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An Exploratory Analysis of Perceptions and Uses of Generative AI Tools for Higher Education

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Abstract

This study addressed the growing usage of Artificial Intelligence (AI) in relation to students completing academic tasks. Over the past few years, there has been a growth in tools that help simplify automate the tasks we perform. This study examines numerous tools, where students are integrating them into their academic tasks, and their overall perceptions of using AI. A survey of 256 AI users was conducted and found that participants highly adopted AI tools like ChatGPT and Microsoft Copilot, among other lesser used tools. The survey focused on asking participants of their impressions with integrating AI to understand if there was a positive or negative impact in their academic journey. The overarching feedback suggested that AI is widely adopted among the participants and highly integrated into their tasks with an overall positive impact.

Keywords: generative AI, artificial intelligence, AI, chatbots, higher education

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1. INTRODUCTION

Generative AI (GenAI) has seen a dramatic rise in use since the release of OpenAI's ChatGPT chatbot in 2022. Among the most prevalent users are college students, prompting many questions about the role of GenAI in the field of education (Johnston et al., 2024; Nam, 2023; Sullivan et al., 2023).

While there are many potential benefits, including increased writing support, customized learning plans, personalized feedback for students, and support for data analysis tasks, there are also some serious concerns to consider (Rasul et al., 2023). For example, use of GenAI in educational settings brings with it questions about academic integrity as well as issues for assessing learning outcomes effectively (Liu et al., 2024; Rasul et al., 2023). Universities are now struggling to determine how best to incorporate the use of GenAI in higher education, and further study is needed to explore the myriads of ways that GenAI is disrupting higher education (Sullivan et al., 2023).

Another major concern is that overreliance on GenAI tools may significantly diminish cognitive abilities over time as students learn to depend upon these tools to complete tasks, even partially, for them. While this may allow short term success, the lack of practice in problem-solving and other analytical tasks could eventually lead to a decline in critical thinking (Lee et al, 2024; Basha, 2024). Further, a lack of practice in writing can potentially lead to a decline in quality and coherence of writing (Uyen & An, 2025).

The rapid onset of the use of GenAI and its potentially significant impact on students in higher education make this a topic worthy of further exploration. The purpose of this study was to explore young adults' perceptions about and uses of generative AI (GenAI) tools in an educational setting. Traditional college students are young adults aged 18-25, so this age group was targeted for this research in order to explore perceptions about AI in higher education and uses of GenAI tools in an educational setting.

This study explores the following research questions:

RQ1: What are the most prevalent generative AI tools in use for educational purposes by young adults aged 18-25?

RQ2: What uses of GenAI are the most common for young adults aged 18-25?

RQ3: What are the perceptions of young adults aged 18-25 about the use of GenAI tools for education?

2. LITERATURE REVIEW

A total of 399 undergraduate and graduate students in Hong Kong from a variety of academic fields responded favorably to a survey about the use of generative artificial intelligence (GenAI) in education. Through individualized learning support, writing and brainstorming help, and sophisticated research and analysis tools, students emphasized how GenAI could improve education (Chan et al., 2023).

However, stakeholders must address the possible drawbacks of generative artificial intelligence (GenAI), even though it has great potential to revolutionize education by providing individualized support, increasing productivity, and facilitating self-directed learning. Participants expressed worries about data privacy, ethical transparency, and the veracity of AI-generated content. It is especially important to pay close attention to how GenAI affects students' personal development, future employment readiness, and wider social values.

The study highlights a few important concerns expressed by students, despite a generally positive outlook on the role of GenAI in learning. One of the main concerns is the reliance on AI, which some believe could diminish fundamental academic abilities and lower the perceived worth of a college education. Concerns regarding

accuracy, transparency, privacy, and ethical limits in relation to the use of AI-generated content were also expressed by the students. (Chan et al., 2023).

