



The AI Revolution in Education: Bridging European Ideals and National Realities

An analysis of the EU's ethical and legal framework and the challenges of its implementation on the ground.

AI in Education Presents Both Transformative Promise and Significant Peril



Enhanced Learning & Efficiency

Personalize learning paths for individual students.

Automate assessments to free up teacher time.

Analyze student progress to provide data-driven support.

AI is “framed as tools that can enhance the efficiency of educational procedures and add support for teachers and learners.” (Holmes, Bialik & Fadel, 2021)



Ethical & Human Rights Risks

Algorithmic Opacity: “Black-box” systems make decisions that are difficult to understand or challenge.

Discrimination: Algorithms can perpetuate and amplify existing biases.

Datafication: Students risk being seen “**simply as data points in an opaque and impersonal system.**” (UNESCO, 2021)

The EU is Establishing a Global Benchmark for Ethical AI in Education



- The European Union has identified the risks and is proactively building an **ethical and legal framework** for trustworthy AI.
- While education remains a national competence, the EU promotes common rules and principles of governance to create a unified approach.
- Given the high stakes in education, the EU's framework demands **stronger principles of governance**, transparency, and protection of fundamental rights compared to other sectors.

Central Question of the Study

How does the EU's ambitious framework translate into practice within the diverse national contexts of its Member States?

A Normative-Documental Analysis Paired with a Real-World Case Study



Methodology

An analysis of core EU documents: **The AI Act, Digital Education Action Plan, White Paper on AI, and Ethics Guidelines for Trustworthy AI.**

A case study of **Romania** is used as a lens to highlight the gaps between European normative intentions and the administrative and institutional capacity of a member state.

Research Questions



How does the European Union build an ethical and legal framework for the integration of artificial intelligence in education, through policies, regulations and institutional mechanisms?



To what extent can European policies regarding the use of AI in education be effectively implemented in the national context, taking the case of Romania as an example?

The Foundation of EU Governance: Five Core Principles for Trustworthy AI

The EU framework is built upon key principles designed to balance technological development with the protection of democratic values. These include:



Transparency

The ability to understand how an AI system works and makes decisions.



Fairness

Ensuring non-discrimination and equal treatment for all students.



Privacy

Protecting the massive amounts of personal data collected in educational settings.



Human Control

Guaranteeing meaningful human supervision of automated decisions.

