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Student Use of GenAI: Catalyst for Enriched Learning or Devil in Disguise?

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Abstract

Following their quick integration in academic process, AI tools remain a source of great controversy. It is viewed both as facilitators of teaching and learning and at the same time as the barrier to learning, to maintaining academic integrity and authenticity of academic content, and a cause to many other concerns. In this mixed methods study we surveyed the students from different colleges and majors in order to determine how they perceive AI and use AI tools to facilitate their learning. Another research goal was to investigate their opinions on the change of strategies that will be necessary to adapt education to the new reality. The results of the study show differences in the students' use of AI between different demographic groups and explains multiple strategies that the faculty follow introducing AI in their classroom. In addition, the study reveals dual results: while many students see the benefits of the use of AI, many of them emphasize the importance of introducing policies and controls to mediate its use.

Keywords: AI, artificial intelligence, students, perceptions, learning, strategies

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1. INTRODUCTION

After its introduction to new aspects of our lives in late 2022, AI, and particularly generative AI, has become a transformative moment in higher education. While the majority of students gladly adopt AI in their studies (Melnyk & Pypenko, 2024), faculty differ in their perceptions. Some view it as a new tool introduced to help the students, similar to search engines, computers, and other innovations that shifted academia back in the day. Some view it as a means of cheating and in general as a disruption to the academic process. Faculty opinions on AI presence vary from skeptical (AI should be avoided altogether in academia) to more positive (AI is just a new helpful tool that facilitates learning) (Mah & Gross, 2024). Regardless of these multiple beliefs, the truth is that AI is now part of our society, and it is important to adapt to the changes.

Students and faculty adopt a variety of AI tools: Large Language Models (LLMs) such as ChatGPT and Gemini, coding tools such as Claude Code, writing assistants similar to Grammarly, and many others. In the middle of the tension between AI-enhanced learning potential and growing academic integrity concerns, each of these tools causes debates and contradictory views: should we perceive Grammarly or ChatGPT as helpful assistants in writing papers, or should it be viewed as a barrier to the students' improving their writing skills, mastering the academic language, learning to correctly formulate their thoughts and make concise and efficient statements? Twenty years ago, some faculty were skeptical about programming platforms such as MS Visual Studio.NET, claiming that such tools were overly forgiving and preventing the students from learning the essence of programming (they autocorrected the statements, color coded, gave a selection of acceptable properties and methods, etc.) In some cases, faculty demanded that the students use Notepad and similar basic text editors for a more fundamental understanding of coding. Presently, should Claude Code be accepted as a coding assistant, or is it better to avoid it and let the students write their code from scratch?

Many research studies focus on AI capabilities and the technical side of AI, as well as adequate institutional policy for adopting AI; however, there is always a need for research that reveals the students' perspective on AI adoption and their new experiences. In this study we attempt to bridge this gap and address evidence-based academic adaptation of AI by the students, determining how they use AI to support their learning, and to find out what pedagogical strategies will emerge from the use of AI in higher education. We formulated the following research questions that will be answered as the result of this research:

RQ1: How are students using AI to support learning?

RQ2: How do students observe their instructors' response to student use of AI?

RQ3: What pedagogical strategies/changes are warranted in response to the increasing use of AI in higher education?

2. REVIEW OF THE LITERATURE

AI has been a factor in education since the 1990s but traces its roots back to the 1950's (Sousa & Cardoso, 2025). They also assert that there is need for further research to "mitigate the existing biases". Large language models (LLM) and generative artificial intelligence (AI), collectively a part of the general category of AI, is quickly permeating the realm of higher education. Transforming the way that knowledge is produced, shared, and accessed, it is altering traditional approaches to teaching, learning, research, and more (Adamakis & Rachiotis, 2025). Rajki et al. (2025), found differences in AI usage among students based on the type of courses the students are taking but also found gender differences influences their knowledge of AI. Disparities in access to AI tools across differing institutions and disciplines around the world are leading to uneven adoption (Matere, 2024; Zhao et al., 2025).

2.1 Student Use of AI

Studies suggest that students are readily adopting AI tools to assist in their learning (Melnyk & Pypenko, 2024). They generally perceive AI as augmenting their synthesis, evaluation, and analysis skills but also acknowledge the possibility of overreliance (Tahir et al., 2025; Galindo-Dominguez at al., 2026). Aprianto et al. (2025) corroborate their perceptions when AI is used within reflective and guided learning frameworks.

Personalized learning and adaptive instruction is one area where AI can have a significant impact on learners. A strong positive correlation exists between the integration of personalized learning platforms and learner academic progress (Ullah et al., 2025; Parveen et al., 2025). Specifically, AI tutoring systems with automated grading features have been shown to improve learner performance with personalized learning and enhanced feedback (Matere, 2024; Fragouli, 2025, Létourneau et al., 2025). When these platforms integrate pleasurable/enjoyable aspects, such as AR/VR and AI mediators in immersive environments, engagement and intention to use increase, which also increases inclusivity (Lam & Phi, 2025; Vehrer & Palfalusi, 2025).

