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The Rapid Rise of Generative AI Adoption among First-Year College Students

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Abstract

This paper explores the rapid adoption of Artificial Intelligence (AI) tools among 1,597 first-year college students at two New England college campuses during three semesters (Spring 2023, Fall 2023, and Spring 2024), with a specific focus on Generative AI (GAI) tools like ChatGPT. After a comprehensive literature review and empirical analysis, findings indicate a significant increase in GAI awareness and utilization, primarily for academic tasks such as homework assignments, with some use in quizzes and exams. Regression analysis reveals that strong data literacy skills, specifically those related to data discovery, collection, and analysis, are linked to the adoption of AI technologies, while general digital literacy skills such as ability to use productivity applications and databases were not found to have a similar correlation. These results amplify the importance of enhancing data literacy to facilitate effective AI tool integration in academic settings. The study highlights the need for targeted educational strategies to improve data literacy, thereby promoting equitable access to AI technologies and mitigating potential biases. A limitation of this study is that the scope is limited to incoming college students. This research contributes to the understanding of AI adoption dynamics in higher education, providing insights for educators and policymakers to support the ethical and effective use of GAI tools in academic settings.

Keywords: Artificial Intelligence, ChatGPT, Data Literacy, Digital Literacy, Technology Adoption.

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The Rapid Rise of Generative AI Adoption among First-Year College Students

Mark Frydenberg, Kevin Mentzer, and Adam Patterson

1. INTRODUCTION

The topic of Artificial Intelligence (AI) is sweeping across college campuses, highlighting the universally high interest in this emerging technology. Faculty are struggling with the ethical issues that arise from the use of AI while also looking for ways to capitalize on this technology for the educational opportunities it enables (Mew & Money, 2024; Zhong & Kim, 2024).

The adoption of AI technologies among students introduces new opportunities and challenges in educational environments (Fuchs & Aguilos, 2023; Murugesan & Cherukuri, 2023). Many students are leveraging AI for various purposes, from generating ideas and conducting research to completing assignments and preparing for exams (Fuchs & Aguilos, 2023; Jovanović & Campbell, 2022). This widespread use signifies a shift in how knowledge is acquired and processed, prompting a need to reassess traditional educational models (BaïDoo-Anu & Owusu Ansah, 2023). Understanding the patterns of AI usage among students can offer insights into their learning behaviors and preferences, which, in turn, can inform the development of more effective teaching strategies and policies.

The rapid rise of generative AI tools into the student experience necessitates understanding more about the students using them and for what purposes. This research aims to contribute to the increasing literature on uses of AI in education by considering first-year college student behavior and attitudes toward AI tools. The following research questions drive this analysis:

RQ1: How quickly are first-year college students adopting the use of AI?
RQ2: What demographic characteristics and technology competencies describe first-year college students who are likely to adopt AI tools?
RQ3: For what purposes are first-year college students using AI tools to support their academic work?
RQ4: How do first-year college students perceive the ethics of AI usage in the classroom, and what factors influence their perceptions?

2. LITERATURE REVIEW: TECHNOLOGY ADOPTION AND AI

The use of generative Artificial Intelligence tools have been a major topic of debate in academia since Chat Generative Pretrained Transformer (ChatGPT) was released in November 2022 by OpenAI (Murugesan & Cherukuri, 2023). Generative AI tools use large language models that generate human-like responses from inputs, or prompts, through natural language processing and statistics (Jovanovic & Campbell, 2022). In addition to generating text, some generative AI tools also create images and video, generate speech, and write and debug code. The technology has a wide range of expertise and domain knowledge as the models are trained on over 175 billion parameters, making it ideal for personalized learning in academia (Brown et al., 2020).

Generative AI tools have experienced swift adoption within students at higher education institutions (Wong, 2024). For educators, the benefits of novel, creative, and always available learning are often compared against the potential for undermining academic integrity and increased bias (Eke, 2023). For students, the adaptive and interactive learning is often weighed against ethical and proper use of the technology (BaïDoo-Anu & Owusu Ansah, 2023).

According to Baldassarre et al. (2023), a primary area of concern is the potential for adoption bias increasing social inequality. Social injustice may be enhanced as learning outcomes become unfair to students that do not use AI tools (Chan & Wu, 2023). Thus, it is of interest for educators to better understand mechanisms driving adoption in creating interventions for technology laggards to embrace GAI tools (Venkatesh, 2022).

Kasneci et al. (2023) report that a clear strategy is needed for educational institutions to optimize GAI in educational settings. To optimize learning with GAI, insights about student usage are imperative in closing the theoretical gap as potential influencing factors may be properly addressed (Fuchs & Aguilos, 2023). According to Hwang and Chen (2023), it is predicted that GAI

applications will increase rapidly in the coming years, thus it is imperative to understand student usage in creating efficient learning strategies.

Sharples (2023) details adoption of GAI as a social process of exploration dependent not only on AI systems themselves, but with interactions among other students. According to Ivanov et al. (2024), social impact has potential to be a major driver of behavioral intention within AI adoption at academic institutions. Jo and Bang (2023) corroborate these findings by reporting that social influence may be an essential driver of ChatGPT adoption at the University level through evaluation of theoretical technology acceptance models. Empirical research by Gupta (2024) denotes social influence, domain experience, technology familiarity, and training to be factors that impact GAI adoption. However, empirical research also reports that social influence does not play an important role in student usage of ChatGPT (Matalka et al., 2024).

