The State of AI in K-12 Education in Mexico: Insights and Implications for Policy, Practice, and Design

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Child - Centered AI Lab

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INTRODUCTION

The rapid emergence of generative Artificial Intelligence (AI) tools such as ChatGPT, Gemini, and Claude is reshaping the way students learn, create, and solve problems. As these technologies become increasingly embedded in everyday educational practice, understanding how students engage with them is essential for informing effective policy and instruction.

This policy brief presents findings from a large-scale survey conducted in partnership with the Ministry of Education of Chihuahua, Mexico, examining how high school students use AI tools, what purposes they serve, and how students perceive AI's influence on their learning and self-concept of ability. The survey, administered between May and June 2025 to 4th and 6th semester students in public high schools of the Colegio de Bachilleres del Estado de Chihuahua (COBACH) system, captured data from over 7,500 students across diverse regions.

The analysis reveals emerging patterns in how students use AI for writing and mathematics, their confidence in integrating AI into schoolwork, and the complex ways AI both empowers and challenges independent thinking. Taken together, these insights provide a foundation for developing AI literacy initiatives, teacher training programs, and design principles that align technology with meaningful, student-centered learning.

In the sections that follow, we summarize key findings regarding students' use and perceptions of AI and conclude with practical and policy implications for educators, technology designers, and decision-makers seeking to ensure that AI strengthens, rather than substitutes, human learning.

Research Context and Sample

A total of 7,739 students participated in the study. Of the respondents, 7,509 were included in the final analysis after removing entries from participants who failed attention checks.

Participation in the survey was completely voluntary. Students had the option to stop at any time even after they had started the survey. The survey was conducted anonymously, protecting the name of participants. Personal information about the participants was not collected. Participants were notified that participation on this survey would not have an impact on their school grades.

Specifically, of the participants, 48.7% were 17 years old (N = 3,657) and 43.4% were 18 years old (N = 3,256). There were smaller numbers of participants who were slightly younger or older, as well as participants with missing age data.

The sample included 61.5% female students (N = 4,615) and 38.5% male students (N = 2,894). The gender imbalance may reflect typical enrollment patterns in public high schools in the area.

Almost all participants (99.2%, N = 7,448) said Spanish was their main home language. A few students spoke English (0.5%, N = 37) or an Indigenous language (0.1%, N = 7), and the remaining 0.2% reported other languages.

A little over half of the students noted that they were in their fourth semester (54.3%, N = 4,077), and the rest were in their sixth semester (45.7%, N = 3,432). This distribution of participants aligns to the focus of the study on students in the last two years of upper-secondary school, the equivalent to 11th and 12th U.S. grades.

Most students (78.3%, N = 5,877) went to schools in urban areas, meaning communities with more than 2,500 people. Some students were unsure about their school's location type (18.7%, N = 1,402), and 3.1% lived in rural areas with fewer than 2,500 residents (N = 230).

Most students had reliable internet access, about 90.8% (N = 6,821) could go online both at home and on their phones. Another 7.6% (N = 569) had internet only at home. Smaller groups had limited or inconsistent access: 0.8% (N = 57) could only sometimes get online, 0.7% (N = 51) had access only through their phones, and just 0.1% (N = 11) had no access at all.

Caregivers had a wide range of education levels. Almost half of students (43.9%, N = 3,293) said their caregivers had a university degree or higher, and 33.1% (N = 2,489) reported high school completion. Others reported secondary-level education (15.8%, N = 1,190), primary education (2.5%, N = 190), or no schooling (0.3%, N = 22). A small group (4.3%, N = 325) chose “don't know,” “prefer not to say,” or “not applicable.”

FINDINGS

Overview

The sections that follow detail how students engage with generative AI tools, how frequently they use them, and how these technologies influence their learning, confidence, and sense of independence. The results reveal not only what students do with AI but how they feel it affects their academic and personal development, illustrating the growing integration of AI into everyday learning.

Awareness and Frequency of Use

Almost All Students Have Heard About or Used AI Tools

Over 90% of participants said to have used AI tools like ChatGPT, Gemini or MetaAI. Around 9% of students reported to have heard of AI tools but noted they had not used them. In contrast, just over 1% of students noted they had never heard of AI tools.

90.5% of students reported they had used AI tools like ChatGPT, Gemini, or MetaAI.

8.5% of students reported they had heard of AI tools but not used them.

Just over 1% of students said they had never heard of them.

About One-Third of Students Report Using AI Tools Daily

Around 43% use AI once or twice a week, and nearly 29% use it daily. This widespread familiarity signals that AI is no longer a niche resource. It is part of students' regular study and communication habits. Rather than viewing AI as a passing trend, students appear to treat it as an essential companion for learning and productivity.

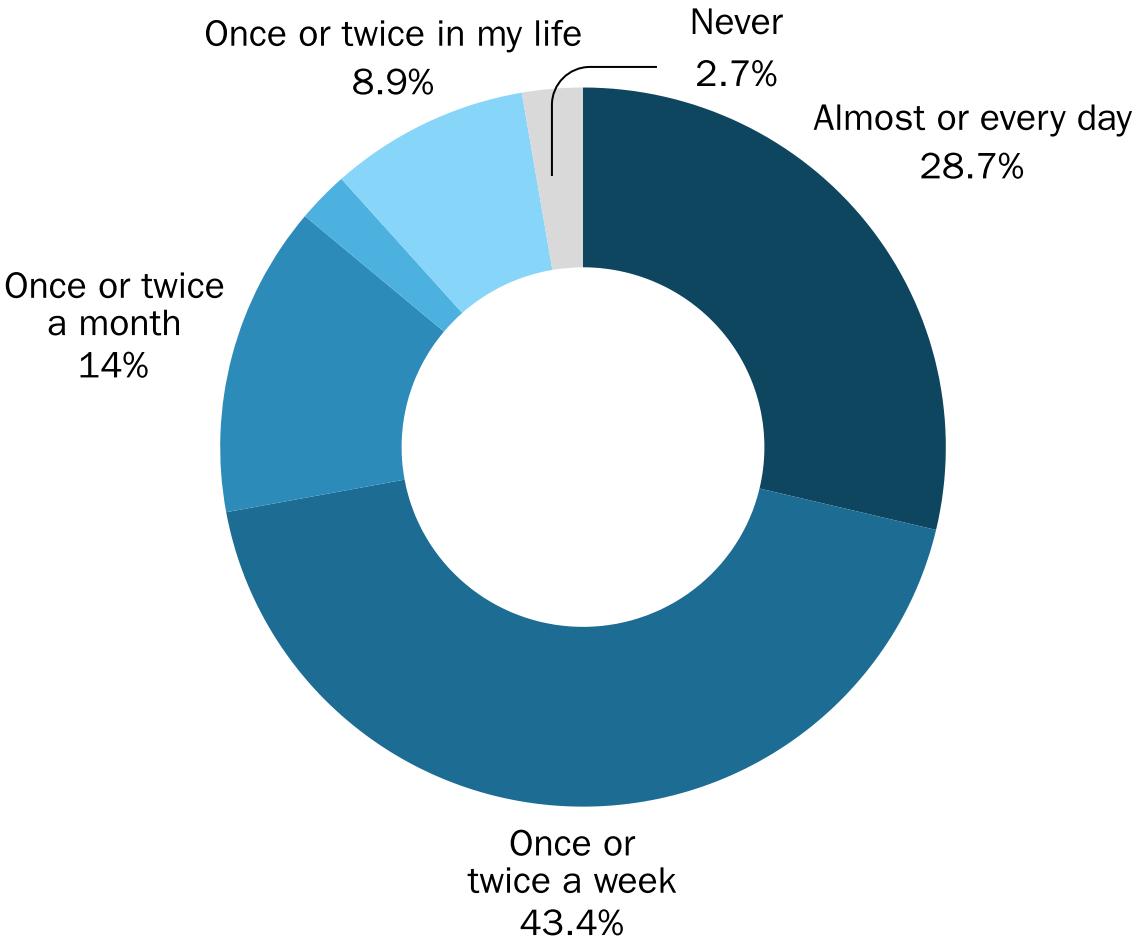


Figure 1. Frequency of AI Tool Usage Among Students

The data underscores the extent of students' awareness of AI tools and the frequency with which they use them. The following section of this report examines how students are using these tools for different purposes, including in their learning.