From a tool perspective, chatbots, such as ChatGPT, are the most recognized and used tools among students (Epaminonda et al., 2025; Kock et al., 2025). Other bots, such as DALL-E, Copilot, and Gemini are also fairly widely used (Epaminonda et al., 2025; Haldar et al., 2025; Fitria, 2025). Some disciplines make use of field-specific chatbots, such as UpToDate Expert AI and Amboss AI Mode, within the healthcare field (Vishwanath et al., 2025; Wu et al., 2025). Beyond chatbots, Grammarly is a favorite among students for academic writing assistance (Setyowati et al., 2024; Selim, 2024) with other tools, such as QuillBot and HIX.AI, becoming increasingly popular for specific aspects of writing like paraphrasing and DeepL, ELSA, and Hello English for language translation and practice (Hamid et al., 2025). For computer programming, tools such as Sakshm AI, Codex, ChatPDF, Copilot, and Jupyter AI (Goyal et al., 2025; Simaremare et al., 2024; Nikoli & Marjanovi, 2025). AI-powered grading systems, such as RubricAI, excel with structured/objective assessments and also implement similar plagiarism detection as TurnItIn (Kannan et al., 2025). Intelligent feedback systems, such as Automated Feedback, are used to provide lower-level feedback on writing assessments (Fraser et al., 2023; Chen & Chen, 2025).

The adoption of AI is not without its challenges. Academic integrity, specifically plagiarism, is among the most critical issues cited by many studies. Student work is becoming increasingly more difficult to distinguish from work partially or wholly generated by AI (Barus et al., 2025). This may lead some educators to regress to more traditional assessment approaches, but unless those approaches devoid of the possibility of incorporating AI-generated content the problem still exists (Kofinas et al., 2025). From the student perspective, tools such as TurnItIn's plagiarism detector and GPTZero are being used to help detect and correct AI plagiarism (Shiba et al., 2025; Hamid et al., 2025). Lund et al. (2025) suggests that AI ethics education is the most successful model for curbing student ethical misconduct. Institutionally, mitigation efforts are difficult due to inadequate policy and enforcement mechanisms (Thelma et al., 2025). Additionally, issues such as algorithmic bias and fairness and authorship ambiguities challenge institutional accountability (Barus et al., 2025; Adamakis & Rachiotis, 2025).

2.2 Non-US Perspectives

These issues are not unique to students in the United States. Given that the researching institutions enroll international students, the international perspective must be addressed. Faraon et al. (2025) compared the usage and impressions of AI, specifically, ChatGPT, between the USA and five Nordic countries. They found that social influence had a higher influence in the USA than in the Nordic Countries and ultimately cautioned AI implementers to remember "… the importance of understanding regional differences when developing educational approaches" (p. 42). Wang et al. (2005) reviewed AI policies at the state and regional levels and their implementation. They found a very top down approach to the implementation, concluding, "weak cooperation appears at the state level, while little cooperation is found among regional agencies" (p. 322). This suggests there is a disconnect between how the implementation of AI in higher education is occurring in different locations, with the USA being led more from the ground up (students) than other countries. One of the differences in the acceptance of Artificial Intelligence Generated Content (AIGC). AIGC in China is encouraged at some levels, while in many US universities there are strict policies about submitting AIGC. They found that trust was a key feature of

the acceptance of AI in general. That is, the trust mitigates "privacy concerns, information accuracy, and social influence" (p. 95).

2.3 Trust

In industry, specific, short-lived tasks are often solved by temporary teams. Studies have shown that quickly formed trust is possible between the members of the teams (Jarvenpaa et al., 1998), being deemed swift trust (Meyerson et al., 1996). While swift trust is usually a paradigm applying to human teams, Barrett (2025) suggests that AI can act as an additional team member due to its ability to engage and collaborate similarly to humans. Duan et al. (2024) researched what increases trust on teams that specifically include AI as a team member. Trust was broken into two categories: initial and situational. When AI trust was high initially, it was because of three key factors:

- Benevolence; it was expected to be less likely to have hidden intentions or conflicting interests
- Integrity; it was expected to be less likely to have bias
- Ability; it was expected to be less error-prone

When trust was low initially, it was due to AI being error-prone and unable to correct itself. Continued, or situational, trust had four main factors:

- Responsiveness; promptness, timeliness, and consistency of replies
- Communication proactivity; being able to provide useful information without being asked
- Rectification and acknowledgement of mistakes
- Learned distrust; encountering AI errors, or hallucinations, and wasting mental capacity on verification

AI systems must be consistent, reliable, and free of hallucinations so that it helps instead of hinders human decision-making (Zhang et al., 2023).

3. METHODOLOGY

An online survey was created to understand student use of generative AI and any influences thereof on pedagogical practices in higher education. This was to answer the following research questions:

1. How are students using AI to support learning?
2. How do students observe their instructors' response to student use of AI?
3. What pedagogical strategies/changes are warranted in response to the increasing use of AI in higher education?

