional methods could coexist, with AI acting as a supportive tool for learning without replacing conventional methods. Participants proclaimed that students these days are not going to libraries and are not using artificial intelligence correctly [Quote #16]. They reiterated- with that the other participants also concluded that the best way is to integrate AI use within classrooms and curricula purposefully and thoughtfully [Quote #17].

Need for AI Literacy and Guidelines

Almost all the participants believe that institutions need to incorporate AI literacy into the curriculum and offer training on ethical and effective AI use [Quote #18]. Participants also suggested that some short courses could be taught related to IT and technology, to increase the student skill set. Similarly, one of the participants recommends compulsory courses on safe AI use and increase digital literacy among students [Quote #19]. It was agreed that rather than being wary about these innovations, there is a dire need to further our standards of education by shifting away from traditional teaching methods to those that will be beneficial in the context of the modern world [Quote #20].

Lastly, participants promoted the implementation of formal guidelines and policies on how AI should be ethically integrated into academic work and learning environments. They believe that AI use should be taught to students and to teachers in a practical way [Quote #21].

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Table 1
Interview Guide and Protocol

Topic	Questions
Perception of Generative AI in Academia	What is your general opinion about the role of Artificial Intelligence in academia?
	Have you heard of the use of Gen AI tools in your studies? For what purpose?
	In your opinion, do you see Generative AI as a facilitator or a threat to traditional teaching and learning methods?
Benefits and Opportunities	From your experience, what potential benefits do you believe Generative AI could bring to academia, especially in terms of learning?
	Please provide examples of how Generative AI might enhance your educational experience.
	Have you found any Gen AI tools useful for your educational experience? If yes then please give any suitable examples.
Concerns and Limitations	What concerns or limitations do you associate with the integration of Generative AI in your studies?
	Are there specific aspects where you think Generative AI might pose a threat to the creative thinking of students?
	Do you think that Generative AI can cause/provide misinformation to the students; please elaborate.
	Are there any specific concerns related to Generative AI adoption that you have met or heard from colleagues, seminars/ workshops, or any other sources?
Impact on Learning	How do you think Generative AI might affect the way students' approach and engage with their studies?
	Do you feel that using Gen AI tools / ChatGPT makes you more dependent on technology, or does it empower you to learn more independently? Why?
	Has the use of AI tools affected your study habits or learning style? In what ways?
Balancing Technology and Creativity	In what ways do you manage between leveraging technology such as Generative AI and developing your creative thought processes?
	Do you have approaches that you apply to guarantee that the AI tools are the boosters to creativity and not hamper it?
	Have you ever come across some scenarios where you believed that learning on AI forces you to be less innovative?

Preparation and Training	In your opinion, do students get adequate guidance or training on how to use Generative AI in their learning?
	In your opinion, as a student, what are the support or resources you believe helpful to improve the use of Generative AI in academics?
	Concerning your institution or professors' advice, how satisfied are you with the Generative AI tools?
Ethical Considerations	From An ethical perspective, do you have any kind of worry with Generative AI in the academic field?
	If concerns to do with the prohibition of student privacy and security of data can be ignored while designing and implementing AI tools and techniques, how do you feel about such positions?
Recommendations	How do you see the future of Generative AI and academia cooperation developing for the next ten years?
	Are there any recommendations that you might have for the universities and the students concerning the integration of AI in their learning system?
Concluding remarks	Are there any other comments or contributions you would like to make about your opinions on Generative AI in academia or suggestions to advance in this area?

Table 2

Demographic Characteristics of Participants (N=16)

Initials	Age	Gender	Subject Area	Institution	Level of Study	Frequency of AI Use
A.D.	20	Male	Computer Science	Private	Undergraduate	Weekly
M.O.	21	Female	Psychology	Private	Undergraduate	Weekly
E.K.	22	Female	Biochemistry	Public	Undergraduate	Weekly
S.T.	26	Male	Clinical Psychology	Private	Graduate	Weekly
M.B.	23	Non-binary	Sociology & Political Science	Private	Undergraduate	Daily
K.J.	24	Male	Clinical Psychology	Public	Graduate	
H.T.	22	Male	MBBS	Private	Undergraduate	Daily
A.F.G.	23	Female	Political Science	Private	Undergraduate	Weekly
B.I.	21	Female	Psychology	Private	Undergraduate	Weekly
H.F.	22	Female	Applied Psychology	Private	Undergraduate	Weekly
I.M	22	Female	Psychology	Private	Undergraduate	Monthly
A.Z	26	Male	Media Studies	Public	Graduate	Daily
E.F	24	Female	Mass	Public	Graduate	Weekly

