



# ARTIFICIAL INTELLIGENCE IN K-12 EDUCATION

## Opportunities, Challenges, and Policy Implications

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### **ARTIFICIAL INTELLIGENCE (AI) DISCLOSURE**

The Guinn Center utilized ChatGPT to support the identification and preliminary review of many of the research resources explored in this report. Certain "stock photos" used in this report for visual enhancement may have been generated by AI. However, the report's authors are responsible for all conclusions and written content.

# EXECUTIVE SUMMARY

## KEY FINDINGS

- The use of AI in K-12 education has tremendous potential. It could make teachers significantly more effective, the student learning process more engaging and productive, and school management much more efficient.
- However, the associated risks are unclear. Because the technology is new and AI use is progressing so rapidly, there is no reliable, long-term data about its effectiveness or a fundamental understanding of possible unintended consequences.
- The stakes are very high. In moving too slowly, Nevada could fall behind other states, other countries could surpass the U.S. in key strategic ways, and students could be left unprepared for the new labor market that is rapidly unfolding. **In moving too fast, untrained teachers might use AI tools in ineffective or harmful ways, schools may pay for AI apps that quickly become outdated or are not what was promised, or students may be incorrectly assessed by an algorithm, have their sensitive data compromised, or have their educational growth harmed by as-yet unknown factors.**

The proliferation of Artificial Intelligence (AI) has unfolded much faster than any other technology in human history. It took seven years for the Internet to have 100 million users. Facebook reached that number in just five years. For ChatGPT, it took 60 days. In addition to this rapid pace of adoption, AI's technological progress and the development of new tools have advanced at a similar speed. AI's computational throughput and per-unit cost have improved by 500 to 1,000 times in just two years. Indeed, the top-ranked AI applications typically remain at the top for only three weeks as they are replaced by newer tools (Treybig, 2025).

In K-12 education, AI is not a futuristic concept; it is already in our classrooms. Teachers are using generative AI to create lesson plans and differentiate instruction. Students receive real-time feedback from AI tutors and engage in intelligent simulations. Administrators are drafting multilingual messages to families using AI chatbots. Nevadans under age 30 are digital natives, accustomed to rapid technological shifts. Yet the K-12 system remains complex and deeply institutionalized, making swift transformation both difficult and potentially risky.

Artificial Intelligence will reshape essential elements of our education system, sometimes unintentionally. If not guided by thoughtful policy, AI use could exacerbate existing inequities, deepen digital divides, and undermine public trust. Harnessing and controlling a technology as transformative as AI will be a monumental task in a system as big, multifaceted, and bureaucratic as K-12 education.

This report is our second on AI use in educational settings, following our earlier brief on [AI in higher education](#). K-12 education being arguably a more complex and high-stakes endeavor, this comprehensive report explores what is happening with AI in our primary and secondary schools, what developments may be coming, and the policy considerations that should be on the minds of Nevada's education and political leadership. Artificial Intelligence can surely be leveraged to improve the effectiveness of public education's academic goals, but care must be taken to protect education's human-centered mission and the social growth of students.

A recurring theme in our research was the tension between urgency and caution: the need to act swiftly without sacrificing deliberation, transparency, or collaboration. Managing the tidal wave of AI advancement will be incredibly challenging.

To help education leaders and policymakers, we offer a collection of recommendations from a research base that is still in its infancy. This report includes a three-part framework for responsible AI integration—centered on the needs of students, teachers, and administrators. Each stakeholder group faces distinct opportunities and risks. Students require equitable access and protections; teachers need training and tools; administrators must build governance and oversight systems. It is important to note that the K-12 scope is broad and these strategies should be adapted to be suitable for the particular age range. For example, AI exposure in early elementary school will likely be different than in a high school student.

For students, the research suggests:

- Pairing AI adoption with investments in connectivity, devices, and age-appropriate AI literacy—beginning with struggling or under-resourced districts and schools;
- Codifying student AI rights;
- Requiring transparency and family agency; and
- Limiting surveillance and backing its use with fair-treatment reviews.

For teachers, the research supports:

- Funding sustained, continuously evolving, AI-supported professional development;
- Keeping humans in the loop for pedagogy and grading, as necessary;
- Redesigning assessments to emphasize authentic, ongoing evidence of learning;
- Providing privacy-preserving tools; and
- Offering a vetted, state or district-approved AI toolbox, ideally reviewed by a cross-sector consortium.

In support of education administrators, Nevada could consider:

- Adopting a statewide model AI policy for districts to adapt to their needs;
- Instituting a cross-functional governance structure;
- Embedding strong privacy and security terms in AI provider contracts;
- Managing risk using industry-standard use case profiles;
- Requiring algorithmic impact assessments for high-impact systems;
- Implementing a process of pilot, then evaluate, then scale; and
- Publishing a public transparency portal of all AI tools in use.

[EdSAFE's AI SAFE Benchmarks](#) could offer a practical baseline and roadmap across these actions. As AI continues to evolve, this report aims to provide a foundational framework for informed decision-making, helping Nevada's education system navigate emerging opportunities and risks with clarity and care.

# INTRODUCTION

In April 2025, the president signed an Executive Order titled “*Advancing Artificial Intelligence Education for American Youth*,” establishing AI literacy as a national priority (White House, 2025). In response, the U.S. Department of Education released guidance encouraging states to use formula and discretionary grant funds to responsibly integrate AI in ways that improve student outcomes. The Department emphasized AI’s potential to enhance teaching and learning, expand access to technology, and support educators—while reaffirming the irreplaceable role of teachers. It further outlines how AI may be used across key educational functions and says such uses are allowable under existing federal education programs, provided they align with applicable statutory and regulatory requirements (McMahon, 2025).

While federal initiatives provide a broad framework, individual states, such as Nevada, which bears primary responsibility for public education, must determine how best to harness AI’s potential while managing its risks.

The proliferation and rapid advancement of artificial intelligence and technology stand to transform public education systems around the globe. Although AI has long been embedded in consumer applications, its widespread use in K–12 education is a recent development. Its integration signals a paradigm shift in how teaching, learning, and school operations are conceptualized and delivered.