Participants were recruited from the researchers' current semester courses, which lead to a participant pool spanning two universities and academic levels from certificates to graduate study. The survey began with demographic questions, such as age, gender, academic level, major, and familiarity with AI. The remaining 17 questions were a combination of the following:

- Likert-style (6)
- multiple choice (3)
- open-ended questions (8)

The Likert-style questions – scale adapted from Zehler et al. (2025) – are shown in Table 1.

Question [var]	1	2	3	4	5
What is your level of trust in AI as it pertains to your decision to use it? [Q8]	I completely trust AI tools	I moderately trust AI tools	I neither trust nor distrust AI tools	I moderately distrust AI tools	I completely distrust AI tools
How useful are AI tools to your education? [Q10]	Extremely useful	Very useful	Somewhat useful	Not so useful	Not at all useful
How much has AI usage changed your approach to studying? [Q11]	A great deal	A lot	A moderate amount	A little	None at all
Does using AI tools impact your understanding of the course content? [Q12]	A great deal	A lot	A moderate amount	A little	None at all
Do you think your AI usage is aligned with academic integrity? [Q13]	A great deal	A lot	A moderate amount	A little	None at all
Do your instructors provide specific rules and guidance around using AI? [Q17]	Yes, very specific	Yes, somewhat specific	Yes, rather vague	No, nothing specific	Not sure

Table 1. Likert-style questions

The multiple-choice questions allowed the participants to select all that applied from a given list and also offered the ability to choose the "Other" option and offer an option of their own. The multiple-choice questions are listed in Table 2.

Question [var]	Choices
Which AI tools do you currently use to support your learning? [aitools]	ChatGPT, Claude, Google Gemini, Microsoft Copilot, Grammarly, Midjourny, Perplexity, DeepL NotebookLM, Other
What types of assignments do you find AI useful for? [aiassign]	Writing/essay development, Writing/essay editing, Email writing, Email responses, Computer program development, Computer program editing, Homework besides writing and programming, Presentations, Image generation, Image manipulation, Video generation, Video enhancement, AI agent development, Chatbots/social interaction, Finding answers to questions, Podcasts or similar content, Other
How do your professor's AI rules affect the type of assignments you receive? [airules]	No change, more closed-ended questions, more open-ended questions, Blue books or other no-technology environment, More labs or similar activities, Other

Table 2. Multiple-choice questions

Finally, there were eight open-ended questions, listed below:

- How does your trust in AI change based on its responsiveness to your prompts and ability to proactively communicate (suggest information before you request it)? [Q14]
- How is your trust in AI affected when it acknowledges its mistakes or provides incorrect information? [Q15]
- What are your instructors' attitudes toward using AI in your classes? [Q16]
- How have faculty changed teaching strategies in response to student usage of AI? [Q19]
- How is your experience of using AI in class? [Q20]
- How can instructors integrate AI into coursework without impacting learning? [Q21]
- How can instructors ensure that students are using AI responsibly? [Q22]
- How should policies reflect the adoption of AI in the curriculum? [Q23]

The data were cleaned, removing internal survey platform variables and incomplete responses, resulting in a final n=82. A number of additional variables were added, allowing for easier statistical analysis of certain data. Each of the three multiple-choice questions received a new Sum variable to count the number of items the participant selected (aitools, aiassign, airules). This was due to the survey mechanism separating each item within a specific question into separate variables instead of providing the total number selected automatically. The participant's major, originally an open-ended question on the survey, was coded into a new numeric variable to adjust for misspellings, etc. Finally, because some participants listed multiple majors, a binary variable was added to indicate whether the participant was a double major. This also led to a second dataset being created, which duplicated the responses for those double majors, coding the first response as their first listed major and the duplicated response as their second listed major. This new dataset, with an n=96, was only utilized for statistical analyses on the "major" variable.

The Shapiro-Wilk test was run on all data to be analyzed, producing a mix of significant and non-significant results, indicating that some of the data was normally distributed while other data was not, and the results were close enough for different researchers to arrive at different conclusions. Because of this, all statistical analyses were conducted using both parametric (T-Test and ANOVA) and non-parametric (Mann-Whitney U and Kruskal-Wallis) tests, to ensure that all possibly significant results were uncovered.

The open-ended questions were qualitatively analyzed using a systematic thematic analysis approach (Bromall et al., 2023; Draus et al., 2024). This ensured rigor and enhanced data depth, with the data being reviewed multiple times for a deeper understanding. The iterative reading process allowed patterns and meanings to emerge naturally from the data. Coding was done in multiple stages, with the initial codes being merged into broader, conceptual categories. This reduced the volume of open-ended data. Finally, the sub-themes were merged in order to create a higher-level theme representing the patterned responses in the data. This was an iterative process; themes were refined, collapsed and/or expanded, and redefined for clarity. Finally, the qualitative analysis produced complementary themes that expressed the complexity of the data, providing a methodic, yet nuanced, view of the research problem.