			Communication			
A.H	23	Male	Psychology	Private	Undergraduate	Weekly
I.N	23	Female	Psychology	Private	Undergraduate	Daily
S.S	24	Female	Journalism	Public	Graduate	Daily

Table 3

Superordinate Themes, Subordinate Themes, Categories, and Explanations Derived from In-Depth Interviews (n=10)

Superordinate Themes	Subordinate Themes	Explanation/Categories
Opportunities Related to Gen AI	Easy Accessibility of Information	Quick access and summarization of information
Opportunities Related to Gen AI	Easy Accessibility of Information	Convert knowledge to the desired learning mode
Opportunities Related to Gen AI	Easy Accessibility of Information	Available on all devices
Opportunities Related to Gen AI	Educational Aid	AI as a productivity tool for researchers and students. Optimization of academic discourse through AI-assisted readings
Challenges of Gen AI	Erosion of Research Skills	Reduces the need for traditional research methodologies
Challenges of Gen AI	Diminished Critical Thinking	Hampers originality of thought
Challenges of Gen AI	Over-reliance	Reduction in effort and creativity
Challenges of Gen AI	Erosion of Research Skills	Lack of concern for the quality of work produced with AI
Ethical and Intellectual Implications	Academic Integrity	Concerns about the misuse of AI for academic dishonest
Ethical and Intellectual Implications	Misinformation	Dummy citations
Ethical and Intellectual Implications	Impact on Creativity	Negative impact on creativity, everything is AI generated
Future of AI In Academia	AI as a Supplementary Tool	AI to be included in the curriculum and used in classrooms
Future of AI In Academia	Changing Role of Educators	Distribution of work between humans and AI. Teachers assume the role of mentors and ethics givers

Table 4

Superordinate Theme 1: Opportunities Presented by Generative AI in Academia

Quote Number	Quote and respondent
1	I don't always have time, I- even if I do have time as I do usually put my readings in ChatPDF to see if I missed something, or if I don't understand something, I do ask it to explain it in context to the thing I'm studying." (M.B)
2	"I feel like a lot of people are just better visual learners. Like if you see it happen, you can put it into your own words too, right? So, if you're someone that struggles with a certain language for example, like most textbooks and such would be printed in English. If you struggle with that, I think that visual aids that could be created through AI in seconds would be helpful for you." (E.K.)
3	"The university that I'm going to, everyone- most people, sorry, not everyone is from a low-income background. So yeah, they don't have the facilities they would need to write out a whole code generate it in a 3D image, and then present it to a teacher as well, right? So, in that case I think, since you can just use a lot of these programs on your phone, the AI programs it's easier for us now…Like nobody's held back because they don't have resources." (E.K.)
4	"I would definitely use it at the end of my study to sort of summarize the whole chapter for me so that I can do like a quick revision while keeping all the points that were in that chapter in mind." (E.K.)
5	"Whenever I have to make an outline and it's just – you have to make – do brainstorming at times. And when you are short at – at time at hand, what you can do is just ask the ChatGPT or Gemini to outline the assignment. You give it a prompt and then it gives you a outline. You can follow that outline, and you can get done with your assignment." (S.T.)
6	"They can provide you with a lot of ideas. They can brainstorm a lot of ideas with you. You tell them to, you know, provide with – you with a list of ideas, they're gonna quote ten ideas. You don't like them, they're gonna quote another ten. You don't like the previous ten; they're gonna quote another ten. So you know, it, uhm, makes you sit with a huge pool of ideas where you can pick one." (M.O.)
7	"Search tools like ChatPDF or um, you know, other PDF scanners, they have been, uh, increasing, you know, informed discourse in classrooms because students didn't use to do their readings, but now they at least have a general idea into, you know, start somewhere." (M.B.)
8	"In any of your courses, they could assign you a presentation, and you'll find yourself running out of either content or like the images or the videos or the relevant things that you

	need for your presentation. You may think that one video from YouTube is not enough, one video- one photo from Google is not enough. So for that reason you can maybe use AI to generate your own unique vision." (A.D.)
9	"There was this course that I took last semester – it was a course of abnormal psychology. We had to, uhm, create an animated video on a specific mental health disorder, and I, uh, was given PTSD… since I suck at video editing and video creation, so there was this tool, uhm, it was an AI tool that I used. That AI tool created an entire video for me. I just had to put in the script… it was helpful for me; it saved me a lot of time. It put me away from, like, a lot of hassle and, you know, it reduced the amount of stress that I had." (M.O.)
10	"They're just giving you a structure or framework, and you have to, you know, further work on that structure. So I think they help you as an assistant. It is very helpful. It saves you a lot of time. It saves you a lot of hassle." (M.O.)
11	"Because if you're looking to get an outline from AI, that is helpful. It helps you have those points, and you can look at those points and follow, and have guidelines. This, in turn, gives students more time to engage in personal activities and get sufficient rest. "Suppose it is an hour's work, and you can do that in one hour, it is beneficial for you. You will have more time for yourself." (S.T.)
12	"Disabled students are not able to do research in the manner we normal students do. So, what happens is that using the help of AI, they can easily conduct their research because they can find all of the findings on one page." (H.F.)