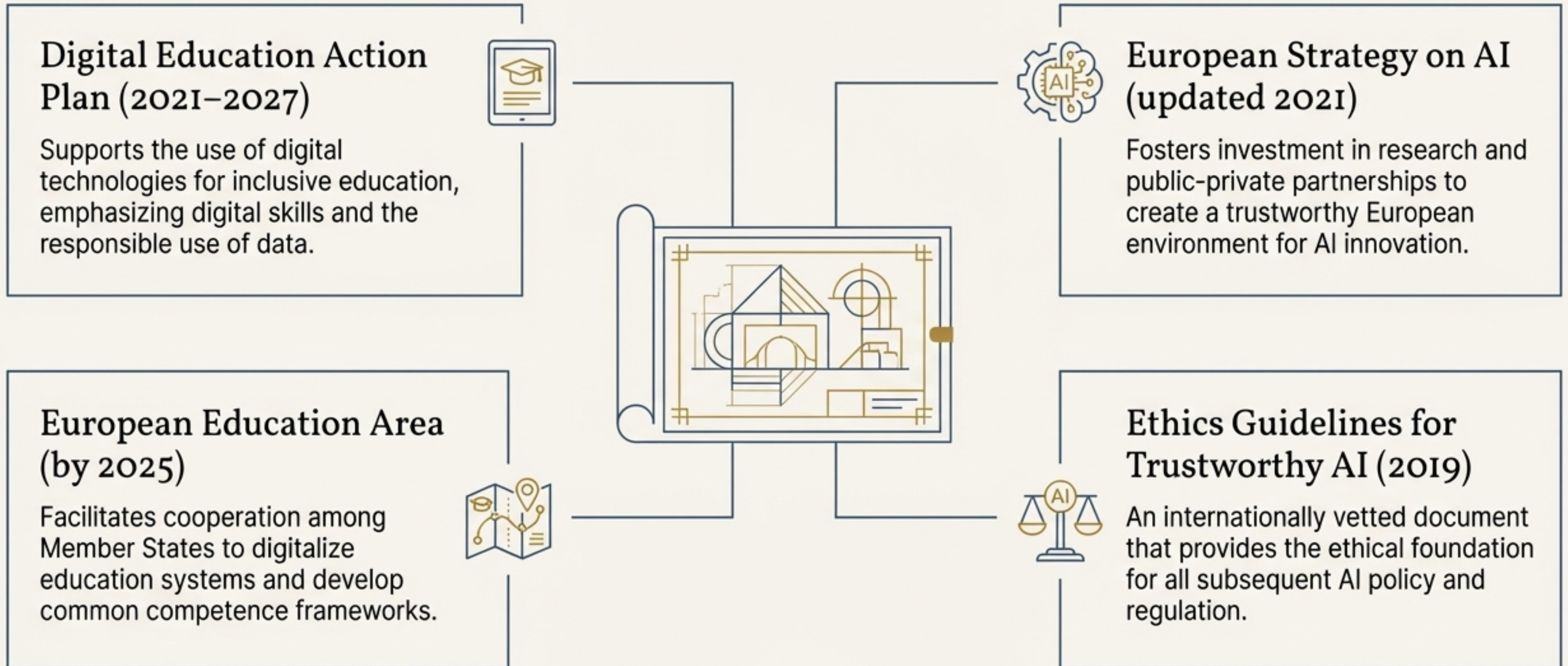


Responsibility

Establishing clear accountability for the developers and users of AI technologies.

In education, these principles must be adapted to the specific context of pedagogical relationships, social dynamics, and the vulnerability of young learners.

The EU Employs a Multi-faceted Toolkit of Strategies and Policies



The AI Act Classifies Education Systems as a 'High-Risk' Domain



Implications for High-Risk Systems in Education:

- **Strict Obligations:** Providers and users must adhere to rigorous requirements.
- **Increased Transparency:** Technical documentation must be thorough and accessible.
- **Mandatory Human Oversight:** Systems cannot operate without human supervision and control.
- **Impact Assessments:** A mandatory assessment of the impact on fundamental rights is required before deployment.
- **Responsibility:** Schools, universities, and technology providers face increased responsibility for selecting and implementing compliant AI tools.

A Coordinated Approach: The Respective Roles of EU Institutions



European Commission (The Architect)

- Initiates legislative proposals (e.g., AI Act).
- Develops horizontal strategies and ethical guidelines (e.g., White Paper on AI).
- Coordinates and funds digital programs (e.g., Digital Europe).



European Parliament (The Guardian)

- Focuses on the protection of fundamental rights and democratic oversight.
- Audits systems to prevent abuse, discrimination, and digital exclusion.
- Ensures protection of minors and privacy in education-related systems.



EU Council (The Negotiator)

- Negotiates final laws on behalf of Member States.
- Upholds the principle of subsidiarity, ensuring flexibility for national contexts.
- Calls for investment in teachers' digital skills and infrastructure.

A Coherent Framework Faces Significant Implementation Hurdles

Translating these principles into the concrete reality of 27 diverse education systems reveals numerous structural and practical difficulties.



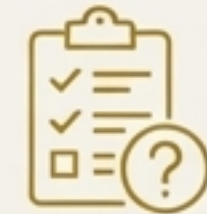
Diversity of National Systems

Each Member State has its own curriculum, teaching methods, and technology policies, complicating uniform application.



Tension Between Innovation & Rights

Pressure to adopt new technologies can clash with the need to protect vulnerable students from surveillance, profiling, and discrimination.