4. RESULTS & DISCUSSION

4.1 The Participant Pool

The 82 responses were heavily skewed toward traditional, undergraduate students, with 91.5% of participants being in the 18-22 age range and the same percentage being undergraduate students. Given that the majority of participants were in highly technical majors (Cyber Security = 28.1%, Computer Science = 16.7%, Business Analytics = 10.4%) it is no surprise that all but one participant identified with some level of AI familiarity, with 53.7% saying they were Very Familiar. Additionally, 17.1% of the participants were double majors. All demographic data can be seen in Tables 3 and 4.

Age	
18-22	75
23-25	3
26-29	1
30-39	3

Academic Level	
Undergraduate	75
Graduate	1
Accelerated 4+1	5
Other	1

AI Familiarity	
Extremely Familiar	16
Very Familiar	44
Somewhat Familiar	21
Not so familiar	1
Not at all familiar	0

Gender	
Male	53
Female	29

Double Major	
Yes	14
No	68

Table 3. Demographics (n=82)

Major							
Accounting	9		Cyber Security	27		Marketing	3
Business Administration	1		Data Science	2		Marketing & Management	3
Business Analytics	10		Economics	1		Mathematics	1
Computer Info. Sys.	4		Finance	5		Psychology	2
Computer Science	16		General Studies	1		Statistics	1
Criminal Justice	8		Healthcare Management	1		UX/UI Design	1

Table 4. Demographics ctd. (n=96)

It is also appropriate to discuss the distributions of the various multiple-choice questions. When asked which AI tools they use, participants overwhelmingly selected ChatGPT (75.6%), corroborating the literature (Epaminonda et al., 2025; Kock et al., 2025). Three students offered two other tools (DeepSeek and Napkin.ai) while two students noted that they do not use AI at all (one of whom said "there is no AI tool that exists that can support learning of any kind"). The distribution of tools can be found in Table 5.

AI Tools				
ChatGPT	62		NotebookLM	16
Google Gemini	37		Other	5
Grammarly	28		Perplexity	4
Microsoft CoPilot	25		DeepL	2
Claude	17		Midjourny	0

Table 5. Usage numbers for AI tools

Assignment Types			
Finding answers to questions	45	Computer program development	16
Writing/essay editing	37	Other	10
Writing/essay development	35	AI agent development	6
Homework besides writing/programming	29	Chatbots/social interaction	4
Email writing	26	Video generation	3
Email responses	23	Podcasts/similar content	3
Presentations	22	Image manipulation	2
Computer program editing	21	Video enhancement	2
Image generation	17		

Table 6. Assignments for which students found AI tools useful

Rounding out the top five were the other major players that either already have top-of-mind awareness due to other popular products or are heavily marketed. Given the types of assignments for which students use AI (the majority of which being either writing-based or general use cases), shown in Table 6, the order of AI tool usage stands to reason. The "Others" were various reasons from studying (e.g., exam/quiz preparation or filling in knowledge gaps) to using it as a search engine to the opposite extreme of not believing AI can be used for any task that requires technical proficiency. Lastly, students were asked if their professors' rules about using AI have changed the types of assignments that they assign. These answers are shown in Table 7. While the answers may not exactly reflect a single professor's changes semester to semester due to students possibly not having the same professor twice, they reflect overall changes seen across all professors.

Assignment Changes				
No change	38		More labs/similar activities	10
More open-ended questions	20		More closed-ended questions	4
Blue books/other no-technology environment	10		Other	4

Table 7. Changes to assignments because of AI

Interestingly, the majority of participants noted that they did not notice any change to the types of assignments that their professors were assigning. Some, however, noted the use of more qualitative-style questions/environments, with some of the "Other" respondents noting an increased use of the

sandboxed web browser environment for exams and more difficult assignments making AI use acceptable.

4.2 RQ1: How are students using AI to support learning?

While a partial answer to this question lies in the empirical analysis of the data in Tables 5 and 6, statistical analyses were run against all appropriate variables for this research question. There were two main categories of significant results: gender and trust. With regard to gender, two sets of variables had significant findings, shown in Table 8.

aitools x gender			
T-Test		**Mann-Whitney U**	
Sig.	0.002	**Sig.**	0.005
Eta²	0.12	**r**	0.31
Cohen's d	0.756	**Effect**	Medium
Effect	Medium-Large		

aiassign x gender	
T-Test	
Sig.	0.047
Eta²	0.05
Cohen's d	0.467
Effect	Small-Medium

Table 8. Significant gender statistics

There was a clear, male-leaning gender bias regarding the number of AI tools utilized for learning. With the effect size being measured as medium, minimally, despite the test (parametric or nonparametric), we can safely suggest that men (mean=2.71) tend to use more AI tools to support their learning than women (mean=1.79). Likewise, we also saw a male-leaning gender bias with the number of different types of assignments with which AI was employed. The effect size statistic was mere hundredths away from meeting the threshold for a proper medium size, allowing us to classify this finding as men (mean=4.09) visibly using AI for more types of assignments than women (mean=2.90). These findings are partially in line with the gender bias found by Rajki et al. (2025). While he found that men used AI more as well, Rajki's study suggested women use AI for a greater variety of use cases, while this study found that (at least in the domain of educational assignments) men have a more varied use. This type of gender gap has persisted since the initial spread of the Internet (Morahan-Martin, 1998) and continues well into the 2020s (Cachero et al., 2025; Stone, 2025; Golding et al., 2025) though there are some studies that argue the gap does not exist (Iddrisu et al., 2025). While the initial reaction might be to investigate ways to bridge the gap, a necessary determinant of need is whether the gap needs bridging. It is possible that society is better because of such gaps.

