Perceptions and Utilization of GenAI Tools among Data Science Students and Faculty

Supplementary Material

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This supplementary material contains (S1) additional findings from both the student and faculty surveys; (S2) the complete student survey instruments, including response options and item-level summaries/visualizations; and (S3) the complete faculty survey questions with item-level response summaries and visualizations.

Table 1 provides a high-level overview of the thematic structure of the student and faculty survey instruments, highlighting the parallel but role-specific design of the two surveys. Table 2 complements this overview by providing a mapping of each survey item, whether its primary results are presented in the main manuscript or in the supplementary materials. Together, these tables are intended to improve transparency, clarify the organization of the instruments, and help readers efficiently locate the full wording of questions, response options, and associated results.

Table 1: Students and faculty survey structure.

Student Survey		**Faculty Survey**	
Section	# Questions	Section	# Questions
Consent	2	Consent	2
Demographics & Background	7	Background	6
Awareness of AI Tools for DS	5	Competency in Using AI Tools for Teaching DS	2
Perceptions Toward AI in DS	3	Perceptions Toward AI in DS Education	2
Understanding AI Limitations and Concerns	3	Challenges and Concerns Regarding AI in DS Education	2
Potential to Improve the DS Workflow with AI Tools	4	Potential of AI to Improve DS Teaching	1
		Ethical Considerations and Institutional Policies	4
		AI Readiness and Faculty Support Needs	3

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Table 2: Mapping of student and faculty survey items to the main manuscript and supplementary materials.

Student Survey		**Faculty Survey**	
Question Number	**Location / Notes**	**Question Number**	**Location / Notes**
Q1–Q2	Administrative consent items.	Q1–Q2	Administrative consent items.
Q3–Q5	Demographic and background items; full wording and response options provided in the supplement.	Q3–Q6	Background items; full wording and response options provided in the supplement.
Q6–Q7	Primary results discussed in the main text; full question wording and corresponding supplementary figures also provided in the supplement.	Q7–Q8	Primary results discussed in the main text; supplementary figures and full question wording provided in the supplement.
Q8–Q9	Presented in the supplement with full wording and response summaries.	Q9–Q11	Primary results are presented in the main text; Q11 figure is in the supplement. Full question wording is provided in the supplement.
Q10–Q14	Primary results are discussed in the main text; detailed response distributions and full question wording are also provided in the supplement.	Q12	Primary result discussed in the main text; supplementary figure and full question wording provided in the supplement.
Q15–Q17	Q16–Q17 are discussed in the main text; the rest are presented in the supplement with full wording and response summaries.	Q13–Q15	Primary results are discussed in the main text; for Q13 and Q15, figures are not duplicated in the supplement. Full question wording is provided in the supplement.
Q18–Q19	Primary results are discussed in the main text; full question wording and supplementary response summaries are provided in the supplement.	Q16	Omitted during survey validation due to redundancy.
Q20	Presented in the main text and supplement with full wording and response summary.	Q17–Q23	Primary results are discussed in the main text; supplementary figures and full question wording are provided in the supplement, except that figures for items with primary main-text figures are not duplicated.
Q21	Primary result discussed in the main text; full question wording provided in the supplement.		
Q22–Q23	Discussed in both the main text and the supplement with full wording and response summaries.		
Q24	Primary result discussed in the main text; full question wording and supplementary figure provided in the supplement.		

Note. Questions Q1–Q2 in both instruments were administrative consent items. Survey questions were shown only to participants who met the admission requirements and consented to participate. For the faculty survey, figures for items whose primary visual results appear in the main text (Q9, Q10, Q13, and Q15) are not duplicated in the supplement. Faculty survey item Q16 was removed during survey validation due to redundancy.

S1 Supplementary Results

This section presents supplementary analyses that support the primary findings reported in the main text. The results are organized to parallel Sections 3 and 4 of the main paper.

S1.1 Detailed Student Familiarity with AI Tools (Supplementary to Section 3.1)

To complement the summary of student familiarity reported in Section 3.1 of the main text, we present more granular results on students' familiarity with specific AI tools and task-level AI use.

Tool-specific familiarity. Students rated their familiarity with five AI technologies on a scale from "Not at All Familiar" to "Very Familiar" (Q10). As reported in the main text, familiarity was highest for general-purpose tools and lowest for domain-specific platforms. Figure 3 (Section S2 of this supplement) shows the full distribution. ChatGPT had the highest proportion of students reporting familiarity (57% "Somewhat Familiar" or above), while AI-driven analytics platforms had the lowest, with 56% of students reporting no familiarity at all. Gemini and Google Colab occupied intermediate positions, with roughly one-third of students reporting at least some familiarity. These patterns suggest that students' exposure to AI is shaped primarily by the accessibility and general visibility of tools rather than by disciplinary relevance.

Tools used in DS tasks. When asked which AI tools they had used in their data science tasks (Q11), ChatGPT again dominated (80%), followed by Grammarly (53.6%) and AI-powered visualization tools (26.4%). Only 4.5% reported using predictive analytics tools such as DataRobot, and 10% reported using no AI tools at all. Figure 4 (Section S2) shows the full distribution. The low adoption of specialized analytics platforms, despite their direct relevance to DS workflows, further underscores the gap between general-purpose and domain-specific AI literacy identified in the main text.

Use cases for AI. Students reported using AI technology primarily for coding assistance (69.4%), proofreading (52.3%), mathematical proofs (36.9%), literature reviews (30.6%), and generating initial drafts (27.9%). Figure 2 (Section S2) presents these results. Please note that students were permitted to provide multiple responses to this question; the relative frequency is calculated using the number of nonempty responses ($n = 111$) as the denominator. The predominance of implementation-oriented use cases over content-generation tasks supports the main text's finding that students engage with AI primarily for refinement and support rather than for producing original analytical content.

S1.2 Detailed Student Perceptions of AI in DS (Supplementary to Section 3.2)

Section 3.2 of the main text reports that students are broadly optimistic about AI's potential in data science. This subsection provides additional detail on perceptions toward specific AI capabilities, future career relevance, and the preferred role of AI relative to traditional methods.

Agreement with AI capability statements. Students rated their agreement with four statements about AI tools in DS (Q12). Figure 5 (Section S2) shows the response distributions. Agreement was strongest for the statements that AI tools can automate tedious data processing (71% Agree or Strongly Agree) and provide new insights (69%). Regarding the statement that AI tools lack emotional intelligence, responses were more divided: 55% agreed, while 36% were neutral, reflecting recognition of a limitation alongside the generally positive outlook.

Perceptions of the Future of AI in DS. Students also rated their agreement with statements about AI's future role in DS careers (Q15). Figure 6 (Section S2) presents the full distributions. More than 65% agreed that AI tools are essential for future DS workflows and that AI improves efficiency in analyzing large datasets. Agreement was also high for the statement that AI makes DS accessible to non-technical professionals (75% Agree or Strongly Agree). However, the statement that over-reliance on AI could diminish fundamental DS skills received

the highest proportion of strong agreement (36% Strongly Agree), indicating that optimism about AI's potential coexists with awareness of its risks.

Willingness to learn and adopt AI tools. When asked whether students should learn AI tools for DS careers (Q16), 57.8% selected "Yes, but not a priority" and 32.4% selected "Yes, it is essential." No students selected "No, it is not necessary" or "No, it may even be harmful." Regarding willingness to incorporate AI tools into future DS projects (Q17), 72.4% agreed or strongly agreed, while only 7.7% disagreed or strongly disagreed.

Complement vs. replace traditional tools. Figure 10 (Section S2) shows how students responded when asked whether AI tools should complement or replace traditional DS methods (Q24). A majority (54.9%) endorsed maintaining a balance between AI tools and traditional approaches, and 31.4% favored a primarily complementary role. Only 5.9% indicated that AI mostly replaces traditional methods, and 2.0% preferred full reliance on AI. An equal proportion (5.9%) reported that AI tools do not meaningfully complement traditional data science tools. These results reinforce the main-text finding that students favor integrative rather than substitutive adoption of AI tools.

S1.3 Detailed Student Awareness of AI Limitations (Supplementary to Section 3.3)

The main text reports that at least 70% of students recognize key AI limitations and that accuracy and reliability are the most frequently cited concerns. This subsection provides the detailed response distributions for awareness items, concern rankings, and integration challenges.

Encounters with AI issues. When asked whether they had encountered hallucinations, bias, or inaccuracy while using AI tools for DS tasks (Q20), 53.4% reported occasional encounters and 15.5% reported frequent encounters. Only 18.4% reported never encountering such issues, while 12.6% had never used AI tools for DS.

Primary concerns about AI in DS. Students were asked to identify their primary concerns about using AI tools in DS (Q19; multiple responses allowed). Figure 7 (Section S2) shows the distribution. Accuracy and reliability were cited most frequently (80.6%), followed by privacy and security (63.1%), skill degradation (62.1%), ethical concerns or bias (58.3%), lack of transparency (39.8%), and difficulty understanding the models (34%). These responses suggest that accountability and transparency are salient concerns for students.