Table 5

Respondents' Quotes on Superordinate Theme 2: Ethical and Intellectual Challenges of Generative AI

Quote Number	Quote and Respondent
14	"We don't even have enough digital literacy to use conventional tools like Google Scholar because, um, you can't- study- like, most students don't know to find reliable sources so they just use blog posts to use their research papers… so when you can't already access quality sou- quality information, uh, using you know, Google Scholar, which basically first gives you journal articles but- so you won't have enough literacy to distinguish if it's- AI's giving you real information or not." (M.B.)
15	"I do think it kills the creativity or the risk-taking process that is a big process of scientific culture up to this point and experimentation. Because you know, a big part of science is like your hypothesis. So, if you can just look up your hypothesis and just go like 'okay, is this right or is this wrong?' you're not even gonna experiment to figure out it's right or not. So in that aspect I think it would be

	dangerous that it kind of just kills any kind of curiosity. It kills the need to work hard, or it kills the need for excellence in my opinion. (E.K.)
16	"Because like especially in a field like biochemistry, you need to have all those, uh, like you need the theory, and you need the labs. You need to have all the practical knowledge…So if you're just using AI to get an easy way out…that's not gonna work for you. At least not in the long run—not in your professional life." (E.K.)
17	"Through AI when we generate research questions, hypothesis, methodology, literature review, the results seem to be ideal and to me it seems like they would fulfill the demands of the research journals and academia." (K.J.)
18	"I use ChatPDF for my literature reviews because it makes it easier to find the information I'm looking for. It does also sort of compromise the research I'm producing because it does add this researcher's bias that I'm looking for specific, like this very specific information from a very specific point of view and it's only given to me in this very specific, uh, point in the paper that I've uploaded without the context it's built up upon." (M.B.)
19	"So even in classrooms, when they're engaging in discourse, it's very, um, shallow to the point you- like- in a way you can't really go deeper into critically engaging with it. So it's like just a very shallow statement that is kind of complete in itself." (M.B.)
20	"Again, it's the concept of over-reliance on AI and that it could hinder students' ability to think creatively and develop original ideas, as they might lean more on AI for solutions. So I think that is the main threat to the creativity of the students." (B.I.)
21	"In academia, what I feel like is that it will take away the power of creativity from people – because people will start relying on GenAI for every little thing. And when you do that, you take away the power to brainstorm and creativity, you know?" (S.T.)
22	"People have become less flexible, which is crucial for creativity. Now people say 'No, whatever Chat GPT has said it must be correct.'" (K.J)
23	"If – If you're someone who does not want to study or who does not like to study a lot but they're doing the degree for the sake of doing it – because of societal pressures…I think it's just gonna make them entirely dependent because they have someone that is doing their job. They don't care about how the job is being done, if it's being done perfectly, uhm, if it's being done accurately." (M.O.)
24	"I do believe nowadays it's like I'm not even gonna think about it, I'm just gonna look it up on the internet and whatever seems like is going to fetch me the most

	marks, I'll just go with this. So I do think it kills creativity. It- it kills the idea of taking a risk to begin with, which I don't appreciate, because you know, a big part of this is taking a risk, so I think AI definitely kind of reduces that ability in people." (E.K.)
25	"I wr-wrote the prompt that I need a specific example of collectivism and a specific example of individualism. And quote me a paper – research paper as well, write me a reference, yadda, yadda. It did quote a reference. It did quote an example – but when I checked that reference – for the research paper – the research paper was something else. It was completely something else. Just because the title of the research paper mentioned collectivism and individualism, did not mean the paper was exactly replicating the topic." (M.O)
26	"For example, if the fifth criteria for diagnosis are not even present in the original diagnostic criteria of a disease, and if AI is fabricating, and the doctor misdiagnoses, underdiagnoses, or overdiagnoses the patient on that basis, it will lead to severe complications." (K.J)