The challenge of confirming the originality of AI-generated work is a major problem, as many students are uncertain whether the content is legitimate or plagiarized. Human oversight is still necessary to assess the output's integrity because GenAI tools are currently unable to evaluate truthfulness or cite verifiable sources. Clear usage guidelines, instruction in digital literacy, and institutional policies that promote the moral and responsible integration of GenAI technologies are all urgently needed, as these worries highlight.

Even though generative AI (GenAI) tools greatly aid in writing and learning, growing worries about ethics, academic integrity, and the limitations of machine-generated output continue to exist. In his analysis of AI-generated responses to academic writing prompts, Kumar (2024) found that while the outputs were frequently original and topical, they often lacked the personal perspectives necessary for scholarly voice and included inappropriate references, underscoring AI's incapacity to replicate authentic, lived human experience.

For second language learners, who might find it difficult to create useful prompts because of language barriers, this problem is made even more difficult. These obstacles may make people more dependent on GenAI tools and impede the growth of fundamental writing skills (Warschauer et al., 2023). Furthermore, the training data has a direct impact on the caliber and dependability of AI output. There are ethical concerns and a need for human oversight, critical evaluation, and responsible use when that data contains bias, misinformation, or harmful content.

Generative AI (GenAI) systems are unable to confirm the accuracy or veracity of their outputs, as Lubowitz (2023) highlights. Human oversight is necessary to detect possible misinformation or falsehoods because these tools create content based on patterns in training data rather than assessing factual correctness.

Furthermore, maintaining academic integrity becomes more difficult as GenAI becomes more sophisticated. Determining whether a submission reflects original human authorship becomes more challenging because the majority of traditional plagiarism detection systems are currently unable to recognize AI-generated content. Higher education, where learning outcomes depend on genuine student engagement and skill development, is seriously threatened by this opacity.

Institutions must think about new academic policies, make investments in AI-literacy training, and investigate ethical standards and detection technologies that adapt to the changing digital environment in order to address these problems.

The study conducted by Koohang, et.al, (2024) examined how students perceived the advantages and opportunities presented by AI, taking into account factors such as the frequency of AI use, age, gender, academic major, and college standing. These perceptions were evaluated using a specially created tool that was organized around AI opportunities and AI benefits.

The results showed that students who reported using AI tools frequently, especially those who were extremely likely to use them once a week scored much higher on tests measuring AI's usefulness for learning and skill improvement. Furthermore, group differences surfaced across the demographics that were measured, suggesting that students' perceptions and interactions with AI may be influenced by their academic and personal backgrounds.

Particularly urgent are the issues of privacy and moral guidance. A study on ethics in education revealed that students may unintentionally contribute to or rely on systems that aren't in line with responsible use when educational institutions fail to offer clear instruction on data ethics (Silva, et.al, 2024). A large number of students do not have access to AI tools that are specifically designed for education. Learners frequently resort to commercial tools such as ChatGPT that are optimized for broad utility rather than pedagogy in the absence of institutional support or platforms designed specifically for this purpose. Universities must take action, according to this study, by integrating ethics instruction into the tech curriculum, creating AI tools with a purpose, and preparing faculty and students to effectively navigate this changing environment (da Silva, et.al, 2024).

A qualitative study was carried out by Ali, et.al. (2024) to investigate students' opinions regarding the moral application of artificial intelligence. Using the UNESCO ethical framework as a guide, the researchers framed ethics, highlighting the 6 principles; transparency,

fairness, privacy, accountability, explainability and safety.

The importance of AI systems being open and honest about their operation and use was strongly emphasized by the participants, who pointed out that this transparency is necessary for responsible and appropriate use. Students also underlined the necessity of independently confirming the accuracy of AI-generated data, acknowledging the possibility of biased or inaccurate results (Ali, et.al, 2024).

According to a study by Almassed et al. (2024), 78.7% of Saudi Arabian university students regularly use Generative Artificial Intelligence (GenAI) tools, while 21.3% said they don't, primarily because they don't know enough about them or aren't interested in them. The most popular tool among users was ChatGPT (86.2%), which was followed by Gemini, Socratic, and Copilot.