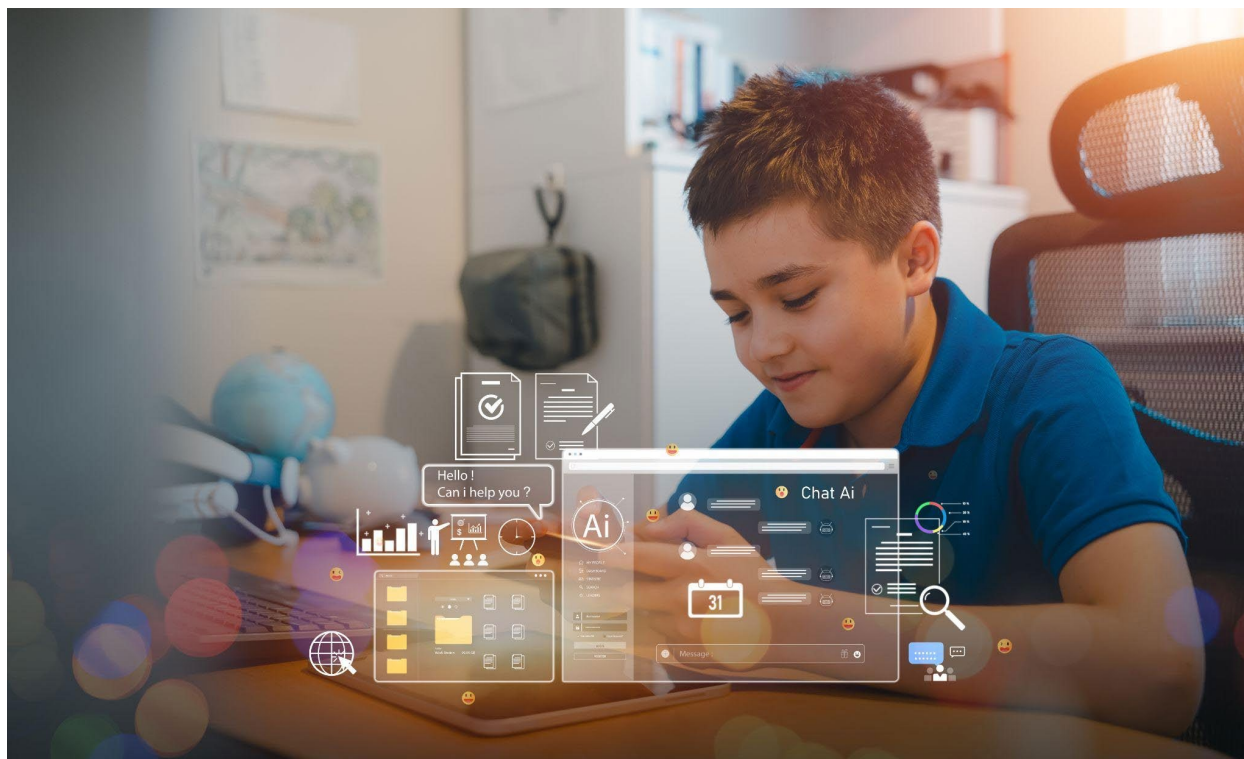
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In July 2025, OpenAI launched the free ChatGPT Study Mode which is designed to help students work through problems and build critical thinking skills. It uses the Socratic method, asking questions while offering students hints and prompts for self-reflection. The interaction is tailored to the user, based on memory from previous chats. Various AI tools now support a range of tasks in education, including automated grading, personalized tutoring, content creation, and administrative streamlining. As with ChatGPT’s Study Mode, new K-12 AI apps are being brought to market daily, and existing applications can be surpassed by new ones almost as quickly as they are deployed.

This report examines the current state and future trajectory of AI in K-12 education. It aims to inform policymakers, school leaders, and educators about existing applications, emerging trends, associated risks, and the importance of strategic readiness.

For the purposes of our report, educational AI refers to computer systems capable of performing tasks traditionally requiring human intelligence, such as data analysis, language generation, decision support, and adaptive learning. This includes machine learning models, generative AI, intelligent tutoring systems, and real-time instructional technologies.

The report begins with an overview of current applications of AI in K–12 learning environments, followed by a discussion of future developments. It concludes with recommendations and key considerations for education leaders and policymakers.



## THE CURRENT LANDSCAPE

### TYPES OF K-12 AI TOOLS

Artificial Intelligence tools evolve almost daily, meaning parts of this report may be outdated upon release. With that in mind, this section provides an overview of current applications in K-12 education to illustrate what is already possible and emerging:

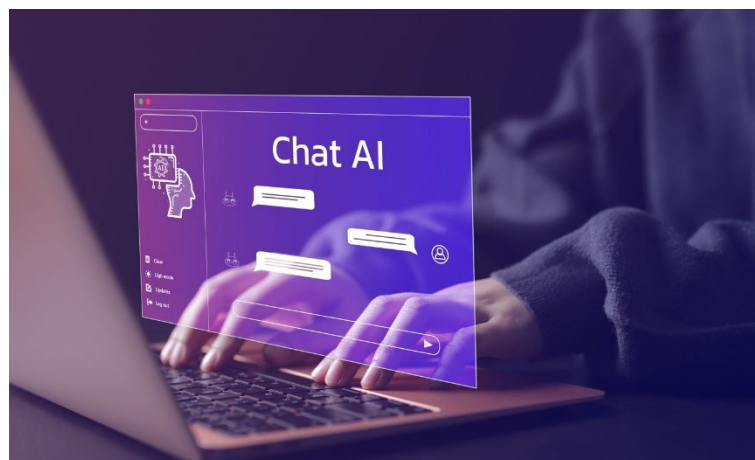
- Generative AI tools – Examples include [ChatGPT](#) and [Gemini](#). They may be used by teachers for lesson planning, by students for help with writing or generating project ideas, and by school leadership for content generation, resource allocation analysis, or communication support.
- Intelligent tutoring systems – Examples include [Carnegie Learning](#) and [Squirrel AI](#). These systems can provide students with personalized instruction, especially in math and science.
- Adaptive learning platforms – Examples include [DreamBox](#) and [IXL](#). These applications can adjust teaching content in real time based on student performance.
- Administrative AI tools – Examples include [PowerSchool](#) and [Infinite Campus](#), which is used in Nevada. These tools collect and analyze student data and can assist administrators in monitoring school attendance, automating scheduling, and identifying at-risk students.
- Affective and behavioral analytics – This is an emerging AI technology, which, for example, might use facial recognition to monitor a student's emotional state or their engagement in a lesson.

As evidence of how rapidly the AI-in-education landscape is evolving, two groundbreaking educational tools became available while researching this report. In August 2025, Google released its Guided Learning tool for Gemini, which breaks down complex problems for step-by-step learning to support deeper understanding (Malik, 2025). That same week, OpenAI added Study Mode to ChatGPT to promote critical thinking. The tool helps users work through problems incrementally, without providing answers (Marrone, 2025).

## EXISTING RESEARCH

Because AI has only been widely available for three years, research on its effectiveness in K-12 is limited. Many studies rely on small samples or lack strong outcome measures, so findings should be interpreted cautiously.

Two recent systematic reviews of other research examined the use of AI in K-12 education. Arranz Garcia, et al. (2025) looked at primary education and found that AI can enhance critical thinking, student engagement, and personalized learning. However, they caution that effective implementation depends on quality teacher training, clear policy frameworks, and thoughtful ethical guidelines. Lee and Kwon (2024) examined the use of AI applications in K-12 classrooms



and found that hands-on, project-based approaches improve student motivation, problem-solving skills, and AI literacy. They emphasize the importance of having aligned resources and curricula tailored to the classroom. A paper by Luckin, et al. (2023) contends that AI-powered intelligent tutoring systems may produce learning gains comparable to one-to-one human tutoring, which has long been thought to be the most effective approach to teaching and learning.

The available research shows that AI is quickly and steadily gaining traction in K-12 education, particularly among teachers seeking active, student-centered learning. Zhou et al. (2025) found that project-based activities available with AI are shown to improve student engagement and connect classroom experiences to real-world situations. The technology is being used in various subjects to support critical thinking, problem-solving, and ethical reflection for older students.

However, the effectiveness of AI integration depends on each teacher's preparedness. Early research shows that support from school leadership and ongoing professional development lead to better outcomes, but most schools lack the resources to provide such support. While society works to understand AI's effect on learning outcomes more clearly, researchers encourage educators to employ learner-centered and context-aware tools.