Table 6

Respondents' Quotes on Superordinate Theme 3: The Future of AI in Academia

Quote Number	Quote and Respondent
27	"I think they need to work on how we can integrate this into our studies because sometimes some professors must develop clear policies like universities should establish transparent and comprehensive guidelines on the ethical use of AI in academic settings and implement mandatory AI literacy programs to educate students and faculty on both the potential and the limitation of generative AI. And I think universities should encourage students to use AI in innovative ways." (A.F.G.)
28	"They could start introducing courses that are related to AI and the ethics that are related to when you- like, you know, when you use the internet and like you know, uh, when you're working with AI tools, you know, what are things you should and should not do. What are things that are morally correct and what are things that aren't. Because I do believe that when you're in the privacy of your own room and you have you these tools available to you, people really stop thinking about if they should like do what they're doing to begin with… So introducing courses like in like your curriculum—that would definitely help." (E.K.)
29	"I think universities should focus on teaching students how to use AI responsibly. So, they should also encourage students to combine AI with their own critical thinking and creativity. And for students, my advice is to use AI as a tool to enhance learning, not to do the work for them." (B.I.)
30	"I feel like having GenAI as a course in our academia and how – like the ethical use of GenAI, having a course on that, a particular course in every class or maybe in uh, you

	know, the majors that they are doing. They have a course like – we have ethics in psychology, how to use ethics. How about giving a course of GenAI in psychology?" (S.T.)
31	"The distribution of work between human and artificial intelligence was also raised in participants' suggestions where educators may become more teachers or mentors and ethics givers in a system enhanced by AI," (R.S).
32	"AI tools get better, they could start doing things teachers do, especially in roles that involve just delivering information." In elaborating, (A.F.G.) explained that AI can contribute to the distribution of some educational tasks, but in the future educators will take on the "role of mentors and ethic givers" (A.F.G).
33	B.I explained that "Gen AI may push students beyond the syllabus, but teachers bring insight, ethics, and life skills that no AI can match."
34	"AI enables teachers to focus on high aspects of human education" (H.F)

Table 7

Superordinate Themes, Subordinate Themes, and Categories from the Focus Group Discussion (n=6)

Superordinate Theme	Subordinate Theme	Category
Benefits and Opportunities	Positive Role of AI	Efficiency in Academic Tasks Creativity Enhancement
Challenges and Concerns	Limitations of AI	Lack of Depth of Information Incorrect or Misleading References
	Negative Impact on Learning	Reduced Effort and Critical Thinking Hindrance to Creativity
	Ethical Concerns	Plagiarism and Misuse in Assignments Data Usage and Privacy Risks
Future of AI in Academia	AI Dominating Academic Processes	Over-Reliance on AI in the Future AI as a Supplementary Tool
	Need for AI Literacy and Guidelines	Training and Workshops for Students and Teachers Creating Institutional Policies for Academic Use of AI

Table 8

Focus Group Participants' Perspectives: Benefits and Opportunities

Quote Number	*Quote and respondent*
1	*"Basically, the time-consuming tasks like research writing and reading books are made shorter by AI as it draws small sketches (summaries and analysis) which makes our task easier" (male, 23, explaining efficiency of AI in academic tasks)*
2	*"If we want examples related to Pakistan for an assignment, then AI hands it to us immediately, and I'm done with my tasks much faster" (female, 24, explaining efficiency of AI in academic tasks)*
3	*"So apart from this, teachers can get help from ChatGPT, like they can design course outlines, can design activities using generative AI or use other software available." (male, 23, expressing usefulness of AI for teachers for academic tasks)*
4	*"The thing is it depends on the way you use AI for your learning. For example, if you need to write an essay, you can give ChatGPT prompts and in return it gives you different domains to work on, you know? Like it tells you which areas of the topic have been worked on, and which areas need novel solutions and innovate ideas." (female, 24, expressing that AI enhances one's creativity)*

Table 9

Focus Group Participants' Perspectives: Challenges and Concerns

Quote Number	*Quote and respondent*
5	*"Tools like ChatGPT, Gemini, Llama, Co-pilot, Bing don't provide real-time data. Like if we consider the current political situation of Pakistan and ask ChatGPT a question about it, we won't get accurate data and information about it so it won't be helpful for us." (male, 23, expressing limitations of AI)*
6	*"The AI detectors confuse our wording to be as something written by AI, or sometimes AI written content goes by undetected." (male, 26, expressing limitations of AI)*
7	*"AI tends to answer in a specific format, like you must've experienced that whenever you ask a question from ChatGPT it always gives a general perspective which is also an attempt to justify whatever is asked. Hence, you need to be very careful about the wording you use to give a prompt" (male, 23, expressing limitations of AI)*
8	*"There will be issues in the memory of people. When you won't study it properly, not try to memorize thoughtfully, it will affect your memory," (female, 22, expressing negative impact of AI on learning)*
9	*"One more thing, the process of skimming and scanning through huge chunks of text is greatly affected when one continues to solely rely on AI for their studies. Hence, it plays a part in skill deterioration." (female, 24, expressing negative impact of AI on learning)*
10	*"In the near past, we used to spend a lot of time collecting information which has been reduced by artificial intelligence. However, this time spent on hunting for data was part of one's creative process, during which one would get that sudden spark of*