A study by Saif et al. (2024) confirms the usefulness of Technology Acceptance Model (TAM) regarding GAI usage. The Unified Theory of Acceptance and Use of Technology (UTAUT) model is shown to align with ChatGPT adoption (Strzelecki, 2023). Literature surrounding the Value-based Adoption Model (VAM) is less prominent in relation to GAI. The VAM model compares perceived benefits and costs among users when considering adoption (Sohn & Kwon, 2020). Although not specifically utilizing the TAM framework, research by Tiwari et al. (2023), found that student adoption of GAI is driven primarily by usefulness, social presence, and enjoyment; however, perceived ease of use was not found to significantly determine usage.

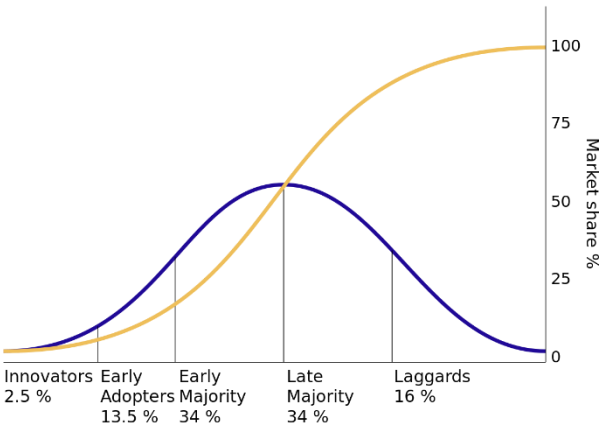


Figure 1. Rogers Diffusion of Innovation Curve

Rogers (1962) developed the Diffusion of Innovations Theory (DOI) to explain how new ideas or technologies spread among a social group (See Figure 1). According to Rogers, innovators are the first adopters of technology and are characterized by being willing to take risks. Early adopters follow and are influential in the technological adoption process. Early majority users adopt innovations after they have been proven by early adopters. The late majority are more skeptical and join later after the majority have adopted a technology. Laggards resist change and prefer more traditional approaches.

Raman et al. (2023) state that understanding adopter categories utilizing Rogers' DOI assists in strategic and successful diffusion of technological innovations by examination of innovators and early adopters. Although extensive literature exists detailing the usefulness of TAM and DOI for new technologies, a literature review specifically for large language models and GAI showed that an acceptance of established models in education exists, but with doubts (Baytak, 2023).

3. METHODOLOGY

This descriptive research study aims to gain insights into the adoption and usage patterns of generative AI applications by first-year college students at two different business-focused New England institutions. This study extends the work of McCarron & Frydenberg (2023) which focused on digital skills of first-year students, and Mentzer, et al. (2024), which focused on their data literacy skills.

Limiting this study to first-year students provides insights into the AI skills they have upon entering college. This research analyzes students' AI adoption during a three-semester period beginning with Spring 2023, just weeks after ChatGPT was introduced.

Sample

Students enrolled in either the "Solving Business Problems with Information Technology" (Bentley University) or "Introduction to Data Literacy" (Nichols College) were offered this survey. These courses primarily serve first-year students in each university and include students across all majors. Most students in these courses have not selected a major this early in their college careers. Both courses are mandatory introductory technology courses for all first-year students at their respective institutions. A total of 1597 participating students completed this survey

during the first weeks of the Spring 2023 (n=522), Fall 2023 (n=610), and Spring 2024 (n=465) semesters.

We surveyed the enrolled students regarding their own familiarity with and usage of AI tools. To understand characteristics of first-year students who were likely to adopt ChatGPT usage, we adopted the series of data literacy and digital literacy questions as developed by Mentzer, et al. (2024). In addition, to ascertain their self-assessed familiarity with technology, we asked the respondents whether they felt they were "tech savvy," which we define as "the extent to which one is informed or proficient about the use of digital technologies and devices (Mentzer et al., 2024)."

To understand whether students were using AI and/or familiar with the technology we asked survey questions shown in Appendix I.

Independent Variables

Demographics
- Age
- Gender
- Ethnicity
- High School Location
- First Generation Student

Data Literacy
- Reading: Data Discovery
- Reading: Quality – Trustworthiness
- Reading: Quality – Errors
- Writing: Collection
- Writing: Management
- Comprehension: Analysis
- Comprehension: Interpretation
- Comprehension: Visualization
- Comprehension: Presentation
- Comprehension: Decision Making

Digital Literacy
- Application Usage
- Word Processing
- Spreadsheets
- Presentations
- Database Tasks
- Operating System Tasks
- Cloud Tasks
- Web Tasks
- Media Tasks

Control Variables:
- Tech Savviness
- Others' use of ChatGPT
- Semester

Table 1. Independent and Control Variables

A logistic regression model was used to determine characteristics driving adoption of ChatGPT (Cox, 1959). The dependent variable was ChatGPT usage with responses coded "non-use" if the respondent replied they had never heard of it or had never used it and coded "use" for all other responses.