This new technology also brings ethical concerns that need to be addressed. These include:

- Student data privacy and how to ensure sensitive data is not made vulnerable by students or professionals using AI tools;
- Algorithmic bias and the need to ensure all students have access to objective information and that students are treated equitably by AI;
- Academic integrity and the deployment of measures to ensure AI is a tool for educational growth; and
- System transparency to provide education leaders, parents, and policymakers with the insights needed to make informed decisions.

AI should not be a tool to help students avoid challenging work, so ensuring the framework supports this objective is critical.

On a practical level, schools are grappling with finding technology that is usable, effective, and accessible to all students, as well as devising clear, standardized policies to guide the responsible use of AI. This new technology is packed with promise but comes with complex challenges.

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## DOMESTIC AND INTERNATIONAL ACTION

### Federal Guidance

As mentioned in the introduction, the federal government is encouraging affirmative but responsible implementation of AI in U.S. schools through an Executive Order and a Department of Education letter to grantees. Federal support includes allocating existing education funding streams for various actions, including using AI to create instructional materials; offering high-impact tutoring; and providing college and career pathway exploration, advising, and navigation. The Department also provides principles for responsible AI use, suggesting it should be educator-led, ethical, accessible, transparent, explainable, and data-protective. States may use this federal flexibility to add AI initiatives to their federal contracts or proposals.

### State Leadership

In May 2025, more than 200 corporate CEOs signed a letter urging state leaders to mandate AI and computer science classes as a high school graduation requirement (Computer Science for All, 2025). Salient points in the letter include:

- Basic computer science and AI knowledge are crucial for helping every student thrive in a technology-driven world.
- Just one high school computer science course boosts wages by 8 percent for any student, regardless of career path or whether they attend college. This is about closing skills and income gaps that have persisted for generations.

- Taking computer science and AI courses is the fastest way to shrink skill and wage gaps, and to keep the U.S. ahead in the global AI race. However, only six percent of students are taking computer science courses today. Students are often learning these skills on their own outside of school through alternative paths, so there are ways to streamline that in an educational setting.

In early 2024, the North Carolina Department of Public Instruction issued guidance for using AI tools in schools (North Carolina Department of Public Instruction, 2024). This year, Ohio became one of the first states to mandate public school districts to develop AI governance policies. The Ohio Department of Education and Workforce will first create a model policy, which districts can draw inspiration from or adopt outright. However, this state budget provision does not explicitly require AI use (Government Technology, 2025). In a separate initiative, Ohio State University is making AI a part of general education for every major, beginning with the fall 2025 semester (Neese, 2025).

In early 2025, Connecticut launched a six-month AI pilot program in seven school districts. The pilot introduced students in grades 7 through 12 to state-approved AI tools to offer hands-on learning experiences. Educators also received professional development on effective classroom integration. The program's development resulted from [Public Act 24-151](#), a bonding and fiscal policy bill that required the State Department of Education to develop and implement the program (Connecticut State Department of Education, 2025).

As of March 2025, 28 states have published or adopted AI guidance for K-12 education. Many are now looking toward AI integration with specific instructional and support-related objectives. Though new use cases in K-12 settings will arise as the technology advances, states have focused primarily on instruction and support services (Comai, 2025).

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## **International Initiatives**

### *Estonia*

Estonia has evolved into a leader in K-12 education and is among the top-performing countries in Europe. Interestingly, while many U.S. states are implementing policies to get smartphones out of the classroom, Estonia is embracing the smartphone as a tool to help students embrace and master AI. It is launching a pioneering national initiative called AI Leap 2025, a public-private partnership that will equip 3,000 teachers and 20,000 students in grades 10 and 11 with AI learning tools and comprehensive training. The program will expand in 2026 to add vocational schools, plus 2,000 more teachers and 38,000 more students. A special foundation will manage the project, in partnership with AI leaders including OpenAI and Anthropic.

### *Singapore*

In another of the world's leading education systems, Singapore's Ministry of Education (MOE) has implemented an AI-in-Education Ethics Framework (AIEd). It is a blueprint designed to guide the safe, fair, and effective use of AI in teaching and learning and is grounded in four core principles:

- Agency – AI systems must preserve teacher and student control over learning decisions, while teachers retain authority to shape the learning process and exercise their professional judgement.
- Inclusivity – Singapore believes that every child can learn and achieve. All users, regardless of background or abilities, should be able to reap the benefits of AIEd systems.
- Fairness – AIEd systems should be free from bias and be accurate. The use of AIEd systems should also be made known to users, and their outputs should be explainable; that is, users should be able to understand why the AIEd system made a particular decision.
- Safety – AI use must protect student well-being and privacy through strong data security and risk-management protocols. Systems must also safeguard against adverse social or psychological effects.

Singapore has long had a digital Student Learning Space (SLS) and has enhanced it with AI tools under the AIEd framework. In 2023, they added an adaptive learning system to provide personalized learning pathways for math in the primary grades; more subjects and levels are being added. Through the SLS, schools have access to an AIEd ethics primer and an implementation guide. In various schools, students use e-books to develop skills in effective AI prompting and evaluating AI output. They are also being taught to use tools like ChatGPT and how to verify credibility and cite AI-generated content (Ministry of Education, 2025).

### *China*

In April 2025, the Chinese Ministry of Education and eight other departments jointly released new guidelines toward building an AI-based education system that integrates innovative technologies into teaching, learning, assessment, and academic research. The guidelines call for a comprehensive upgrade of disciplines, curriculum, and talent development to meet the demands of the digital economy and future industries. The ministries outlined plans to accelerate the development of large-scale AI models to promote their deep integration into education. They also proposed adjustments to academic programs in higher education and vocational training to better meet the needs of advanced manufacturing and the modern service sector (Yimeng, 2025).

Beginning in fall 2025, the city of Beijing will require all its primary and secondary students to receive at least eight hours of AI education annually. The instruction may be provided in standalone classes or embedded in other subjects, like science and information technology. Younger students will focus on foundational, hands-on learning, middle school students will work with practical applications, and high school students will be exposed to AI innovation (Ming, 2025).

## **THE EFFECTS OF AI ON STAKEHOLDERS**

### **Teachers**

In June 2025, Gallup and the Walton Family Foundation surveyed 2,232 U.S. public school teachers. The findings show AI use is both widespread and time-saving. Six in ten teachers used an AI tool for their work in the 2024-2025 school year, with three in ten using AI at least weekly. Those weekly users report saving an average of 5.9 hours per week—or roughly six weeks over a typical school year. Teachers reported using saved time for student feedback, differentiated lessons, family communication, and improved work-life balance.

Teachers most often used AI to prepare lessons (37 percent), develop worksheets or activities (33 percent), and adapt materials to student needs (28 percent). Depending on the task, a majority reported AI saved time (60-84 percent) and improved work quality (57-84 percent). Less than 7 percent said it cost extra time (Malek Ash, 2025). Teacher comfort with AI has risen significantly—77 percent of educators now find it helpful, up from 59 percent in 2024. Comfort with student use of AI also rose, from 31 percent to 59 percent (Carnegie Learning, 2025).