Regarding trust there were a number of significant statistical findings. Corroborated by both the parametric and nonparametric tests was the relationship between a student's level of trust with AI (Q8) and their major, detailed in Table 9.

Q8 x Major		
ANOVA		
Sig.	.004	
Eta²	.276	
Effect	Large	
Groups	**Lower Trust**	**Higher Trust**
	Bus. Analytics	Comp. Sci.

Q8 x Major		
Kruskal-Wallis		
Sig.	.004	
r	.42 - .72	
Effect	Large	
Groups	**Lower Trust**	**Higher Trust**
	Bus. Analytics	Other
	Bus. Analytics	Comp. Sci.
	Bus. Analytics	Psych.
	Marketing	Comp. Sci.*
	Finance	Comp. Sci.
	CIS	Comp. Sci.*
	Crim. Justice	Comp. Sci.*

Table 9. Significant level of trust by major statistics

There are two items of note with the statistics in Table 9. First, the Other major makes an appearance in the nonparametric test, having a significantly higher trust score than the Business Analytics major. The Other major is a grouping of several majors that all had an n=1 (listed in Table 4), necessary for the statistical tests to be able to run and show group differences. Second, the three groupings with an

asterisk had an r value slightly below the typical .5 cutoff for a Large effect size, with the lowest being .42. Due to this minute variance, all effect sizes were considered Large.

These findings take a tangential approach to corroborating other studies that found Computer Science students, specifically those students completing programming assignments, to be the highest users of AI (Rahe & Maalej, 2025; Habiballa et al., 2025). While these studies, as nearly all other studies, mention the perceivable benefits of incorporating AI into education, "concerns about [the] potential decrease in programmers' agency and productivity with Generative AI are justified" (Rahe & Maalej, 2025, p. 1). Our study attempts to offer one possible reason for this increased usage: trust.

Additionally substantiated by both the parametric and nonparametric tests were bivariate correlations of a student's level of trust with AI (Q8) being a predictor for four other metrics: number of AI tools used (aitools), usefulness of AI tools (Q10), change in studying approach due to AI (Q11), and AI helping to better understand course content (Q12). These findings can be seen in Table 10.

Q8 x aitools	
Sig.	.046 / .040
r / rho	-.233 / -.240

Q8 x Q10	
Sig.	.001 / .001
r / rho	.558 / .490

Q8 x Q11	
Sig.	<.001 / <.001
r / rho	.466 / .421

Q8 x Q12	
Sig.	.042 / .043
r / rho	.237 / .236

Table 10. Significant bivariate correlations

A high level of trust is correlated with a high number of AI tools being used by the student. (The negative correlation coefficient is due to the Q8 trust values being inverse of the meaning of the aitools values). High trust is also correlated with finding AI tools useful for education (Q10), noting AI has changed their studying approach a great deal (Q11), and noting AI tools impact course content understanding a great deal (Q12). While the existence of these findings on trust may seem self-evident, they do not lend any insight into why students trust AI or if anything can sway their trust during its use. Initial trust can be explained by Barrett's (2025) study of Meyerson et al.'s (1996) swift trust, modifying it so one member of the "team" is AI. Continued trust, however, was found to have four main factors in Barrett's study.

Our qualitative analysis of Q14 and Q15 agree with Barrett's (2025) findings. The student responses to Q14 (How does your trust in AI change based on its responsiveness to your prompts and ability to proactively communicate (suggest information before you request it)?) yielded four main themes, shown with representative quotes in Appendix A Table 1.

Refined to a single sentiment, students tell a story that begins with apprehension but ends with acceptance as the AI tool continues making perceived correct responses. Given that the journey typically lasts only a few prompts, this sentiment fits with the original definition of swift trust and, perhaps, even accelerates the timeline. With all human teammates, swift trust can be built over the course of a few meetings or days, but with AI as a teammate the trust can be earned within seconds as long as the initial prompts produce accurate results.

The last qualitative survey item was Q15 (How is your trust in AI affected when it acknowledges its mistakes or provides incorrect information?) with its themes displayed in Appendix A Table 2. The overall sentiment with these themes is overwhelmingly negative. The majority of students have some initial level of distrust with results from AI and, should those results appear incorrect, whether or not the AI acknowledges such, any trust is quickly degraded. Some students went on to say that the mistakes made by AI lean toward predatory behavior.

The last significant statistical finding doesn't fit into the two categories of gender and trust, nor is it a strong finding (only the nonparametric test yielded significant results), but it does fit with the trend of all results for this research question. A student's level of familiarity with AI showed a significant

difference (Sig.=.004) between the Somewhat Familiar and Very Familiar groups on the Kruskal-Wallis test, with the Very Familiar group having the highest mean rank (56.44). This difference had a Medium effect size (r=.31), suggesting that it is clearly noticeable that those who are more familiar with AI will use more AI tools than those who are less familiar.

