AI in K-12 Classrooms: A Structured Governance Framework for Cognitive Preservation

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Abstract

The rapid integration of Artificial Intelligence (AI) into K-12 education presents both significant instructional opportunities and emerging governance challenges. While existing research has largely focused on the technical capabilities or theoretical implications of AI in education, limited empirical work captures how educators themselves perceive its use in real classroom settings, particularly at the district and state levels. This study addresses that gap by examining educator perspectives on AI adoption across nine school districts in Arkansas, in collaboration with the Arkansas Department of Higher Education. Using an IRB-approved survey instrument, data were collected from 46 educators across five domains: instructional and administrative benefits, classroom risks and downsides, trust and ethical considerations, governance and oversight structures, and professional support and training needs. Findings indicate strong recognition of AI's efficiency and instructional value, particularly in lesson planning, grading, and content generation. However, these benefits are accompanied by substantial concerns, including the loss of critical thinking, risks to academic integrity, misinformation, and data privacy risks. Notably, results reveal a pronounced gap between individual-level AI usage and institutional-level trust, with educators expressing strong demand for structured oversight, standardized tools, and formal training. Building on these findings, this study proposes a structured governance framework for AI integration in K-12 education that links technological capability, risk emergence, institutional trust, and policy design to the preservation of student cognitive autonomy. The framework emphasizes that the central challenge of AI adoption is not technological readiness, but the absence of coordinated governance mechanisms that align AI use with educational objectives. By providing localized, policy-relevant evidence and a conceptual model for responsible integration, this study contributes to ongoing discussions on AI governance, educational standardization, and the future of teaching and learning in the AI era.

Keywords: Artificial Intelligence in Education; K–12 Education; AI Governance; Cognitive Preservation; Educator Perceptions; Continuous AI Evaluation; Responsible AI; Educational Policy; Critical Thinking; Classroom AI Implementation; Algorithmic Accountability

1. Introduction and Related Work

Artificial Intelligence (AI) is rapidly entering K-12 education through writing assistants, tutoring tools, analytics platforms, and administrative systems. Prior work emphasizes both the promise of AI to support teaching and learning (Chen et al., 2020; Chiu et al., 2023) and the challenges that emerge when powerful generative systems are adopted faster than institutional safeguards (Wang et al., 2024; Zhu et al., 2025). In practice, adoption is mediated by educator readiness and perceived usefulness (Kim, 2025; Filiz et al., 2025), which aligns with classic technology acceptance theory (Davis, 1989).

1.1. Opportunities and Teacher-Facing Use

AI is often most acceptable to educators when framed as professional augmentation that reduces time spent on routine tasks such as drafting materials, planning lessons, and supporting assessment. At the same time, teacher trust and willingness to integrate AI tools is shaped by transparency and the degree to which educators retain agency over final decisions (Nazaretsky et al., 2022).

1.2. Student Risk, Cognitive Erosion, and Integrity

Concerns center on whether student-facing use substitutes for core cognitive work. When AI is used as an answer generator rather than a scaffold, it can reduce practice in reasoning, writing, and problem-solving (Child Trends, 2024) and increase academic integrity risks (Wang et al., 2024). These concerns motivate the need for governance that protects authentic learning processes rather than simply enabling tool access.

1.3. Trust, Privacy, Equity, and Governance Readiness

Responsible AI scholarship highlights recurring risks involving privacy exposure, bias, and accountability gaps (Zhu et al., 2025). In K-12 settings, these issues are amplified by student protections and heightened public accountability. Policy-oriented work also suggests that governance capacity lags behind adoption, requiring clearer standards for procurement, acceptable use, oversight, and professional development (Joshi, 2025; Sangwa, 2025; Tan et al., 2025).

1.4. Study Purpose and Contribution

Despite growing scholarship, limited empirical work captures district-level educator perspectives in U.S. K-12 systems where implementation decisions are often made locally. We address this gap with an IRB-approved survey of 46 educators across nine Arkansas school districts, organized into five domains: instructional benefits, classroom risks, trust and ethics, governance preferences, and professional development needs. Building on these findings, we propose a structured governance framework that links technological capability, risk emergence, institutional trust, and policy design to the preservation of student cognitive autonomy.