Challenges in integrating AI tools into DS workflows. Students were also asked about specific challenges they face when integrating AI tools into their work (Q22). Figure 8 (Section S2) shows the distribution. Accuracy and reliability of predictions were the most frequently cited challenges (48%), followed by data security and privacy risks (19.6%), understanding AI outputs (16.7%), and complexity of using AI tools (8.8%). Only 6.9% expressed concern about AI's impact on DS job roles. These results suggest that students' primary integration challenges are epistemic (can I trust the output?) rather than occupational (will AI replace my job?).

Concerns about AI in education. Figure 9 (Section S2) presents students' concerns about integrating AI into education more broadly (Q23). Over-reliance on generative AI was the most commonly selected concern (42.2%), followed by hindering the development of transferable skills (23.5%), undermining the value of university education (18.6%), and limiting social interaction (15.7%). The prominence of over-reliance as a concern, echoed in the faculty results, suggests a shared awareness across stakeholder groups that AI adoption requires deliberate safeguards against dependency.

S1.4 Detailed Faculty Integration and Self-Assessment (Supplementary to Section 4.1)

Section 4.1 of the main text reports that a majority of faculty have incorporated AI tools into teaching at least sometimes, but that self-assessed proficiency remains low. This subsection provides the detailed distributions for specific teaching tasks and usage frequency.

Faculty AI incorporation. When asked whether they had incorporated AI tools in their data science teaching (Q7), 57.1% of faculty responded "Sometimes," 14.3% "Rarely," and 7.1% "Always." Only 21.4% had never incorporated AI tools. Figure 11 (Section S3 of this supplement) shows the distribution.

AI tools and platforms used. When asked which AI tools or platforms they use in teaching (Q8), AI learning assistants such as ChatGPT dominated the list (100% of respondents), followed by AI-driven coding platforms such as Jupyter and Colab (64.3%) and AI-based data analysis or visualization tools (42.9%). Only 14.3% reported using automated grading systems, and one respondent mentioned AI project management or collaboration tools. These findings are consistent with student responses, in which ChatGPT was the most popular GenAI tool.

Self-rated ability for specific teaching tasks. Faculty rated their ability to perform five AI-related teaching tasks (Q9). Across all five tasks, the majority rated their ability as "Beginner" or "No Experience." The task with the highest reported competence was implementing AI-assisted coding environments, with 40% reported at least intermediate skill. The lowest self-rated competence was for employing AI for student performance tracking and curriculum adjustments, with 62% reporting no experience. Figure 4 in the main text summarizes these results. The gap between faculty self-assessment and student self-assessment is noteworthy. Whether this reflects greater realism among faculty or greater overconfidence among students cannot be determined from survey data alone, but it has implications for calibrating training programs and managing expectations in AI-integrated courses.

Frequency of AI use in specific teaching activities. Faculty rated how frequently they use AI for four teaching activities (Q10). Across all activities, "Never" or "Rarely" was the most common response, selected by over 46% of faculty for each item. "Generating teaching materials with AI support" and "Engaging students through AI-assisted interactive labs" had the highest frequency of use, although even for these tasks fewer than 23% of faculty reported using AI "Always" or "Often." Figure 5 in the main text presents the full distributions.

S1.5 Detailed Faculty Perceptions (Supplementary to Section 4.2)

The main text highlights that faculty perceptions are broadly supportive but conditional. This subsection provides additional detail on the equity and inclusion finding and on perceptions of AI as an instructional enhancer.

Equity and inclusion. A notable finding was that faculty were unanimous in the direction of their response to the statement "AI tools are capable of improving equity and inclusion in data science education": no faculty disagreed, 23% were neutral, and the remainder agreed or strongly agreed. This result is particularly striking given widespread attention to algorithmic bias and the risk that GenAI tools may amplify existing societal and racial inequities. As an HBCU, our institutional context makes this finding especially relevant. Faculty responses were favorable toward the potential of GenAI tools to improve equity and inclusion in DS education, even as they recognized the risks of bias. This finding should be interpreted cautiously, given the small sample size.

Detailed Perceptions toward AI in DS Education. Figure 6 in the main text summarizes faculty perceptions across five pedagogical and ethical dimensions (Q11). A strong majority expressed agreement that AI tools can improve equity and inclusion (over 75%), efficiently automate repetitive teaching tasks (nearly 70%), and significantly improve instruction in technically complex areas such as machine learning, deep learning, and big data (over 75%). Likewise, a majority agreed that AI tools will be vital for the future of DS education. Only 9% disagreed with the claim that GenAI tools can efficiently automate repetitive teaching tasks. The item on over-reliance reducing critical thinking skills was more evenly distributed across agreement and neutrality, indicating ambivalence rather than outright opposition.

AI tools as teaching enhancers. Figure 7 in the main text summarizes faculty agreement that AI tools can enhance five dimensions of DS teaching (Q15). The strongest endorsement was for simplifying complex DS concepts through AI-enhanced visualizations (roughly two-thirds agreeing or strongly agreeing). No faculty disagreed with the potential for AI to support real-time tracking and identification of student challenges, indicating strong confidence in AI's role in formative assessment and conceptual support. Faculty also viewed AI favorably for enhancing engagement via interactive modules and automating assessment and feedback, although these areas exhibited slightly higher neutrality and some disagreement, suggesting cautious optimism, particularly regarding automated assessment, where concerns about validity or pedagogical fit may remain. Perceptions were most mixed regarding personalizing learning paths using AI-driven insights, with the highest proportion of neutral and negative responses.

Complement vs. replace (faculty). When asked whether AI tools should complement or replace traditional methods in teaching DS (Q12), 61.5% of faculty favored balancing AI tools with traditional methods, 30.8% preferred AI as a complement, and only 7.7% supported replacement in some contexts. No faculty supported full replacement, a pattern consistent with the student results. Figure 13 (Section S3 of this supplement) shows the distribution.

S1.6 Detailed Faculty Concerns and Institutional Context (Supplementary to Section 4.3)

The main text summarizes the headline faculty concerns and syllabus policy findings. This subsection provides additional detail on the distribution of concern levels across categories, institutional awareness, ethical priorities, and training needs.

Concern levels by category. Figure 8 in the main text presents the full distribution of faculty concern across five categories (Q13). Beyond the headline finding that all faculty were concerned about keeping pace with evolving AI technologies, the data reveal that concerns about biased results in student assessments and lack of transparency in AI outputs were nearly as prevalent, with over 70% expressing concern in each area. Over-reliance on AI reducing faculty-student engagement was also a majority concern, with 23% not concerned and 46% somewhat concerned. Data privacy and security, while still a majority concern, had the lowest intensity, with 8% of faculty reporting no concern. This relatively lower concern about privacy may reflect greater familiarity with data-driven technologies among DS faculty.

Integration challenges. When asked about their biggest challenges in integrating AI tools into their courses (Q14), faculty most frequently cited insufficient institutional support or training (61.5%), balancing AI with curriculum learning objectives (53.8%), ethical concerns such as fairness and bias (46.2%), resistance from students or faculty to adopt AI tools (38.5%), limited access to advanced AI platforms (38.5%), and difficulty in learning and mastering AI tools (23.1%). Figure 14 (Section S3 of this supplement) presents the full distribution.

Institutional AI guidelines awareness. Figure 15 (Section S3) shows that only 7.7% of faculty reported being "Very Aware" of institutional guidelines on AI use. The largest group (46.2%) reported being "Somewhat Aware," while 38.5% reported being "Not Aware." This limited awareness, combined with the non-uniform syllabus policies reported in the main text, suggests a significant gap in institutional communication regarding AI governance in the classroom.

Ethical priorities. Figure 16 (Section S3) shows that 84.6% of faculty cited over-reliance on AI leading to less human oversight as their primary ethical concern, while 15.4% cited bias in AI-driven student evaluations. No faculty member selected student privacy as their primary concern.

Human oversight. Faculty unanimously endorsed the importance of maintaining human oversight when using AI for assessments and student feedback (Q19). Figure 17 (Section S3) shows that 76.9% rated this as "Very Important" and 23.1% as "Important."

Syllabus policies. Figure 18 (Section S3) presents the distribution of AI policies in faculty syllabi (Q20). The majority (83.3%) allowed AI use for specific activities designated by the instructor with required disclosure, 16.7% prohibited AI use for any activities or assignments, and none permitted unrestricted use with attribution.

Faculty confidence. When asked about their confidence in their knowledge of AI tools available for DS education (Q21), responses were distributed across all levels: 30.8% "Very Confident," 15.4% "Somewhat Confident," 30.8% "Neutral," and 23.1% "Not Confident." Figure 19 (Section S3 of this supplement) presents these results.

Training and support needs. Figure 20 (Section S3) presents the distribution of faculty training needs (Q22). Access to advanced AI platforms for classroom use and technical support for integrating AI into the curriculum were each cited by 69.2% of faculty. More AI-related training or professional development was selected by 61.5%, institutional support for purchasing AI tools by 53.8%, and peer collaboration and sharing best practices by 46.2%.