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

Independent variables included demographics, data literacy skills, digital literacy skills, and tech savviness. We controlled for the semester to understand likelihood of adoption over time (Lever et al., 2016). Table 1 shows the independent variables and control variables used in our analysis.

The logistic regression model makes predictions based on the log-odds of the positive outcome (i.e. ChatGPT Use). The parameters are exponentialized to deliver a more interpretable result, odds ratio, rather than log odds ratio (Nick & Campbell, 2007). Parameter probabilities are calculated by dividing the odds ratio by 1 plus the odds ratio, and then subtracting the baseline model probability (Huang & Moon, 2013; Liberman, 2005).

4. RESULTS

This section discusses the initial adoption patterns for GAI tools, adoption characteristics, and student use during the three-semester timeframe since GAI became widely available.

Initial Adoption Patterns

As can be seen in Figure 3, at the start of the Spring 2023 semester shortly after the release of ChatGPT, many first-year students (66.67%) had neither used ChatGPT nor known other students using it. One year later (Spring 2024) this had dropped to just 4.21% not using nor knowing others using the tool. Personal use went from 15.63% in Spring 2023 to 80.93% usage in Spring 2024.

Initially, we would expect that students do not use technology, nor do they know people who do (C). As the word of the technology spreads, people may know a few early adopters, though most still will not have used or tried the technology themselves (A), or alternatively, some users might adopt the technology independently (D). Later, we would expect users to actively use the technology themselves. As mass adoption is obtained, personal usage, along with knowing others who use the technology would occur (B).

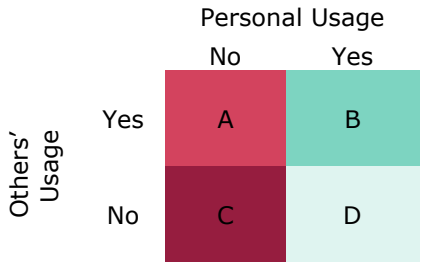


Figure 2. Personal vs Others' Usage

We looked across the immediate three semesters (since the release of ChatGPT in November 2022) to determine trends for how students and their peers used AI tools, as shown in Figure 3.

As can be seen in Figure 3, at the start of the Spring 2023 semester shortly after the release of ChatGPT, many students (66.67%) had neither used ChatGPT nor known other students using it. One year later (Spring 2024) this had dropped to just 4.21% not using nor knowing others using the tool. Personal use went from 15.63% in Spring 2023 to 80.93% usage in Spring 2024.

These numbers suggest a rapid progression through Rogers' Diffusion of Innovation curve. Within months of release of ChatGPT, with personal usage at 15.63%, we were nearing the end of the Early Adopters phase and approaching the Early Majority. By Fall 2023 with personal usage at 53.63% we had moved through the Early Adopters and moved into Late Majority.

By Spring 2024 we were approaching the end of Late Majority and nearing the Laggards phase. If this trend continues then it suggests use of ChatGPT will be in the Laggard phase in fewer than 18 months from its initial release.

Adoption Characteristics

Using the Personal Usage variable as our target variable and the independent variables in Table 1, we ran our logistic regression model. Appendix II shows the results of this model. In logistic regression, confidence intervals that contain the value 1 do not reject the null hypothesis for each parameter. In contrast, traditional ordinary least squares techniques reject the null hypothesis if the parameter contains the value 0.

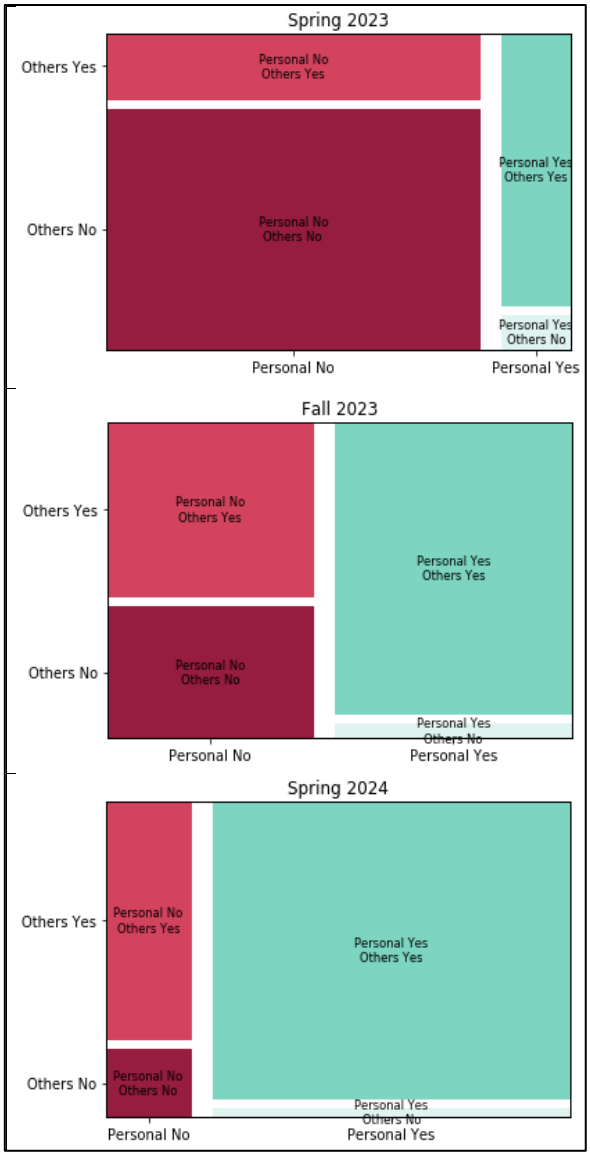


Figure 3. Generative AI Usage Trends of First-Year College Students and their Peers

