The Cognitive Foundation at Risk: Balancing AI Efficiency with the Necessity of Grit

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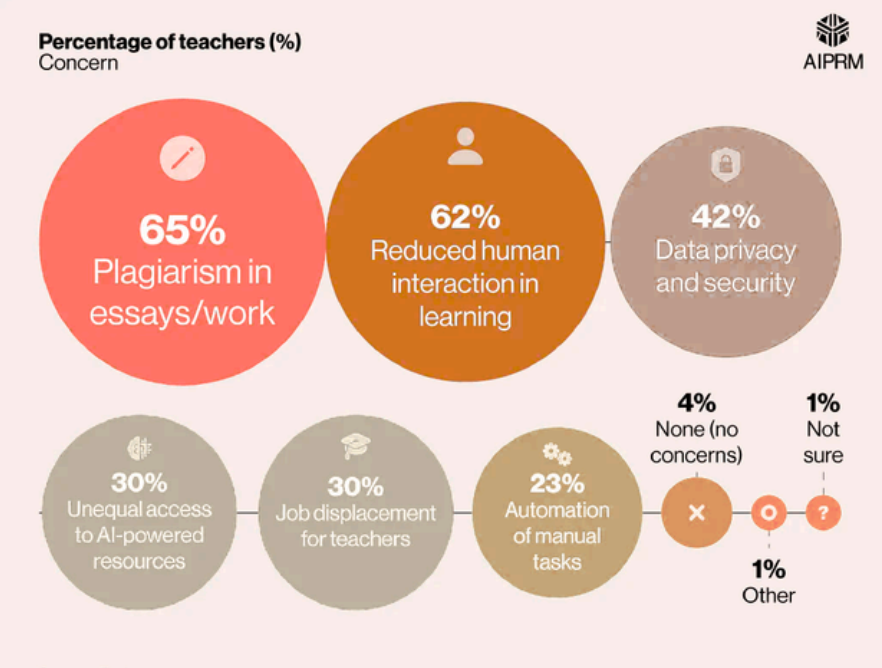
Abstract

This policy memo examines the rise of Artificial Intelligence in K-12 school systems through both a **negative** and **positive** lens. This memo also highlights the gap between AI use in the classroom and the training received by educators surrounding the emergence of systems like chatbots. More **regulations** are needed to aid school systems, specifically public schools in the United States, in supporting the rapid **development** of AI software. This memo will explore the current policy landscape at the federal, state, and local levels, emphasizing the importance of a **coordinated policy action** to protect young students while preparing them for an AI-driven world.

Scope of the Problem

When it could be beneficial: Artificial intelligence can act like a **personal tutor** for every child. In other words, if a child is struggling with understanding the concept of adding, subtracting, multiplying, or dividing fractions. CoPilot, ChatGPT, and Gemini, to name a few, could provide **targeted practice questions** in seconds, which is something that an elementary teacher with 25 students might not be able to provide immediately. This further fosters learning and practice as the LLM provides the questions, but the student is going to use their cognitive abilities to fully go about answering the practice questions. Also, it demonstrates that these artificial intelligences have the potential to provide **high-quality**, reliable, useful educational resources to areas that might be under-resourced, and even offer immediate translation for students whose first language is not English, for example, contributing to a more inclusive classroom, which is what most teachers strive for, promote, and encourage.



Scope of the Problem

When it could be **dangerous**: On the other hand, there is a highly dangerous risk that students rely on a machine for their thinking. The overall objective in elementary years is to build those **mental muscles**, which include problem-solving, critical thinking, social skills, reading and vocabulary comprehension, recall, and resilience and grit, which are vital in all aspects of life as it's needed to drive a car or communicate, for example. If an AI bot is **always providing** the starting sentence or all the steps to complete a writing or math assignment, for example, as Brookings.edu reports, the child is more likely to rely on the bot and **fail to develop** those independent problem-solving skills. To further add on, elementary-aged children are particularly prone to trusting technology as if it were a person. In other words, believing or assuming that everything artificial intelligence bots spit out is true, moral, or correct. Because AI models can contain **inherent biases** or hallucinate, basically providing false information confidently, young learners are at risk of internalizing misinformation or biased perspectives without the critical thinking skills to question them.