How Students Use AI

AI Use Spans Information, Learning, Creativity, and Companionship

Information seeking is by far the most common way students use AI. Nearly 60% reported using it to search for general information frequently or daily. Almost 20% said they use AI frequently to look up medical information –a substantial proportion given the potential risks of relying on AI for sensitive or health-related guidance.

Students also use AI for a variety of **academic tasks**. Nearly 50% reported using it frequently for research, about 40% for writing essays, and over 30% for completing STEM homework or studying for exams. This indicates that AI has become integrated across many aspects of their learning.

Students also reported using AI for **creative or exploratory purposes**. Though less frequent than information-seeking and academic tasks, these uses still represent a meaningful share of overall engagement with AI. Over 15% of students reported frequent usage of AI for play or creative writing, and slightly fewer, just under 10%, for generating videos, audio, or music. All of these signal a growing exploration beyond traditional schoolwork.

Finally, AI use among students extends into more **relational and personal** domains. Over 10% reported frequently engaging in conversations with chatbots, seeking mental health support, or asking for advice, with about 7% doing so on a daily basis. These uses hint at an emerging sense of companionship in students' interactions with AI.

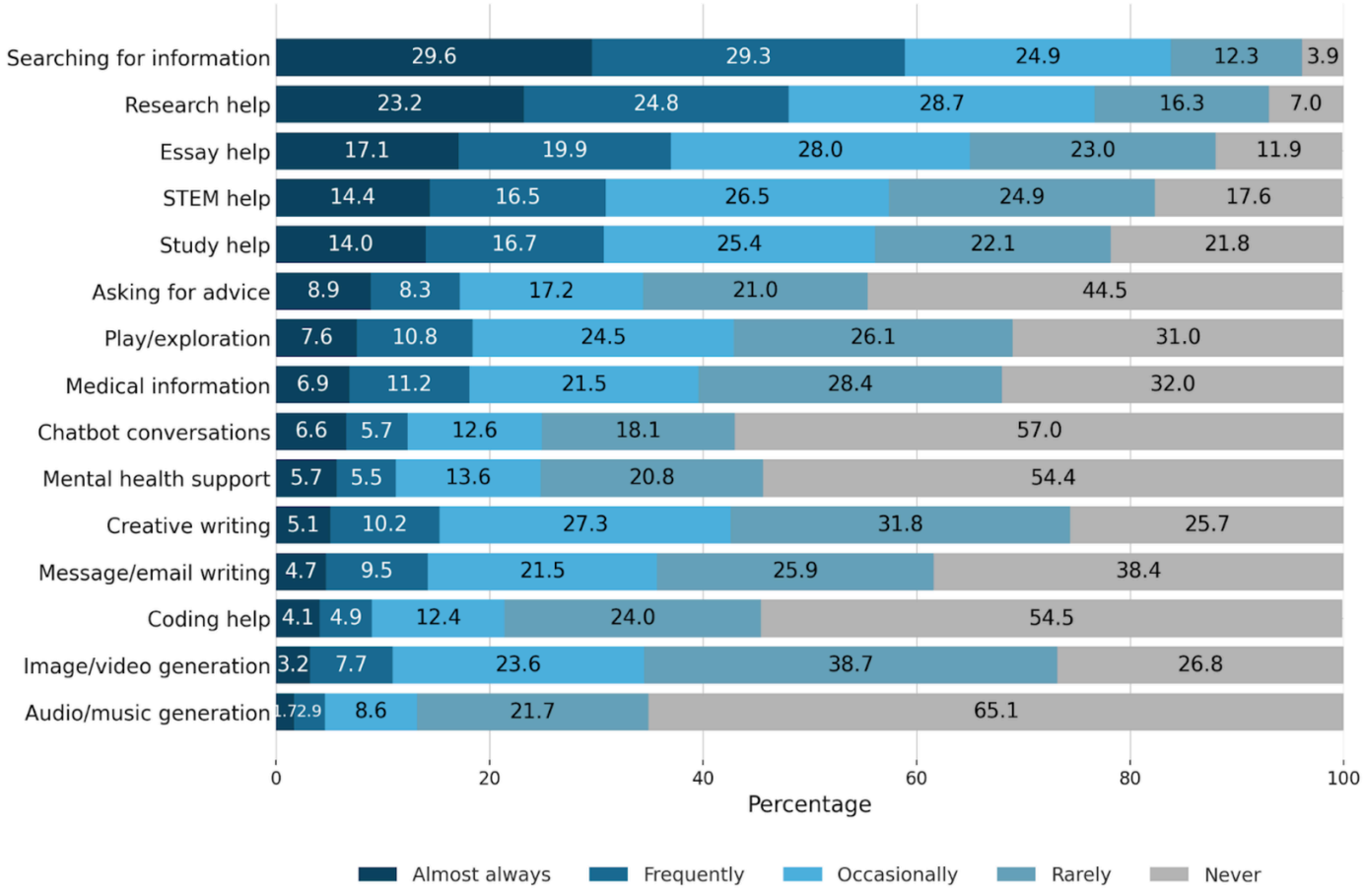


Figure 2. Purposes and Patterns of AI Use

Information | Academic | Creativity | Personal

This wide range of uses is also reflected in students' own words:

- "I use it to learn about interesting topics from different fields like Art, history, science, the animal kingdom, human anatomy, etc…"
- "Make a long but simple task faster, obtain sources for research, summarize texts, and facilitate the search for things and their sources of information."
- "I almost always use it for homework that I don't understand."
- "I ask for help with my mental problems and how I can control them."
- "To talk to ChatGPT about problems where I can't find a way out or solution and need support from someone."

Such responses illustrate that while students primarily use AI as an academic aid, they also turn to it when conventional resources fall short. Together, these perspectives highlight the diverse ways students integrate AI into both their academic and personal lives.

Perceived Impacts on Learning and Development

In our survey, we asked students how they feel AI affects their abilities across eight different domains, using a five-point scale ranging from worsening a lot to improving a lot.

Overall, students' perceptions of AI's impact are mixed. Across the eight domains, students were most likely to view AI as having a positive influence on their ability to complete tasks, persist through challenges, and satisfy their curiosity –with over half responding either "improves a little" or "improves a lot" in these areas.

Creativity was viewed somewhat less positively but still favorably by over 40% of students. Attention, hobbies, and social skills were generally seen as less influenced by AI, with most students perceiving no change in these areas.