Turning first to the demographic variables related to the first-year students surveyed, in Appendix II, gender and high school location were significant. Males had a 70% increase in probability of using ChatGPT over females holding all other variables constant, while international students had a 68% increase over U.S. students, holding all other variables constant. Age, ethnicity, and first-generation classification were non-significant. Students may come from high schools where they had (or did not have) exposure to or access to new technologies, and that could impact their own willingness to adopt AI technologies.

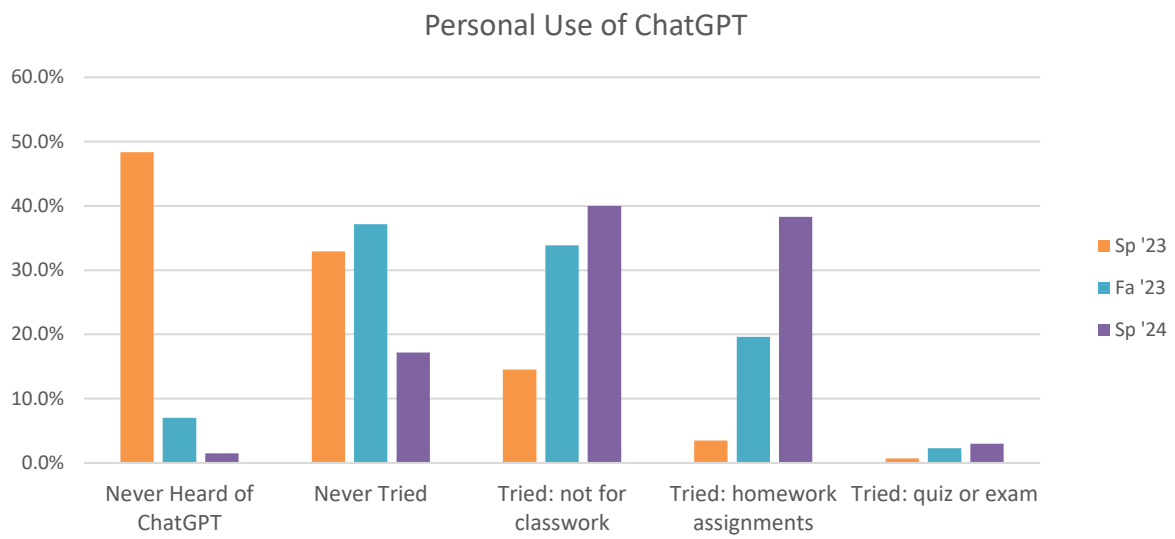


Figure 4. Personal Use of ChatGPT

In Appendix III, the 95% confidence interval does not intersect the value of 1 (shown by the red dashed line) for parameters such as gender and tech savviness, indicating a significant positive effect of these factors. The interval intersects the value 1 for web tasks, visualization, and several other factors, suggesting that these do not have a statistically significant effect on ChatGPT usage. Data and AI skills are hypothesized to be related as according to Schüller (2022), data literacy and AI literacy skills intersect within educational standards. While research by Ng et al. (2022) indicate that AI literacy should emerge as a new literacy skill set in response to digital literacy, our results corroborate that AI literacy is more related to data literacy skills and has less in common with digital literacy. Upon examining data literacy and digital literacy skills, no digital literacy skills are significant while the data literacy skills of Discovery, Collection, and Analysis are significant.

The significant variables within data literacy have differing influences on AI usage. Students with higher self-reported skills in Discovery and Collection have greater likelihood of using ChatGPT. For each one unit increase in Discovery and Collection skills, the likelihood of students using ChatGPT increased by 16% and 25%, respectively. Conversely, respondents with higher skills in Analysis have decreased odds of using ChatGPT. For every one unit increase in Analysis skills, the likelihood of using ChatGPT decreased by 21%. Students with increased analysis skills may not use ChatGPT if they are confident in their own abilities to analyze information.

These skills directly relate to understanding, managing, and analyzing information which are important when using ChatGPT and other AI tools. Students need to be able to validate that AI-generated results are accurate.

The lack of significance of digital literacy skills suggests that basic competencies in using digital tools do not significantly influence AI adoption. This might be because of the perception that as digital natives, most students have basic digital literacy skills already, even though prior research has shown otherwise (McCarron & Frydenberg, 2023). While many students are proficient in launching a web browser and navigating to the ChatGPT website to interact with it, they lack the ability to critically evaluate the information it generates. (Mentzer et al., 2024). A study by Paris (2002) showed that a majority of students lack critical thinking processes when asked questions about websites that they were visiting. The ease of use of AI tools lessens the influence of a student's digital literacy skills as a differentiating factor between those who have adopted the use of AI tools, and those who have not.