Current Policy Context

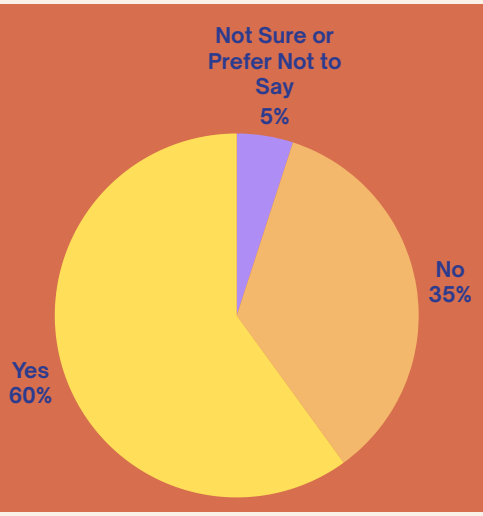
Artificial Intelligence (AI) is developing at a pace **faster** than policy can be created and implemented. This poses a challenge when local, state, and federal governments are trying to create the **necessary infrastructure** and boundaries to ensure safe usage. To put it into perspective, in an interview with Harvard Business School, the CEO of Perplexity (an AI answer bot) explained that they only plan a few months in advance. This is due to the fact that AI technology is developing so rapidly (Chang, 2025). When comparing this speed of

Current Policy Context

development to **policy**, the odds are not great. Comparatively, a state government policy can take years to create and implement. Because the policy process, regardless of government level, can take a significant amount of time, **school systems** are struggling to keep up with this increase in technology.

It is also important to consider the actions the federal government has begun to take surrounding **AI in the classroom**. In July of 2025, the Department of Education sent out a guide on AI usage for education to recipients and potential recipients of federal grants. T**he U.S. Secretary of Education**, Linda McMahon, is actively working to "advance AI in education," with a proposed series of supplemental grants (U.S. Department of Education, 2025).

When considering K-12 education, the presence of AI is increasing. In a study conducted by **RAND**, researchers found that in 2025, more than **50%** of students and teachers for English, math, and science were using AI technology in the classroom (Doss et al., 2025). In comparison, only **35%** of district leaders in the survey indicated that they provide students with training on AI technology (Doss et al., 2025). This gap between teachers/students' use and reliable training is a red flag. To ensure AI is used ethically and constructively to aid learning without prohibiting critical thinking, more regulations surrounding



Percentage of teachers who have integrated AI into their daily teaching practices (Forbes, 2024)

Current Policy Context

training are necessary. When AI use is **unregulated** in the classroom, it makes it more difficult to gauge if students are actively learning the baseline information needed to complete grade-level standards. This is even more critical for **early elementary learners**.

Another warning sign that points to concern around technology and AI usage in K-12 school systems is the slow transition away from technology in certain schools. Up until now, private schools or public schools in affluent areas have symbolized prestige with increased technology access. Upgrades to smartboards, iPads, and Chromebooks are a few examples of this. Public school systems with less funding may not gain access to new versions of technology as quickly as schools with more funding and may be unable to provide students with a **1-1 ratio** of computer usage. But the narrative may be shifting away from the connotation that more technology means a "better" school. A school in Silicon Valley, the hub of technology development in the United States, is advertising an elite program for children that is a "**phone-free, slow technology**" program. The tuition for Waldorf School of the Peninsula, for Preschool and Kindergarten, runs anywhere from $19,600-$26,900 annually (The Waldorf School of the Peninsula). Essentially, in the epicenter for U.S. tech, there is a private school that promotes the importance of reducing screen time and advocates for a transition away from technology-centered learning. With the rise of AI in K-12 classrooms and the simultaneous shift away from technology in some private institutions, the United States may be viewing the beginning of a shift surrounding technology prestige in school systems.