	idea while finding new pieces of info. I think that with answers given by AI, the ease is affecting our creativity." (female, 24, expressing negative impact of AI on learning)
11	*"I know that AI is very helpful for thesis, specially for literature search, but I've seen students copy paste AI answers and try to take credit for them. Although they get in trouble on the day they have to defend their thesis, because they didn't do the work themselves, they get caught easily". (male, 26, expressing ethical concerns)*
12	*"As for security concerns, we don't know where our data is being stored. You must've heard tales of companies selling people's private data on the dark web or using it to blackmail them for money." (male, 23, expressing ethical concerns)*
13	*"For every AI tool, there are 100 others used just for scamming purposes". (male, 23, expressing ethical concerns)*
14	*"Well, if we are thinking about privacy and security issues in the academic field, I don't thin that is a problem. It is just students using data for academia, there shouldn't be a lot of personal information being handed out to AI." (male, 26, expressing ethical concerns)*

Table 10

Focus Group Participants' Insights: The Future of AI in Academia

Quote Number	*Quote and respondent*
15	*"The human mind, human intelligence can change its way of thinking which is why we can't just be dependent on AI for everything, and which is why there will always be a need for the human mind" (male, 23, talking about AI dominating academic processes)*
16	*"I believe that it's sad and unfortunate that libraries have been abandoned due to AI. There should be a way to combine the two for better utilization and enhancement of knowledge acquisition" (male, 26, talking about AI dominating academic processes)*
17	*"I recommend that within classrooms, teachers use AI in a way that can serve as an example of ethical use of AI in academia. For that, teachers need to learn the different ways in which AI can be incorporated within their lessons. Along with it, they can then practically teach students the use of AI in a classroom, but the educational institutes need to formally include their use in the curriculum." (female, 22, talking about AI dominating academic processes)*
18	*"There is a need to conduct workshops and teach us about the potential problems associated with AI use, like what the other participants said, the problems of dummy research references ChatGPT gives us should be discussed with us." (female, 23, discussing need for AI literacy)*
19	*"I think AI is being used more, which is why compulsory courses and seminars should be hosted to teach students the proper way to benefit from this technology, which are not being organized currently in educational institutes." (female, 24, discussing need for AI literacy)*
20	*"In the next 10 years, the job market will look a lot different. Which is why it's*

	important to integrate steps and strategies into our education system which will help make the transition to a job market filled with new technology easier. Short courses, compulsory lessons should be integrated into classrooms to get students used to the idea. Traditional education methods alone won't be helpful." (female, 24, discussing need for AI literacy)
21	*"I have a teacher who was telling us that teachers too aren't fully aware of the capabilities of AI. Such teachers rely on their students to teach them how to use such technology. Hence, not only students, but teachers also need to be given training so they can easily teach their students and tackle problems related to it." (female, 24, discussing need for AI literacy)*

Figure I: *Thematic Map of Superordinate and Subordinate Themes from In-Depth Interviews (n=10), presenting a conceptual model with four superordinate themes and eleven subordinate themes.*