The significance of some of the data literacy skills and the insignificance of all digital literacy skills in predicting AI adoption suggests that proficiency

in handling data is indicative of students' likelihood to use AI tools. This underscores the need for providing instruction to enhance students' data literacy to foster greater AI adoption, as these skills are evidently more relevant to effectively engaging with AI technologies.

Finally considering the control variables, all three were significant. Students who consider themselves more Tech Savvy had a 58% increase in probability of using ChatGPT holding all other variables constant, students who knew others who used ChatGPT had a 74% increase in probability of use, and as each semester passed there was a 74% increase in the probability of using ChatGPT compared to the prior semester.

These results suggest that gender, high school location, certain data literacy skills, tech savviness, and contextual factors like the use of ChatGPT by others and the academic semester significantly impact students' adoption of ChatGPT.

Student Use

Figure 4 shows the results when first-year college students were asked how they personally use ChatGPT. While 48.3% of students had never heard of ChatGPT in the beginning of Spring 2023 semester, this number dropped to just 7.0% in the Fall 2023 semester and 1.5% by spring 2024. This highlights how rapidly knowledge of AI spread among college age students.

Combining the "Never Heard of" and "Never Tried" we see that accounted for a total of 80.2% of students surveyed in the spring 2023, this number dropped to 44.2% in the Fall 2023 and dropped further to 18.7% by the Spring 2024. This suggests a rapid familiarity with the tool spreading between Spring 2023 and Spring 2024.

Survey questions were structured to increase in severity (See Appendix I for questions). We see a rapid increase from Spring 2023 to Fall 2023 for those Trying the tool but not for classwork. From Fall 2023 to Spring 2024 we see a rapid increase of those using it for homework assignments (but not quizzes or exams). As expected, this suggests that students were getting comfortable with the tools before using them for classwork and then subsequently used them for classwork. Across all three semesters there is low usage for ChatGPT to help with quizzes and exams. This could be a result of waiting one more semester before applying it to quizzes and exams (if it follows the same trend of moving from non-classwork to homework usage) or could be due to self-reporting bias. We will explore this more next.

Others' Use

We then asked students how other first-year college students were using ChatGPT (Figure 5). As expected, those who weren't familiar with ChatGPT remained consistent. By the Spring 2024 semester, 43.4% of respondents indicated they knew others who were using it for classwork but not quizzes or exams. 29.5% knew of others who were using it to help with quizzes or exams. This latter finding suggests that a low value for self-reported use for quizzes or exams could be a sign of self-reporting bias. Alternatively, first-year students could be familiar with a few well-known students who have used it for quizzes or exams. Overall, 72.9% of these students know of other students using ChatGPT for either homework assignments or quizzes or exams.

Generative AI Helpfulness

Our next set of questions focused on the perceived helpfulness of Generative AI tools (see Figure 6). While participants responded based on a 5-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree), to simplify the presentation, Figure 6 combines the Strongly Disagree/Disagree and Agree/Strongly Agree categories. Figure 6 has ordered the questions from those applications least likely to be perceived useful to most likely be perceived as useful, as indicated by the increasing values of the green bars. This shows us that students think usefulness in their job is least applicable while usefulness for personal tasks is most applicable.

These results suggest that students find Generative AI tools helpful for a variety of tasks, most notably personal and homework or academic related tasks. The lower response for "in my job" may be because most first-year students who completed this survey are not employed or have not had the opportunity to use Generative AI tools in a professional setting.

It is interesting to note that students find Generative AI more useful in writing essays or papers than for writing job or college applications. One reason for this could be that they are more likely to have exposure to Generative AI recently, and therefore, have written essays and papers more recently than job or college applications. This result could also reflect that students do not have as much confidence in using Generative AI tools for the personal reflection that is needed for job or college applications.

ChatGPT Use

Our final set of questions is meant to summarize

feelings about the ethics of ChatGPT usage (see Figure 7). Usage for college work correlates strongly with a student's perception of whether it is acceptable to use it for coursework with approximately 60% of students indicating that they disagree that they will use it for coursework. 43.1% of first-year students are unsure or disagree that it is acceptable to use Generative AI tools even for personal use.
This suggests that these students in general are unsure when it is appropriate to use Generative AI tools and when it is not appropriate.

Finally considering the control variables, all three were significant. Students who consider themselves more Tech Savvy had a 58% increase in probability of using ChatGPT holding all other variables constant, students who knew others who used ChatGPT had a 74% increase in probability of use, and as each semester passed there was a 74% increase in the probability of using ChatGPT compared to the prior semester.

