

# Context Matters: Understanding Student Usage, Skills, and Attitudes Toward AI to Inform Classroom Policies

## Online Appendix

### Survey Sample

In September 2023, the researchers fielded a survey among students enrolled in three political science undergraduate courses at a large American public university. The sample size of N=106 represents a 39% completion rate among those invited to take the survey.

The sample is close to representative of the broader university population in terms of gender, (54% women in the sample and university) and first-generation status: On the university website, the university reported that the incoming student cohort on the campus had 29% first-generation students, compared to 26% in the sample. The racial/ethnic diversity of the sample is also reflective of the diverse nature of the university on the whole, as shown in the table below:

Survey Sample	University Student Population
54% women	54% women
26% first-generation	29% first-generation student (in incoming cohort on specific campus in the sample)
39% White, non-Hispanic	31.5% White
28% Hispanic	17% Hispanic
8.5% Black, non-Hispanic	9.2% African-American
21% Asian/Pacific Islander	26% Asian

The sampled students came from three political sciences classes where the instructors did not have a policy restricting access to AI technology. This was important to reduce potential social desirability effects where students may hesitate to report the use of AI technology on the survey out of fear about the instructors learning the results.

In one of the three classes, the instructor did not have a written policy on the syllabus but verbally indicated to students that the use of AI technology was an acceptable way to check their work for errors but not for generating original material. In the other two classes, the instructor had a policy on the syllabus to explain to students how they would be using AI and ChatGPT in the course. The instructor went over the following policy on the first day of class, which was prior to the fielding of the survey.

- *AI Technology: Chat GPT: One of the objectives of this course is for students to become fluent with AI technology, primarily Chat GPT, to become effective, efficient, and ethical social science researchers and consumers. To address this objective, we will be using Chat GPT as an "intern" throughout the duration of this course. We will use Chat GPT during lectures and as a tool on course assignments. Each course assessment clearly explains the appropriate and inappropriate use of Chat GPT and AI technology for that particular assignment. If you haven't already, please create an account with Chat GPT by the second week of class.*

To protect student privacy and, again, reduce potential survey demand effects, we did not ask students to report which of the three classes they were taking. In the analysis, we do not conduct subgroup analyses by major because 88% of students indicated they were social science majors, with only 13 students not reporting a social science field as one of their majors/intended majors. The small number of non-social science majors/intended majors are split across natural sciences, math/data science, and the humanities. The high prevalence of social science majors is not surprising given that the sample included only students enrolled in political science courses. Future research can compare AI competence and usage across different disciplines.

**Table A1-A4 Proportion Used ChatGPT At Least Rarely Across Subgroups**

These results provide detailed numeric results that align with Figure 2 in the main text.

**Table A1: Proportion by First Generation Status**

	At least one parent graduated	Neither parent graduated from college	p-value
Entertainment	0.42	0.54	0.38
Work Tasks	0.31	0.43	0.26
Learning a Language	0.05	0.18	0.05
Recipes	0.19	0.18	1.00
New Ideas	0.40	0.54	0.27
Sources for Coursework	0.26	0.43	0.10
Writing Papers	0.41	0.71	0.01
Help with Assignments	0.45	0.71	0.03
Analyzing data	0.28	0.46	0.10
Creating Music	0.12	0.18	0.52
Travel Ideas	0.15	0.29	0.16
Creative Writing	0.28	0.57	0.01

*Note: The p-values represent the results of a Fisher's exact-test of group differences.*

**Table A2: Proportion by Gender**

	Female	Male	P-value
Entertainment	0.33	0.59	0.02
Work Tasks	0.32	0.37	0.68
Learning a Language	0.09	0.09	1.00
Recipes	0.21	0.15	0.61
New Ideas	0.40	0.43	0.84
Sources for Coursework	0.28	0.33	0.67
Writing Papers	0.47	0.50	0.84
Help with Assignments	0.49	0.54	0.69
Analyzing data	0.30	0.39	0.40
Creating Music	0.10	0.13	0.76
Travel Ideas	0.16	0.22	0.46
Creative Writing	0.39	0.35	0.84

*Note: The p-values represent the results of a Fisher's exact-test of group differences.*