2. Methodology

2.1. Research Design

This study employed a cross-sectional quantitative survey design to examine educator perceptions of Artificial Intelligence (AI) adoption in K-12 classrooms. The primary objective was to assess how practicing educators evaluate the opportunities, risks, trust considerations, governance needs, and professional development requirements associated with AI integration in school environments. A survey-based design was selected because it enables efficient collection of standardized perception data across multiple districts while allowing comparisons across thematic domains.

Given the rapid emergence of AI tools in education and the limited availability of localized practitioner evidence, the study was designed as an exploratory needs assessment intended to generate policy-relevant insights for district and state stakeholders.

2.2. Participants and Setting

Participants consisted of 46 K-12 educators drawn from nine Arkansas school districts. The study was conducted in collaboration with the Arkansas Department of Higher Education (ADHE) to better understand educator perspectives regarding AI use in classrooms and institutional governance readiness.

The participating districts included Little Rock, Springdale, Jonesboro, Fort Smith, Fayetteville, Hot Springs, Texarkana, El Dorado, and Stuttgart. These districts were selected to reflect a broad geographic representation of Arkansas, including central, northeast, northwest, southwest, and southeast regions of the state. Collectively, the sample represented urban, suburban, and smaller community school systems, allowing the study to capture perspectives from diverse educational settings.

Because the purpose of the research was to understand practitioner sentiment rather than estimate statewide prevalence, the sample was treated as a purposive professional sample of active educators rather than a randomized population sample.

2.3. Instrument Development

The survey instrument was developed through a structured review of emerging literature, public reports, and practitioner surveys on AI in education. Sources used to inform item construction included educator perception studies, student AI adoption reports, trust in AI research, and governance frameworks (Cambium Learning, 2024; Campus Technology, 2024; Chan, 2023a, 2023b; Child Trends, 2024; Digital Education Council, 2024; Imagine Learning, 2023; KPMG International, 2023; Leib et al., 2023; National Center on Education and the Economy, 2024; Salesforce, 2024; Šimenc & Rugelj, 2024; Startquestion, n.d.).

Across these sources, several recurring themes consistently appeared, including instructional efficiency, grading and lesson-planning support, academic integrity concerns, critical thinking decline, misinformation and bias, privacy and data exposure, equity of access, trust in AI outputs, governance structures, and professional development needs. Based on these themes, a custom educator-focused instrument was constructed for the Arkansas K-12 contexts.

2.4. Survey Structure and Measures

The final instrument consisted of 28 items that included both Likert-scale questions and open-ended prompts. Core attitudinal items were measured using a six-point Likert scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). A six-point scale was intentionally selected to remove a neutral midpoint and encourage directional responses.

Items were organized into five analytic domains: instructional and administrative benefits; classroom risks and downsides; trust and ethical considerations; governance and oversight structures; and professional support and training needs. In addition to scaled responses, open-ended questions invited educators to describe observed student misuse of AI, identify

Table 1: Survey item structure (Likert items Q1–Q25 grouped by instrument section).

Section	Items
Section A: Understanding & Benefits	Q1–Q6
Section B: Possible Downsides & Classroom Concerns	Q7–Q12
Section C: Trust & Ethical Questions	Q13–Q16
Section D: School Policies & Oversight	Q17–Q22
Section E: Support & Training	Q23–Q25

resources that would increase their comfort with AI use, and suggest innovative classroom applications.

Table 1 summarizes how the 25 Likert-scale items (Q1–Q25) were organized into the survey's five instrument sections; the remaining three items (Q26–Q28) were open-ended prompts.

2.5. Data Collection Procedure

The study was conducted under an Institutional Review Board (IRB)-approved protocol. Survey distribution occurred through participating educational channels associated with the collaborating districts. Participation was voluntary, and responses were collected anonymously to encourage candid feedback regarding institutional readiness, classroom concerns, and governance perceptions.

No personally identifying information was required for participation. Respondents completed the instrument electronically through a secure online survey platform.