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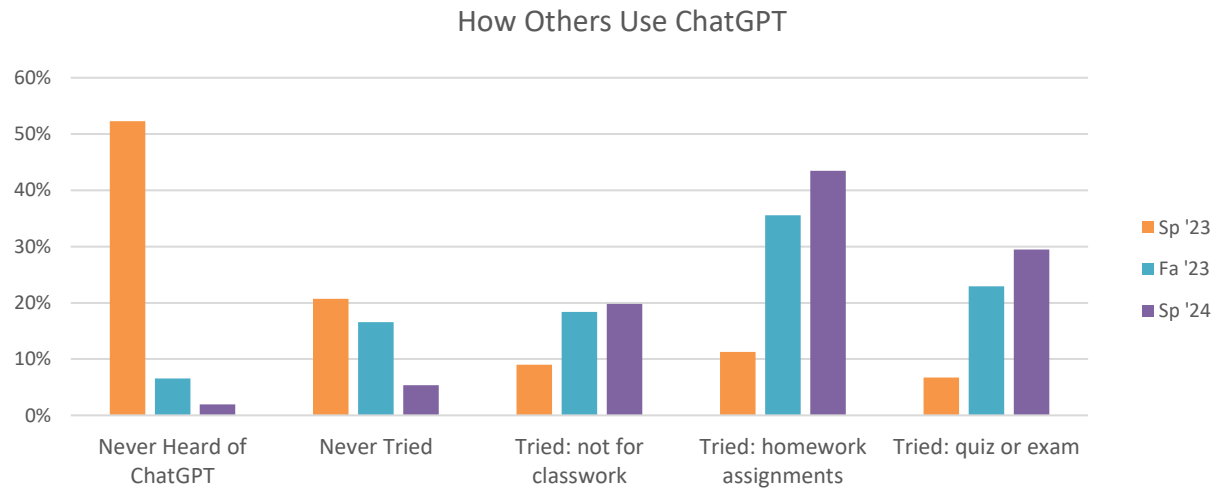


Figure 5. How Others Use ChatGPT

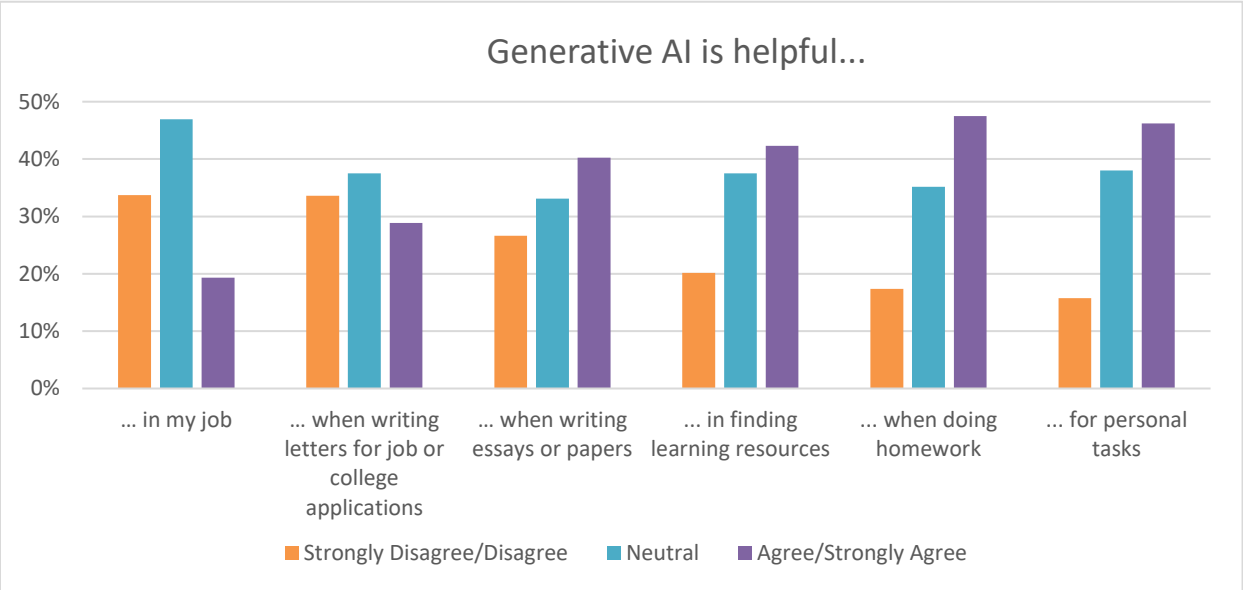


Figure 6. Perceived Helpfulness of Generative AI Tools

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It is interesting to note that students find Generative AI more useful in writing essays or papers than for writing job or college applications. One reason for this could be that they are more likely to have exposure to Generative AI recently, and therefore, have written essays and papers more recently than job or college applications. This result could also reflect that students do not have as much confidence in using Generative AI tools for the personal reflection that is needed for job or college applications.

ChatGPT Use

Our final set of questions is meant to summarize the students' feelings about the ethics of ChatGPT usage (see Figure 7). Usage for college work correlates strongly with a student's perception of whether it is acceptable to use it for coursework with approximately 60% of students indicating that they disagree that they will use it for coursework. 43.1% of students are unsure or disagree that it is acceptable to use Generative AI tools even for personal use.

This suggests that students in general are unsure when it is appropriate to use Generative AI tools and when it is not appropriate.