Overall, in answering this research question, men use AI more to support their learning than women, particularly Computer Science students. While initially trusting of AI's ability to produce correct results, students report an overall hesitation to fully trust, verifying the given results. What trust is built, however, can be quickly lost should incorrect results appear.

4.3 RQ2: How do students observe their instructors' response to student use of AI?

None of the statistical analyses for this research question had significant results, but a thematic analysis of three survey items was done:

- Q16: What are your instructors' attitudes toward using AI in your classes?
- Q19: How have faculty changed teaching strategies in response to student usage of AI?
- Q20: How is your experience of using AI in class?

Their analyses can be seen in Appendix A Table 3.

Overall, there was one clear theme that transcended survey items: attitudes on AI are mixed. While some students report that they have professors who allow the use of AI in a studying capacity, others have mentioned that their professors outright ban the use of AI. While some will integrate AI into their course in order to help cover more material, others take active steps to restrict its use via technological means, such as sandbox environments for exam-taking. While faculty were not surveyed such that their intentions behind these AI decisions would be understood, a number of students appeared to read between the proverbial lines of their professors' actions, noting that excessive and improper AI usage could result in decreased learning and actively harm their future. There have been many studies that have observed these same negative attitudes and lobbied for regulations and frameworks to control AI usage in educational institutions (Ju, 2023; Łodzikowski et al., 2023; Săseanu et al., 2024). Despite the time between the previously cited studies and this study, the same attitudes and problems still exist.

4.4 RQ3: What pedagogical strategies/changes are warranted in response to the increasing use of AI in higher education?

Three open-ended survey items (Q21-23) were used in order to answer this research question. It is important to note that the themes resulting from this analysis, shown in Appendix A Table 4, are entirely from the students' point of view. Each survey item asked students, not faculty nor staff, to give their opinions on warranted strategies/policies that are necessary to use AI responsibly. Thus, the answer to this research question provides a side of the discussion typically missing from research, given that students are generally not consulted for such institutional changes.

Despite most students not using the specific word (though some did), based on their suggestions and the overall tone of their responses it was clear that the majority concede that AI is primarily used to cheat. The major themes that appeared center around having formal AI policies in place per instructor/course and redesigning course content so that AI can be more helpful for learning without explicitly giving answers. Some students even suggested that institutions develop their own AI, based on specific course content, and configure it not to give answers. While all of the restriction/control suggestions are in good faith, they are most likely not possible in any given educational institution due to the widespread use of personal (non-institutional controlled) devices, cloud applications out of institution control, and varying locations of Internet access. All of these factors make technical solutions to the AI "problem" seem impossible (Alexander, 2025). The per instructor/course policy may be the only viable option. One student suggestion (paraphrased) sat above the rest, which can serve as a litmus test for asking a question to AI: Would I ask this to my professor and would they give me an answer?

Another theme that appeared was the request to use AI in courses in manners consistent with how it would be used in industry as a means of job preparation. This, again, is a noble goal but also has its issues. Using a software engineer as an example, AI is frequently used to do many foundational tasks,

from writing loops, to iterating over datasets, to templating objects, and more. For an experienced software engineer, this can save a tremendous amount of time over the course of a sprint; however, it is only a time saver *because* the engineer is experienced and can quickly determine if and where the AI produced bad code. If college students were to use AI the same as experienced professionals, they would not have the proper foundational knowledge to detect the bad code, resulting in pull requests being denied or worse, bad code being integrated and causing havoc in production (Rabbi et al., 2026; Wang & Yang, 2026; Mansoor, 2026). Every outcome is the opposite of saving time. Thus, the students' suggestion of being taught how AI will be used in industry may be short-sighted.

Overall, the consensus was that AI is not going away; therefore, it is the institution's responsibility to properly govern the use of AI (such as through the academic honesty policy) and the professor's responsibility to ensure their courses can adapt to technological change.

5. CONCLUSION

This study is not without its limitations, namely self-reporting bias. While the intent of the study was to gather student perceptions, the results curated by the researchers tried to be as generalizable as possible. Additionally, the sample was limited, both in size and institutional representation. Despite these limitations, the findings agree with the literature and offer a deeper understanding of the issue at hand. While many students do see some benefit to AI, they, and their professors, see a much darker future if AI usage in academia goes unchecked. While some suggestions were provided, it is extremely clear that the problem is not solved, nor will it be any time soon. As with most technological disruptions, the lasting effects and long-term positive contributions will not be seen for years. It is up to us, in the middle of the disruption, to tread carefully and ensure our decisions are framed with everyone's best interest in mind.

For students, the challenge is to use generative AI sparingly and for the right reasons. Understand its limitations, that all generated information is not necessarily correct. Ensure that the impetus for its usage is to assist in learning, not simply to quickly find the answers and circumvent learning completely. Do not allow the AI to direct your own thoughts and your ability to actually know what questions need to be asked. The problem-solving part of your brain needs to be exercised or you will begin to lose part of what makes you uniquely human (You Suck at Programming, 2026).