Institutional support adequacy. When asked whether their institution provides sufficient guidance and resources for using AI in teaching (Q23), 53.8% responded "No," 30.8% responded "Somewhat," and only 15.4% responded "Yes." Figure 21 (Section S3) presents these results. This finding reinforces the main text's conclusion that institutional leadership and support for AI integration are significant areas for improvement.

S2 Student Survey Questions

This section includes detailed student survey questions, response options, and additional secondary results or visualizations.

Q3. What is your gender?

Response options: Male; Female; Non-binary; Trans man; Trans woman; Prefer not to say.

Q4. What is your major?

Response options: Open-ended response.

Q5. What is your classification?

Response options: Freshman; Sophomore; Junior; Senior; Graduate student.

Q6. Have you ever used AI technologies (e.g., MS Copilot, Google Colab) in your data science work?

Response options: Never; Rarely; Sometimes; Often; Very often.

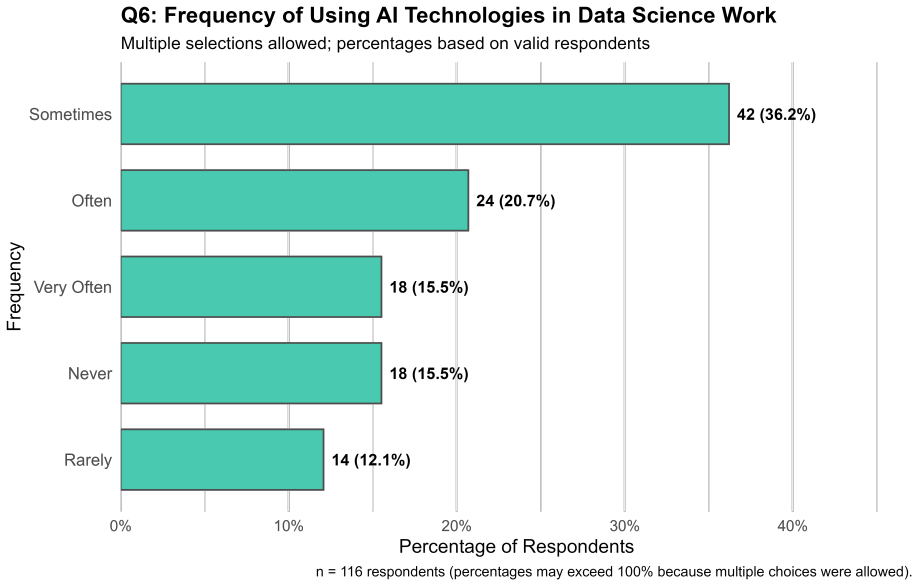

Figure 1: Students' self-reported frequency of using AI tools in their DS coursework.

Q7. What did you use AI technology for? Select all that apply.

Response options: Proofreading; Getting an initial draft; Help with coding; Mathematical proofs; Literature review; Other (please specify).

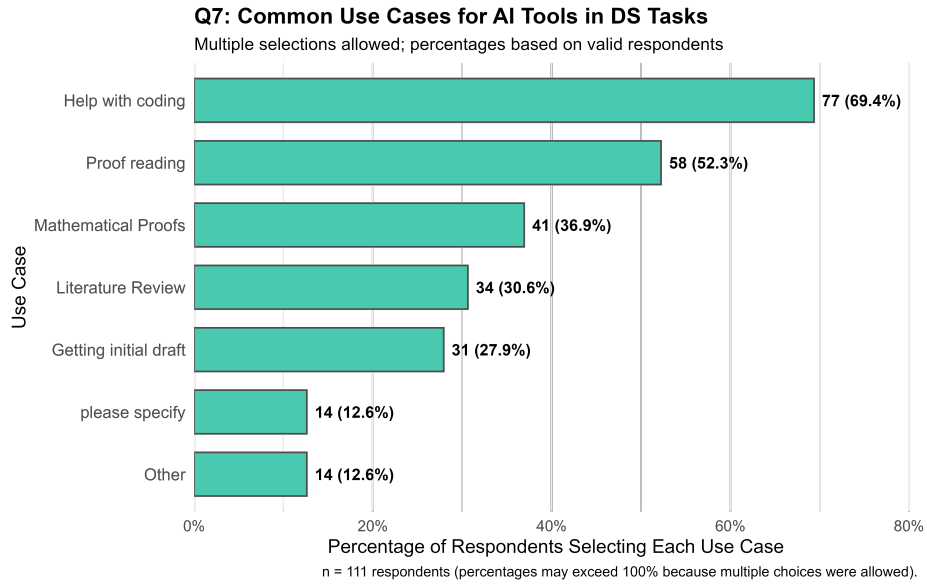

Figure 2: Students' common use cases for AI tools in DS tasks.

Q8. Are you interested in pursuing a degree in data science in the future?

Response options: Yes; Not sure; No.

Among respondents, (40.9%) selected "Yes," 36.4% selected "No," and 22.7% were unsure.

Q9. Are you interested in getting a job in data science in the future?

Response options: Yes; Not sure; No.

Among respondents, (46.8%) selected "Yes," 27.9% selected "No," and 25.2% were unsure.

Q10.

How familiar are you with the following AI technologies in data science?

Response options: (Not at all familiar–Very familiar)

- ChatGPT
- Gemini
- Google Colab
- AI-powered data visualization tools (e.g., Tableau, Power BI with AI)
- AI-driven analytics platforms (e.g., DataRobot)

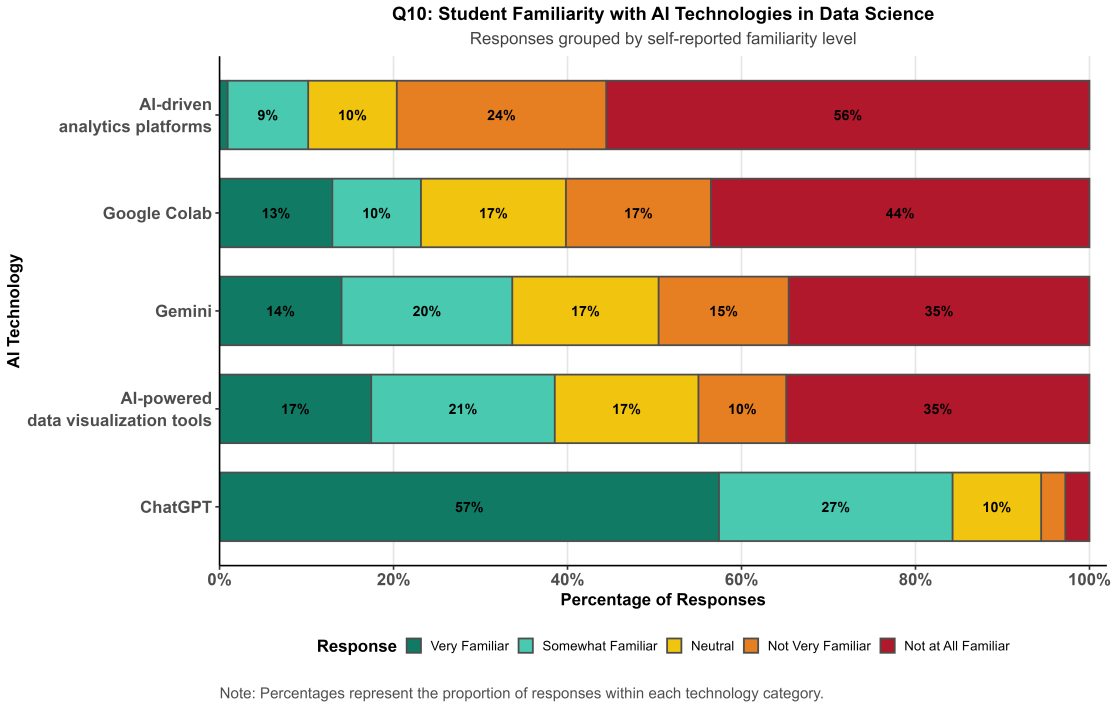

Figure 3: Students' self-reported familiarity levels with AI technologies in DS.

Q11.

Which AI tools have you used in your data science tasks? Select all that apply.

Response options: ChatGPT; AI-powered visualization tools; Predictive analytics tools (e.g., DataRobot); Grammarly; Canva or AI-assisted presentation tools; Other (please specify); None.