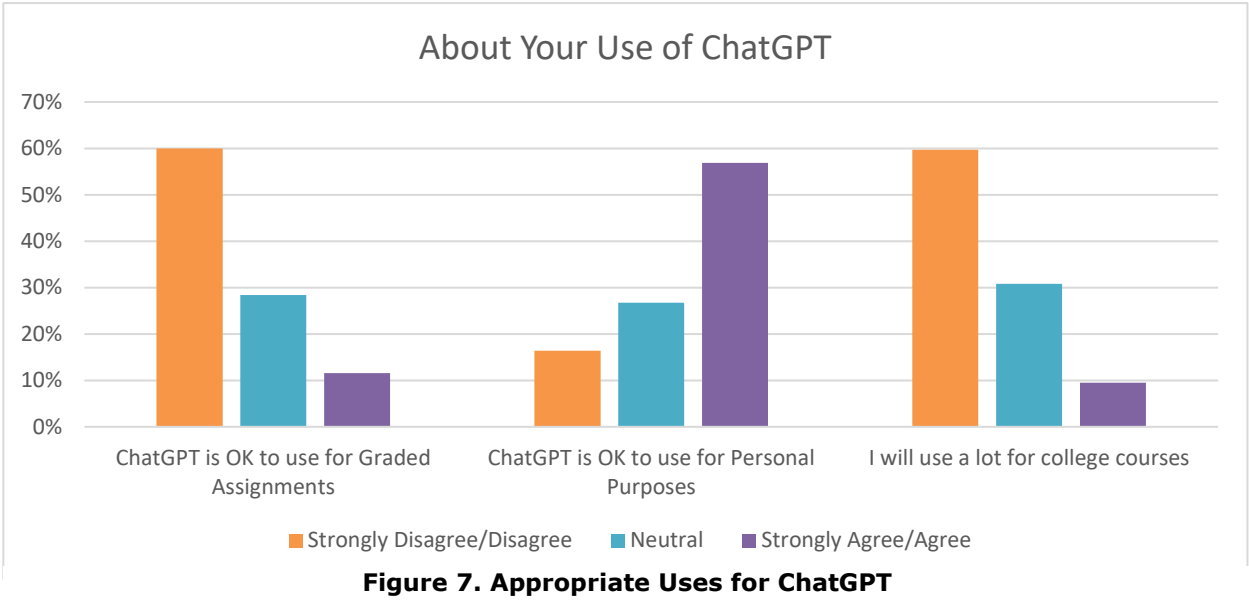


Figure 7. Appropriate Uses for ChatGPT

5. DISCUSSION AND CONCLUSIONS

This discussion summarizes the findings as they relate to the research questions that guided this study.

RQ1: How quickly are first-year college students adopting the use of AI?

Our results demonstrate a clear progression of increased awareness, experimentation, and adoption of ChatGPT. The rapid adoption of ChatGPT among first-year college students during a 12-month period demonstrates the importance of including ample instruction for using it effectively and responsibly in personal, academic, and professional contexts. Initially, most students had not used nor known peers who used ChatGPT, but as the tool became more widely used, this trend shifted drastically. By Spring 2024, nearly 81% of all students used ChatGPT and 72.9% knew others who were using ChatGPT for classwork (homework or exams). These results demonstrated a rapid movement through Rogers' Diffusion of Innovation Curve from early adopters to late majority in 18 months.

RQ2: What demographic characteristics and technology competencies describe first-year college students who are likely to adopt AI tools?

Students who identified as male and international students had higher likelihood of using ChatGPT. Those with data literacy skills are more likely to use ChatGPT for more complex tasks. Our study concludes that data literacy, gender, tech savviness and social influence all contribute to students' adoption of AI tools. College curricula need to emphasize data literacy to encourage students to use Generative AI tools and emerging technologies effectively and efficiently.

It is possible that students with increased analysis skills do not use ChatGPT as they are confident in their own abilities to analyze information.

RQ3: For what purposes are first-year college students using AI tools to support their academic work?

As students become more familiar with the capabilities and benefits of Generative AI tools like ChatGPT, they are more likely to integrate them into their academic work, particularly for homework and, to a lesser extent, for assessments such as quizzes and exams.

RQ4: How do first-year college students perceive the ethics of AI usage in the classroom, and what factors influence their perceptions?

Our data indicates that students are still uncertain about how appropriate it is to use ChatGPT and that students are looking to see how their peers are using it. This suggests that colleges and universities need to offer stronger guidance to students as to the appropriateness of using Generative AI tools such as ChatGPT.

Limitations and Future Research

This study emphasizes the critical importance of

having data literacy skills to fully utilize AI tools. AI literacy goes beyond traditional data analysis and interpretation and requires an understanding of the limitations and capabilities of AI tools, the ability to recognize bias in and reliability of its results, and ethical considerations regarding its use. While this research contributes to our understanding of AI adoption among first-year college students, future research will focus on identifying specific skills that contribute to AI literacy and measuring the extent to which students have these skills, so they can engage with AI tools as informed and responsible users.

Analysis of survey data from the Fall 2024 semester regarding generative AI usage trends of students and their peers as shown in Figure 3 did not reveal any significant differences from the Spring 2024 semester. This suggests that the adoption of GAI tools such as ChatGPT has plateaued. This suggests that students who are likely to adopt the tool have already done so, and the few who have not used them are not likely to do so. This behavior aligns with Rogers' Diffusion of Innovation Curve, as laggards are least likely to adopt new technologies.