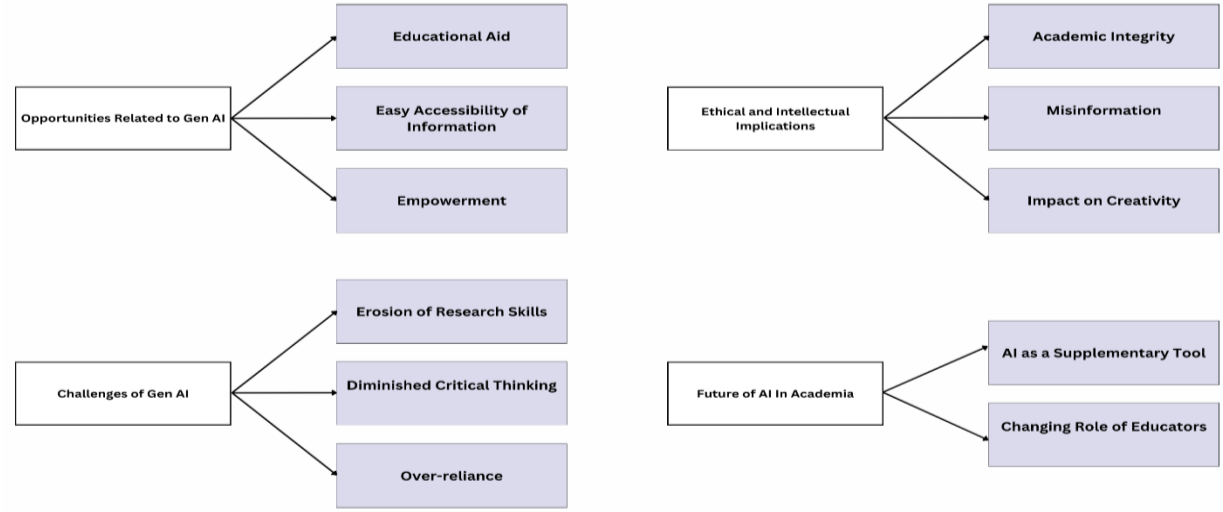
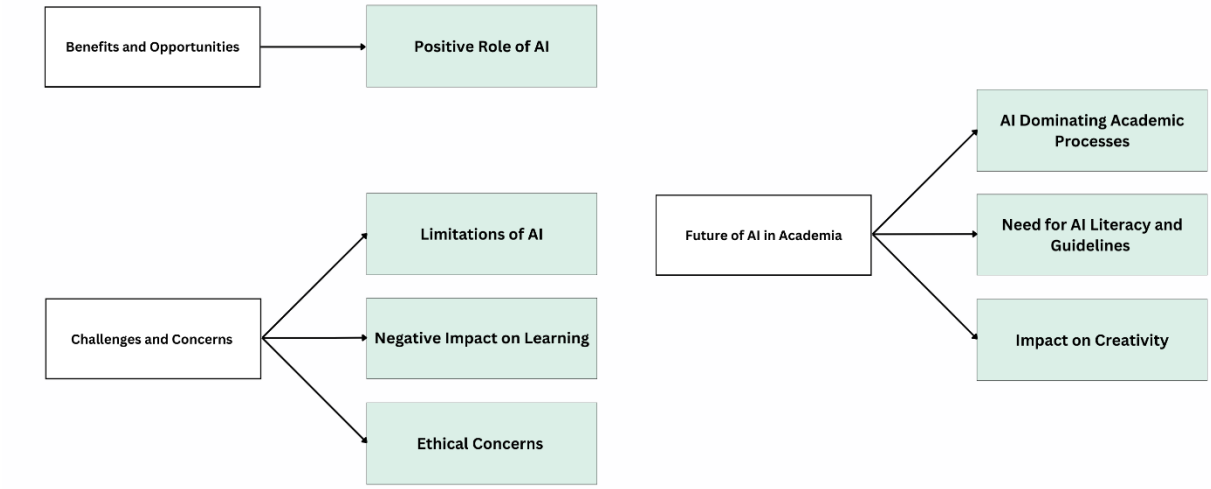


Figure 2: *Thematic Map of Superordinate and Subordinate Themes from Focus Group Discussion (n = 6), presenting a conceptual model with four superordinate themes and eleven subordinate themes.*



Discussion

The current indigenous qualitative study used a constructivist approach to unveil Pakistani students' attitudes and usage of artificial intelligence (AI) for their studies. This research details the positives and negatives of AI use noted by the Pakistani student population and how that impacts their knowledge acquisition and academic output. However, the small sample size, gender imbalance, and limited focus on university students can limit the generalizability of the findings and cannot fully showcase the differing perspectives across Pakistan. Still, the results present an intricate pattern of thoughts that indicate the challenges and ease of accepting the changing educational landscape due to AI. The students are aware of the wide range of AI software available, and while some reported using them ethically, others shared examples of blatant misuse of AI they have witnessed. Hence, the results of this study help in understanding the pros and cons of using AI revealed by the participants of in-depth interviews and focus groups, the knowledge of which differs based on the student's frequency of AI use. By viewing the issue from the student's perspective found in this study, educationists and policymakers can ensure that students get the maximum benefit from using AI for academics.

Recent trends show the growing familiarity of the majority of the student population with artificial intelligence in multiple facets of academia. They know the benefits and risks of using AI models for their learning (Stöhr, Ou, & Malmström, 2024; Hamid et al., 2023; Idroes et al., 2023). When discussing the role of AI in academia with the participants of this study, the first theme that emerged was the benefits of using AI - students primarily appreciated its capacity to save their time by responding quickly to the prompts they give it.