Lack of Technical Standards

There are currently no uniform, binding standards for auditing and certifying AI systems in education, creating uncertainty for institutions.



The Digital Literacy Gap

Many teachers lack the critical and ethical training needed to use AI tools effectively, leading to uncritical adoption.



Absence of National Monitoring

Many Member States lack dedicated mechanisms to monitor the implementation and impact of AI in their schools.

Case Study: Romania Reveals a Mismatch Between European Intent and National Capacity

Key Findings on the Regulatory Environment

A Regulatory Void

While a National Strategy on AI (2024-2027) exists, it is general and lacks a specific, operational framework for the education sector.

Missing Standards

The strategy does not include technical standards, audit mechanisms, or specific ethical guidelines for how AI should be used in schools and universities.

Fragmented, Unregulated Adoption

AI projects (e.g., adaptive platforms like Brio, chatbots) are often led by private actors or individual institutions, evolving in a legal and ethical vacuum.

Lack of Coherent Governance

There is no integrated national strategy for the digitalization of education, leading to a sporadic and uneven use of AI that is potentially risky.

An Underprepared System: The Human and Infrastructural Deficit in Romania

19%

of teachers in Romania report being “very confident” in the advanced use of digital technology. (European Schoolnet, 2021)



Low Digital Competence

Romania consistently ranks below the EU average in the use of technology in education, digital literacy, and teachers’ IT skills.

(European Commission, 2023)



Insufficient Training

There is virtually no ongoing, systemic training in AI, digital ethics, or algorithmic literacy for teachers.