Students stated that they mostly used GenAI tools for academic literature summarization, idea generation in writing, translation, and concept clarification. Easy access, time-saving features, and the ability to provide immediate feedback were among the main advantages noted.

Students voiced a number of concerns in spite of the advantages. These included the price of subscription-based resources, the possibility of obtaining false information, plagiarism concerns, a decrease in in-person academic interaction, and less control over the learning process.

3. METHODOLOGY

To obtain data for the quantitative analysis, the researchers developed a structured survey instrument. The study population comprised young adults between the ages of 18 and 25 residing in the United States, reflecting the typical age range of college students. The United States was selected as the research setting due to the researchers' geographic location. An electronic survey was published in Survey Monkey and used to collect the data. A total of 256 participants responded to the survey (n = 256). This study was approved by the Institutional Review Board at Pennsylvania Western University prior to data collection.

Amazon Mechanical Turk (MTurk) was used for sample selection as well as distribution of the survey. MTurk is an online recruitment platform that has become one of the dominant sources of online convenience samples for survey research (Rinderknect et al., 2025). This tool has been used by academic researchers and the quality of data has been shown to be quite high, rivaling that of data obtained from traditional samples of college students (Zhang and Gearhart, 2020; Chandler et al., 2019). However, some limitations should be noted. MTurk samples tend to be younger, better educated, and have lower incomes than the broader U.S. public (Rinderknect et al., 2025) and may also be more tech-savvy due to the nature of the platform itself (Tafesse & Mamo, 2025).

Gender was recorded as a fundamental demographic variable in the survey. Given the study's focus on generative AI within the context of higher education, the researchers deemed it essential to determine participants' enrollment status in university courses at the time of this study. According, respondents were asked whether they were enrolled in an academic program, and if so, to specify their level of study.

The next set of questions on the survey asked participants about their familiarity with AI, whether they have used any AI tools for academic purposes, and if so, how often and which tool(s). The list of tools provided (participants were encouraged to select all that apply) included: ChatGPT, Microsoft Copilot, Claude, Grok, Gemini, Quillbot, DALL-E, Midjourney, IBM Watson, Grammarly, and Canva Magic Studio. An area for participants to write-in additional tools was also provided. Further, the survey asked participants who used AI tools for academic purposes about the types of tasks they use the tools to complete. Responses included: Research, writing/text generation, problem-solving, data analysis, image generation, video generation, language learning, personalized tutoring, time management, coding/programming, and task automation. An area to write-in additional tasks was also provided.

Next, participants were asked to respond to a series of statements about AI, examples of which include:

- AI can be a valuable tool for learning.
- AI can help me manage my time more effectively.

- I am concerned about the potential for AI to replace human teachers.
- I am concerned about the potential for AI to reduce critical thinking skills.
- I am concerned about the potential for AI to be used for academic dishonesty.

For this series of statements, participants were asked to respond on a Likert scale as follows: Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree.

The final question on the survey asked was "Do you think AI will have a positive or negative impact on education in the future?" Participants were asked to respond on a Likert scale as follows: Very positive, Positive, Neutral, Negative, Very negative.

4. RESULTS

The survey began with questions to evaluate the participants gender, education, and familiarity with AI. Of the total participants (255), 13.7% were female while 86.3% were male. Next, participants were asked if they were currently enrolled in college classes and 86.7% reported they were enrolled while 13.3% reported they were not enrolled in a college course. Participants were asked what their level of education was, and the results are provided in Table 1 below. Additionally, Table 2 provides the participants self-evaluation of their familiarity with the concept of AI. The results illustrate the majority, approximately 92.9%, were extremely familiar or very familiar with the concept of AI.