The greatest concern arose around independent thinking: more students viewed AI as having a negative rather than a positive impact in this domain. This is corroborated by students' own words: "I feel that it gradually takes away my ability to think for myself."

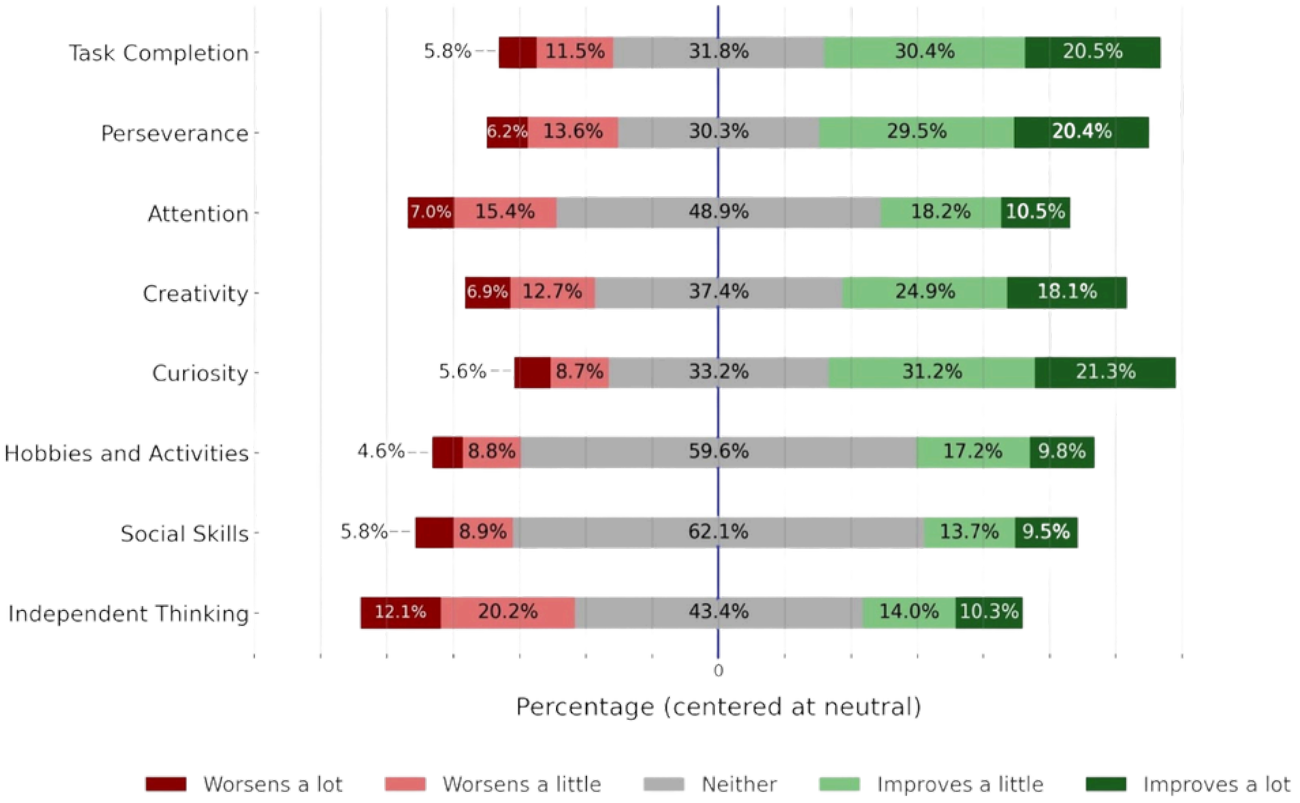


Figure 3. Students' Self-Perceived Impact of AI Use

AI and Academic Learning

In this section, we examine how AI affects students' learning in math and writing – two core subjects in Mexico and around the world. We focus on these areas for two main reasons. First, math and writing invite different kinds of AI use: math tends to involve step-by-step problem solving, while writing emphasizes creativity and expression. Second, students often see themselves as either a "math person" or a "language person", a divide that shapes how they view their strengths and interests and makes these subjects especially useful for understanding AI's role in learning.

AI Usage is embedded across math and writing but plays a different role in each

We first describe how often students use AI in math and writing. The categories of use were developed to align with the typical processes involved in each subject.

In math, AI use is common across all stages. The most common uses were checking answers (26% frequently or almost always) and consulting step-by-step guides (26%); roughly one in five students said they almost always relied on AI for these purposes. Fewer students generated practice problems (19%) or asked AI to rephrase problems (18%) frequently, indicating that AI is leveraged more for verification and explanation than for independent practice.

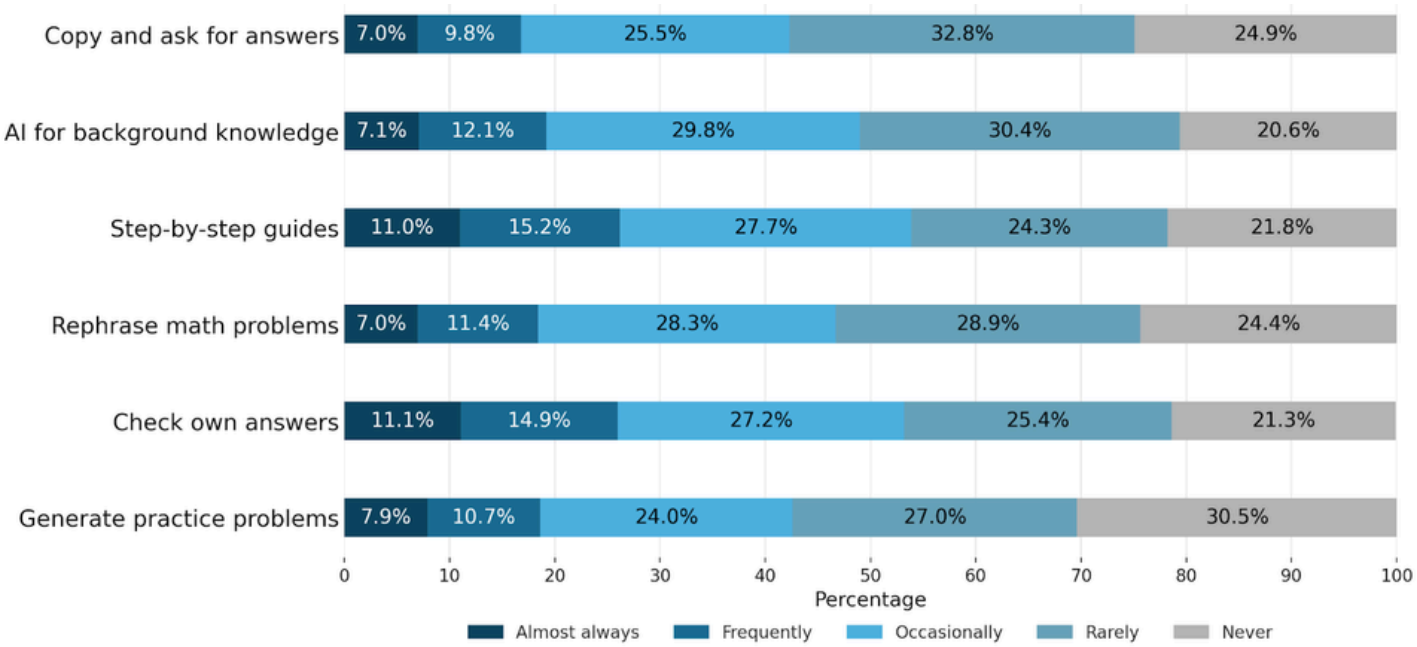


Figure 4. AI Use During Math Tasks

In writing, AI use is widespread and fairly balanced across stages of the process. More than one in five students reported using AI frequently or almost daily for brainstorming (22%) and outlining (23%), activities that help them initiate their writing.