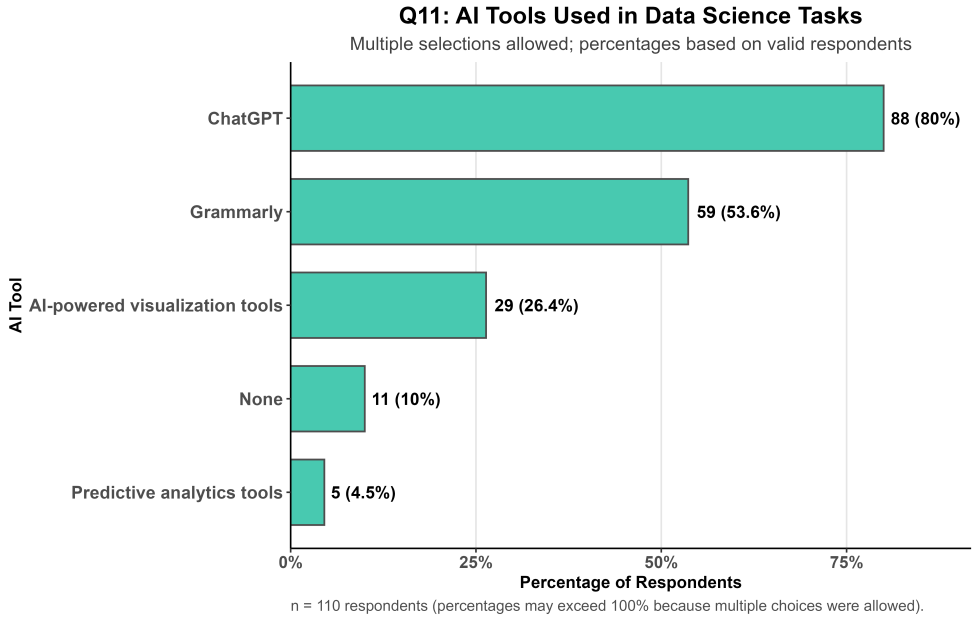

Figure 4: AI tools students reported using in DS tasks.

Q12.

To what extent do you agree with the following statements regarding AI tools in data science?

Response options: (Strongly disagree–Strongly agree)

- AI tools can enhance the accuracy of data science models
- AI tools can automate tedious data processing tasks
- AI tools can provide new insights or perspectives I would not have discovered otherwise
- AI tools lack emotional intelligence, which may limit their utility in complex tasks

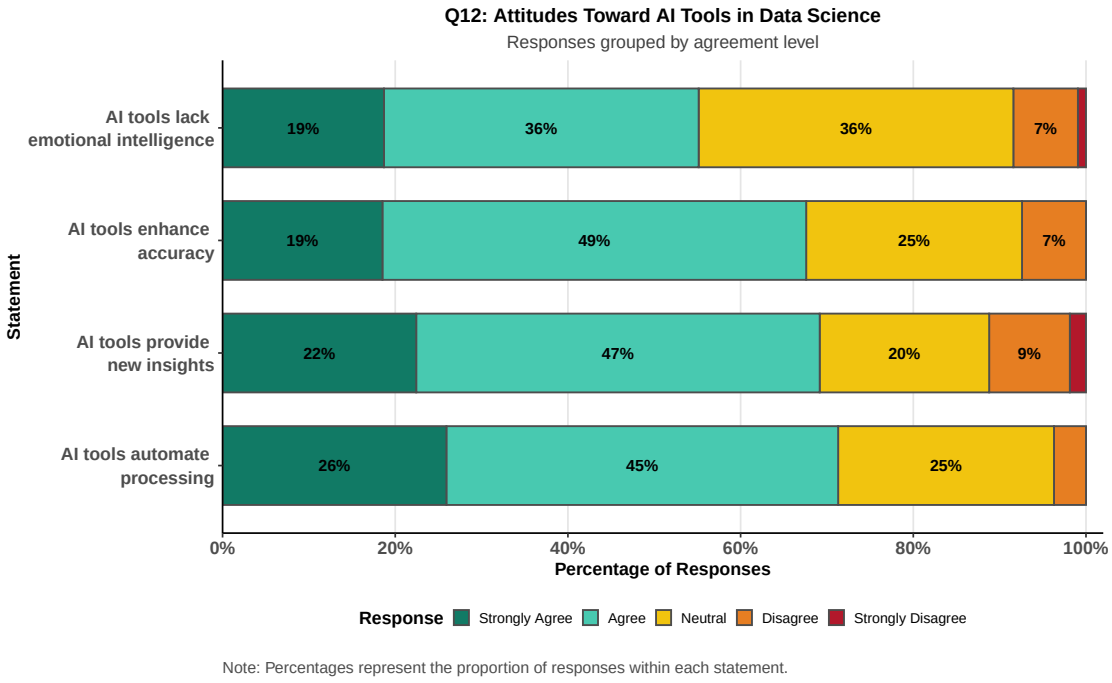

Figure 5: Students' perceptions toward integrating AI tools in DS.

Q13.

How often do you use AI tools for the following data science tasks?

Response options: (Never–Always)

- Exploratory data analysis
- Predictive modeling
- Data visualization
- Automating data cleaning tasks
- Presenting findings and reports

Q14.

How confident are you in explaining AI-generated outputs for data analysis tasks to peers or supervisors?

Response options: Not at all confident; Not very confident; Neutral; Confident; Very confident.

Only 40.6% of student respondents were confident in their ability to explain AI outputs, while 30.2% were either not very confident or not at all confident.

Q15.

To what extent do you agree with the following statements regarding the future of AI in

data science?

Response options: (Strongly disagree–Strongly agree)

- AI tools are essential for future data science workflows
- AI can improve efficiency in analyzing large datasets
- AI can make data science more accessible to non-technical professionals
- Overreliance on AI tools could diminish fundamental data science skills

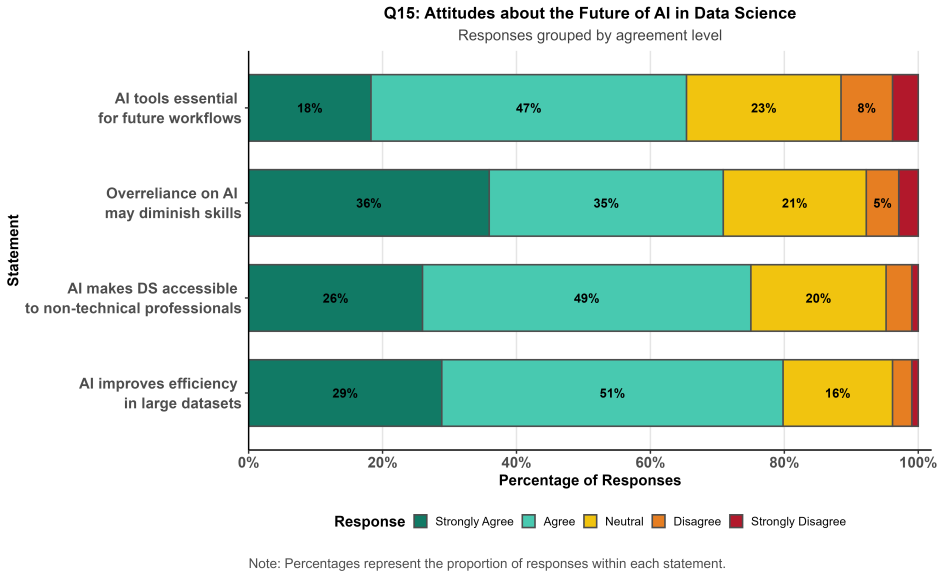

Figure 6: Agreement with statements about the future of GenAI in DS.

Q16.

Do you think students should learn how to use AI tools for their data science careers?

Response options: Yes, it is essential; Yes, but not a priority; Neutral; No, it is not necessary; No, it may even be harmful.

The majority of students (57.8%) selected "Yes, but not a priority", about a third (32.4%) selected "Yes, it is essential". The rest selected "Neutral". Neither the option "No, it is not necessary" nor the option "No, it may even be harmful" was selected by any students.

Q17.

I am willing to incorporate AI tools more into my data science projects in the future.

Response options: Strongly disagree; Disagree; Neutral; Agree; Strongly agree.

The majority of students indicated willingness to incorporate AI tools into their future DS projects, with 20% selecting "Strongly Agree," 52.4% selecting "Agree," 6.7% selecting "Disagree," and 1% selecting "Strongly Disagree."

Q18.

To what extent are you aware of the following limitations of using AI for data science tasks?

Response options: (Not at all aware–Very aware)

- AI tools can produce biased results due to biased training data
- AI tools may generate factually incorrect outputs (hallucinations)
- AI models lack real-world experience and contextual understanding
- AI-generated results often need to be validated by experts
- Using AI tools could pose data privacy risks

Q19.

What are your primary concerns about using AI tools in data science? Select all that apply.

Response options: Accuracy and reliability of AI outputs; Lack of transparency in AI decision-making; Data privacy and security issues; Ethical concerns (e.g., bias in AI models); Overreliance on AI leading to skill degradation; Difficulty understanding how AI models work; Don't know/none.