The evident risks for teachers include using AI inappropriately, ineffectively, or potentially not using it at all. In any case, ongoing professional development is essential; it can help teachers avoid pitfalls and make them more effective in their work.

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### **Students**

Today's students adapt easily to AI. It can boost creativity, classroom effectiveness, and support in areas of struggle. However, it also introduces risks to their privacy and may challenge their academic integrity, which can slow educational growth. Research shows that AI technology can work against some students by fostering inequities, eroding trust, and sometimes leading to discipline that arises from AI's student activity monitoring (Laird, 2023).

Federal guidance urges schools to keep student needs at the center of AI adoption. It recommends building on student strengths, expanding creative learning opportunities, and supporting skills like discussion, writing, presentation, and leadership (U.S. Department of Education, 2023).

### **Administrators and Policymakers**

Administrators tend to prioritize teacher engagement with AI over policies for student use. They see AI as a tool to ease teacher workloads but worry about uneven adoption and the challenge of crafting policies for a fast-changing technology (Diliberti, 2024).

Various guidance suggests helpful measures for school leaders in contracting for AI services, including banning or limiting the training of AI models on student input, disclosing sub-processors active in AI tools, setting data retention limits, requiring notification for data breaches, and requiring an independent review of AI tools before and after deployment for higher-risk uses. Experts and advocates recommend that education leaders consider instituting cross-functional governance that includes educators, technologists, and families; offering transparent inventories that disclose details about AI tools schools use; and equity reviews of AI-supported decisions that affect students.

In summary, AI use in K-12 education is rapidly evolving, teeming with promise and opportunity, and comes with both known and unknown risks that affect students, teachers, and leaders.

# LOOKING AHEAD

## TECHNOLOGICAL TRENDS AND DEVELOPMENTS IN AI AND K-12 EDUCATION

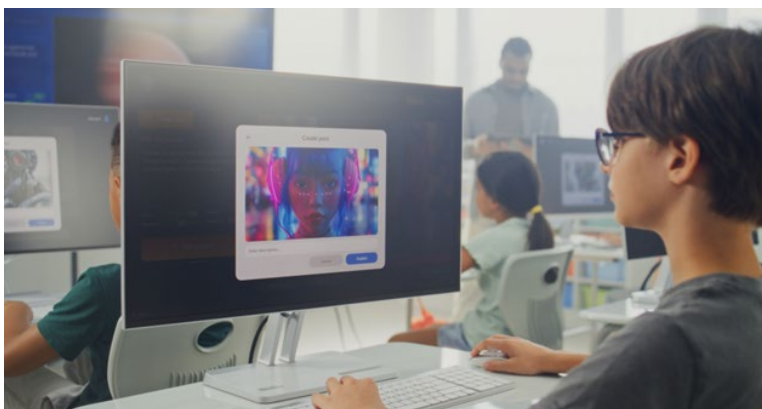
Artificial intelligence is advancing at a pace that suggests it will not only support but also redefine how children are educated. Developments in machine learning, natural language processing, and human-computer interaction are reshaping instruction, assessment, and classroom dynamics. In June 2025, the Organisation for Economic Co-operation and Development (OECD) released its *AI Capability Indicators*, a framework mapping AI's strengths against human abilities in domains such as problem-solving, creativity, and critical thinking.

In each domain, AI functionality is rated on a five-level scale. Level 1 reflects solved AI challenges (e.g., Google search's retrieval capabilities), while level 5 represents performance that simulates all aspects of the corresponding human abilities. Current systems rate between levels 2 and 3—well short of human equivalence, but advancing quickly. While not specific to education, the framework helps policymakers anticipate AI's potential influence on teaching, learning, and school operations.

The Guinn Center evaluated the rapidly evolving AI landscape and the available research as it struggles to keep up with the advancements. Below are some ways we imagine AI could soon affect education.

### Personalized and Adaptive Learning

AI-powered adaptive learning systems are rapidly evolving to become more nimble and nuanced. Future iterations of the technology may move beyond content-level personalization for each student to support real-time cognitive and metacognitive scaffolding (Azevedo, 2005). For example, in cognitive scaffolding, which relates to supporting the thinking process, an AI tool might provide structured, temporary support to help learners master new concepts or skills, and gradually remove the assistance as a learner gains independence. Supports could provide intermediate examples, highlight key concepts in texts, give feedback when a student's answer reveals a misunderstanding, or recommend supportive activities to address gaps in knowledge.



Metacognitive scaffolding relates to empowering students to monitor and control their learning. An AI tool might prompt students to set goals before starting an assignment, explain their reasoning behind an answer, use a progress dashboard to track their improvement over time, or choose among specific study approaches when encountering difficulties. Educational supports like these were previously only possible through human interaction, and teachers have long used these strategies to help their students. AI could provide this assistance in real time, with specific customization for every student in a classroom simultaneously.

### Examples of Cognitive and Metacognitive Scaffolding

| Cognitive Scaffolding (supporting understanding of content) | Metacognitive Scaffolding (supporting regulation of thinking and learning) |
|-------------------------------------------------------------|----------------------------------------------------------------------------|
| Breaking complex tasks into smaller steps                   | Prompting students to reflect on what strategies worked or did not work    |
| Providing examples or models                                | Encouraging students to plan how they will approach a task                 |
| Using guiding questions to focus attention on key concepts  | Asking learners to monitor their comprehension ("Does this make sense?")   |
| Highlighting connections between new and prior knowledge    | Promoting self-questioning before, during, and after learning              |
| Offering visual aids, diagrams, or concept maps             | Encouraging goal-setting and evaluating progress toward goals              |

(Hmelo-Silver, 2007)

Because of AI's direct interaction with a student, it is already able to dynamically adapt so the student is always working in their zone of proximal development, where tasks are challenging but achievable with assistance (Eun, 1984). This helps students avoid spending time on exercises that are too easy or too difficult, resulting in consistent, practical learning. Emerging AI can analyze patterns in a student's work, so it may also be able to anticipate where they might struggle next and take steps to avoid or minimize those struggles. A potentially significant benefit of adaptive learning is that teachers may need to administer fewer tests because AI could continuously assess and report students' progress and understanding.

### AI Agents and Complex Task Automation

AI agents are configured to pursue goals and complete tasks on behalf of users. They can be used to design reasoning models, planning strategies, and maintaining memory, and have a level of autonomy to learn, adapt, and make decisions (Google, 2025). Their use in education is expected to continue growing. They might serve as teaching assistants, curriculum designers, or student coaches. Over time, linked agents could handle complex, multi-step tasks. For instance, this might include predicting that a student is at risk, drafting a preliminary Individualized Education Program, and recommending resource allocations to support interventions.

### Generative and Multimodal AI

Emerging and in-development AI tools for education may soon offer many new multimodal learning experiences beyond audio and visual output to provide interactive simulations for student learning. These tools could help make complex concepts more accessible to all students, which could especially benefit English learners and those with disabilities. Future generative and multimodal AI might be able to facilitate:

- Personalized learning at scale – such as creating customized explanations, examples, and practice problems that adjust to each student's background, current knowledge, and learning pace. This aspect of educational AI could also be the key ingredient in scaling Competency-Based Education, which many education stakeholders support.