This study emphasizes the critical importance of having data literacy skills to fully utilize AI tools. AI literacy goes beyond traditional data analysis and interpretation and requires an understanding of the limitations and capabilities of AI tools, the ability to recognize bias in and reliability of its results, and ethical considerations regarding its use. While this research contributes to our understanding of AI adoption among college students, future research will focus on identifying specific skills that contribute to AI literacy and measuring the extent to which students have these skills, so they can engage with AI tools as informed and responsible users.

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Appendix I. Survey Questions about AI Usage

Which of these statements best describes how <u>you</u> have used ChatGPT: (Select one)

- I've never heard of ChatGPT
- I've heard of ChatGPT but have never tried it myself
- I've tried ChatGPT but have never used it for classwork
- I've used ChatGPT to help answer homework assignments but not quizzes or exams
- I've used ChatGPT to help answer quizzes or exam questions

Which of these statements best describes how others you know have used ChatGPT: (Select one)

- I've never heard of ChatGPT
- I've heard of ChatGPT but don't know anyone else who has tried it
- I know others who have tried ChatGPT but not for classwork
- I know others who have used ChatGPT to help answer homework assignments but not quizzes or exams
- I know others who have used ChatGPT to help answer quizzes or exam questions

Before coming to college, how often have you used ChatGPT or other AI tools to:
(Responses: Never, Little, Somewhat, Frequently, Very Frequently)

1. help you with homework
2. help you with writing essays or papers
3. write a cover letter for a job or college application
4. help you in your job
5. help with personal (not-school or work related) tasks
6. find learning resources

To what extent do you agree with these statements about ChatGPT or other generative AI tools?
(Responses: Strongly Disagree, Somewhat Disagree, Neutral, Agree, Strongly Agree)

1. They are helpful when doing homework
2. They are helpful when writing essays or papers
3. They are helpful when writing letters for job or college applications
4. They are helpful in my job
5. They are helpful for personal tasks
6. They are helpful in finding learning resources

To what extent do you agree with these statements:
(Responses: Strongly Disagree, Somewhat Disagree, Neutral, Agree, Strongly Agree)

1. ChatGPT helps me reach my learning goals
2. It is okay to use ChatGPT to help me with graded class assignments
3. It is okay to use ChatGPT for personal purposes
4. I think I will use ChatGPT a lot to help me with my college courses

Appendix II. Regression Analysis

	Characteristic	Estimate Exp	Std. Error	z value	Pr(>|z|)	Sig
	(Intercept)	0.00602392	1.01129428	-5.0549262	4.31E-07	
Demographics	Age	0.82447206	0.38675851	-0.4990505	0.61774383	
	Gender	2.3541209	0.17715419	4.83289379	1.35E-06	***
	Ethnicity	1.05666723	0.04109728	1.34120385	0.17985428	
	High School Location	2.15767549	0.28155654	2.73135723	0.00630741	***
	First Generation Student	0.95888348	0.22125888	-0.1897583	0.84949851	
Data Literacy Skills	Reading: Data Discovery	1.16063837	0.07840564	1.89999296	0.05743404	**
	Reading: Quality - Trustworthiness	0.9679529	0.08352707	-0.3899557	0.69656933	
	Reading: Quality-Errors	0.91823002	0.09452987	-0.902438	0.36682424	
	Writing: Collection	1.25119137	0.09897494	2.26417094	0.0235636	***
	Writing: Management	1.05443753	0.09076459	0.58401049	0.55921326	
	Comprehension: Analysis	0.79318478	0.10359064	-2.2366795	0.02530729	***
	Comprehension: Interpretation	1.00846432	0.0978591	0.08613095	0.93136232	
	Comprehension: Visualization	0.93876078	0.10477302	-0.6031571	0.54640416	
	Comprehension: Presentation	1.12839831	0.10543814	1.14568792	0.25192431	
	Comprehension: Decision Making	1.06859367	0.10080572	0.65813181	0.51045344	
Digital Literacy Skills	Application Usage	0.91165035	0.23646576	-0.3911719	0.6956702	
	Word Processing	0.71059835	0.29474392	-1.1591347	0.24640128	
	Spreadsheets	1.00099828	0.18608623	0.00536195	0.99572181	
	Presentations	0.91679522	0.2831927	-0.3067563	0.75902887	
	Database Tasks	0.82847411	0.19116859	-0.9843128	0.32496175	
	Operating System Tasks	1.12379166	0.26484177	0.44067209	0.65945041	
	Cloud Tasks	1.03217864	0.21697188	0.14597168	0.88394375	
	Web Tasks	1.4252037	0.26310288	1.34667759	0.17808409	
	Media Tasks	0.81324336	0.3248304	-0.6364087	0.5245101	
Other	Tech Savviness	1.4018558	0.11913182	2.83548857	0.00457557	***
	Others use of ChatGPT	2.91666884	0.07901982	13.5465017	8.31E-42	***
	Semester	2.92557721	0.12661898	8.47812718	2.29E-17	***

Appendix III. Coefficient and 95% Confidence Intervals