Moreover, Schei, Møgelvang and Ludvigsen's (2024) review of the literature on students' perceptions regarding AI in higher education shows that students tend to use AI as assistants, personal instructors, and as platforms that assist with academic activities like planning and collaboration. This view is also shared by Pakistani students as indicated by the results of this study - students emphasized that AI's ability to simplify information and audio-visual creation serves as an effective way of personalized knowledge acquisition. This on-demand assistance can reinforce comprehension and self-paced learning, especially in remote learning, making it accessible anywhere and anytime (Chan & Lee, 2023).

Chan and Hu (2023) conducted a survey-based study in Hong Kong on undergraduate and postgraduate students to evaluate their opinions about AI in academia. While the majority are satisfied with AI integration and hope to continue using it, many students raised concerns about the ethics, accuracy, and transparency of AI (Chan & Hu, 2023). They emphasized the complexity of the AI models, and the ambiguity associated with the process it uses to solve problems.

Similarly, teachers also acknowledge that GenAI use in academia has both benefits and risks. Language models such as *Google's Bard, Microsoft Bing,* and *ChatGPT* versions are viewed as forerunners of future technological innovations, the safe and ethical use of which need to be taught to the students (Majeed et al., 2024). However, most talked about the deterioration of academic skills they have witnessed in students over the years with increasing GenAI use. Students themselves pointed out that reliance on AI is resulting in decreasing creativity, superficial critical analysis, and reduced effort in producing originality of thought. Many studies report students fearing a decline in their cognitive abilities owing to easy access to answers (Yilmaz & Yilmaz, 2023, Chan & Hu, 2023; Zhu et al., 2023). In fact, in Yilmaz & Yilmaz's (2023) study, programming students expressed the belief that ChatGPT promotes laziness within students. Another major issue highlighted was plagiarism - student's present AI-generated information as their own and it is getting increasingly difficult to detect them (Chan & Hu, 2023). Zhu et al.'s (2023) quasi-experimental study on undergraduate students found that students stressed the need to fact-check *ChatGPT's* responses to prevent disinformation, but they also noted that fact-checking is challenging because *ChatGPT's* responses contain vast knowledge that users lack.

Adding to the above-mentioned cons of AI, students discussed ethical concerns about the incorporation of AI in academics. Students elaborated on the negative side of AI concerning its misuse by their fellows. Specifically for research, students use GenAI for literature searching and crafting their papers which brings a host of problems. By efficiently summarizing information and generating high-quality text, AI tools such as *ChatGPT* can improve the efficacy of academic writing and research. However, their current limitations in interpreting data and accurately citing sources must be acknowledged (Dergaa et al., 2023; Semrl et al., 2023). In a similar vein, significant privacy concerns are raised by the collection and analysis of vast quantities of student data by AI systems in education (Klimova, Pikhart, & Kacetl, 2023). Robust security measures and clear communication about data handling are essential to address these issues.

Lastly, the future of AI in academics was explored and students predicted GenAI to be used progressively more in the future. Students conveyed optimism towards GenAI in academia and offered suggestions to create and then disseminate stringent institutional policies among the student body. AI will improve the stimulating and immersive nature of education by building on game-based learning and strengthening collaborative learning environments (Kamalov, Calonge, & Gurrib, 2023). These methods can thus boost student incentive and participation. Many participants also pointed out the role of teachers changing to ethics givers and facilitators, while some believe that a smooth collaboration can be achieved between teachers and AI within the classroom.

The participants of this study remain hopeful of GenAI improving their capacity of knowledge acquisition. On the contrary, they remain wary of the lack of proper use of AI shown by students in Pakistan and urge institutions to formally implement it to prevent any possible aggravating effects on education in the future.

Limitations and Suggestions

This study has some limitations. As qualitative research, it is subjected to researcher bias. Furthermore, the small sample size, gender imbalance, and limited focus on university students can limit the generalizability of the findings and cannot fully showcase the differing perspectives across Pakistan. Due to the study using self-reported data, there is a possibility of social desirability impacting participants' responses. Keeping the above-mentioned points in mind, future research should investigate the use of GenAI in suburban and rural landscapes to add more depth. Additionally, indigenous studies can be conducted to gather further insight on the differences in AI use and perceptions across disciplines. Moreover, future studies should use data triangulation and interdisciplinary collaboration with experts from fields like sociology, education, and computer science to present a more nuanced image of reality. Such efforts can drastically improve the risks and pitfalls associated with usage of GenAI in academia and minimize the ethical concerns revealed in this study.