Level of Education	Percentage
Freshman	20.3%
Sophomore	1.6%
Junior	6.6%
Senior	34.0%
Graduate Student	15.2%
Post-Graduate (Doctorate)	8.6%
Other	13.7%

Table 1: Level of Education

Level of Education	Percentage
Extremely Familiar	56.6%
Very Familiar	36.3%
Somewhat Familiar	5.9%
Not so Familiar	1.2%

Table 2: Familiarity with AI

The next series of questions tried to understand how many participants have leveraged AI tools for academic purposes and what tools have they used. Of the participants, 97.3% have used AI tools for academic purposes while 2.7% have not. One of the survey questions asked participants how often they are using AI Tools for academic purposes and Table 3 below provides the results. Approximately 88.5% of the participants have used AI tools for academic purposes "Often" or "Always." Table 4 summarizes which tools the participants have used and they were permitted to select multiple responses. One participant listed "Artflow AI" in the other category for AI Tools used for academic purposes.

How Often AI Used	Percentage
Always	58.9%
Often	29.6%
Sometimes	8.2%
Rarely	2.1%
Never	1.2%

Table 3: How Often Used AI for Academic Purposes

Tool Used	Percentage
ChatGPT	83.6%
Microsoft CoPilot	49.2%
Claude	41.8%
Grok	19.5%
Gemini	24.6%
Quillbot	5.9%
DALL-E	5.9%
Midjourney	6.6%
IBM Watson	4.7%
Grammarly	10.5%
Canva Magic Studio	3.5%
Other	.4%

Table 4: AI Tools used by students

While understanding which tools participants used was a foundational element to this study, the researchers found it pivotal to understand what tasks they used AI to complete. Table 5 below provides the breakdown of these response and participants were permitted to select more than one task.

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Task	Percentage
Research	64.5%
Writing / text generation	48.8%
Problem-solving	42.6%
Data analysis	32.8%
Image generation	20.3%
Video generation	12.9%
Language learning	10.9%
Personalized tutoring	14.8%
Time management	12.5%
Coding / programming	7.4%
Task automation	4.7%
Other (please specify)	0.4%

Table 5: Tasks Completed using AI

To assess participants' perceptions regarding the use of AI tools in educational contexts, the survey included five targeted questions. Tables 6 through 10 provide the participants perceptions on AI being valuable for learning, AI personalizing the learning experience, AI helping learn more effectively, AI improving their academic outcomes, and AI helping manage time more effectively. Lastly, participants were asked if AI would have a positive or negative impact on education in the future.

Level	Percentage
Strongly Agree	52.0%
Agree	39.1%
Neither Agree or Disagree	7.4%
Disagree	0.8%
Strongly Disagree	0.8%

Table 6: Valuable for Learning

Level	Percentage
Strongly Agree	23.4%
Agree	50.4%
Neither Agree or Disagree	18.8%
Disagree	5.5%
Strongly Disagree	2.0%

Table 7: Personalize Learning Experience

Level	Percentage
Strongly Agree	20.7%
Agree	55.5%
Neither Agree or Disagree	16.8%
Disagree	4.7%
Strongly Disagree	2.4%

Table 8: Learn more Effectively

Level	Percentage
Strongly Agree	18.4%
Agree	60.9%
Neither Agree or Disagree	16.4%
Disagree	3.1%
Strongly Disagree	1.2%

Table 9: Improve Academic Outcomes

Level	Percentage
Strongly Agree	17.2%
Agree	57.0%
Neither Agree or Disagree	19.1%
Disagree	4.7%
Strongly Disagree	2.0%

Table 10: Manage Time more Effectively

To better understand the participants perceptions, the researchers correlated five perception variables with both GENDER and LEVEL_OF_EDUCATION. Statistical significance (p-value of less than or equal to 0.05) was found in one case for Gender and the results are displayed in Table 11 below. Table 12 displays the correlation between LEVEL_OF_EDUCATION with the same five variables and in each case the variables were statistically significant with LEVEL_OF_EDUCATION.