Role for Government

Federal Government

In April of 2025, President Trump signed **Executive Order** 14277: "Advancing Artificial Intelligence Education for American Youth." This action established a national strategy to promote AI literacy among students and educators. It created a **White House Task Force** on AI Education to establish public-private partnerships and identify federal funding mechanisms. The U.S. Department of Education sent a Dear Colleague Letter to schools, colleges, and other grant recipients outlining the use of federal funds for AI. It is assured that AI can be used legally with existing federal education funds so long as schools follow laws surrounding privacy and civil rights. The Education Secretary, Linda McMahon, proposed that future competitive grants favor projects that advance AI in education, which could **influence** which projects get funded in the future. The Federal government has limitations when it comes to implementation, as it is so far removed from specific school districts, but when working in conjunction with state and local governments, there can be overarching themes with specific tweaks depending on community needs.

State Government

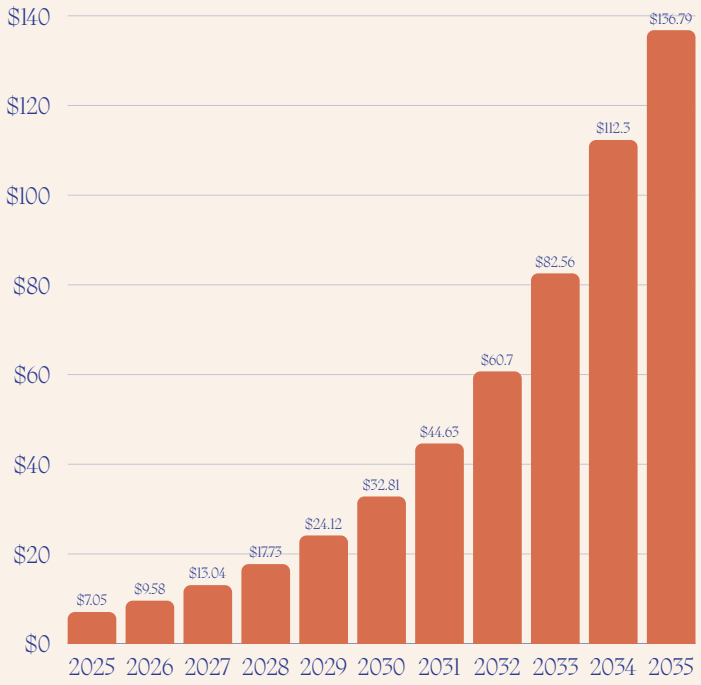
After the initial emergence of generative AI, state policymakers struggled to **conceptualize** how to handle the implications. As AI has evolved, more states have started creating statewide frameworks for AI's place in education. By the end of 2025, **34** states had developed statewide guidance on AI usage in schools. Some states have evolved with technology, building on and tweaking their guidance as new developments occur. In Louisiana, the Board of Elementary and Secondary Education

Role for Government

established an **AI committee** to safely integrate AI into the lives of students in the wake of an AI-driven world. Similarly, in North Carolina, Governor Josh Stein signed an Executive Order, forming an AI Leadership Council and AI Accelerator with the main focus of AI training for students and educators. Massachusetts launched a **pilot curriculum** for teachers to use that aims to introduce foundational concepts and societal implications to a couple of thousand students across 30 school districts. Maryland launched a K-12 tutoring pilot program focused on middle-grade math tutoring. An increasing number of states are **evolving their policies** with the growth of technology, trying to balance the preservation of critical, independent, safe thinking, and awareness of AI in a technology-based world.