2.6. Data Analysis

Quantitative responses were analyzed using descriptive statistics, including frequency distributions, mean scores, standard deviations, and response counts for each Likert item. Mean comparisons were used to identify areas of strongest agreement and strongest concern across the five domains.

For interpretation purposes, mean scores above 4.00 were treated as moderate-to-strong agreement, scores above 5.00 as high consensus or strong concern, and scores below 3.00 as disagreement or limited support. Open-ended responses were reviewed using exploratory thematic coding to identify recurring narratives related to misuse, governance concerns, instructional opportunities, and professional development needs.

2.7. Limitations

Several limitations should be acknowledged. First, the sample size was modest and geographically limited to Arkansas districts, which may reduce generalizability. Second, findings reflect self-reported perceptions rather than observed behavioral outcomes. Third, because

Table 2: Table 1: Item-level descriptive statistics for Likert-scale survey items (1 = Strongly Disagree, 6 = Strongly Agree).

Item	n	M	SD
Q1. Comfort with AI chat tools (e.g., ChatGPT)	46	3.82	1.69
Q2. AI helps students finish work more quickly	46	3.33	1.67
Q3. AI helps with grading tasks	46	3.31	1.56
Q4. AI helps with lesson-planning tasks	46	4.03	1.70
Q5. Students should be allowed to use AI in assignments	46	2.41	1.33
Q6. Students should be taught responsible AI use in class	46	4.10	1.77
Q7. Overreliance may reduce critical thinking	46	5.74	0.44
Q8. AI may favor certain viewpoints or groups	46	4.89	1.14
Q9. Risk of exposing student information	46	5.21	1.00
Q10. Students may be left behind without AI understanding	46	4.47	1.52
Q11. Internet/device access disadvantage	46	4.84	1.23
Q12. Financial access disadvantage	46	4.87	1.32
Q13. Trust increases with vetted training data	46	3.97	1.66
Q14. Concern about misleading/incorrect AI information	46	5.11	1.14
Q15. AI enables cheating/data manipulation if unmonitored	46	5.49	0.94
Q16. Need a system to monitor/control training data for student tools	46	5.46	0.73
Q17. Need school-level management frameworks	46	5.38	1.03
Q18. Need district-level management frameworks	46	5.41	1.00
Q19. Classroom-only frameworks are sufficient	46	2.79	1.47
Q20. Board/committee should manage AI tools in education	46	4.56	1.42
Q21. Board/committee should provide educator-focused AI tools	46	4.09	1.42
Q22. Oversight of training data improves quality/fairness	46	4.15	1.33
Q23. More use if schools provide access and technical support	46	3.67	1.51
Q24. Students would learn more if they could use AI tools	46	2.39	1.41
Q25. Would welcome professional development on AI tools	46	4.36	1.67

AI technologies are evolving rapidly, educators' attitudes may shift over time as familiarity, access, and policy guidance change.

Despite these limitations, the study offers timely practitioner-centered evidence from active K-12 settings and provides a grounded empirical basis for subsequent governance recommendations.

3. Results

A total of 46 educators across nine Arkansas school districts completed the survey. Responses reflected a geographically diverse sample representing central, northeast, northwest, southwest, and southeast regions of the state. Table 2 presents item-level response counts and descriptive statistics for the 25 Likert-scale items (Q1–Q25).

3.1. Quantitative Trends

Across domains, responses suggest conditional acceptance: educators are more supportive of teacher-facing uses than unrestricted student-facing use. The strongest consensus concerns potential cognitive erosion from overreliance (Q7) and heightened risk of unmonitored dis-

honesty (Q15). Respondents also report high privacy concern (Q9) and substantial equity concerns related to device, internet, and affordability constraints (Q11–Q12).

Governance preferences show the most consistent support. Respondents endorse district- and school-level frameworks (Q17–Q18) and a system to monitor training data used by student-facing tools (Q16), while rejecting classroom-only governance as sufficient (Q19). Together, these patterns position governance readiness as the binding constraint on responsible adoption.

