GOVERNING ARTIFICIAL INTELLIGENCE IN EDUCATION A COMPARATIVE POLICY BRIEF: UNITED STATES AND EUROPEAN UNION

GOVERNANÇA DA INTELIGÊNCIA ARTIFICIAL NA EDUCAÇÃO UM RESUMO COMPARATIVO DE POLÍTICAS: ESTADOS UNIDOS E UNIÃO EUROPÉIA

Imen Ameur[1]

Dr. Jorgete Vitorino Clarindo dos Santos, LL.M.[2]

Executive Summary: Artificial intelligence (AI) is rapidly reshaping education systems, influencing how students learn, how teachers teach, and how institutions make decisions. Across the United States and the European Union, AI is increasingly embedded in tutoring systems, learning analytics, and administrative functions. However, governance frameworks remain uneven in scope, maturity, and implementation. This brief argues that while the European Union provides a more structured regulatory framework than the United States, the effectiveness of AI governance in education depends less on regulatory design alone and more on implementation capacity, institutional readiness, and operational alignment across schools and systems. The United States reflects a decentralized and uneven policy landscape, where states and districts shape AI adoption and governance in distinct ways. In contrast, the European Union has advanced a more structured regulatory approach through the EU AI Act, establishing clearer standards for accountability and risk management across member states. The brief contends that AI must be governed not only as a tool but as a form of decision-making infrastructure. Effective policy must move beyond principles toward operational implementation, ensuring that AI strengthens educational systems while preserving equity, accountability, and institutional control.

Sumário Executivo: A inteligência artificial (IA) está transformando rapidamente os sistemas educacionais, influenciando a forma como os alunos aprendem, como os professores ensinam e como as instituições tomam decisões. Nos Estados Unidos e na União Europeia, a IA está cada vez mais integrada em sistemas de tutoria, análise de aprendizagem e funções administrativas. No entanto, os marcos de governança permanecem desiguais em escopo, maturidade e implementação. Este documento argumenta que, embora a União Europeia ofereça um marco regulatório mais estruturado do que os Estados Unidos, a eficácia da governança da IA na educação depende menos do desenho regulatório isoladamente e mais da capacidade de implementação, da prontidão institucional e do alinhamento operacional entre escolas e sistemas. Os Estados Unidos refletem um cenário político descentralizado e

[1] Imen Ameur is A Technology Policy and Governance Expert and Professor of Practice. You can contact her at imen@thedigitaleconomist.com

[2] Dr. Jorgete Vitorino is attorney-at-law, board advisor, business strategist, and expert in risk management and corporate governance, including compliance. She may be contacted at jorgete.vitorino@advisorychair.de.

This article was originally published on April 22, 2026, in *The Digital Economist*. The views and opinions expressed in this work are solely those of the authors and do not necessarily reflect the views of any institutions or organizations with which they are or have been affiliated.

heterogêneo, no qual estados e distritos moldam a adoção e a governança da IA de maneiras distintas. Em contraste, a União Europeia avançou em uma abordagem regulatória mais estruturada por meio da Lei de IA da UE, estabelecendo padrões mais claros de responsabilidade e gestão de riscos entre os estados-membros. O documento defende que a IA deve ser governada não apenas como uma ferramenta, mas como uma forma de infraestrutura de tomada de decisões. Uma política eficaz deve ir além dos princípios em direção à implementação operacional, garantindo que a IA fortaleça os sistemas educacionais enquanto preserva a equidade, a responsabilidade e o controle institucional.

Keywords: AIGovernance. AIinEducation. DigitalGovernance. ResponsibleAI. EducationPolicy. TechGovernance. FutureOfEducation. BoardGovernance. RiskManagement. PublicPolicy. EthicalAI. DigitalTransformation.

Palavras-Chave: IA-Governança. IA-Educação. Governança Digital. IA-Responsável. Política Educacionais. Governança de Tecnologia. Futuro da Educação. Governança Corporativa. Gestão de Riscos. Políticas Públicas. IA-Ética. Transformação Digital.

1. POLICY CONTEXT AND PROBLEM DEFINITION

AI is no longer peripheral to education systems. It is becoming embedded in their operational core. Adaptive learning platforms, automated grading tools, and generative AI systems increasingly shape how students access content, how teachers assess performance, and how institutions allocate attention and resources.

This shift represents a structural transformation. AI systems do not simply support decisions. They shape classification, prediction, and prioritization within educational systems. As a result, governance becomes central to ensuring that these technologies produce equitable and beneficial outcomes, particularly by addressing risks such as bias amplification and limited transparency in decision-making (European Parliament & Council of the European Union, 2024).