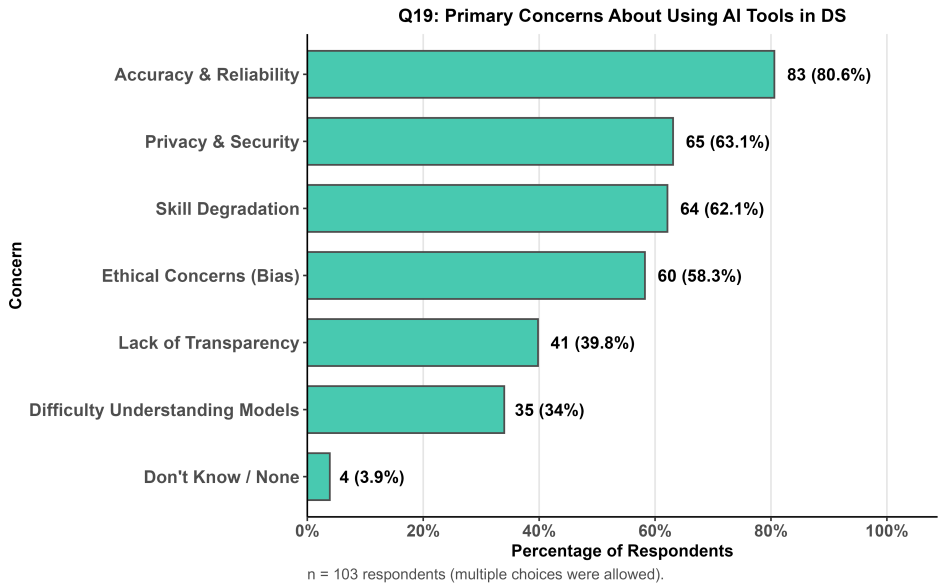

Figure 7: Students' primary concerns about using AI tools in DS.

Q20.

Have you ever encountered issues such as hallucinations, bias, or inaccuracy while using AI tools for data science tasks?

Response options: Yes, frequently; Yes, occasionally; No, never; I have never used AI tools for data science.

The majority (53.4%) selected "Yes, occasionally", 15.5% selected "Yes, frequently", 18.4%

selected "No, never", and 12.6% selected "I never used AI tools for data science."

Q21.

Do you think AI tools can significantly enhance the following aspects of your data science workflow?

Response options: (Strongly disagree–Strongly agree)

- Automating repetitive data processing tasks
- Enhancing predictive modeling accuracy
- Visualizing complex datasets more effectively
- Supporting faster decision-making
- Helping communicate findings to non-technical stakeholders

Q22.

What concerns or challenges do you face when integrating AI tools into your data science workflow? Select all that apply.

Response options: Complexity in setting up and using AI tools; Accuracy and reliability of AI predictions; Understanding how AI models generate outputs; Data security and privacy risks; AI's impact on data science job roles.

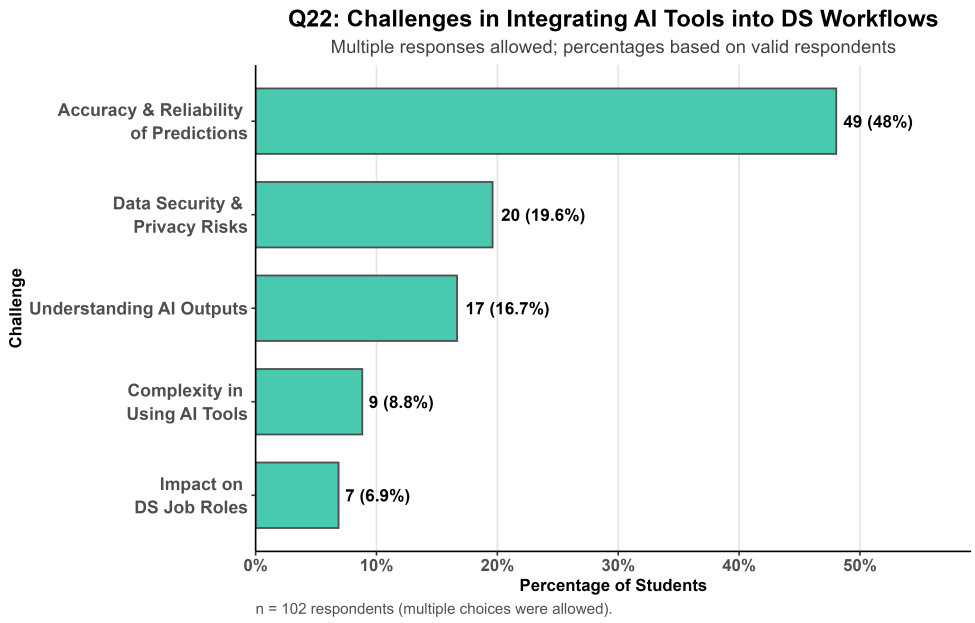

Figure 8: Challenges faced by students when integrating AI tools into DS workflow.

Q23.

To what extent do you agree with the following statements regarding the use of AI tools in education in general?

Response options: (Strongly disagree–Strongly agree)

- Using generative AI technologies such as ChatGPT to complete assignments undermines the value of university education
- Generative AI technologies such as ChatGPT may limit opportunities to interact with others and socialize while completing coursework
- Generative AI technologies such as ChatGPT may hinder the development of transferable skills such as teamwork, problem-solving, and leadership
- I may become over-reliant on generative AI technologies

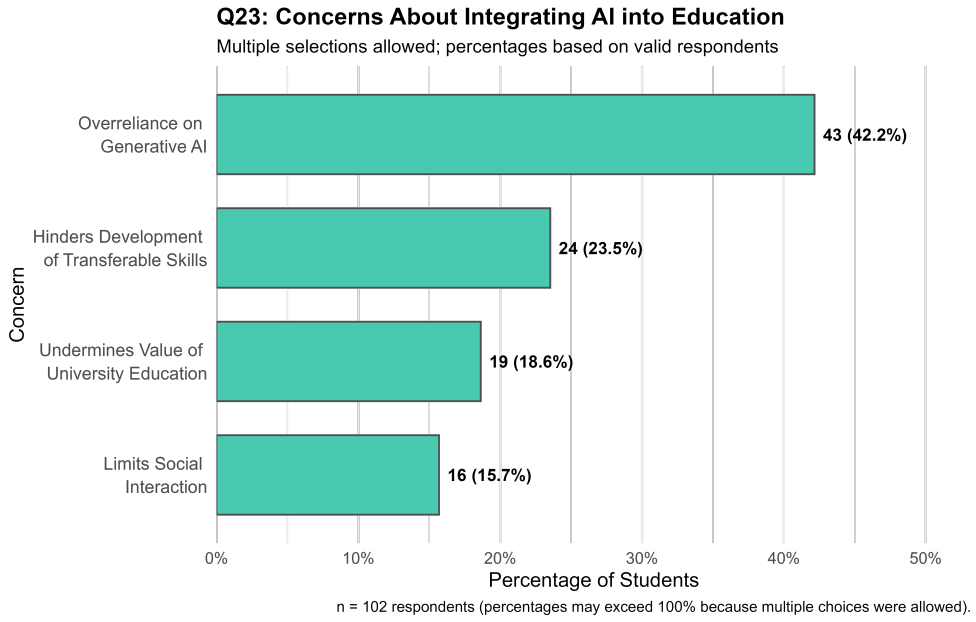

Figure 9: Students' concerns about AI use in education.

Q24.

Do you believe that AI tools should complement traditional methods in data science or replace them?

Response options: AI tools do not complement traditional data science tools; AI tools complement traditional methods; Balance between AI tools and traditional methods; AI tools mostly replace traditional methods; Rely entirely on AI tools.

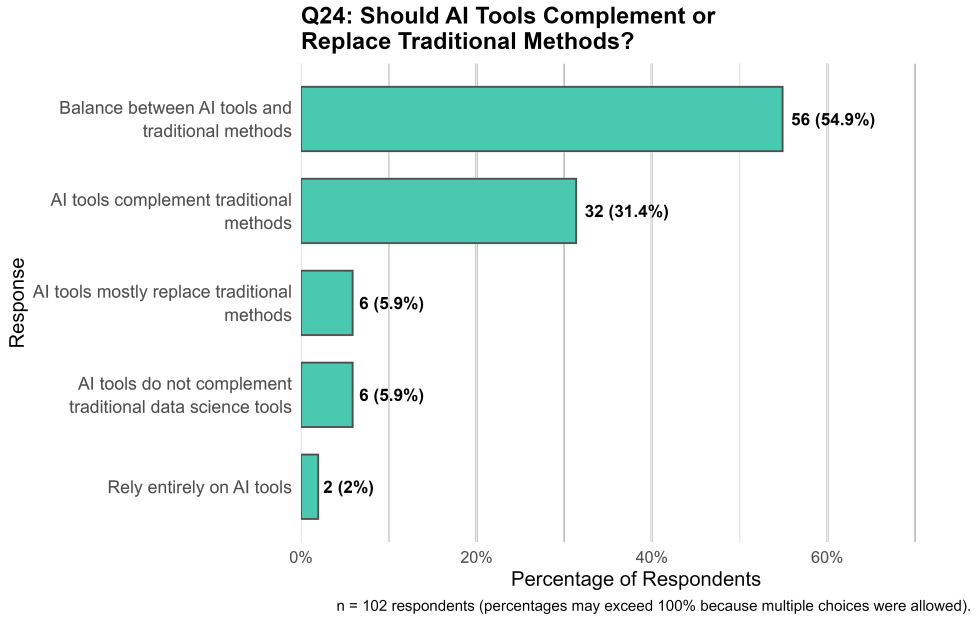

Figure 10: Students' views on whether AI tools should complement or replace traditional methods.