- Multimodal teaching materials, on demand – such as helping teachers generate lesson plans, visual aids, diagrams, or audio/video content tailored to a specific topic.
- Simulated learning environments – such as producing interactive role-plays, virtual labs, or historical recreations that give students safe, immersive opportunities to explore events, places, or concepts.
- Language and accessibility support – such as translating text, generating captions, or converting content into speech or images to reduce barriers for multilingual learners and students with disabilities.
- Enhancing student creativity – such as helping students brainstorm ideas, create multimedia projects, and experiment with concepts before including them in a project.

## Predictive Analytics

AI systems are incredibly powerful in identifying patterns and predicting possible future outcomes. Thus, predictive analytics (PA) models can look at what is happening in a student's educational journey today to capitalize on positive developments while suggesting changes or interventions to minimize adverse developments as they emerge. Some ways that PA might be leveraged in K–12 education include:

- Forecasting academic performance – PA could anticipate students' future academic achievement based on the trajectory of various data points. This information might help teachers plan increasing challenges for engaged and advancing students, while intervening with students whose engagement or progress is waning (Green, 2025).
- Creating customized learning pathways – AI-powered PA may supercharge the field of learning analytics—which looks at variables like a student's time on task, error types, content preferences, and many others—to offer personalized learning plans in real time (New York University, 2025). By combining predictive and learning analytics, students might receive tailored reading lists, targeted problems to solve, or adaptive learning modules that constantly adjust to their needs, preferences, strengths, and weaknesses.



- Monitoring engagement, educational behavior, and attendance – Sudden or evolving student behavior changes can signal they are experiencing deeper challenges. Predictive Analytics could potentially combine data from attendance records, educational behavior tracking, and classroom engagement data gathered through AI tools to anticipate an escalation in unproductive behaviors (Adusumilli, 2020). This anticipatory analysis might enable early communication from teachers, engagement from counselors, and the use of supportive interventions.
- Early identification of learning disabilities – For students with undiagnosed learning disabilities, PA may be able to detect persistent patterns such as difficulty with phonemic awareness, reading comprehension, or math reasoning. These disabilities often manifest subtly during the early stages of education, making them challenging to detect. Early diagnosis and intervention are essential for mitigating long-term academic and social repercussions. AI-assisted diagnosis could prompt educators to evaluate further and avoid delaying Section 504 or Individualized Education Program accommodations. One study showed 91 percent accuracy in detecting learning disabilities using PA (Fink, 2025).
- Enhancing course of study or program placement decisions – Research predating AI demonstrates that, by analyzing student performance and contextual data, algorithmic models can recommend personalized course sequences to improve academic outcomes and accelerate student graduation (Xu, 2016). With modern AI models, PA may be able to guide placement in advanced courses or specialized programs by modeling a student's performance trajectory to that of past students and responding with optimized learning opportunities and recommendations.
- Guiding resource or staffing allocations – School administrators may be able to use predictive insights to utilize their limited resources more effectively. A systematic review of predictive models shows that educational institutions can use PA systems to anticipate students needing help, such as counseling, tutoring, or adaptive supports. Having these insights early can help school leaders ensure the appropriate resources are allocated ahead of an emerging need (Almalawi, 2024).
- Improving family and community engagement – Predictive tools can help school staff identify families at risk of disengaging from school communications or events. By drawing on pre-AI methods used in home-visiting programs, where predictive models were successful in flagging early disengagement (Xia, 2022), schools may be able to use data-driven approaches to guide their outreach strategies and to help plan family engagement accommodations—such as bilingual communication, alternative outreach measures, or flexible scheduling.

## POLICY, GOVERNANCE, AND ETHICS

Policy is struggling to keep pace with classroom adoption and the integration of AI into K-12 education is outpacing the development of policy and governance frameworks. On the ground, the students, teachers, and school leaders using AI are simply users; they are not generally equipped to adequately judge the quality, reliability, or legality of an AI tool that may appear perfectly good at the user interface. While federal and state authorities are beginning to articulate principles and guidance, implementing actual policy, governance, and ethics frameworks remains uneven and fragmented.

## Federal Frameworks

The White House Office of Science and Technology Policy published “The Blueprint for an AI Bill of Rights: Making Automated Systems Work for the American People” in October 2022. With the change in presidential administrations in 2025, the document may not be used in future federal efforts. However, its concepts were developed through a broad public consultation process, and may be helpful to policymakers. The blueprint is a set of five principles and associated practices to help guide the design, deployment, and use of AI systems to protect the American public’s rights; they include:

- Safe and effective systems – The public should be protected from unsafe or ineffective systems.
- Algorithmic discrimination protections – The public should not face discrimination by algorithms and systems should be designed in an equitable way.
- Data privacy – The public should be protected from abusive data practices via built-in protections and have agency over how their data is used.
- Notice and explanation – The public should be aware that an AI system is being used and understand how and why it contributes to personal impacts.
- Human alternatives, consideration, and fallback – The public should be able to opt out, where appropriate, and have access to a person who can quickly consider and remedy problems (White House, 2022).

In May 2023, the U.S. Department of Education’s Office of Educational Technology issued a report titled “Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations.” It explores the rapidly evolving role of AI in K-12 education, outlining its potential and risks. The report examines four key education domains—learning, teaching, assessment, and research. It also offers two guiding questions in the realm of educational AI:

- What is our collective vision of a desirable and achievable education system that leverages automation while protecting and centering human agency?
- How and on what timeline will we be ready with the necessary guidelines and guardrails, along with convincing evidence of positive impacts, so that we can ethically and equitably implement this vision widely?

## International Frameworks

Internationally, the United Nations adopted the “Recommendation on the Ethics of Artificial Intelligence” in 2021. It provides a human rights-centered framework for AI governance and urges member nations to develop accountability mechanisms, ensure system explainability, and protect human autonomy in decision-making (UNESCO, 2021). In 2023, the Organisation for Economic Co-operation and Development partnered with Education International to publish a report titled “Opportunities, guidelines and guardrails for effective and equitable use of AI in education.” It contains nine core principles to help education jurisdictions and organizations navigate the fast-moving developments in AI (OECD-Education International, 2023).