**Table A3: Proportion by Race/Ethnicity**

	<b>Asian/PI</b>	<b>Black/Latino</b>	<b>White</b>	<b>pvalue</b>
Entertainment	0.59	0.36	0.46	0.23
Work Tasks	0.46	0.26	0.32	0.32
Learning a Language	0.04	0.10	0.05	0.60
Recipes	0.32	0.13	0.15	0.17
New Ideas	0.68	0.28	0.42	0.01
Sources for Coursework	0.41	0.31	0.17	0.11
Writing Papers	0.55	0.54	0.37	0.24
Help with Assignments	0.55	0.54	0.44	0.63
Analyzing data	0.32	0.31	0.32	1.00
Creating Music	0.27	0.10	0.07	0.08
Travel Ideas	0.36	0.13	0.15	0.07
Creative Writing	0.32	0.44	0.24	0.20

*Note: The p-values represent the results of a Fisher's exact-test of group differences.*

**Table A1: Proportion by GPA**

	<b>High GPA</b>	<b>Lower GPA</b>	<b>p-value</b>
Entertainment	0.44	0.41	0.83
Work Tasks	0.35	0.33	1.00
Learning a Language	0.06	0.12	0.47
Recipes	0.17	0.17	1.00
New Ideas	0.39	0.43	0.83
Sources for Coursework	0.26	0.36	0.36
Writing Papers	0.50	0.48	0.83
Help with Assignments	0.56	0.45	0.39
Analyzing data	0.30	0.33	0.82
Creating Music	0.11	0.12	1.00
Travel Ideas	0.17	0.24	0.60
Creative Writing	0.33	0.43	0.38

*Note: The p-values represent the results of a Fisher's exact-test of group differences.*