S3 Faculty Survey Questions

This section includes detailed faculty survey questions, response options, and additional secondary results or visualizations. *Note. Questions Q1–Q2 were administrative consent items. Figures for questions whose primary results appear in the main text (Q9, Q10, Q11, Q13, Q15) are not duplicated here; see the corresponding main-text figures. Q16 was omitted during survey validation due to redundancy. All other response distributions are presented immediately following each question.*

Q3. What is your gender?

Response options: Male; Female; Non-binary; Trans man; Trans woman; Prefer not to say.

Q4. What is your primary area of expertise within data science?

Response options: Open-ended response.

Q5. How many years have you been teaching data science or related subjects?

Response options: 1–3 years; 3–5 years; 5–10 years; 10+ years.

Q6. At what academic level do you primarily teach?

Response options: Undergraduate; Graduate; Both.

Q7. Have you incorporated AI tools in your data science teaching?

Response options: Never; Rarely; Sometimes; Often; Always.

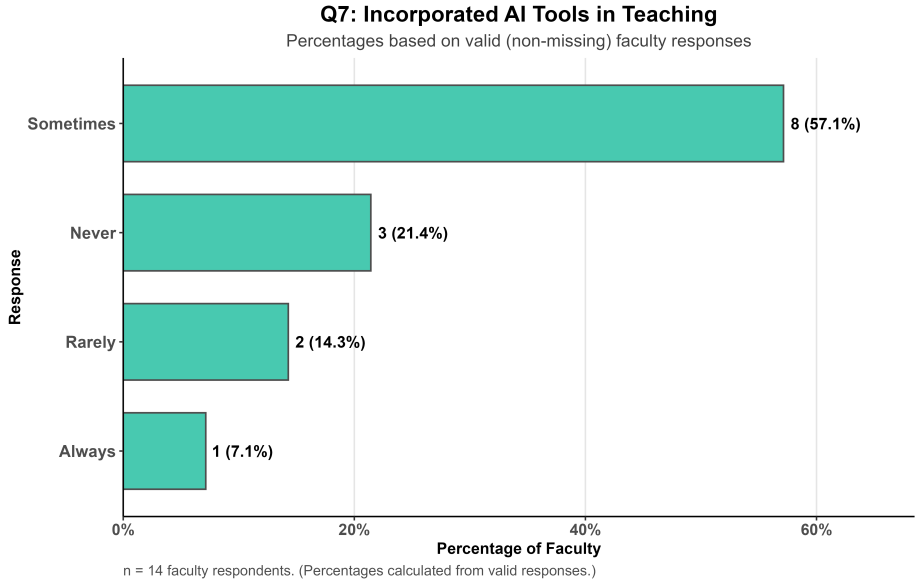

Figure 11: Faculty self-reported frequency of incorporating AI tools in teaching.

A majority of faculty (57.1%) reported incorporating AI tools "Sometimes," while 21.4% had never done so and 7.1% reported "Always." See Section S1.4 for further discussion.

Q8. What AI tools or platforms do you use in your teaching? Select all that apply.

Response options: AI-driven coding platforms (e.g., Jupyter Lab, Colab); Automated grading systems; AI-driven learning assistants (e.g., ChatGPT); AI-based data analysis or visualization tools (e.g., DataRobot, Tableau); AI-based project management or collaboration tools; Other (please specify); None.

AI learning assistants such as ChatGPT were used by all 14 respondents (100%), followed by AI-driven coding platforms (64.3%) and data analysis or visualization tools (42.9%). See Section S1.4 for further discussion.

Q9. How would you rate your ability to perform the following tasks using AI tools in your teaching?

Response options: (No experience–Expert)

- Implement AI-assisted coding environments for teaching
- Use AI tools for real-time data analysis and visualization in class
- Automate student feedback and assessment using AI tools

- Guide students in applying AI to solve real-world data science problems
- Employ AI for student performance tracking and curriculum adjustments

The response distribution for this question is presented in Figure 4 of the main text. Over 60% of faculty rated their skill level as "Beginner" or "No Experience" across all tasks. See Section S1.4 for further discussion.

Q10.

How frequently do you use AI tools in the following teaching activities?

Response options: (Never–Always)

- Automating grading or feedback for data science assignments
- Engaging students through AI-assisted interactive labs (e.g., coding or machine learning exercises)
- Monitoring student learning progress using AI-based analytics
- Generating teaching materials with AI support

The response distribution for this question is presented in Figure 5 of the main text. Fewer than 23% of faculty reported frequent use for any activity. See Section S1.4 for further discussion.

Q11.

To what extent do you agree with the following statements about AI in data science education?

Response options: (Strongly disagree–Strongly agree)

- AI tools are vital for future data science education
- AI can significantly improve the teaching of data science topics such as machine learning, deep learning, and big data
- Overreliance on AI tools may reduce the development of critical thinking skills in students
- AI tools can efficiently automate repetitive teaching tasks, freeing up time for more complex educational engagement
- AI tools are capable of improving equity and inclusion in data science education

The response distribution for this question is presented below. Over 75% agreed on equity/inclusion and instruction in complex topics; concerns about critical thinking showed more ambivalence. See Section S1.5 for further discussion.

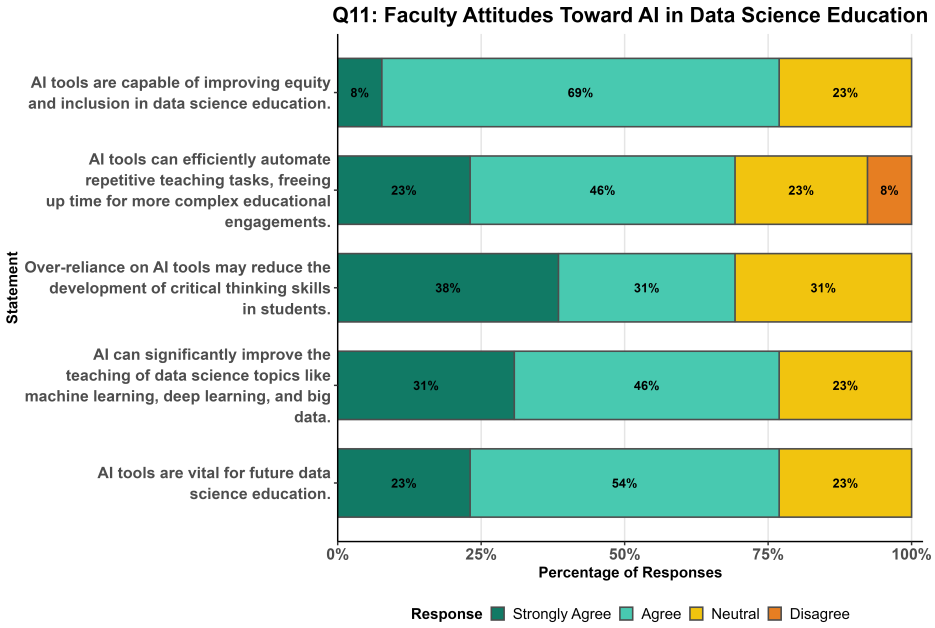

Figure 12: Faculty perceptions of the potential of AI tools to improve DS education.

Q12.

Do you believe that AI tools should complement or replace traditional methods of teaching data science?

Response options: AI tools should complement traditional methods; AI tools should balance with traditional methods; AI tools should replace traditional methods in some contexts; AI tools should not replace traditional methods.

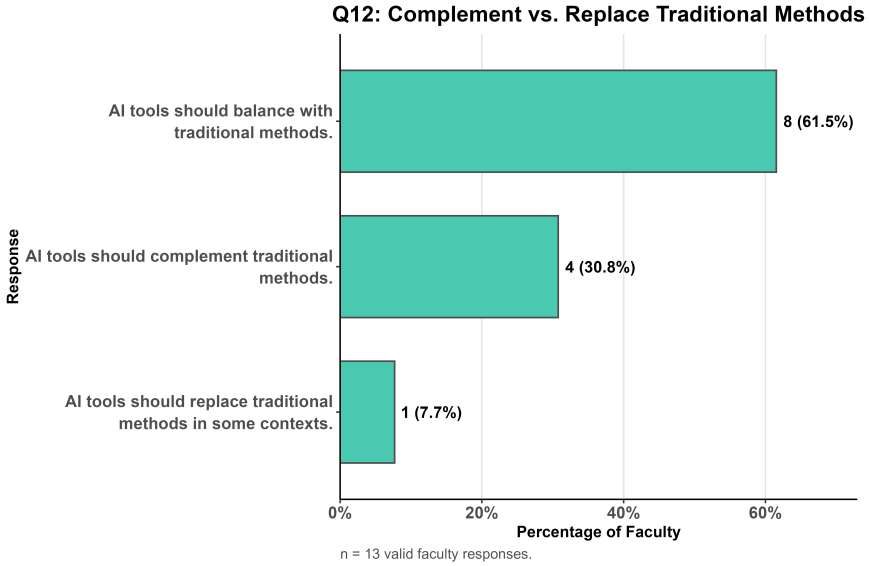

Figure 13: Faculty perspectives: AI as complement vs. replacement in education.