For faculty, the same warnings apply; however, it is the responsibility of the faculty to ensure students heed said warnings. Teaching students the proper (and improper) uses of AI is just as important today as teaching the actual subjects of their courses, but it is critical to understand that simply because something has quickly gained the attention of the mainstream media we, as educators, are not required immediately to integrate it into our curriculum. "Schools are not called to follow the pace of the digital world" (Leo XIV, 2026, para. 147), instead educators must be the curators of that which is crucial to their pupils' development.

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APPENDIX A

Thematic Tables

Theme	Quotes
Cautious verification as the default	"Everything generated by an AI is something I double check, though I usually refrain from asking things that require long explanations." "I take what it says with a grain of salt, especially depends what sources they choose to use." "Once it starts producing accurate results I trust it more."
Trust linked to performance quality	"I find the more information you provide AI, the better it is with helping you find the correct information." "If it keeps giving good answers to my questions, I will keep using it. If it gives bad answers, I will change AI or not use it at all." "Sometimes AI is spot on, but there are times, even with a detailed prompt, AI's output is completely off the goal I was trying to achieve."
Proactive guidance, not agendas	"My trust definitely increases because it not only knows how to answer my question, but it knows my intent behind the question." "I don't like how AI tries to make you hooked onto it by making suggestions to keep the conversation alive." "The ability of AI to suggest information before I request it implies the existence of grossly negligent data privacy practices."
AI as a tool, not an authority	"I try and see ai strictly as a tool, although more trust is given when it assist where to branch next given a question or idea." "I believe in learning from AI rather than relying solely on it to complete my assignments because I want to be able to perform my job effectively when I start working." "My trust in Ai is hit or miss. It usually creates a solid output for my input."

Table 1. Themes from Q14

Theme	Quotes
Fragile trust	"My trust in AI is negatively affected when it provides incorrect information or makes mistakes, regardless of whether it acknowledges it or not." "My distrust stems from when it is incorrect. So it is extremely affected when this happens." "Since AI, especially ChatGPT, usually just scours the internet and gives an opinion based on what it sees the most, I do not usually trust it 100% anyways."
Trust human oversight	"I make sure anything I get from AI is real by doing my own research. I mostly use it to find leads for assignments like sources to look into." "Everything I get from AI, I check… It is not affected much since I already know AI can and will be wrong sometimes." "I would also say I have a good understanding of what it can be entrusted to and what it can't be entrusted to, so I use it solely for automating mundane processes that don't teach me anything."

Competing views of AI	"AI is a machine that guesses the most likely response to a prompt. It physically cannot be right or wrong because it has no sense of reasoning or knowledge or memory." "When AI acknowledges its mistakes or even provides incorrect information, it almost feels human like. Much like humans, sometimes AI makes mistakes." "This is a predatory behavior to encourage more interaction from users and should be seen as a very present danger to society."

Table 2. Themes from Q15

Theme	Quote
Q16: What are your instructors' attitudes toward using AI in your classes?	
Helpful study tool	"Allow it for help editing content and research but not doing the assignment." "Most are fine with it being used to find sources and to get quick summaries, but beyond that they do not approve of its usage." "My professor suggests I use AI to find syntax that I am struggling with in code but not to ask it how to do the exact problems I am tasked with."
Threat to academic integrity and learning	"Any use for assignments is plagiarism and breaks academic integrity." "Almost all professor have a 0 AI policy." "Every instructor I have had has been 100% against the use of AI, with penalties in place for use of it in class work."
Fragmented attitudes	"It is 50/50, some professors are encouraging us to use it for ideas and sources while other professors are outlawing all use." "Some instructors are very against AI usage, while others are very for it. There is no consistency." "My instructor for the specific class that i am in does not want ai to be utilized. However, I have had other classes with them where they allow ai for as long as we understand the material."
Q19: How have faculty changed teaching strategies in response to student usage of AI?	
Restrictions to reduce AI usage	"A lot of professors force exams to be taken through Lockdown Browser so students can't use AI during exams." "Stopping the usage of technology where it is possible or increasing use of lockdown browser due to the potential of AI usage, even if it is much less efficient and more tedious to perform the assignment without it." "they run everything through filters to catch ai that don't work very well"
Selective integration	"The most change I've experienced is the fact that professors will acknowledge the ways AI can be used effectively rather than deny its existence and the fact that students use it." "Some faculty have allowed us to use AI to experience it since we will in the working world." "Some see it as an opportunity to cover more material, as simple topic reinforcement can be solidified using AI on your own."