Similar proportions use AI for improving language (23%) and tailoring text to a specific audience (24%). Slightly fewer, but still substantial, numbers of students use AI for gathering supporting evidence (20%) or receiving feedback (19%). Overall, these patterns suggest that students integrate AI throughout the writing process rather than relying on it at a single stage.

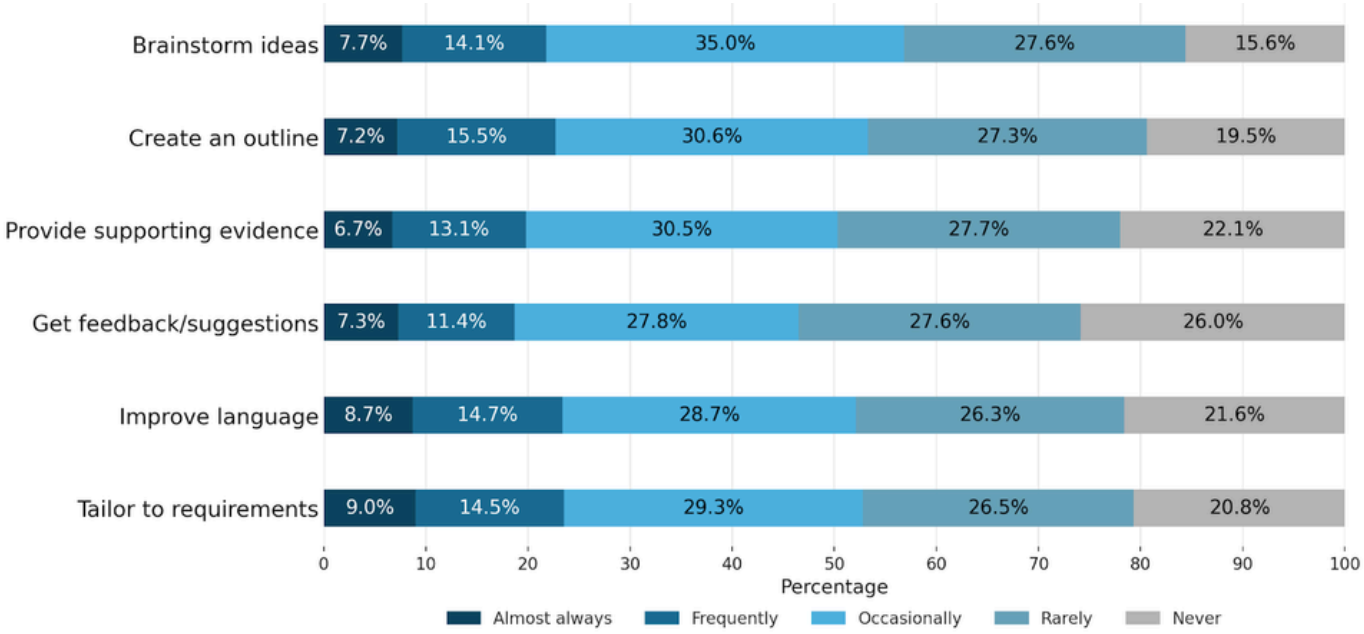


Figure 5. AI Use During Writing Tasks

Students Feel Studying Math and Writing as Less Important When AI Is Introduced

The survey asked students to reflect on the value of math and writing. This measure captures students' perceptions of a subject's usefulness and importance-factors that strongly predict motivation, persistence, and long-term engagement.

For writing, students rated the subject as more useful, more important, and more enjoyable when considering it without AI. When AI was part of the scenario, average scores on these dimensions dropped modestly.

A similar pattern emerged in mathematics. When students reflected on the value of studying math without AI, they rated the subject as highly useful and important. However, when considering math with AI in the picture, these ratings declined.

Taken together, the decreased perceived value of both math and writing suggests a potential tradeoff. While AI may reduce frustration, clarify difficult steps, or lower barriers to getting started, it may also subtly signal that learning these skills independently is less important. This shift raises questions about how AI-supported learning shapes students' motivation and their sense of responsibility for developing core academic competencies.

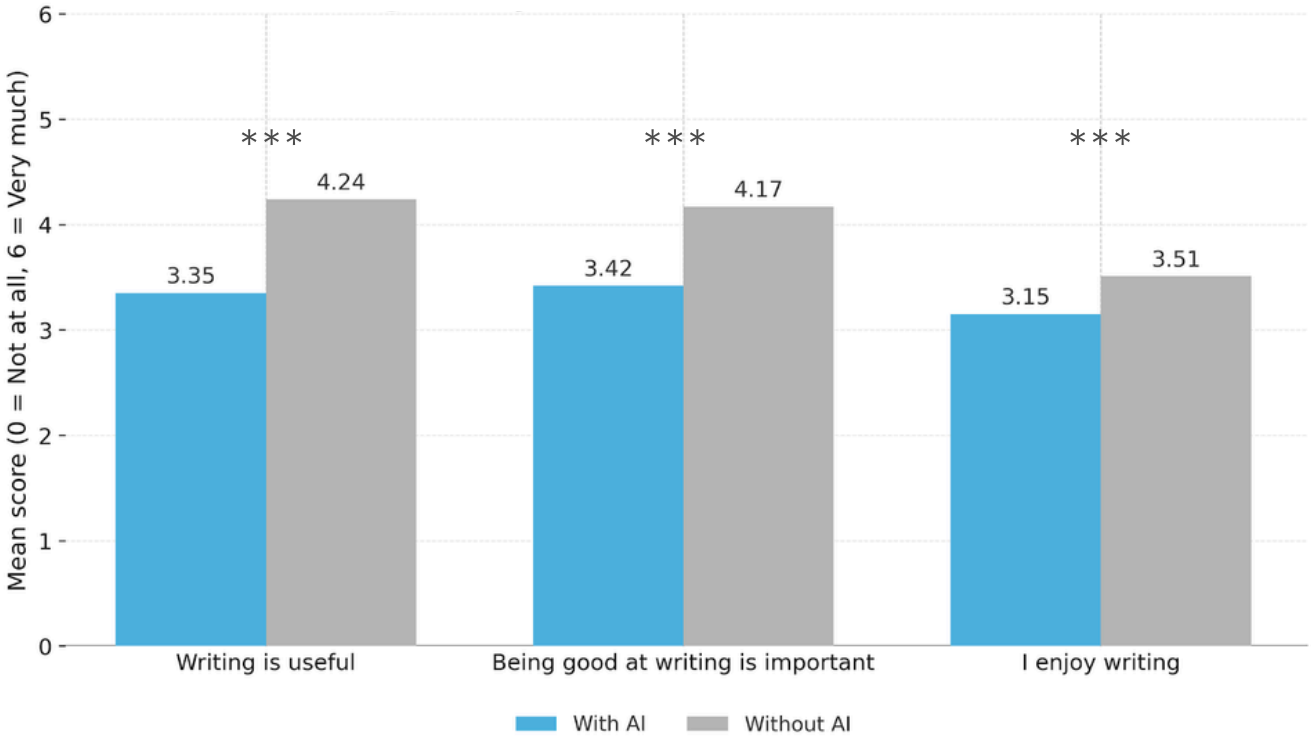


Figure 6. Writing- Subject Value (With vs. Without AI)