A majority (61.5%) favored balancing AI with traditional methods, 30.8% preferred complementary use, and only 7.7% supported replacement in some contexts. No faculty endorsed full replacement. See Section S1.5 for further discussion.

Q13.

How concerned are you about the following aspects of AI integration in data science education?

Response options: (Not concerned–Very concerned)

- Potential for AI to produce biased results in student assessments
- Lack of transparency in how AI tools generate outputs (e.g., black-box models)
- The challenge of keeping up with evolving AI technologies in education
- Over-reliance on AI tools, leading to reduced faculty engagement with students
- Data privacy and security issues related to using AI in education

The response distribution for this question is presented in Figure 8 of the main text. Faculty were unanimous in their concern about keeping up with evolving technologies. See Section S2.6 for further discussion.

Q14.

What are the biggest challenges you face in integrating AI tools into your data science courses? Select all that apply.

Response options: Difficulty in learning and mastering AI tools; Insufficient institutional support or training; Ethical concerns (e.g., fairness, bias); Limited access to advanced AI tools or platforms; Resistance from students or faculty to adopt AI tools; Balancing AI

tools with the curriculum's learning objectives.

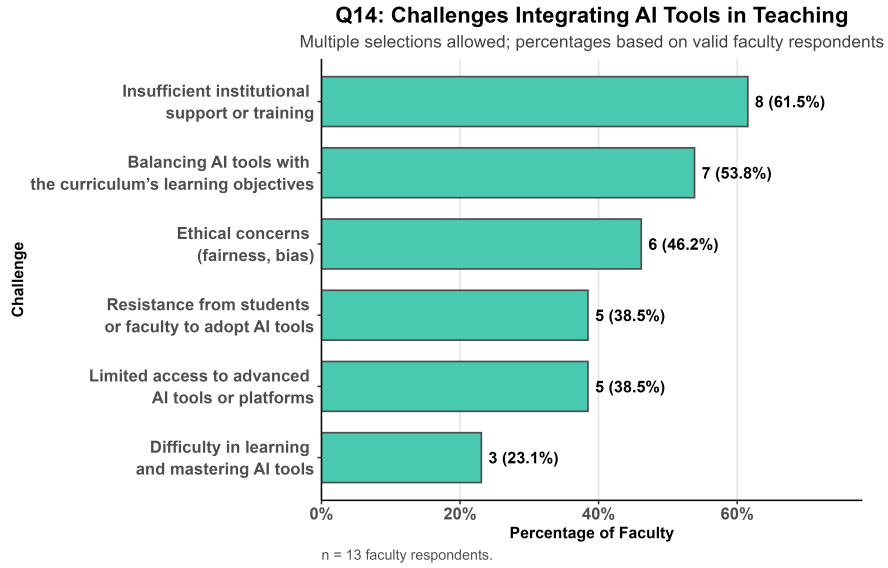

Figure 14: Reported challenges related to AI use in teaching.

Insufficient institutional support (61.5%) and balancing AI with curriculum objectives (53.8%) were the most frequently cited challenges. See Section S2.6 for further discussion.

Q15.

To what extent do you agree that AI tools can enhance the following aspects of data science teaching?

Response options: (Strongly disagree–Strongly agree)

- Automating assessment and feedback for data science projects
- Supporting the personalization of learning paths based on student performance
- Simplifying complex data science concepts through AI-enhanced visualizations
- Assisting with real-time performance tracking and identifying areas where students struggle
- Enhancing student engagement with AI-driven interactive learning modules

The response distribution for this question is presented in Figure 7 of the main text. Strongest endorsement was for AI-enhanced visualizations; perceptions were most mixed for personalizing learning paths. See Section S1.5 for further discussion.

Q17.

How aware are you of your institution's guidelines on the use of AI in teaching and assessments?

Response options: Very aware; Somewhat aware; Neutral; Not aware.

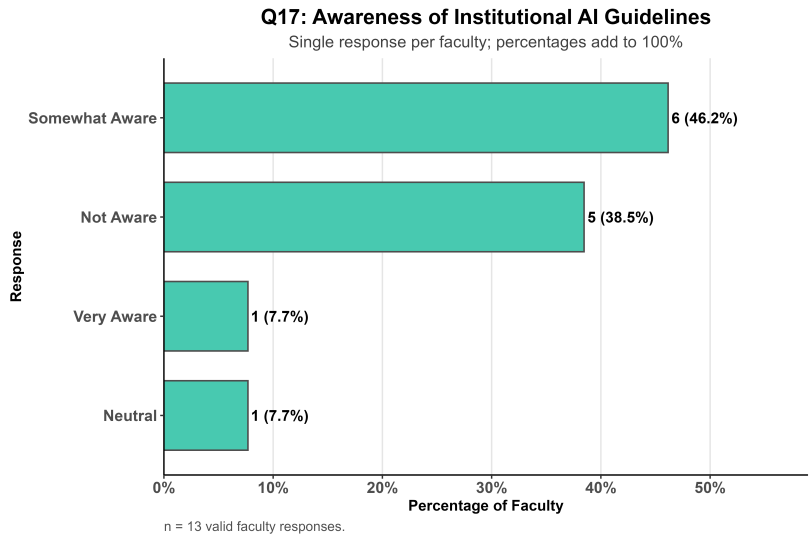

Figure 15: Faculty awareness of institutional AI guidelines.

Only 7.7% reported being "Very Aware" of institutional guidelines; 38.5% were "Not Aware." See Section S1.6 for further discussion.

Q18.

What primary ethical concern do you have about using AI tools in education?

Response options: Bias in AI-driven student evaluations; Infringement on student privacy with AI monitoring tools; over-reliance on AI leading to less human oversight in teaching and assessments.

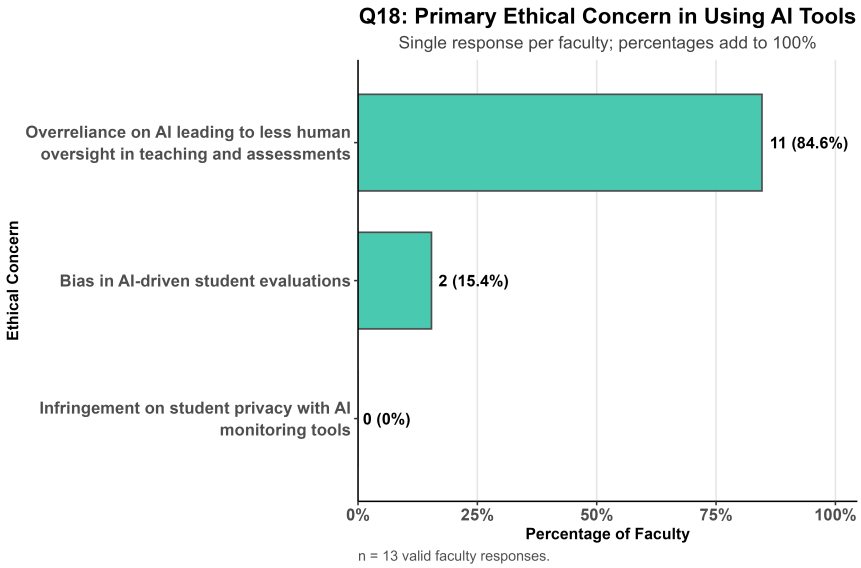

Figure 16: Primary ethical concerns in AI use.

Over-reliance on AI leading to less human oversight was cited by 84.6% of faculty; 15.4% cited bias in AI-driven evaluations. See Section S1.6 for further discussion.

Q19.

How important is it to maintain human oversight when using AI for assessments and student feedback?

Response options: Very important; Important; Neutral; Not important.