## State Policy Responses

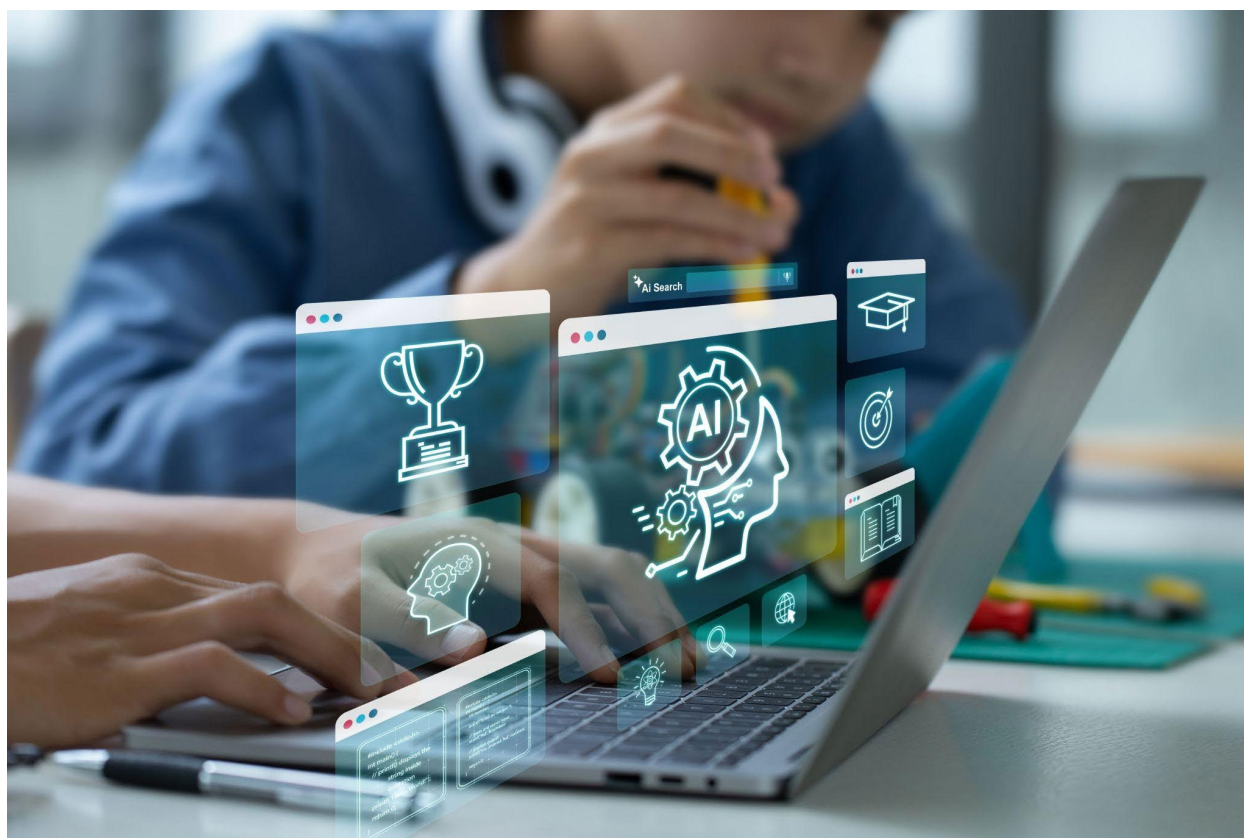
According to the Education Commission of the States (ECS), when ChatGPT debuted in 2023, no states had policies related to generative AI. As of April 2025, at least 28 states had published guidance on AI in K-12 settings, and legislative interest is growing (Vaughan, 2025). That same month, the Nevada Department of Education published an administrative guidance document

titled “Nevada’s STELLAR Pathway to AI Teaching and Learning: Ethics, Principles, and Guidance.” Through statewide town hall meetings with the Nevada AI Alliance, the Department issued the document to address concerns related to equity in technology access, data privacy, and bias while emphasizing the essential role of teachers in using AI.

At least 20 states have introduced AI-related education bills thus far in 2025, including three that passed one chamber: Alabama ([H.B. 332](#)), Hawai‘i ([H.B. 546/S.B. 1622](#)), and Maryland ([H.B. 1391/S.B. 0906](#)). Nevada introduced, but did not pass, two bills that proposed working groups related to the use of Artificial Intelligence systems in education.

The ECS review shows a growing shift from early experimentation and exploratory research toward more structured discussions around guidance, oversight, and use cases in schools. Policymakers are seeking ways to ensure safe and ethical AI use without slowing down innovation. States like California ([A.B. 1064](#)), Connecticut ([S.B. 2](#)), and Texas ([H.B. 1709](#)) introduced bills to create oversight boards and “regulatory sandboxes,” or flexible spaces where AI tools can be tested before being rolled out more broadly.

State-level task force reports, including reports from [Arkansas](#) and [Georgia](#), call for comprehensive risk management policies, cross-sector collaboration, and phased policy development across government agencies. As task forces formed more recently begin to release their findings, a clearer picture of shared priorities and challenges is emerging. Meanwhile, Maine ([Executive Order, 2024](#)) and Mississippi ([S.B. 2426](#)) recently commissioned education-specific AI task forces, and Maine’s Department of Education released its own [AI guidance](#) in February 2025.



# HOW TO PROCEED

## CONCERNS AND CAUTIONS

### Legal and Ethical Tensions

The integration of AI into K-12 education introduces complex legal and ethical considerations. Existing laws, such as the Family Educational Rights and Privacy Act (FERPA, enacted in 1974) and the Children's Online Privacy Protection Act (COPPA, enacted in 1998), were written before current technologies like biometric data collection and automated algorithmic analysis were developed. For example, FERPA does not address the kinds of specific behavioral data collected by modern AI systems. A 2019 paper on this topic raises six ethical concerns: information privacy; anonymity; surveillance; autonomy; non-discrimination; and ownership of information (Regan, 2019). Policymakers will need to address these in any AI policy initiative.

On the other hand, COPPA restricts data collection from children under age 13. However, this primarily applies to traditional commercial websites and does not adequately regulate the modern, embedded data practices of educational technology vendors using AI. Furthermore, the Federal Trade Commission (FTC), the enforcement agency overseeing COPPA, issued an exception for data disclosed by schools to online operators acting as authorized educational partners. The FTC maintains that a student's personally identifiable information disclosed as an education record is regulated by FERPA. That legislation's broad definition of education records, combined with the 2011 Amendments expanding FERPA to permit schools to disclose data to third parties, creates a loophole for the education technology industry to avoid COPPA regulation regarding student data (Rhoades, 2020).

### Ethical Considerations

Beyond legal compliance, ethical considerations must be a part of any debate about AI in education. Researchers and practitioners have raised various areas of concern:

- Influence on student evaluation – AI-based algorithmic assessment tools have many potential strengths, but they can also reduce transparency, have opaque or biased algorithms that cause unintended consequences, and may disempower educators by replacing human judgment with prescribed algorithmic solutions (Bulut, 2024).
- Informed consent – Meaningful consent is problematic when dealing with minors, who may not fully grasp the implications of their data being collected and used (Kwok, 2025). Additionally, consent mechanisms are often managed by school districts that may have limited knowledge of the related technology.
- Accountability – When AI systems make or influence decisions related to student supports or interventions, responsibility for those decisions may be diffused among various players, including app developers, AI vendors, teachers, school administrators, etc. Because algorithmic systems can return potentially incorrect, unjustified, or unfair results, additional approaches are needed to make such systems subject to human accountability among those involved in the AI value chain (National Telecommunications and Information Administration, 2024).

### **Access, Equity, and Bias**

While AI tools promise more personalized and effective instruction, they also risk exacerbating existing problems if not carefully deployed. For example, students in rural or under-resourced schools may lack access to reliable internet service, up-to-date devices, or AI-powered learning tools (OECD, 2024). Existing academic performance divides between these schools and those with the necessary resources may quickly multiply with AI deployment.

The use of AI to monitor student behavior, assess engagement, or detect emotions may treat students inequitably if the systems are trained on data based on prejudicial past experiences related to students with disabilities, behavioral challenges, or specific demographic profiles. Furthermore, there are several types of potential bias beyond the typical historical bias; they include bias in representation, measurement, aggregation, evaluation, and deployment. These challenges must be addressed throughout the process of bringing AI to schools (OECD, 2024). For such systems to work well, they need to understand and measure against certain norms. However, equitably defining these norms may be challenging. In February 2025, the European Commission published its first draft regulations for the European [AI Act](#). Among other provisions, the regulations prohibit social scoring, criminal offense risk assessment and prediction, facial recognition databases that use untargeted scraping of facial images from the internet or CCTV footage, and the inference of emotions except for medical or safety reasons (Schröder, 2025). These complex issues are worthy of consideration in crafting an AI use policy.