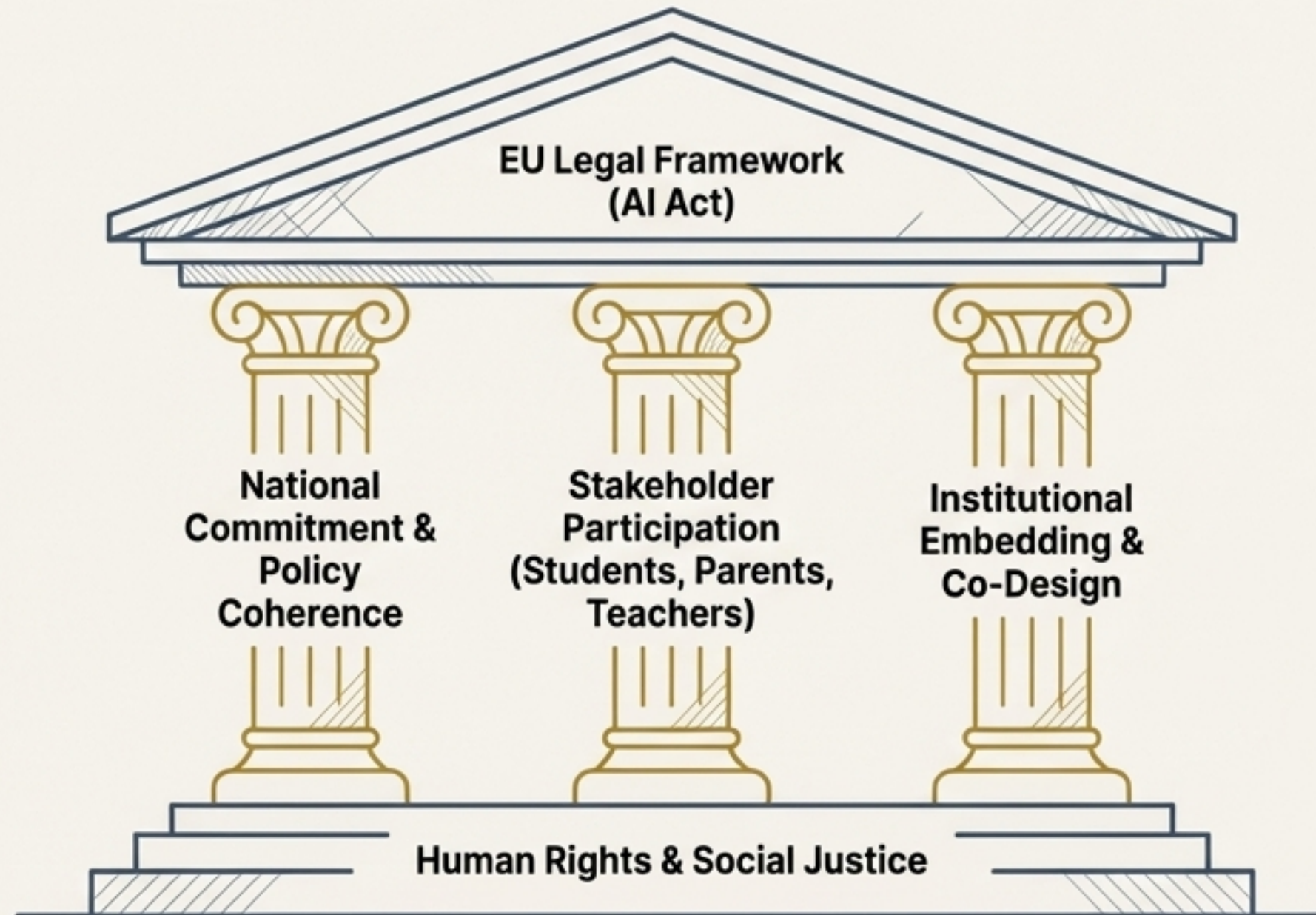


Mismatched Funding

While the National Recovery and Resilience Plan (NRRP) allocates funds for digital equipment, teacher training and the development of a digital ethics culture remain “peripheral elements, poorly funded and rarely tracked.”

A Strong EU Framework is Necessary, But Not Sufficient

The Romanian case demonstrates that for AI to be a fair and trustworthy tool, a strong European legal framework must be met with policy coherence, political resolve, and real commitment from each Member State.



Beyond Legal Compliance



The Need for Stakeholder Participation

AI governance in education cannot be a top-down, technical operation. It requires active participation from students, parents, and teachers to build trust and prevent misuse.



Co-designing the Future

Mechanisms for dialogue, consultation, and co-design are crucial, particularly around data privacy, algorithmic decision-making, and fairness.



A Holistic Vision

Successful governance must be grounded in a comprehensive vision based on human rights, social justice, and actual institutional embedding.

Charting a Path Forward: Key Recommendations for Responsible AI in Education



Enhance the EU Framework

- Create a specific European sectoral framework for education, complementary to the general AI Act, with tailored obligations for schools.
- Establish a voluntary European certification mechanism, a "Trustworthy AI" label, for educational tools that meet the highest ethical standards.



Empower Educators

- Implement continuous, systemic teacher training focused on algorithmic literacy, digital ethics, and the critical use of AI-based technologies.
- Use EU funds like Erasmus+ to build an interdisciplinary training network.



Foster Research & Dialogue

- Incentivize interdisciplinary research through programs like Horizon Europe to study the impact of AI and develop locally-tailored solutions.
- Ensure that educators, not just technologists, are at the center of the discussion about AI's role in education.



Aligning European Norms with National Capabilities is the Critical Task Ahead

Summary of Contributions

- **Theoretical Value:** This analysis provides a cohesive frame connecting the normative, ethical, and institutional dimensions of European AI governance in education.
- **Practical Value:** The Romania case study provides concrete evidence of how high-level European intentions can be undermined by a lack of coordinated national digital governance.
- **Core Conclusion:** A strong EU framework is not sufficient. Real alignment with democratic values requires political resolve and deep institutional capacity within each Member State.

A Call for Future Research

Further comparative analysis is needed to understand the reception and application of AI in education in other Central and Eastern European member states to identify common regional trends.



Reference

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