Figure A1: Proportion of Respondents Using Different Academic Resources

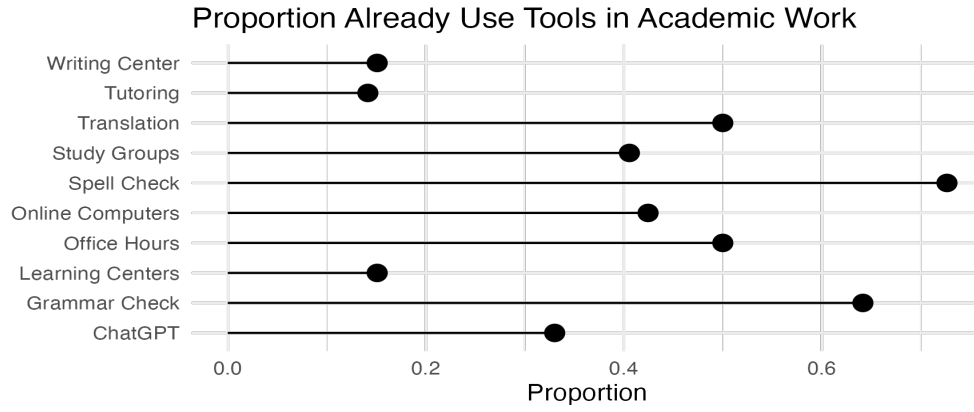


Figure A2: Perception of AI Tasks Inside and Outside of Classroom

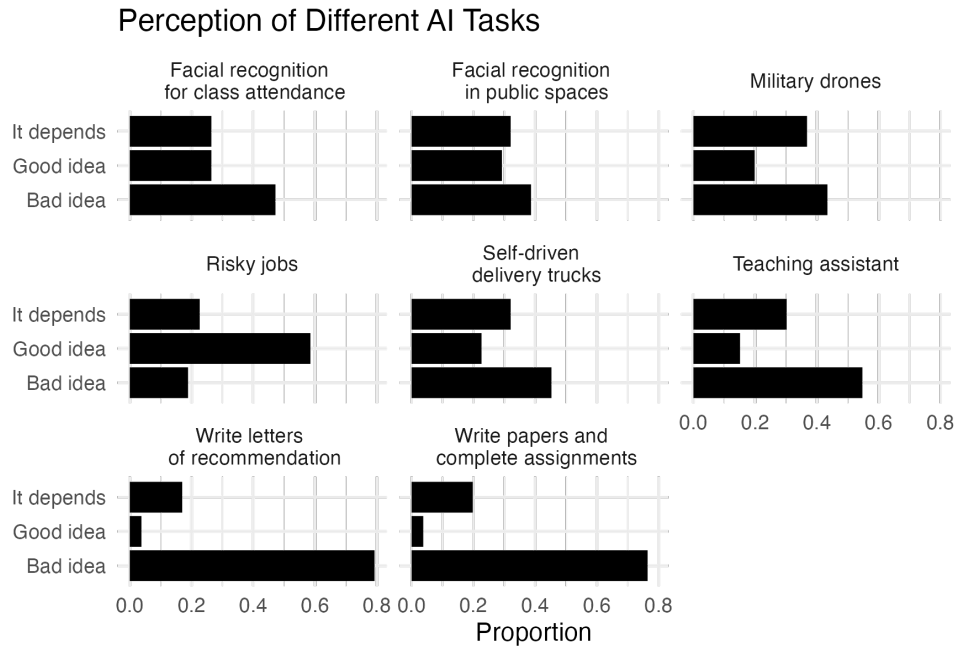
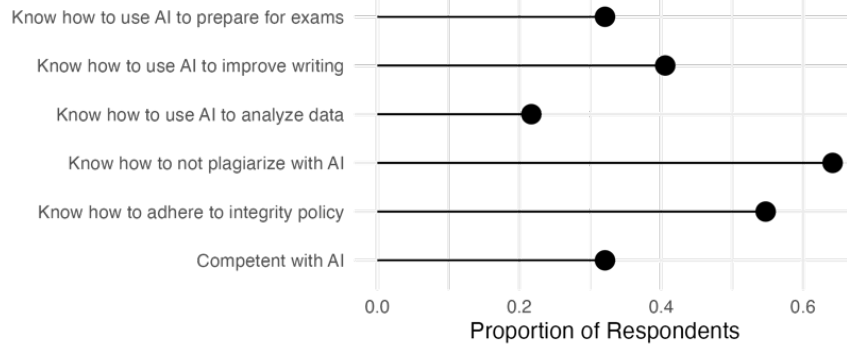


Figure A3: Proportion who Somewhat or Strongly Agree that they have the Skill  
Proportion Agree that R has the Skill



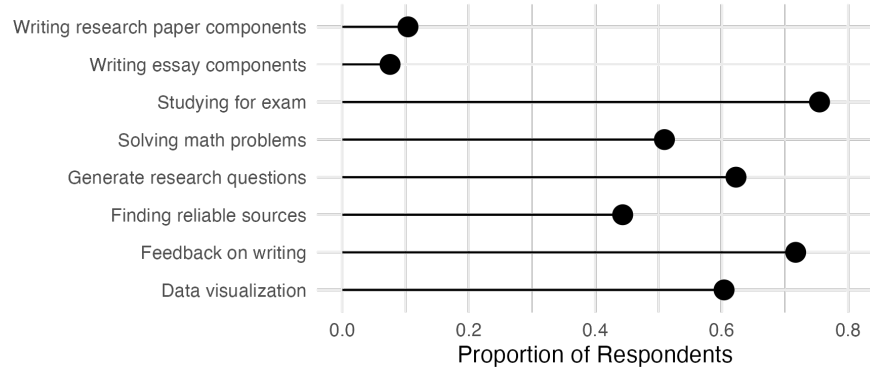
Note: The above figure is for the overall sample, for comparison with the subgroup analyses below  
Demographic Differences in AI Skills Self-Assessment



Note: Supplemental analyses assess statistical significance of the skill measures between subgroups—assessing the likelihood that a respondent “somewhat” or “strongly” agrees vs. otherwise, using Fisher’s exact tests. We also compare subgroups using linear regression with a multi-item composite measure of skill—where the 5-point scale ratings across the six areas are averaged together on a scale of 0 to 1.