Artificial intelligence systems are often trained on massive existing datasets, which may include biases that unintentionally result in unwanted or societally unfavorable outcomes from the AI tool (Baker, 2021). For example, a test of facial recognition technologies showed much higher error rates in recognizing the gender of people of color than those with lighter skin (Buolamwini, 2018). Similarly, predictive analytics have been shown to reinforce stereotypes when trained on biased data. For example, the State of Wisconsin's Dropout Early Warning System has been wrong nearly three-quarters of the time it predicts a student will not graduate. The algorithm's false alarm rate—how frequently a student that it predicted would not graduate on time actually did graduate on time—was 42 percentage points higher for black students than white students (Feathers, 2023).

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### **Job Displacement**

In the general conversation about AI proliferation, there is much speculation about widespread job losses, at least initially, until the economy pivots to creating new, as-yet-unknown opportunities. Without a doubt, developing human and relational skills in an educational setting will continue to be prioritized in the workforce. In the long term, it is difficult to anticipate how AI and robotics may combine to affect jobs requiring physical human effort. However, in the short to medium term, many jobs that are expected to be reduced or eliminated require rules-based analysis or thinking tasks, but the relational skills of humans may be needed even more.

In K-12 education, it currently appears that the teaching force needed to educate America's students will be largely unaffected. Studies tend to project AI as a contributor to the art of teaching by augmenting tasks such as lesson planning, student assessment, grading, and personalized learning. However, the current technology is not capable of replacing teachers' vital relational, social, moral, and emotional work. At its highest and best use, researchers see AI as a powerful teacher's assistant (Miao, 2021).

The same may not be true in the administrative ranks of K-12 education. Five years before the advent of ChatGPT, McKinsey predicted that, by 2030, 20 to 25 percent of tasks in the education sector could be automated. Administrative functions, such as student performance tracking, facilities scheduling, student records management, and routine communications, are examples of functions vulnerable to automation (Manyika, 2017). These findings were reinforced by a Brookings Institution report that found more than 30 percent of the work of education administrators, 40 percent of teaching assistants, and 60 to 70 percent of library technicians, clerks, and support personnel may be automated. The report explains that AI disruption will be task-specific. Jobs requiring social intelligence, creativity, and complex perception are less likely to be delegated to AI. While machines automated routine physical tasks during the industrial era, routine mental tasks will now be automated by computers.

At its highest and best use, researchers see AI as a powerful teacher's assistant.

The expanded use of AI will also result in job creation, such as roles in AI oversight, educational content customization, or digital pedagogy. Capitalizing on these opportunities, however, requires placing tech-driven skills at the center of any organization's strategy for professional evolution (Muro, 2019).

### **Data Security Risks**

The wide array of new AI tools opens the door for risks and unintended consequences related to student information. Many schools already face cybersecurity risks; adding AI without thoughtful guardrails increases the odds of exposing student names, contact details, grades, behavioral records, or other sensitive information. More specifically, the student data risks include:

- More data pathways available – Modern AI tools rely not only on the foundational models familiar to many (Claude or Gemini, for example), but may also use plug-ins, browser tools, or other affiliated technology to help those models run. Thus, student inputs may be handled by multiple companies and not just the one that developed the primary tool being used. Therefore, service contracts must be well vetted, cover any sub-processors involved in an AI system, and include transparency about the possible use of student input to train affiliated products or models.
- Models can leak – System misconfigurations or outside attacks can result in the unintended disclosure of student data or input. Experts recommend comprehensively testing tools before they go live in a school (NIST, 2024).
- Use of non-school AI – Students or staff may use publicly available AI tools that are not under school district control and may not be approved for minors. Such usage could result in unintended sharing of school or student data. Districts would benefit from setting clear rules about using non-approved AI and providing approved tools as alternatives.

- High-surveillance features – As this report outlines, AI's most significant educational benefits may come from functions that monitor student activity and behavior in real time. However, these functions can delve deep into personal behavioral metrics and result in higher rates of negative outcomes for some student groups (Laird, 2023). Experts advise that product testing and transparency with families are essential.

### **Broader Concerns Regarding AI in K-12 Education**

It has been sarcastically said about AI in education, “Students respond to AI-generated questions with AI-generated responses that are evaluated and graded by AI... what could go wrong?” Such comments can be rhetorical, simplistic, or cynical, but they often contain an element of truth worth considering.

Looking outside the realm of educational AI can reveal areas of concern that emphasize the need for prudence in deploying AI in our schools. For example, early research shows that repeated exposure to deepfakes and erroneous AI news results in skepticism of news and information in general (Singh, 2022). If a significant portion of the information available to people is fabricated, they may come to distrust even trustworthy sources. Children need to be exposed to reliable information and be taught how to think critically about what they see online and when interacting with AI.

However, the proliferation of false data, news, and information presents an additional layer of peril. Over time, fake or incorrect information generated by AI can poison the body of historical information from which humanity and AI will seek future insights. Datasets used for research, historical archives, and AI training may become polluted with false or synthetic content, and our future selves may have difficulty distinguishing historical facts from fiction. What would be the implications for future AI tools teaching history to our children?



Early AI use among adults has revealed concerns about its effect on individual well-being in some circumstances. Studies document risks in the persistent use of conversational AI. People with existing risk factors, such as attachment anxiety, loneliness, depression, or low self-esteem, are more likely to overuse AI chatbots for emotional support. This can result in unhealthy dependency and an uncritical reliance on the advice given by a chatbot. These risks are more pronounced when the AI is anthropomorphized—made to feel human instead of like the computer that it is (Heng, 2025). Studies comparing the efficacy of AI chatbots versus human therapists demonstrate the unsuitability of general-purpose chatbots to safely engage in mental health conversations, particularly in crisis situations. While chatbots display sound therapy elements, such as validation and reassurance, the overuse of directive advice and generic interventions without sufficient inquiry can make them unsuitable as therapeutic agents. Careful research and evaluation will be necessary to determine the impact of chatbot interactions and to identify the most appropriate use cases (Scholich, 2025). These lessons from behavioral sciences can inform the ways AI is designed and used in schools.

The above concerns may not directly correlate with AI use in education, but they offer caution for children's exposure to AI content and their use of chatbots in any context. They also argue strongly for teacher involvement in all aspects of AI use, and for AI to supplement rather than supplant the human judgment and connection that only teachers can deliver.

If a significant portion of the information available to people is fabricated, they may come to distrust even trustworthy sources. Children need to be exposed to reliable information and be taught how to think critically about what they see online and when interacting with AI.