(Useful: ***p<.001, Important: ***p<.001, Enjoy Writing: ***p<.001)

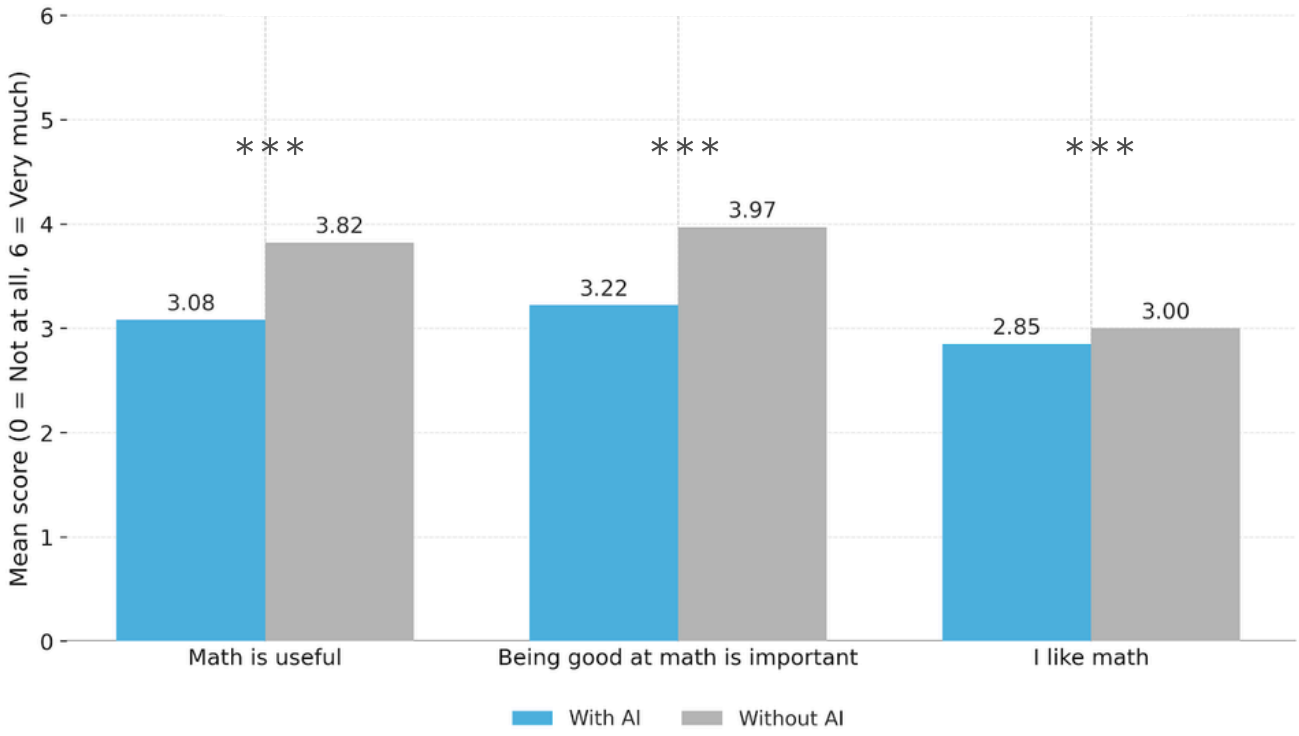


Figure 7. Math- Subject Value (With vs. Without AI)

(Useful: ***p<.001, Important: ***p<.001, Like Math: ***p<.001)

With AI, Students Feel More Confident in Their Performance but Less Certain About Their Future Learning

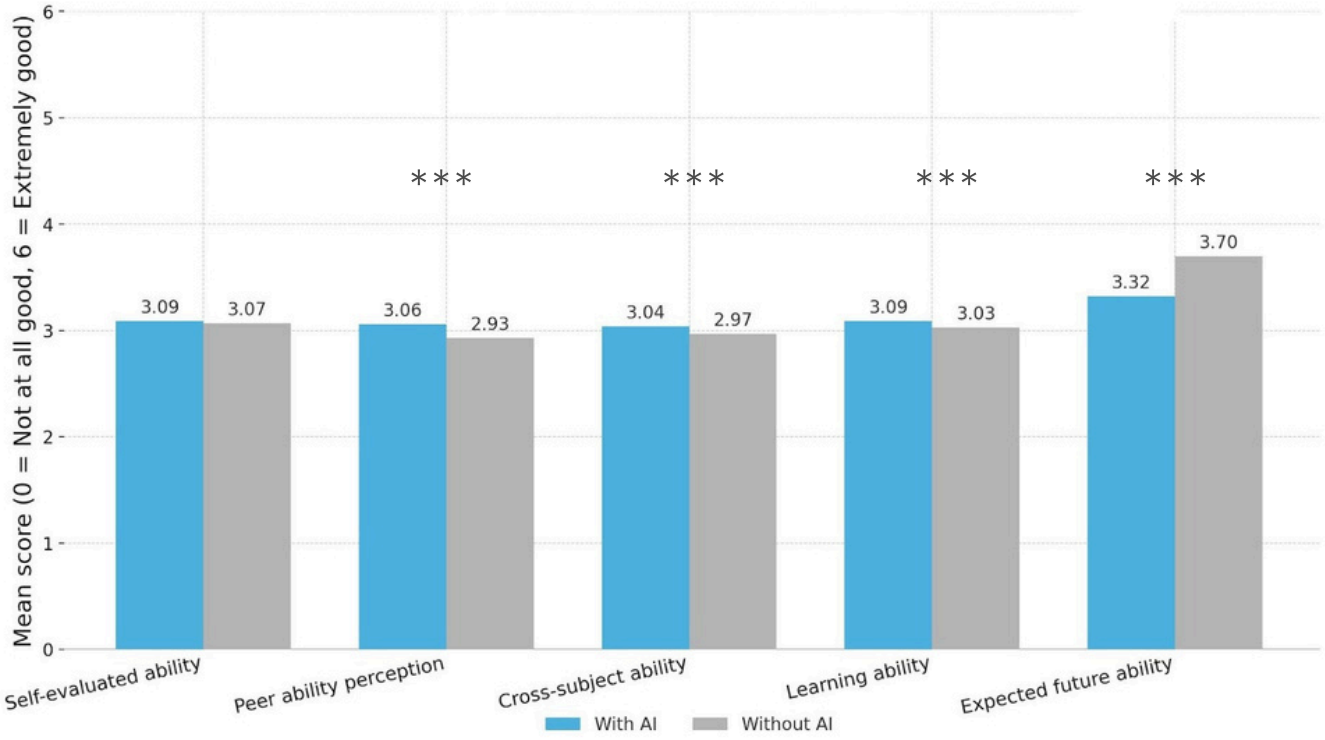


Figure 8. Writing Ability (With vs. Without AI)

(Self: p>.05, Peer: ***p<.001, Cross-subject: ***p<.001, Learning: ***p<.001, Expected Future: ***p<.001)

The survey also asked students how they perceive their abilities in both math and writing. Does AI make them more confident or less?