Policy development, however, has not kept pace with adoption. Schools and institutions are integrating AI tools faster than governments are establishing standards for transparency, accountability, and evaluation. This dynamic creates a widening gap between technological capability and governance capacity, with significant implications for equity, trust, and educational outcomes.

2. UNITED STATES: DECENTRALIZED GOVERNANCE AND UNEVEN IMPLEMENTATION

In the United States, AI adoption in education has expanded rapidly, but governance remains fragmented across federal, state, and local levels. Federal institutions, including the US

Department of Education, have issued guidance emphasizing responsible and human-centered AI use. However, implementation is largely left to states and school districts (US Department of Education 2023).

This decentralized structure produces significant variation in how AI is integrated into education systems. Massachusetts and California illustrate how different governance approaches shape both adoption and outcomes.

In Massachusetts, AI adoption is emerging within a broader policy environment that emphasizes digital equity, educational quality, and institutional accountability. The integration of AI tools is often approached cautiously, with attention to data privacy, student protection, and disparities in digital access across communities. This results in a more deliberate process, where AI is introduced alongside considerations of teacher training, infrastructure readiness, and governance safeguards.

In contrast, California reflects a more innovation-driven model. The state has actively encouraged the use of generative AI tools in classrooms, supported by guidance addressing academic integrity and data use. This approach accelerates adoption and experimentation, particularly in districts with strong technological capacity. However, it also introduces variation in implementation quality, with better-resourced districts more effectively positioned to leverage AI.

The comparison highlights a broader dynamic within the US system. Decentralization enables flexibility and rapid innovation, but it also produces uneven outcomes across states and districts. While AI can enhance learning, particularly when integrated into teacher-led instruction (Zawacki-Richter et al. 2019), its effectiveness remains contingent on local capacity, training, and governance structures. Without more coordinated policy frameworks, these differences risk reinforcing existing inequalities across the education system, particularly through disparities in access to digital infrastructure, teacher preparedness, and institutional capacity to adopt and manage AI tools (European Parliament 2026).

3. EUROPEAN UNION: STRUCTURED AND RISK-BASED GOVERNANCE

The European Union has taken a more structured approach to AI governance through the EU AI Act, which establishes a comprehensive, risk-based regulatory framework (European Parliament & Council of the European Union 2024).

AI systems used in education, particularly those related to student assessment, monitoring, or decision-making, are generally classified as high-risk (European Parliament & Council of the European Union 2024). This classification requires compliance with strict standards, including transparency in system design, documentation of decision-making processes, human oversight, and ongoing risk management.

This model reflects a shift toward proactive governance. Rather than regulating AI after widespread adoption, the EU defines conditions for its use in advance, aligning technological deployment with broader principles related to fundamental rights and accountability.

Recent developments also indicate that the EU framework is still evolving in practice. In March 2026, committees of the European Parliament supported a proposal to postpone the application of certain rules governing high-risk AI systems, citing delays in the development of key technical standards. Under the proposed timeline, some high-risk provisions, including those affecting sectors such as education, may not apply until late 2027. This reflects an important limitation: even within a structured regulatory system, implementation timelines may shift, creating uncertainty for institutions expected to comply with evolving requirements (US Department of Education 2023).

Across member states, including Germany, this framework is translated into national strategies that emphasize coordinated implementation, investment in digital infrastructure, and alignment between regulatory requirements and institutional practice. This produces a more consistent governance environment compared to the fragmented US system.

However, as the German case illustrates, implementation remains uneven due to decentralized governance structures and differences in institutional capacity, resulting in variation in how regulatory requirements are applied in practice (Germany Federal Ministry of Education and Research, 2023).

At the same time, the EU approach introduces its own challenges. Compliance requirements can be complex, particularly for schools and institutions with limited technical capacity. The effectiveness of the framework will depend on how these requirements are operationalized and whether they translate into measurable improvements in learning outcomes and equity.

4. CROSS-CASE INSIGHTS

Across both contexts, a central finding emerges: the impact of AI in education is shaped less by the technology itself than by governance structures, implementation capacity, and institutional readiness. Evidence from the European context, particularly Germany, reinforces that even strong regulatory frameworks can produce uneven outcomes when implementation is fragmented.

The United States demonstrates how decentralized systems enable rapid innovation but produce uneven and, at times, inequitable outcomes. The European Union illustrates how regulatory clarity can establish strong safeguards and more consistent standards, though it may also introduce implementation complexity.