AI Education Market Size 2025 to 2035 (USD Billion))

(Precedence Research, 2026)



Local Government

Local governments and school districts are the **closest policy point** to schools and directly implement the technology in classrooms. It is on school boards and administrators to outline educational technology, which makes local government policy on AI arguably the most **important**. Local governments can outline an AI policy around the community's values. For example, districts might **opt out** of AI usage for younger

Role for Government

students, K-8, to preserve the importance of **autonomous** thinking for brain development. However, they may begin to implement more AI technology for high school students to promote proper AI education that will be important for students' post-graduation. The National Education Association published a sample school board policy that aims to “build opportunities for all students to learn in a safe, inclusive, future-focused learning environment.”

Societal Implications

The biggest societal concern with artificial intelligence is that it further widens the already existing **socioeconomic inequality gap**. As discussed, CoPliot or Gemini can provide high-quality tutoring to children in underfunded educational institutions. However, wealthier school districts can afford **advanced AI** systems with fewer biases. Underfunded schools have to rely on **lower-quality AI**, creating a digital divide. In other words, the quality of the child’s digital tutor depends entirely on their zip code.

As also discussed earlier, elementary school is where children learn to socialize, and the introduction of "relational AI" per se becomes a concerning risk. Research like the **Stanford Initiative** suggests that children are likely to start to treat AI as a true friend, which is a concept called **anthropomorphism**. This could lead to social isolation, lessen social skill ability, where a child would prefer the non-judgmental, AI bot that lacks the human element (empathy, experience, understanding) over actual human interaction that possesses those elements.

Policy Recommendations

1 Training for Educators on propper AI usage

Due to the fact that many educators have reported either not receiving training on AI use in the classroom or not knowing how to train students on AI use in the classroom, it would be beneficial for **states and school districts** to streamline AI training. These trainings could be implemented by state governments and rolled out through school districts. Training could be conducted as workshops to educate instructors on available positive AI tools for use, as well as instruction regarding how to **educate** students on **appropriate** AI use. This form of training would help streamline techniques that school systems currently use to detect AI use in students' work.

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2 Regulations on age-based AI usage in the classroom

Implementing **age-appropriate** boundaries of AI use in education, with stricter protections for younger students. While children's brains are still developing, it is crucial to develop **core functions** like attention span, memory, executive, and social functions. Relying on AI tools at a young age **disrupts** this crucial

Policy Recommendations

developmental process. For example, **banning** AI from classes **kindergarten through 5th grade**, and **slowly** implementing the technology more as the children grow up, can help preserve vital brain functions while keeping kids **in the loop** and ready to enter an AI-driven world by the time they graduate high school. Banning AI from all schools is **unrealistic**, as it is important for children to be prepared to enter higher education or the workforce, but putting age limits on use can help evade some of the **risks** of AI dependency as children are growing up.

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3 Endorsement of Education Platforms that Avoid AI

Instead of relying on general chatbots, like ChatGPT, **endorsing** platforms that promote independent thinking principles. For example, an AI system programmed to answer questions with a guiding approach rather than a direct answer. The most effective tools are those that say in a child's or student's zone of proximal development, meaning providing **just enough** information to help them succeed or complete a task without completely doing the work for them.

Conclusion

Overall, the development of **Artificial Intelligence** is not going to decline in the foreseeable future, which is why it is crucial for school systems and the Department of Education to develop practices alongside AI. It is not something that can be entirely avoided, and often, when used correctly, can provide great support to **elementary learners** and **educators**. AI presents both promising opportunities and serious risks for elementary education. This makes coordinated policy efforts from the federal, state, and local governments so important. AI can support personalized learning, offer immediate feedback, and provide **high-quality** educational resources to children who may not otherwise have that opportunity. However, without clear boundaries and policies, AI usage at elementary levels **risks** damaging the development of cognitive, social, and critical-thinking skills. Young children are especially vulnerable to these risks as their brains are very impressionable, and **overreliance** on technology can cause irreparable damage to healthy brain development. Current gaps in existing education policy stem from the rapid increase of AI usage in recent years. Utilizing all levels of government to implement effective boundaries on AI usage is critical to the success of these opportunities for elementary students.

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