Across both math and writing, the presence of AI appeared to slightly boost students' confidence in their current abilities. Students rated their abilities –across self-evaluation, comparisons to peers, and comparisons to other subjects– somewhat higher when thinking about learning with AI than without it. This pattern suggests that AI may make academic tasks feel more manageable in the moment.

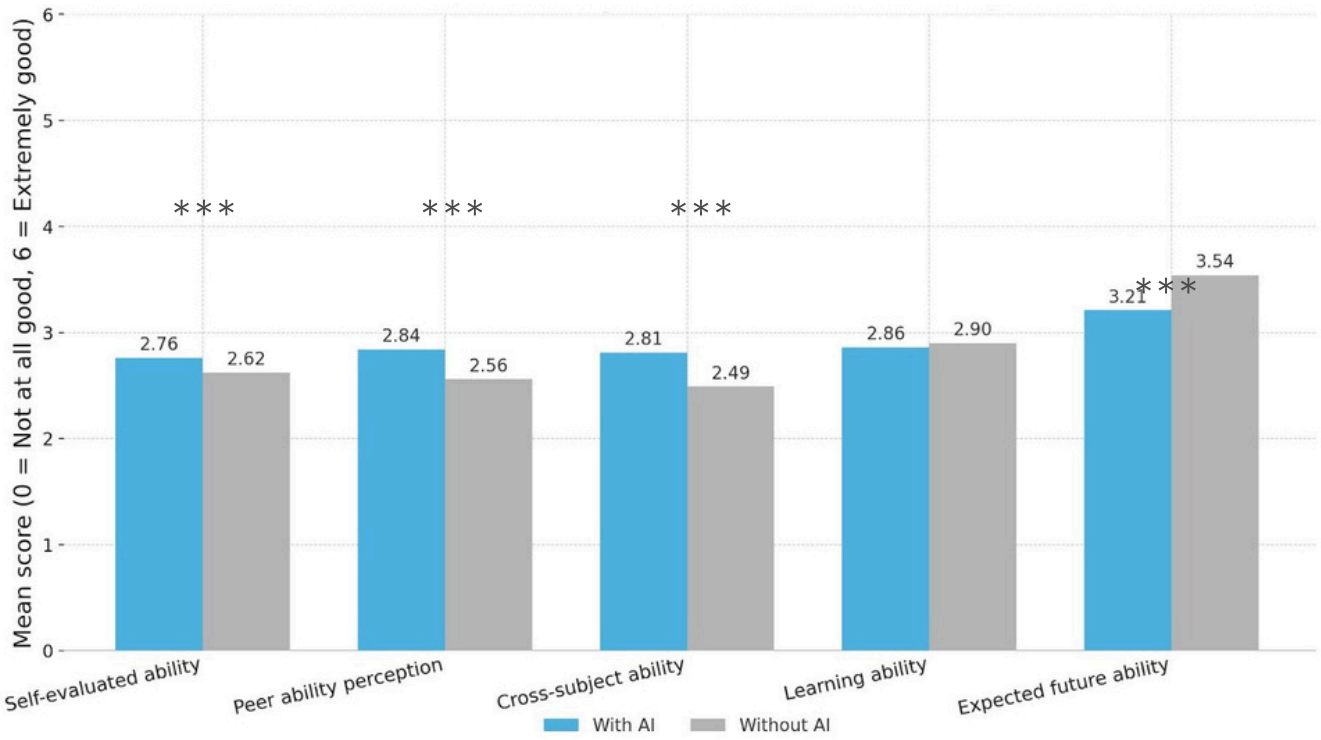


Figure 9. Math Ability (With vs. Without AI)

(Self: ***p<.001, Peer: ***p<.001, Cross-subject: ***p<.001, Learning: p>.05, Expected Future: ***p<.001)

However, when asked whether they expected to build the skills needed for math and writing in the future, students reported lower confidence in the AI-supported context (M = 3.32) compared with the context without AI (M = 3.70). This gap indicates that although AI may provide modest support for students' sense of competence right now, it also raises concerns among students about their capacity to develop these skills independently over time.

This tension between immediate performance and long-term learning points to emerging patterns of reliance, which we describe in the section below.

Students' Reliance on AI

Looking across the earlier sections, it's clear that students use AI often and in many ways. That brings up an important question: how much do they feel they rely on it?

In our survey, we asked students to respond to a series of statements and indicate the extent to which they agreed that each statement applied to them. Some items captured their general perceptions, while others pointed to specific behaviors that might signal reliance.