Variable	Chi-square Value	df	p-value (* indicates statistical significance)
Valuable for Learning	8.033	5	.154
Personalize Learning Experience	22.200	5	.000*
Learn more Effectively	6.685	5	.245
Improve Academic Outcomes	8.363	5	.137
Manage Time more Effectively	8.736	5	.120

Table 11: Gender Chi-Square Analysis

Variable	Chi-square Value	df	p-value (* indicates statistical significance)
Valuable for Learning	79.417	35	.000*
Personalize Learning Experience	111.575	35	.000*
Learn more Effectively	65.769	35	.001*
Improve Academic Outcomes	66.649	35	.001*
Manage Time more Effectively	81.802	35	.000*

Table 11: Level of Education Chi-Square Analysis

5. DISCUSSION

Most Prevalent Tools

Participants were asked if they are using tools to support academic purposes, where 88.5% stated they have used at least one tool. A total of 11 tools were listed, and participants were permitted to select multiple tools as shown in Table 4 above. Of the responses, it was most notable that five tools were most adopted which include ChatGPT (83.6%), Microsoft CoPilot (49.2%), Claude (41.8%), Gemini (24.6%), and Grok (19.5%). The remaining six selections had approximately 10% or less of the respondents reporting they used it. A study by Almassed et al. (2024) reported that ChatGPT was the most popular tool with 86.2% of the respondents using it. Additionally, the study reported that other popular AI tools included Gemini and Copilot which were also selected within the top five tools of our study. ChatGPT being the top-rated tool is not surprising as it is optimized for broad utility and can include academic use cases (Silva, et.al, 2024).

Additionally, 97.3% of the participants reported that they have used AI tools in the past for academic purposes. Participants were also asked to identify their level of usage and 88.5% stated they used it often or always in their academic. With a large response stating they use AI tools for academic purposes, the AI tools being well adopted, and the results being aligned with prior literature, the researchers found these results were an accurate depiction of AI tool usage for academic purposes.

Common Uses of GenAI

The study reported high adoption of specific AI tools by the participants. Next, the participants were asked to identify tasks that they would complete using AI tools. A large portion of the respondents (64.5%) stated they used it for research. Other top tasks selected by the participants included writing / text generation (48.8%), problem-solving (42.6%), data analysis (32.8%), image generation (20.3%), video generation (12.9%), and language learning (10.9%). When considering these tasks, they make up many primary duties that students perform in academia. As a secondary measure of adoption, these results illustrate that the participants are using AI Tools for a wide variety of primary tasks that are incorporated into their academic journey.

Perceptions of GenAI Tools

The researchers wanted to understand student perceptions of GenAI tools by evaluating 5 key variables: Valuable for Learning, Personalize Learning Experience, Learn more Effectively, Improve Academic Outcomes, and Manage Time more Effectively. A positive perception was aligned with participants responding "Strongly Agree" or "Agree" to AI helping these core areas. In all five of these variables, a majority of participants (at least 73%) responded favorably that AI would have a positive impact in their academic tasks.

This impact was further supported when the researchers asked if the participants overall felt if AI had a positive or negative impact on education in the future and 92.6% reported a "Very Positive" or "Positive" impact. A final analysis evaluated the statistical significance between these five variables and two variables (GENDER and LEVEL_OF_EDUCATION). For GENDER, there was a correlation between that and Personalized Learning Experience. However, LEVEL_OF_EDUCATION had a statistical significance among all five variables where the higher the level of education, the more positive their perception of AI in education.

6. CONCLUSIONS

The use of AI tools for academic purposes has grown substantially in recent years. As AI evolves and use-case driven tools for education are introduced, students will have additional opportunities to leverage these tools for academic purposes. At the present, it is clear that tools such as ChatGPT and Microsoft Copilot are widely used and increasingly adopted in academia, even though these tools are aligned for broad

utilization. While other tools did not have as high of an adoption rate, it would be fair to assume that given time and enhancements, their adoption will also improve.

Most notable is the perceived positive impact the participants stated on AI's usage in academia. Overall, participants found that the tools are aiding in their academic tasks, which can reduce the delivery time of projects and academic work. One could correlate this movement as we moved from the traditional encyclopedia to Google. Information was available at our fingertips and thus reduced the time needed to do research. If students are finding these tools to improve the efficiency and delivery timelines for their work, they will understandably see the impact as positive. But the question will still remain on the accuracy of information provided by these AI tools and the impact of disseminating derived information through academia.

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