Implications of the Study

The integration of AI in education has sparked a global debate regarding its advantages and disadvantages across all educational levels, prompting a more comprehensive discussion on the ethical application of AI technologies. The findings of the present study have the potential to inform the development of institutional policies and guidelines that ensure the ethical and effective use of Generative AI in higher education, promoting responsible adoption that aligns with academic values. Additionally, the insights gained can assist educators in utilizing Gen AI tools to enhance personalized learning experiences, foster critical thinking, and support skill development. The research underscores the necessity for professional development programs aimed at educating educators on the capabilities and limitations of Gen AI, which will facilitate its informed integration into teaching practices. Moreover, understanding the challenges associated with Gen AI can help institutions address issues such as potential biases, accessibility barriers, and the digital divide, ensuring equitable access to educational resources. The study also provides practical strategies for balancing technological innovation with academic integrity, such as defining AI-assisted work clearly and implementing responsible use policies. Lastly, the research highlights the importance of fostering collaborations between academic institutions and technology developers to ensure that educational tools are designed to align with pedagogical objectives rather than being driven by commercial interests.

Directions for Future Research

Future research should investigate the long-term effects of Generative AI on academic performance, skill retention, and critical thinking across diverse educational settings. It is essential to explore how students' experiences with Gen AI differ across various cultural, educational, and socioeconomic contexts to inform the development of inclusive policies. Further examination of educators' attitudes, challenges, and preparedness to incorporate Gen AI tools into their teaching practices is necessary. The effectiveness of Gen AI-supported learning should also be assessed in comparison to traditional and other technology-enhanced educational methods. Additionally, research should focus on the development and impact of ethical frameworks governing AI adoption, particularly concerning data privacy, intellectual property, and accountability.

Another key area for investigation is how reliance on Gen AI influences cognitive processes such as creativity, problem-solving, and decision-making among students. The effectiveness of AI literacy programs in empowering both students and educators to use Gen AI responsibly should also be explored. Studies could also examine how Gen AI is reshaping academic writing practices, research methodologies, and the production of scholarly work. Furthermore, the potential of Gen AI to support differentiated instruction, adaptive learning environments, and personalized feedback systems warrants further exploration. Lastly, research should investigate how Gen AI affects student agency, collaboration, and participation in academic settings. These proposed directions aim to broaden the understanding of Gen AI's multifaceted role in education, seeking to balance technological innovation with ethical and pedagogical considerations.

Conclusion

This research focuses on an extensive qualitative discussion of Pakistani university students' perspectives on the role of generative AI in education, prospective opportunities, and challenges Many students advocate for the use of AI, as it makes information readily available, brings productivity for researchers, and empowers students of differing backgrounds. Furthermore, AI quickly takes care of repetitive and menial tasks, so students have more time to do other important and productive work. At the same time, students also showed concerns regarding AI, highlighting the erosion of academic skills like research, creative, and critical thinking due to students' over-reliance on it. Moreover, overusing AI for everything blurs the line between ethical and misuse of AI for academics, which is why many students have been seen plagiarizing work. Students seem to be using AI for research without fact-checking information like references and end up using dummy citations, and such practices are the reason the use of AI is seen with disdain by many. The ethical and responsible use of Artificial Intelligence (AI) in academia plays a crucial role in maximizing its potential benefits while minimizing associated risks and limitations. By adhering to ethical principles, such as transparency, fairness, accountability, and data privacy, institutions can create a framework where AI tools support learning, creativity, and academic integrity. Responsible implementation ensures that students and educators can harness the opportunities AI offers—such as personalized learning, enhanced research efficiency, and innovative pedagogical strategies—while mitigating challenges like misinformation, over-reliance on automation, and biases in AI-generated content.

Ethical Considerations

The study was reviewed and approved by the Ethics Review Committee of the Department of Psychology, Forman Christian College (A Chartered University), Lahore, Pakistan. Written informed consent was obtained from all participants before data collection, ensuring voluntary participation. Participants were informed of their right to withdraw from the study at any stage without any consequences. The study adhered to the ethical principles outlined in the Declaration of Helsinki (2013) and followed the ethical guidelines established by the American Psychological Association (APA, 2017). All collected data were anonymized and kept confidential, ensuring compliance with data protection regulations.

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Availability of Data and Materials

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request, ensuring compliance with data-sharing policies.

Authors' Contributions

Dr. Saima Majeed conducted the research, data collection, and analysis and other members provided guidance in conceptualization, methodology, and manuscript preparation. Both authors contributed to the final manuscript and approved its submission.

Competing Interests Statement

The authors declare no conflicts of interest regarding the publication of this article.

COPE Compliance Statement

This study complies with the ethical standards outlined by the Committee on Publication Ethics (COPE). The authors affirm

that the work is original, free from fabrication, falsification, and plagiarism. All necessary permissions for data collection and participant inclusion were obtained, and the study does not involve any unethical practices.

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