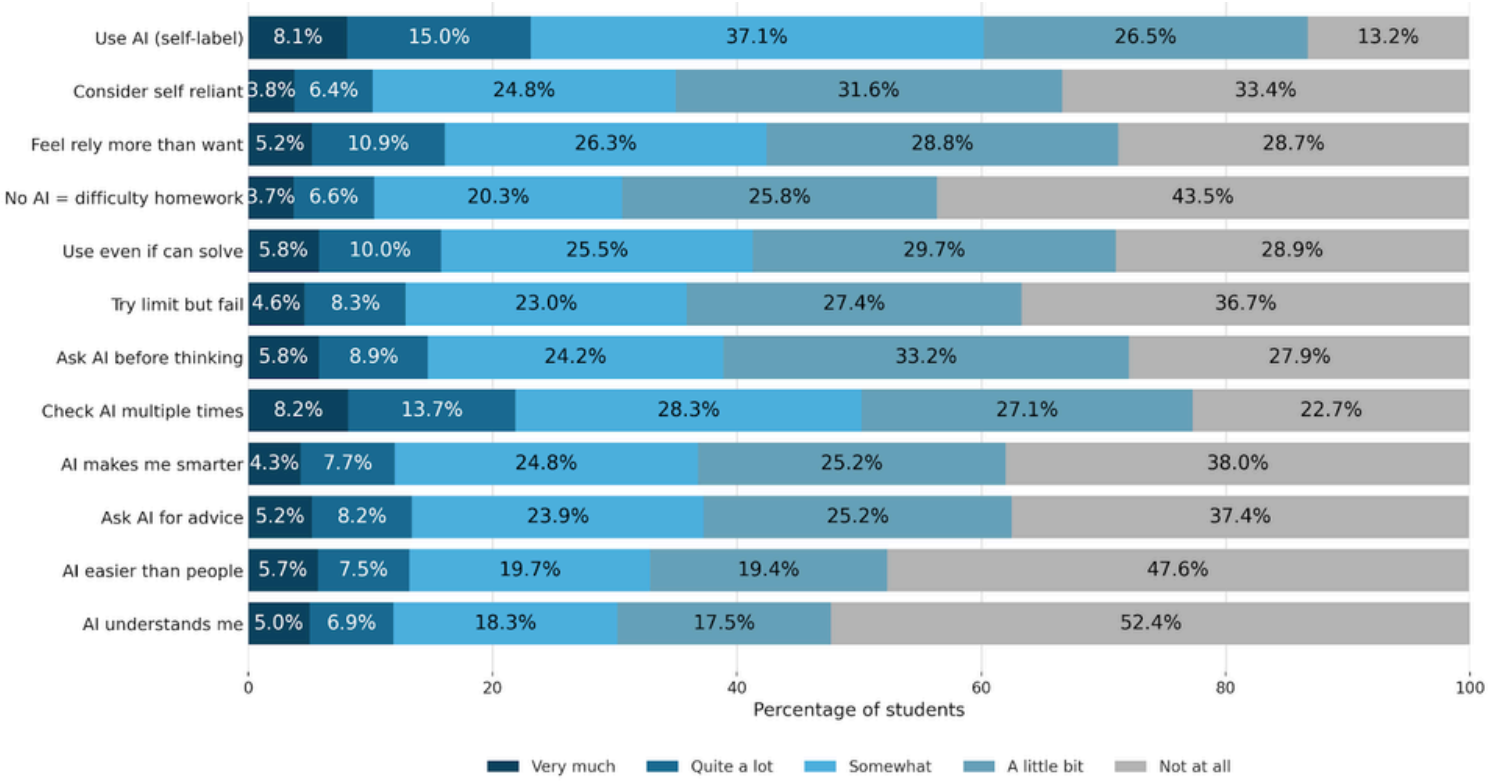


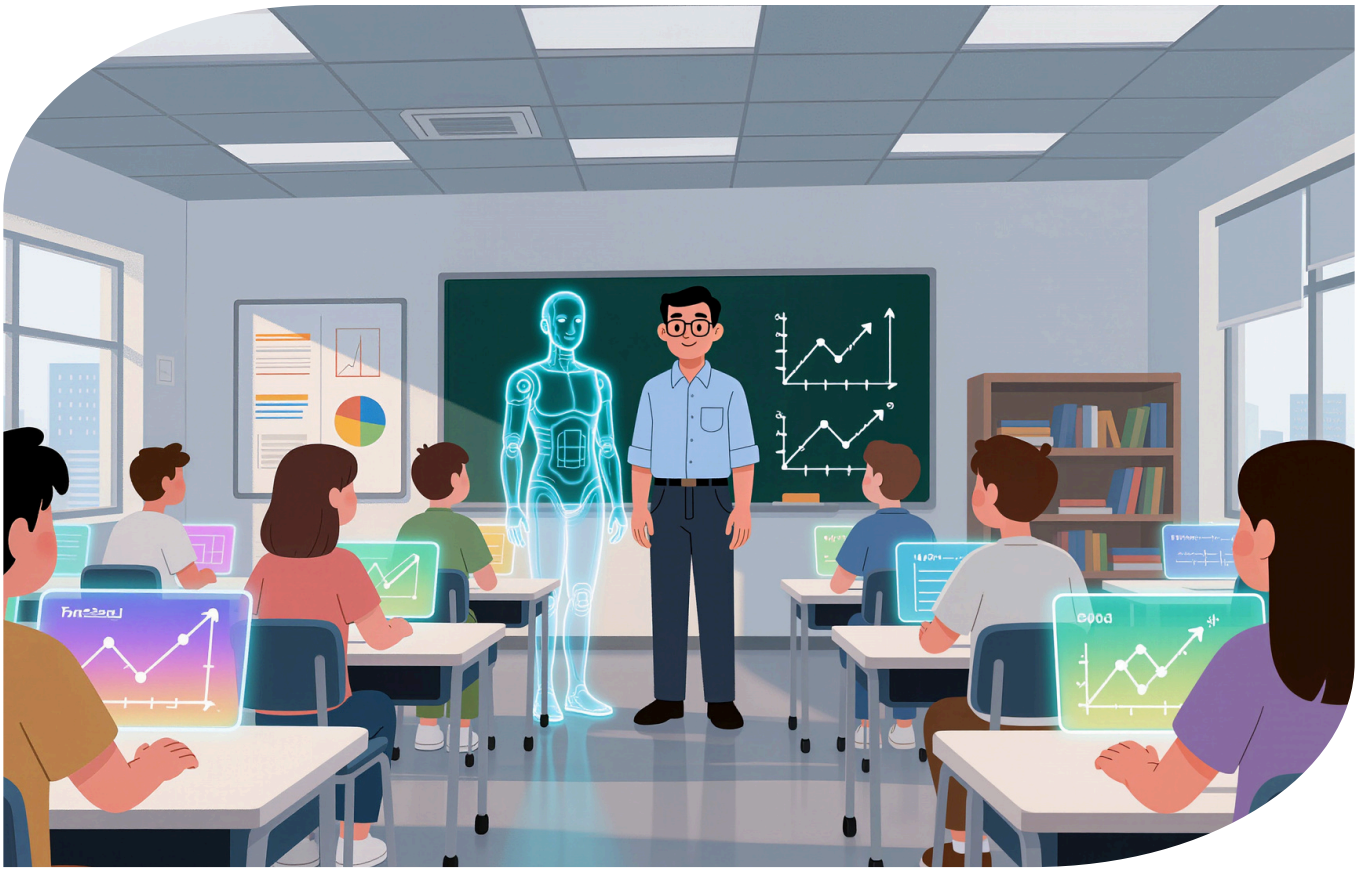
Figure 10. Students' Reported Reliance on AI Tools

First, the majority of students saw themselves as heavy AI users –most indicated at least "somewhat" when asked whether they use AI frequently.

When it comes to reliance, 35% reported that they at least somewhat depend on AI, and more than 11% said they rely on it "very much." Interestingly, even more students felt that their reliance exceeded what they would prefer. 42% said they rely on AI more than they want to, and more than 15% felt this was true "quite a lot." On the flip side, only around one third of the students considered themselves as not reliant.

Beyond these broad strokes, almost one third of students said they somewhat or greater agree would struggle to start or complete homework without AI, and 40% admitted to using it even when they already knew the answer. Such patterns suggest a quiet but growing psychological dependence that they treat AI as a "safety net" that provides reassurance and convenience. Students trust AI enough to double-check their own reasoning, even if they do not consciously see this as dependence.

Students' responses also hinted at a degree of emotional dependence. More than 10% strongly agreed (i.e., "very much" or "quite a lot") that AI understands them better than people, and that it is easier to communicate with AI than with others. Together, these patterns suggest that students' reliance on AI is driven not only by its practical usefulness but, for some, by a developing sense of relational connection that may further reinforce that reliance.



PRACTICAL AND POLICY IMPLICATIONS

Policy Area 1: How Students Use AI

Key Finding: More than 80% of students use AI to search for information, and over 70% rely on it for research support. Common uses include getting help with essays and assignments.

Policy and Practical Implication - Develop Critical Consumers of AI

Given that most students use AI as an information and research tool, there is an urgent need to strengthen AI literacy and critical evaluation skills across all grade levels. Policymakers and educators should collaborate to design clear, age-appropriate guidelines and classroom resources that help students and teachers distinguish between reliable and unreliable information.

These guidelines should teach students to consider who produced a source and for what purpose, when it was published and whether it remains current, and whether the claims presented are supported by evidence or represent personal opinion. They should also address how to recognize bias or sponsorship, identify whether a source is human or AI-generated, and detect manipulated content.

Once these guidelines are established, professional development programs should ensure teachers are well-prepared to integrate these principles into daily instruction. In parallel, educational authorities may consider implementing baseline AI literacy assessments to gauge students' ability to critically evaluate digital information and to track progress over time.

By equipping students to question, verify, and interpret AI-generated content, education systems can help nurture a generation of critical, discerning learners who engage responsibly and thoughtfully with technology, an essential skill in the age of AI.

Policy Area 2: Perceived Impacts on Learning and Development

Key Finding: About 30% of students reported that using AI negatively affected their independent thinking.

Policy and Practical Implication - Embed principles from Cognitive Science in AI & Prompt Design

As AI becomes a more frequent presence in classrooms, educational leaders must ensure that these tools are designed not to replace student thinking, but to strengthen it - fostering active reasoning, reflection, and critical thinking. Ministries of Education and school administrators should work closely with AI providers to align the design and functionality of educational AI systems with cognitive science and the realities of classroom learning.