Mixed impact	"I do not think faculty has changed teaching strategies from what I have seen. The only thing that has really changed are rules against or for the use of AI." "Some have been very strict against AI usage. Others have been very open about AI usage." "It frightens me to see individuals, whose entire careers surround education, falling for the pitholes of AI and encouraging the use of such a dangerous technology that is threatening to erase all of their efforts from the past couple of decades."
Q20: How is your experience of using AI in class?	
Efficient learning partner	"AI is very useful for saving time especially when you have a heavy workload for many classes." "It has freed up a lot of time for me to focus on things that are more important than busy work." "Where my understanding is lacking, AI has the ability to instantly fill that knowledge gap for me. I view it as living, breathing documentation."
Guardrails on use and ethical considerations	"I mostly use it as a last resort and if I do use it I try to make sure that I learn from the usage of AI." "Any student who abuses AI to circumvent assignments or test ultimately hurts themselves in the end… AI like a calculator can be a brilliant tool, but using it as your 'brain' is digging your own grave when it comes to your future." "Personally I feel guilty using it for simple things like reviewing papers for errors because some professors feel very strongly about Grammarly being a cheating mechanism when it is simply just doing spell check like Microsoft Word."
Trust and usage is mixed	"It is very hit or miss whether it is helpful or not… Its really a chance by chance basis if it is correct or not, just based on the ai summaries Google gives for searches automatically now, and the stories ive heard." "Professors are much better able to explain things in terms that they know you understand from taking their class, and AI doesn't know enough about me as a student to be anywhere near as helpful as professors." "In my classes where AI is encouraged, I enjoy using it to generate analytics reports that I can alter as needed. It helps me gain an understanding and provides a framework for me to change if necessary."

Table 3. Themes for Q16, Q19, and Q20.

Theme	Quote
Q21: How can instructors integrate AI into coursework without impacting learning?	
Explicitly determine acceptable/unacceptable use	"AI should never be used by any instructor for any circumstance." "In my opinion, entirely forbidding students from using AI (like one of my professors who has zero-tolerance of it) is honestly a bit lazy, and serves as an easy way out of explicitly defining acceptable AI use for a class."

	"I believe it's extremely important to explicitly define acceptable use of AI, even if it's difficult."
AI-supported pedagogy that protects/deepens learning	"Generative AI models can be fine tuned to not give explicit answers to questions, but rather to coach the student along through the process if they need it." "They can make assignments that require the use of AI, and then have the student identify what the AI was wrong about and where it was right." "Application questions as opposed to memorization."
Build AI skills for the future	"I think more professors should accept that AI is here to stay and should be thought of as a tool instead of a hinderance. Teach students how to make themselves more efficient by using it correctly." "Make a class on it. How it is good/bad/and what we can and cannot do." "Have the school pay for some AI tools that are used in our respective future careers."
Q22: How can instructors ensure that students are using AI responsibly?	
Formal governance and control	"I've seen instructors use AI scanners to see the amount of AI use on an assignment and including in their syllabuses the penalty for using AI beyond its approved measures." "Usage of AI checkers in submitted materials, and preventing use of AI in examination." "They can allow AI usage outside of exams for studying purposes and then make students take exams on Lockdown Browser or on paper without any pre-made notes so students can't easily access AI or use a pre-made essay."
Redesign teaching and assessing	"Have assignments that are worth doing. Don't make students memorize pointless things or ask about what has happened. Make them have an opinion they personally need to back." "Teaching styles must adapt somewhat, less reliance on memorization and exams(more and more useless in the real world anyway) and more hands on in class stuff should make up grades, as those things are harder to use AI with. Focus more on "can you apply what you have learned?" instead of "do you know?"" "Additionally teaching student the best ways to use AI to enhance their learning is imperative. We all can agree that LLMs are here to stay in some capacity and are now a part of the general populations life. Colleges should prepare students for reality, not for a fake world where we ban electronics and AI."
Responsibility as an ethical and trust issue	"It is really difficult unless the instructor knows the student personally." "That's not easy, I'm not sure. I think it takes a lot of trust and ethics." "I would say by encouraging students to ask themselves, "If I asked my professor to go to this extent in helping me, would they be comfortable helping me? Or would they say that going to that extent reduces academic effectiveness?" This could define a lot of boundaries with AI use without the instructor having to run through a million scenarios."
Q23: How should policies reflect the adoption of AI in the curriculum?	
AI normalization	"Accept that it is here to stay and encourage our understanding of it"

	"I think it should not be considered how it is, it is now a tool in todays world." "They should be open minded. While supplanting learning with AI is harmful, completely cutting it out is harmful as well. College is a place of innovation and broadening understanding, and policies should reflect that with AI adoption."
Protect academic integrity	"Use it to help, but not to cheat." "Polices should still reject the use of AI in coursework as AI is heavily impacting critical thinking skills in students and is compromising education" "Personally, especially for things like writing and art classes, the final product shouldn't be ai generated, and so the policies should reflect that."
Transparency and shared accountability	"Policies should clearly define how AI tools can be used for learning, collaboration, and assignments. They should emphasize academic integrity, requiring transparency when AI is used. Guidelines should also promote ethical use and ensure AI supports, not replaces, student learning." "Policies should clearly state the professor's position on AI and why. Some instructors may ban AI because they do not know what its capabilities are. Some may ban it because they do know its capabilities. I feel that this transparency is important to students." "The policies need to be more than just up to the discretion of faculty. I can't fully articulate how the policy would be designed to adopt AI, but I know it's possible."

Table 4. Themes for Q21-23.