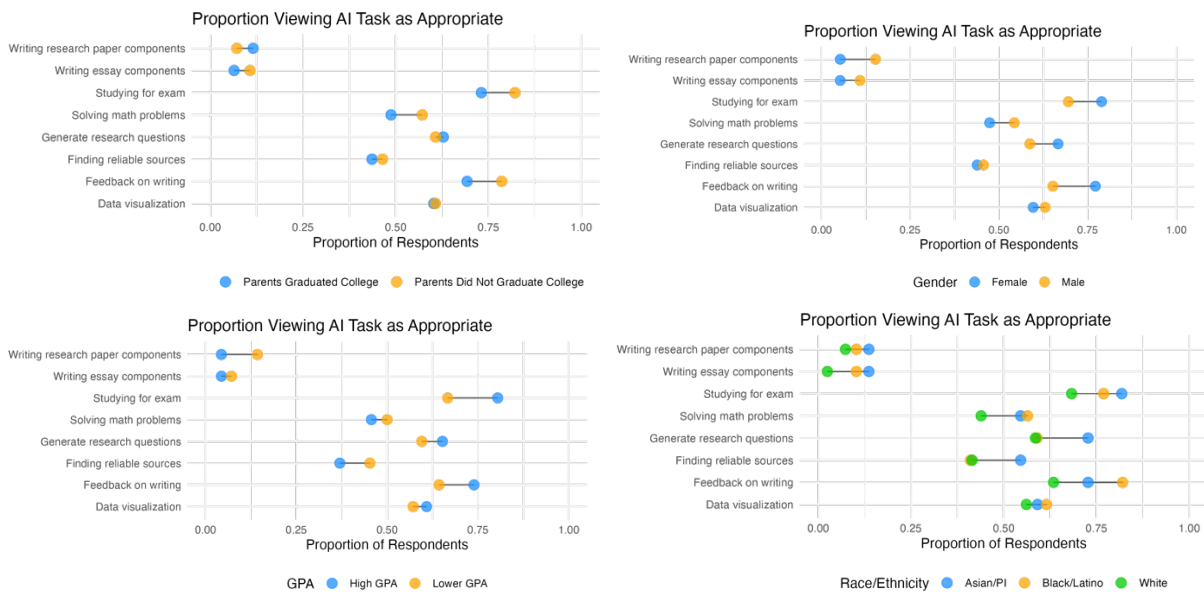
- First-generation: First-generation students are somewhat more likely to indicate they somewhat/strongly agree that they are skilled at using AI in ways that do not violate integrity policies ( $p < 0.05$ ), to analyze data ( $p < 0.10$ ), and to help with exams ( $p < 0.10$ ). There is also a significant difference in a composite average of all measures, whereby first-generation students report higher average skill levels across areas (.10,  $p < 0.10$ ).
- Gender: The following gender-based differences on individual measures are significant: Female respondents are significantly less likely to agree they are competent with AI ( $p < 0.10$ ), skilled at analyzing data with AI ( $p < 0.05$ ), and skilled at using AI to help prepare for exams ( $p < 0.10$ ). The difference in a composite average of all skill types is 0.11 greater for men ( $p < 0.05$ ).
- GPA: There are no significant differences by higher vs. lower GPA.
- Race/Ethnicity: An analysis of variance assessing the three groups finds only one significant difference, whereby white respondents report being less likely to agree that they know how to avoid violating integrity policies with AI, as compared to Asian and Black/Latino respondents ( $p < 0.05$ ).

Figure A4: Proportion of Respondents Perceiving AI Task as Somewhat/Extremely Appropriate  
 Proportion who View AI Task as Appropriate



Note: The above figure is for the overall sample, for comparison with the subgroup analyses below

### Demographic Differences in Perception of AI Appropriateness



Note: Supplemental analyses assess statistical significance of the perceived appropriateness of AI between subgroups—assessing the likelihood that a respondent views the task “somewhat” or “extremely” appropriate, using Fisher’s exact tests. We also compare subgroups using linear regression with a multi-item composite measure of perceived appropriateness—where the 5-point scale ratings across the six areas are averaged together on a scale of 0 to 1.

Using these analyses, no significant differences between subgroups were detected.

***Survey Question Wording Used in the Analysis***

We would like to know more about the types of Artificial Technology (AI) students use. Please check the technology that you use on a regular basis:

- ChatGPT
- Google Assistant
- Amazon’s Alexa
- Replika
- Canva
- Grammarly
- Siri
- Other

Prior to taking this course, how familiar were you, if at all, with the Artificial Technology tool, ChatGPT?

- Not familiar at all
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

ChatGPT is a type of Artificial Intelligence technology that can have conversations with you and write essays based on just a few prompts from humans. We are curious, how often do you use the Artificial Intelligence tool ChatGPT for the following purposes?