This requires deliberate attention to the AI's tone, persona, and instructional role. Systems should be built to help students "think with" rather than "think for" them –by asking guiding questions, prompting reflection, offering hints, and providing constructive feedback through examples rather than supplying direct answers.

When AI tools encourage students to articulate reasoning, test hypotheses, and reflect on errors, they promote the development of metacognition, critical thinking, and self-regulated learning. Conversely, when AI tools do too much of the cognitive work, they risk fostering dependence and cognitive passivity.

By embedding principles from cognitive science and the science of motivation into AI and prompt design, policymakers can help ensure that AI enhances rather than erodes students' capacity for independent thought- cultivating learners who are active participants in their own intellectual growth.

AI AS A TOOL TO ENHANCE, NOT ERODE STUDENT CAPACITY.

Policy Area 3: AI and Academic Learning

3.1 Math and Writing AI Usage

Key Finding: In both math and writing, one in five students reported that they almost always rely on AI for checking answers (math), improving language accuracy (writing), or tailoring text to specific requirements (writing). This pattern raises questions about the depth of practice and students' ability to independently formulate and refine their own solutions.

Policy and Practical Implication - Design AI as a Guided Learning Partner

Rather than serving primarily as a source of immediate correction, AI should function as an adaptive tutor that guides students through the process of discovery and reflection. When AI tools engage learners step-by-step –by prompting them to explain reasoning, offering targeted hints, or posing guiding questions– they foster deeper learning and long-term skill retention.

AI systems used in schools should tailor the level of guidance to the learner's proficiency, providing more structured support for beginners and gradually reducing scaffolding as competence grows. To support this, clear guidelines for effective prompt design should be developed and shared with teachers, who can then introduce students to effective ways of interacting with AI.

By positioning AI as a guided learning partner, educators can transform its role from a tool of correction into a catalyst for metacognition, self-reflection, and mastery, helping students not just get answers right, but understand why they are right.

3.2 Perceived Impact on Math

Key Finding: When evaluating their math abilities, students rated themselves higher when AI was available, describing it as a "safety net" that made difficult problems more approachable. Yet, paradoxically, they reported lower expectations for their future performance in math when AI was present. This suggests that while AI can enhance immediate confidence, it may also temper long-term self-assurance and reduce students' sense of ownership over their learning.

Policy and Practical Implication - Use AI to Build Competence, Not Dependence

The decline in students' long-term performance expectations underscores the need for pedagogical strategies that preserve student agency and intrinsic confidence in the age of AI. When used as a learning partner rather than a shortcut, AI can strengthen a student's belief in their own ability to problem-solve and persist through challenge.

Teachers and system leaders should therefore design classroom practices where AI acts as a temporary scaffold, guiding learners through reasoning processes, but where students still complete the final cognitive steps independently. For example, after AI provides hints or examples, students can be asked to solve a similar problem without assistance, reflect on what strategies they used, and evaluate their reasoning.

Policymakers can support this shift by embedding AI self-regulation frameworks into national curricula and teacher training programs. These frameworks can help educators recognize when AI use transitions from productive support to over reliance, and provide strategies to recalibrate that balance.

Used intentionally, AI can enhance both confidence and competence, ensuring that students feel supported by AI without becoming dependent on it.

3.3 AI and Students' Self-Concept of Ability

Key Finding: Domain-specific effects emerged. Students' self-assessed ability ("How good are you in math/writing?") increased with AI access in mathematics only, whereas confidence in learning new material improved exclusively in writing. This indicates that the psychological and motivational effects of AI use vary across subject areas, reflecting the different cognitive and emotional demands of each domain.

Policy and Practical Implication - Tailor AI Integration to the Learning Domain

These findings challenge one-size-fits-all approaches to AI integration in education.

AI's impact on learners is not uniform; it interacts with subject matter, task type, and students' prior experiences. Policymakers and educational leaders should therefore design domain-sensitive AI strategies that recognize how tools support learning differently in mathematics, writing, and beyond.

In mathematics, AI can serve as a problem-solving companion that supports reasoning and conceptual understanding, helping students persist through challenging tasks while building confidence in their ability to find solutions independently. In writing, however, AI may be more effective as a collaborative co-author that models structure, tone, and linguistic choices, guiding students to refine and extend their expressive abilities.

Teacher preparation programs should include domain-specific training on AI use, ensuring educators understand when and how to integrate AI tools to strengthen, rather than dilute, student agency and skill development.

Ultimately, aligning AI use with the unique learning dynamics of each subject will help ensure that its integration enhances both competence and confidence, fostering students who not only perform better but also believe in their ability to learn.

Policy Area 4: Students' Reliance on AI

Key Finding: One in two students reported that they would struggle to start or complete homework without AI, and one in three said they prefer asking AI a question rather than thinking through it themselves. These findings highlight the complex dual role of AI in learning: simultaneously empowering and displacing aspects of independent thought.

Policy and Practical Implication - Foster Metacognitive Growth Through AI

As AI becomes embedded in students' daily learning routines, educators and policymakers must ensure it functions as a scaffold for cognition, not a substitute for effort. Overreliance on AI risks diminishing students' metacognitive engagement –their ability to plan, monitor, and evaluate their own thinking.

Instead, AI should be leveraged to cultivate reflection and self-regulation,prompting learners to analyze their thinking, monitor progress, and apply feedback to improve future performance.

Teachers can integrate AI in ways that encourage guided reflection and self-evaluation. For instance, after completing a task with AI assistance, students might respond to short reflection prompts such as: What went well? What could have gone better? What strategies might I use next time?

This kind of reflection helps students internalize feedback, strengthen persistence, and develop self-awareness about their learning process.

From a policy perspective, Ministries of Education should promote AI literacy frameworks that emphasize self-regulated learning - helping students understand when to seek AI support and when to rely on their own reasoning. By positioning AI as a thinking partner rather than a problem-solver, schools can cultivate learners who view challenge and productive struggle not as obstacles to avoid, but as pathways to mastery.

CONCLUSION

The findings presented in this policy brief highlight both the promise and the complexity of integrating AI into K-12 education. Across the four policy areas –how students use AI, its perceived impact on learning and development, its role in academic performance, and students' growing reliance on it– a consistent message emerges: AI should serve as a partner in learning, not replace it. Realizing this vision requires coordinated efforts across system levels.

Policymakers must establish clear guidelines that promote responsible, domain-sensitive AI use; educators must be equipped to design learning experiences that harness AI for critical inquiry, creativity, and reflection; and technology providers must align design principles with cognitive science to ensure tools enhance, rather than diminish, students' independence and motivation. When implemented thoughtfully, AI can extend the reach of good teaching, helping students think more deeply, learn more confidently, and engage more fully in the lifelong process of learning how to learn.

Child - Centered AI Lab

The Child-Centered AI Lab at Harvard Graduate School of Education advances research and design to ensure AI supports children's learning, development, and well-being.

The lab conducts a range of projects examining how children interact with, experience, and learn from AI. These projects include research on language development, STEM learning, and well-being. We also identify and challenge limitations in AI technologies used in education, with the aim of making these tools more responsive and responsible to the needs of children, parents, and teachers from diverse backgrounds.

For more information about our work, please visit: childcenteredai.org