In both contexts, a common limitation persists. Policies tend to emphasize principles such as ethics, transparency, and fairness, but often lack mechanisms to ensure that these principles are realized in practice. As a result, there is limited evidence that existing frameworks consistently shape how AI affects learning outcomes, teacher practices, or access to education, particularly in the absence of clear enforcement, monitoring, and feedback mechanisms.

This gap between policy design and implementation represents one of the most significant challenges in governing AI in education.

5. KEY CHALLENGES AND RISKS

The risks associated with AI in education are systemic and interconnected. One of the most significant challenges is the gap between rapid technological adoption and slower policy development, which allows AI systems to influence decision-making processes without clearly defined accountability structures.

Data governance presents a related concern. AI systems rely on continuous data collection, including sensitive student information. However, policies governing data ownership, access, and long-term use remain underdeveloped. This creates a risk that control over educational data shifts from public institutions to private technology providers.

Algorithmic bias further complicates this landscape. Systems trained on historical or incomplete data may reproduce or amplify existing inequalities, particularly across race, language, and socioeconomic status. These effects are often embedded within complex systems, making them difficult to identify without systematic oversight.

Differences in institutional capacity also play a critical role. Schools and districts with greater resources are better positioned to adopt and manage AI systems while under-resourced institutions face barriers related to infrastructure, training, and governance. This dynamic risks widening existing disparities.

At the same time, increasing reliance on AI-generated recommendations raises concerns about the erosion of professional judgment. As AI systems become more integrated into educational processes, there is a risk that teachers and administrators defer to automated outputs, shifting decision-making authority in ways that are not always visible or intentional.

6. POLICY RECOMMENDATIONS

Effective policy responses must recognize AI as part of the core infrastructure of education systems rather than as an external or supplementary tool.

First, governance frameworks should clearly define the role of AI in decision-making processes, ensuring that human oversight remains central, particularly in high-stakes contexts. This requires establishing explicit standards for accountability and responsibility within institutions.

Second, sustained investment in human and institutional capacity is essential. This includes structured teacher training programs, defined AI literacy standards, and dedicated implementation support at both school and district levels. Teachers and administrators must be equipped with the knowledge and skills to understand, evaluate, and effectively integrate AI systems into educational practice. Without this capacity, governance risks remaining formal rather than operational.

Third, data governance frameworks must be strengthened to ensure transparency, accountability, and public control over educational data. Policies should clearly define data ownership, restrict third-party access, and mandate auditing mechanisms for AI systems deployed in education.

Fourth, digital equity must be treated as a foundational principle rather than a secondary consideration. Policymakers must address disparities in access to infrastructure, devices, and digital literacy to ensure that AI does not exacerbate existing inequalities across students, schools, and districts.

Fifth, robust implementation and evaluation frameworks must be established to assess how AI affects learning outcomes, equity, and decision-making over time. This includes

continuous monitoring, clearly assigned institutional ability to adapt policies based on evidence from practice.

Taken together, these recommendations underscore that effective AI governance must extend beyond principles and regulatory intent to include operational clarity, institutional capacity, and continuous evaluation.

7. CONCLUSION

The comparison between the United States and the European Union highlights a critical distinction in how AI is governed in education. The European Union, through the EU AI Act, offers a structured and comprehensive regulatory framework, with clear standards for risk classification, transparency, and accountability. In contrast, the United States reflects a more decentralized and fragmented approach, where guidance exists but implementation varies significantly across states and districts.

At first glance, this contrast suggests that stronger regulation leads to better outcomes. However, the analysis in this brief points to a more nuanced reality: the effectiveness of AI governance depends not only on regulatory design but on how policies are implemented, adapted, and sustained within real educational systems.

Recent developments in the European Union, including proposed delays in the application of certain high-risk AI provisions, further highlight that even well-designed regulatory frameworks remain dynamic and subject to implementation constraints over time.

The experience of EU member states such as Germany demonstrates that even within a unified legal framework, outcomes can vary significantly when governance is decentralized and institutional capacity is uneven. Differences in infrastructure, teacher training, oversight mechanisms, and coordination structures shape how policies translate into practice. As a result, strong regulatory frameworks may still produce uneven protection, inconsistent oversight, and variable educational outcomes across regions.

This leads to a central policy insight: AI governance in education is not only a legal challenge but an implementation challenge. Its success depends on readiness across multiple dimensions: governance design, institutional capacity, operational clarity, and the capabilities of educators and administrators who interact with these systems daily.

Effective governance therefore requires more than well-designed regulation. It requires the ability to operationalize policies within schools and classrooms, meaningful stakeholder

engagement, continuous evaluation of how AI systems affect learning and equity, and the development of human capacity to supervise, question, and adapt AI outputs. Without these elements, even the most advanced regulatory frameworks risk remaining formal rather than functional.