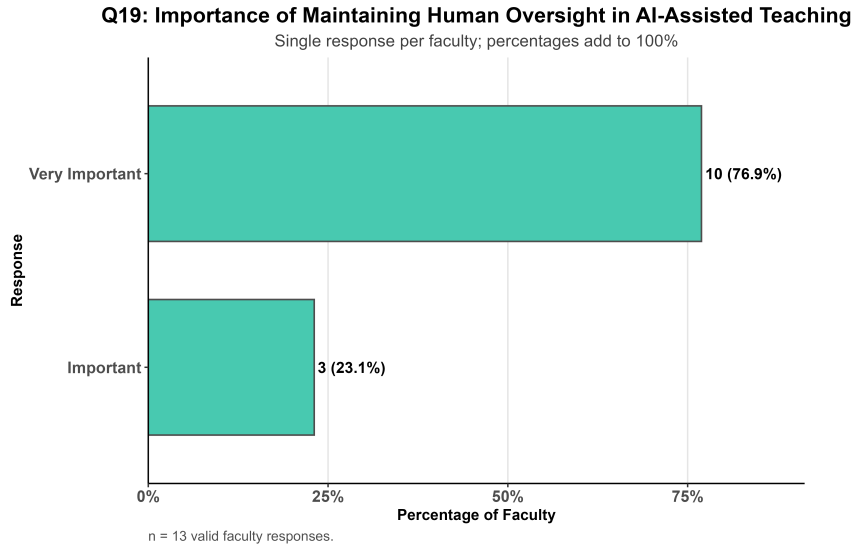

Figure 17: Faculty perspectives on human oversight in AI applications.

Faculty unanimously endorsed the importance of human oversight: 76.9% rated it "Very Important" and 23.1% "Important." See Section S1.6 for further discussion.

Q20.

Which of the following best describes the AI policy in your syllabus/class?

Response options:

- Assistance from generative AI technologies is not allowed for any activities or assignments in this course;
- The use of generative AI technologies is allowed for specific activities or assignments designated by the instructor, and students must clearly indicate when AI-generated content has been used and cite the specific model and platform employed;
- The use of generative AI technologies is permitted for activities and assignments in this course, and proper attribution is required whenever AI-generated content is used.

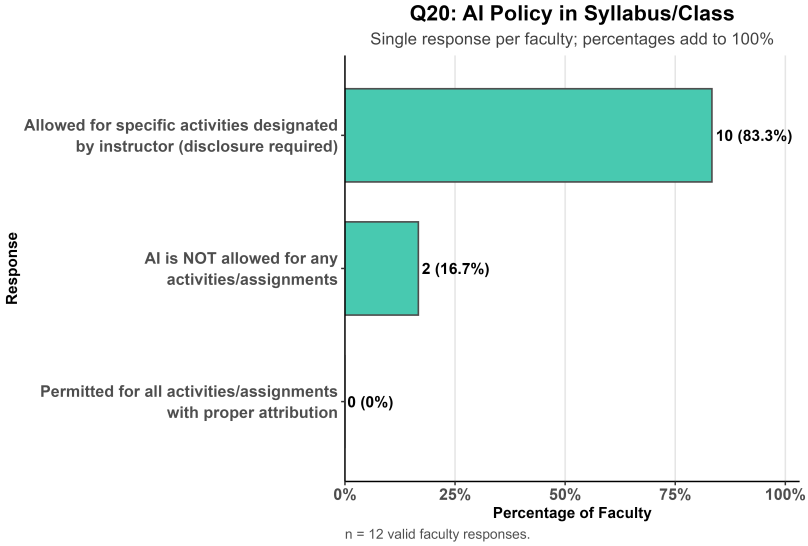

Figure 18: AI policy statements in course syllabi/ class.

The majority (83.3%) allowed AI for instructor-designated activities with disclosure required; 16.7% prohibited AI entirely; none permitted unrestricted use. See Section S1.6 for further discussion.

Q21.

How confident are you in your knowledge of AI tools available for data science education?

Response options: Very confident; Somewhat confident; Neutral; Not confident.

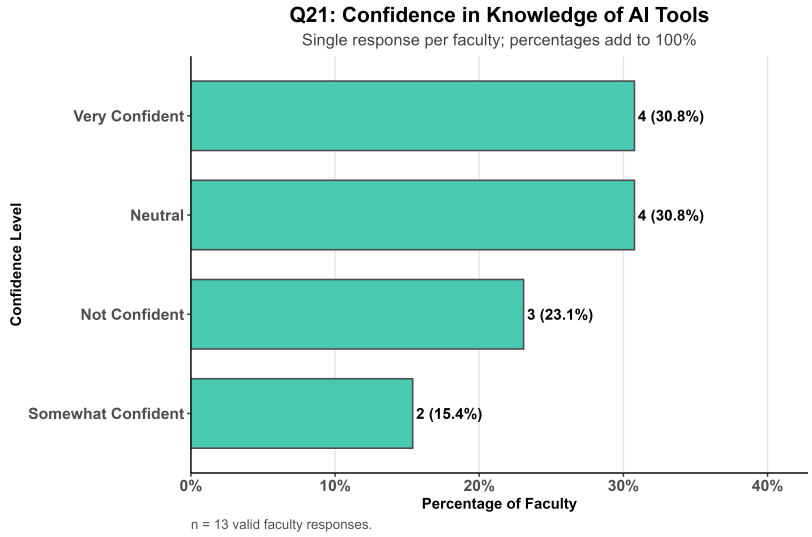

Figure 19: Faculty confidence in using AI tools.

Responses were distributed across all levels: 30.8% "Very Confident," 15.4% "Somewhat Confident," 30.8% "Neutral," and 23.1% "Not Confident." See Section S1.6 for further discussion.

Q22.

What types of training or support would you need to effectively integrate AI tools into your teaching? Select all that apply.

Response options: More AI-related training or professional development; Access to advanced AI platforms for classroom use; Technical support for integrating AI into the curriculum; Institutional support for purchasing AI tools; Peer collaboration and sharing best practices.

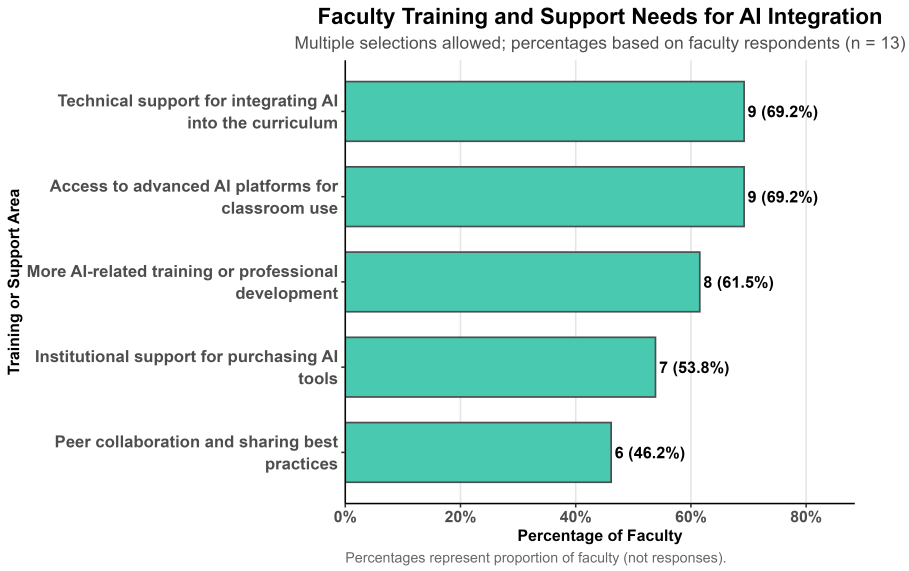

Figure 20: Faculty reported training needs to integrate AI into their curricula.

Access to AI platforms and technical integration support were each cited by 69.2%; AI-related professional development by 61.5%. See Section S1.6 for further discussion.

Q23.

Do you believe your institution provides sufficient guidance and resources for using AI in teaching?

Response options: Yes; No; Somewhat.

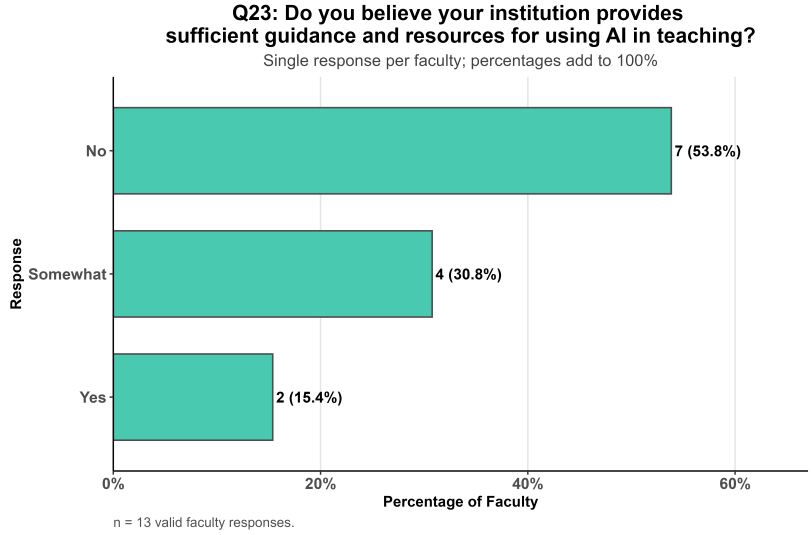

Figure 21: Do faculty believe their institution provides sufficient guidance and resources for using AI in teaching?

A majority (53.8%) responded "No," 30.8% "Somewhat," and only 15.4% "Yes." See Section S1.6 for further discussion.