## POLICY CONSIDERATIONS

### Student Concerns (equity, rights, safety)

1. **Codify student AI rights.** In state or school policy, as well as in AI procurement contracts, the integration of students' rights provisions will help ensure systems are safe and effective; students are protected from algorithmic discrimination; their data is protected; students and parents receive appropriate notices and explanations; and human intervention is available when needed or is standard with consequential actions and decisions (White House Office of Science and Technology Policy, 2022).
2. **Mandate transparency and family agency.** This can be accomplished by publishing an online inventory of AI and analytics tools that students use or that affect them. The descriptions should include plain-language data use summaries and offer an opt-out when feasible (U.S. Department of Education, 2023; Sallay, 2024).
3. **Limit surveillance and require an equity review.** Any student activity monitoring tools should demonstrate educational necessity. Before deployment, such tools should be evaluated independently and include safeguards for students with disabilities (Laird, 2023).
4. **Pair AI adoption with equity investments and AI literacy.** Districts and schools would benefit from coupling AI rollouts with investments in Internet access, new devices, and age-appropriate AI literacy and digital citizenship instruction. By making these investments first in lower-performing and under-resourced schools, pursuing AI objectives can also lead to equity gains. It is vital that students have access to vetted K-12 education tools instead of random consumer applications (U.S. Department of Education, 2023; OECD, 2024).
5. **Move cautiously with high-risk AI uses.** Tools like emotion recognition, facial analysis, and predictive discipline promise to make education much more effective, but they currently come with many unknowns and potential unintended consequences. Such tools will be more safely deployed if they have a robust research base before going live in a school setting. Additionally, bias reviews and safeguards, as well as human involvement, should be considered for any analytics tool affecting placement, opportunity, or discipline (Buolamwini, 2018; OECD, 2023).

## Educator Empowerment (support and guardrails)

6. **Fund sustained and continuously evolving AI professional development.** Teachers and administrators need broad-based AI training in many topics, such as practical classroom uses, assessment integrity, bias awareness, and how to explain AI to families. States and districts can close resource and performance gaps by prioritizing training rollout to lower-performing and under-resourced schools (Diliberti, 2024; U.S. Department of Education, 2023).
7. **Keep humans in the loop for pedagogy and grading.** Artificial intelligence deployment benefits from clearly defined boundaries between people and technology. For example, a policy could state that AI may assist with planning and creating classroom materials, but teachers must retain judgment and authority related to instruction decisions, student interventions, and high-stakes assessment (U.S. Department of Education, 2023).
8. **Improve assessment design in the AI era.** Research shows that U.S. students are over-tested. AI offers an opportunity to address this problem while improving the teacher's ongoing knowledge of student ability. AI can be used to continuously measure student understanding, to deliver performance-based tasks, and to process oral test responses. Such strategies can also reduce plagiarism and strengthen higher-order learning (Diliberti, 2024).
9. **Provide privacy-preserving AI tools.** Sensitive data can be protected by offering AI tools that do not train on student or teacher input, prohibit vendors from reusing user prompts, and prohibit uploading personally identifiable information (Sallay, 2024).
10. **Equip educators with a broad array of district-approved AI tools that they can choose from.** Because the task of vetting AI tools is complex, school districts would benefit from forming or joining a consortium with the expertise to review and test available tools, and perhaps to negotiate more favorable contract terms (Sallay, 2024; National Institute of Standards and Technology, 2024).

## Administrative Considerations (governance, procurement, risk management)

11. **Adopt a statewide model AI policy and require district alignment.** A policy could include considerations such as governance of AI use and access, procurement procedures, acceptable use, prohibited practices, training requirements and timelines, and staying current with emerging tools and approaches (Southern Regional Education Board, 2025; Government Technology, 2025).
12. **Institute cross-functional AI governance.** Gather diverse stakeholders with expertise in instruction, information technology, legal and compliance matters, data ethics and security, special education, and members to represent parents and local industry. This group could vet use cases and authorized AI tools, monitor implementation, and oversee system audits (U.S. Department of Education, 2023; North Carolina Department of Public Instruction, 2024).
13. **Include strong privacy and security clauses in vendor contracts.** Clauses might include a limitation or prohibition on AI model training on student and teacher inputs; full disclosure of sub-processor tools and organizations; data retention and deletion schedules; breach notification; and FERPA-compliant "school official" control (Sallay, 2024; Rhoades, 2020).

14. **Institute AI risk management procedures aligned with NIST’s generative AI use case profiles.** These procedures guide system principals in governing, mapping, measuring, and managing risks for activities or business processes across a district or state K-12 system. Specific strategies might include pre-deployment testing for data leaks and bias, or undertaking dry runs for AI model updates. State funding may be tied to demonstrating that desired controls are in place. (National Institute of Standards and Technology, 2024).
15. **Mandate algorithm assessments for high-impact tools.** Early-warning and predictive systems can be high-risk and high-impact. Thus, they often warrant specialized examination before deployment. This may include subgroup fairness testing, human-in-the-loop testing, red-teaming, analysis of qualitative or social impacts, and publication of assessment findings as a transparency measure (White House Office of Science and Technology Policy, 2022; Baker, 2021).
16. **Pilot, evaluate, then scale.** Before deployment, use time-limited pilots with an independent evaluation of elements such as learning impact, workload effects, and equitable treatment of all users before statewide rollouts. Such evaluation might be conducted at the state level, by an independent organization, or by a consortium of multiple states (North Carolina Department of Public Instruction, 2024; Southern Regional Education Board, 2025).
17. **Create a transparency portal.** School, district, and state education websites should publicly list all AI tools in use and provide plain-language summaries of their purpose, data use, general algorithmic processes, effectiveness, known risks, and accountability measures (Floridi, 2018).

The reference citations provided above and throughout this report offer insights and resources for AI-in-education policymakers. Additionally, the EdSAFE AI alliance offers its [SAFE Benchmarks Framework](#) as a policy baseline and roadmap for addressing the essential issues in creating a safe AI ecosystem. The framework brings together more than 20 global AI safety, trust, and market guidance systems and can be a useful starting point for building AI policy.

## CONCLUSION

Artificial intelligence is no longer a distant possibility in K-12 education; it is already shaping how teachers work, how students learn, and how school systems operate. The technology offers clear promise: time savings for educators, adaptive supports for students, and powerful tools for administrators. Yet alongside these opportunities are risks related to privacy, equity, workforce change, and trust in both information and institutions. The challenge for policymakers and practitioners is not whether AI will enter schools, but how it will be guided to serve educational goals rather than disrupt them.

Moving forward, the task is to balance innovation with responsibility. That means building policies that safeguard student data, ensure transparency, and mitigate bias while also investing in teacher training and equitable access. AI should supplement, not supplant, the human judgment and connection that remain at the heart of education. With thoughtful governance, cross-sector collaboration, and a commitment to keeping student needs and teacher authority at the center, AI can evolve into a tool that strengthens schools, empowers educators, and helps every child reach their potential.

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The Kenny Guinn Center for Policy Priorities is a nonprofit, nonpartisan policy research center addressing key challenges faced by policymakers and all Nevadans.

Our staff researchers, together with academic partners and independent experts across the state, tackle policy issues that range from taxation to water use, healthcare to education, and everything in between. We identify and analyze the complex problems we face as a state and inform decisionmakers about actionable, data-driven, and effective policy solutions.

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## OUR VISION

Identify and advance sound policies and actionable solutions that support a thriving and prosperous Nevada.



## OUR MISSION

Advancing evidence-based policy solutions for Nevada through research, public engagement, and partnerships.