Ultimately, the question facing policymakers is not whether AI should be used in education. AI is already embedded in educational systems. The more important question is how its impact is assessed, understood, and governed over time. This includes evaluating not only its benefits but also its opportunity costs: what is gained, what is lost, and how decision-making authority shifts within educational institutions.

The future of AI in education will depend less on adoption alone and more on whether governance systems can ensure that these technologies support learning, strengthen institutions, and advance equity. Moving forward requires a shift from principle-based frameworks to implementation-focused governance that is adaptive, accountable, and grounded in the realities of educational practice.

8. REFERENCES

COLLEGE BOARD. (2024). “New Research: Majority of High School Students Use Generative AI for Schoolwork.” https://newsroom.collegeboard.org/new-research-majority-high-school-students-use-generative-ai-schoolwork.

DEMANDSAGE. 2024. “AI in Education Statistics 2024: Adoption, Use, and Impact.” https://www.demandsage.com/ai-in-education-statistics/.

EDSAFE AI ALLIANCE. n.d. “Safety and Standards for AI in Education.” https://www.edsafeai.org.

EDWEEK RESEARCH CENTER. 2025. “Rising Use of AI in Schools Comes with Major Challenges for Students and Teachers.” Education Week. https://www.edweek.org/technology/rising-use-of-ai-in-schools-comes-with-big-downsides-for-students/2025/10.

ELECTROIQ. 2024. “AI in Education Statistics and Trends.” https://electroiq.com/stats/ai-in-education-statistics/.

EU AI ACT. 2024. “Regulation (EU) 2024 Laying Down Harmonised Rules on Artificial Intelligence.” European Union.

GERMANY FEDERAL MINISTRY OF EDUCATION AND RESEARCH. 2023. “AI in Education and Research Initiatives in Germany.”

GOVSPEND. 2024. “K–12 Schools Race to Adopt AI in an Untamed Market.” https://govspend.com/blog/k-12-schools-race-to-adopt-ai-in-an-untamed-market/.

HOLMES, W., BIALIK, M., AND FADEL, C. 2019. “Artificial Intelligence in Education: Promises and Implications for Teaching and Learning.” Center for Curriculum Redesign.

INSTITUTE OF EDUCATION SCIENCES. n.d. “Research on Education Technology and AI.” https://ies.ed.gov.

INTERNATIONAL TRADE ADMINISTRATION. 2024. “Germany: AI in Education Market Intelligence.” https://www.trade.gov/market-intelligence/germany-ai-education.

LUCKIN, R., HOLMES, W., GRIFFITHS, M., AND FORCIER, L. 2016. *Intelligence Unleashed: An Argument for AI in Education*. Pearson Education.

MIT Media Lab. n.d. “AI and Learning Environments Research.” https://www.media.mit.edu.
NATIONAL SCIENCE FOUNDATION. n.d. “Artificial Intelligence Research in Education.” https://www.nsf.gov.

PEW RESEARCH CENTER. 2024. “A Quarter of US Teachers Say AI Tools Do More Harm Than Good in K–12 Education.” https://www.pewresearch.org/short-reads/2024/05/15/a-quarter-of-u-s-teachers-say-ai-tools-do-more-harm-than-good-in-k-12-education/.

RAND CORPORATION. 2024. “Using Artificial Intelligence Tools in K–12 Classrooms: Teacher Perspectives and Emerging Practices.” RAND Corporation. https://www.rand.org/pubs/research_reports/RRA956-21.html.

STANFORD INSTITUTE FOR HUMAN-CENTERED ARTIFICIAL INTELLIGENCE. n.d. “Human-Centered AI and Education Research.” https://hai.stanford.edu

UNESCO. 2021. *Artificial Intelligence and Education: Guidance for Policymakers*. UNESCO Publishing. https://www.unesco.org/en/artificial-intelligence/education

US DEPARTMENT OF EDUCATION OFFICE OF EDUCATIONAL TECHNOLOGY. 2023. “Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations.” US Department of Education. https://www.ed.gov/sites/ed/files/documents/ai-report/ai-report.pdf

ZAWACKI-RICHTER, O., Marín, V. I., Bond, M., and Gouverneur, F. 2019. “Systematic Review of Research on Artificial Intelligence Applications in Higher Education—Where Are the Educators?” *International Journal of Educational Technology in Higher Education, 16* (1): 39. https://doi.org/10.1186/s41239-019-0171-0.