3.2. Qualitative Themes

Open-ended responses reinforce the quantitative trends. Educators described common misuse as copy-paste completion of assignments and reliance on AI to bypass effort, and they emphasized the need for clearer guidance, vetted tools, and training. At the same time, respondents identified constructive use cases when AI is teacher-mediated, including lesson planning, differentiated materials, tutoring support, translation, and communication tasks.

4. Proposed Governance Framework

4.1. Overview

The results point to a governance gap: educators recognize selected instructional benefits but report high concern about cognitive erosion, integrity, misinformation, privacy, and inequity, alongside strong support for district- and school-level oversight (Table 2). We therefore propose a structured governance framework that treats responsible AI adoption as shared public infrastructure rather than fragmented classroom-by-classroom experimentation.

4.2. Education Data Commons and Standards

At the center of the framework is an Arkansas Education Data Commons: a secure public-interest repository of vetted instructional resources, evaluation criteria, policy templates, and approved tools. Governance is anchored in transparent standards for procurement, privacy, accountability, interoperability, and periodic review, coordinated through state education agencies and public oversight.

4.3. Continuous Audits and Trust Assurance

Approved tools would undergo routine evaluation for accuracy, bias exposure, privacy compliance, and curriculum alignment. Audits create a mechanism to monitor drift, retire tools that fail standards, and maintain educator trust through evidence-based assurance rather than assumed reliability.

4.4. Cognitive Preservation as a Decision Standard

The framework prioritizes cognitive preservation: AI should strengthen student reasoning and authentic learning rather than substitute for it. Teacher-mediated scaffolds (e.g., brainstorming support, feedback prompts, translation assistance) can be acceptable when they preserve active cognition, while uses that automate core reasoning or produce ghostwritten work warrant stricter limits.

4.5. Multi-Level Governance With Local Flexibility

Implementation remains multi-level. Teachers retain pedagogical authority; schools coordinate training and local practices; districts manage deployment and support; and the statewide commons provides shared standards, audited tools, and governance capacity. This layering preserves local flexibility while avoiding fragmented responsibility.

5. Discussion

The results suggest pragmatic rather than polarized educator sentiment: respondents recognize value in teacher-facing support, but report high concern when AI substitutes for student cognition or introduces integrity, misinformation, privacy, and equity risks (Table 2). This pattern implies that adoption debates framed as "pro" versus "anti" AI miss the core issue, which is governance readiness.

Educators strongly prefer shared responsibility through school- and district-level structures, coupled with oversight of student-facing tools and training data. In K-12 settings, governance must be evaluated not only by efficiency, but by its developmental consequences for minors. The proposed framework therefore treats cognitive preservation as a decision standard: acceptable uses are those that scaffold reasoning while maintaining student agency.

Future work should extend these descriptive findings through longitudinal tracking of attitudes as policies mature, comparative stakeholder studies (teachers, students, parents, administrators), and evaluation of classroom practices that preserve learning outcomes without encouraging cognitive substitution.

6. Conclusion

This study examined educator perceptions of AI adoption across nine Arkansas school districts in collaboration with the Arkansas Department of Higher Education. The findings reveal that educators recognize meaningful value in AI for lesson planning, productivity, and selected support functions, while simultaneously expressing strong concern regarding critical thinking decline, academic dishonesty, misinformation, privacy risks, and inequitable access. Respondents also demonstrated clear support for structured governance systems and professional development rather than isolated classroom-level management.

The central conclusion of this study is that the challenge of AI in K-12 education is not technological readiness alone, but governance readiness. Access to powerful tools does not guarantee positive educational outcomes. Without clear standards, trusted systems, equitable access, and instructional safeguards, AI adoption may generate convenience while undermining core educational objectives.

Accordingly, this paper proposed a statewide governance model centered on shared oversight, data accountability, and cognitive preservation. Under this framework, success is measured not simply by how often AI is used, but by whether schools continue to cultivate reasoning, judgment, creativity, and authentic learning.

The future of AI in education will depend less on whether intelligent systems enter classrooms and more on whether institutions remain capable of protecting the human development classrooms were created to serve.

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