	Never	Rarely	A few times per month	Several times per week	At least once per day
For entertainment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To assist with work tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To learn a language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For finding recipes and cooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



For exploring new ideas	0	0	0	0	0
To find sources for coursework	0	0	0	0	0
To assist with writing papers	0	0	0	0	0
For help with assignments	0	0	0	0	0
To analyze and interpret data	0	0	0	0	0
To explore or create music	0	0	0	0	0
For travel ideas	0	0	0	0	0
For creative writing exercises	0	0	0	0	0

Please tell us the extent to which you agree with the following statements about your skills with Artificial Intelligence tools, such as ChatGPT.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am competent with AI technology.	0	0	0	0	0

I know how to use AI tools in a way that adheres to the [redacted] academic integrity policy.	o	o	o	o	o
I know how to use AI tools to improve my writing.	o	o	o	o	o
I know how to use AI tools to analyze and visualize data.	o	o	o	o	o
I am confident I can use AI tools in a way that does not violate plagiarism policies in my courses.	o	o	o	o	o
I know how to use AI tools in a way that helps me prepare for quizzes and exams.	o	o	o	o	o

The role of artificial intelligence, such as ChatGPT, in university classrooms is a subject of debate. We want to know what you think. To what extent do you think it is appropriate to use AI technology for the following purposes:

	Extremely inappropriate	Somewhat inappropriate	Neither appropriate nor inappropriate	Somewhat appropriate	Extremely appropriate
Asking AI to write components of a personal essay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asking AI to write components of a research paper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finding reliable sources, such as books and articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying for exams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generating research questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solving math problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating data visualizations, such as tables and graphs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Asking AI to provide feedback on your writing

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Which of the following best describes your intended career?

- Education
- Manufacturing, mining, construction, agriculture
- Banking, finance, accounting, real estate, or insurance
- Law
- Government
- Information and technology
- Hospitality, service, arts, entertainment, and recreation
- Health care and social assistance
- Retail and trade
- Other \_\_\_\_\_

How concerned are you, if at all, about how artificial technology might affect your future employment?

- Not at all concerned
- Somewhat concerned
- Very concerned
- Extremely concerned

Why aren't you concerned about how AI technology will affect your future employment?

\_\_\_\_\_

What is most concerning to you about how AI might affect your future employment?

\_\_\_\_\_

How concerned are you, if at all, about the privacy of your information when using AI technology, such as ChatGPT?

- Not at all concerned
- Somewhat concerned
- Neither concerned nor unconcerned
- Very concerned
- Extremely concerned

Below are some examples of how artificial intelligence can be used by people and organizations today or in the future. For each, tell us if you think it would be a good idea or bad idea for people to use artificial intelligence tools to do these tasks:

	Good idea	Bad idea	It depends
Armed military search drones that distinguish between enemy combatants and civilian bystanders and decide which buildings to attack	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Machines that perform risky jobs such as coal mining.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Serve as a teaching assistant in a university course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-driven local delivery trucks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facial recognition technology that can identify and monitor people who try to enter public spaces such as stadiums	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facial recognition technology that can take attendance in university classes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Write letters of recommendation for students on behalf of professors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Write papers and complete assignments for university coursework.

Overall, would you say the increased use of artificial intelligence (AI) in daily life makes you feel...

- More excited than concerned
- More concerned than excited
- Equally concerned and excited

What about the increased use of artificial intelligence (AI) in academics? Would you say the increased use of AI in the classroom is...

- More beneficial to students than harmful
- More harmful to students than beneficial
- Equal amounts of harmful and beneficial

What is your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

What is your race? Check all that apply.

- White/Caucasian
- Black/African American
- Hispanic/Latino
- Asian/Pacific Islander
- Native American
- Other

What best describes your family's educational background?

- Both of my parents/legal guardians graduated from a 4-year college/university
- At least one of my parents/legal guardians graduated from a 4-year college/university
- None of my parents/legal guardians graduated from a 4-year college/university

What year are you at [redacted]?

- Freshmen
- Sophomore
- Junior
- Senior
- Other \_\_\_\_\_

Which of the following categories best describes your major(s) (either declared or intended)?

Check all that apply:

- Social Science (political science, philosophy, psychology, sociology, etc.)
- Natural Science (biology, chemistry, physics, etc.)
- Math, data science, information and technology
- Humanities (art, English, etc.)
- Other \_\_\_\_\_

Which of the following tools do you already use for your academic work, such as studying, writing papers, and working on assignments? Please check all that apply:

- ChatGPT
- Spell Check
- Grammarly or grammar check tools
- Google translate (or any translation tools)
- Attending instructor's office hours
- Study groups
- Learning Centers
- Tutoring
- Writing Center
- Online computers or computation tools
- Other \_\_\_\_\_

What best reflects your GPA?

- 3.75 or above (*considered high GPA for analysis*)
- 3.5-3.74
- 3.0-3.49
- 2.5-2.99
- Below 2.5
- I don't have a GPA / Prefer not to say (*omitted from GPA analysis*)