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Regulating Artificial Intelligence in Higher Education: Comparative Institutional Analysis of Legal Governance, Educational Accountability, and Human Capital Development in the European Union and the United States

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ABSTRACT

This article examines how legal and governance frameworks shape the regulation of artificial intelligence in higher education and how these regulatory choices affect educational accountability, institutional capacity, and economic development. Using a comparative institutional analysis of the European Union and the United States, the study argues that AI governance in higher education is not merely a technical or pedagogical issue but a legally structured developmental problem. The European Union represents a risk-based, rights-oriented, and supranational regulatory model, anchored in the AI Act, the General Data Protection Regulation, and the Digital Education Action Plan. The United States represents a decentralized, guidance-based, and innovation-oriented model shaped by federal civil rights law, sectoral privacy regulation, agency guidance, institutional autonomy, and market-driven educational technology adoption. The comparison reveals that regulatory coherence enhances accountability and public trust but may increase compliance burdens, whereas decentralized flexibility promotes experimentation but risks uneven protection, fragmented institutional standards, and unequal student outcomes. The findings indicate that AI regulation affects higher education through three causal mechanisms: legal classification of risk, institutional coordination capacity, and accountability infrastructures for data, assessment, and student rights. The article contributes to law, education, and development scholarship by proposing a governance-development model linking regulatory capacity, educational quality, institutional legitimacy, and human capital formation.

Keywords: artificial intelligence regulation; higher education governance; comparative education law; regulatory capacity; educational accountability; digital learning; human capital development; European Union; United States

Introduction

Artificial intelligence has moved rapidly from a peripheral educational technology into a central governance problem for higher education systems. Universities increasingly use algorithmic tools for admissions, plagiarism detection, learning analytics, student advising, assessment design, administrative triage, library services, academic integrity monitoring, research productivity evaluation, and workforce-oriented curriculum reform. At the same time, generative AI has transformed the epistemic environment of universities by altering how students write, search, code, translate, summarize, and demonstrate learning. These changes raise legal questions concerning privacy, discrimination, due process, intellectual property, accessibility, student surveillance, academic integrity, public procurement, institutional liability, and the legal status of algorithmically mediated decision-making. They also raise governance questions concerning who should regulate educational AI, how risks should be classified, how institutional autonomy should be balanced with public accountability, and how higher education can support economic development without weakening educational legitimacy.

This study argues that AI governance in higher education should be understood as a legal-institutional problem situated within broader transformations of digital capitalism, public-sector reform, and human capital development. The central issue is not whether universities should use AI, but under what legal conditions, governance structures, accountability procedures, and developmental objectives such use becomes educationally legitimate and socially productive. This problem has become particularly significant because the economic value of higher education is increasingly linked to digital skills, adaptive learning capacity, and innovation ecosystems. The OECD's *Education at a Glance 2024* emphasizes the continuing importance of education systems for economic opportunity, equity, and labor-market participation, while also documenting persistent inequalities across education systems (OECD, 2024). The World Bank similarly stresses that digital transformation can widen productivity and poverty gaps when institutional capacity, connectivity, skills, and safeguards are unevenly distributed (World Bank, 2024). These reports indicate that digital education policy is inseparable from development policy.

The legal context has changed most visibly in the European Union. The EU AI Act entered into force on 1 August 2024 and established one of the world's most comprehensive risk-based regulatory frameworks for artificial intelligence, including rules relevant to educational and vocational training systems. The European Commission states that the AI Act seeks to foster responsible AI development and deployment, while the EU's digital education strategy frames digital learning as part of a broader vision of inclusive, high-quality, and accessible education. Education-related AI systems are especially important because AI used to determine access, assessment, progression, or educational opportunity can affect rights, life chances, and labor-market trajectories. The EU model therefore treats educational AI as a matter of public law,

fundamental rights, market governance, and institutional compliance.

The United States presents a contrasting legal and governance architecture. The U.S. Department of Education's 2023 report, *Artificial Intelligence and the Future of Teaching and Learning*, identifies opportunities for AI to support teaching, learning, research, and educational productivity, while emphasizing the need for human oversight, transparency, safety, and equity. The White House Blueprint for an AI Bill of Rights articulated principles of safe and effective systems, algorithmic discrimination protection, data privacy, notice and explanation, and human alternatives, though it operates primarily as policy guidance rather than a comprehensive binding statute. In higher education, AI governance therefore emerges through a fragmented combination of federal civil rights law, student privacy rules, state regulation, institutional policy, accreditation norms, procurement contracts, professional ethics, and private platform governance. This decentralization reflects the pluralistic structure of American higher education but also produces uneven institutional protections.

The educational stakes are intensified by broader skills and labor-market pressures. Eurostat reported that only about 55–56 percent of EU citizens aged 16–74 had at least basic digital skills in 2023, substantially below the EU Digital Decade target of 80 percent by 2030. In the United States, the National Center for Education Statistics reports that postsecondary attainment among 25–34-year-olds remains above the OECD average, but undergraduate enrollment and access patterns reveal persistent inequalities by race, income, and institution type. These data suggest that AI governance in higher education affects not only institutional management but also the production of human capabilities required for participation in digital economies.

The academic literature provides important but incomplete foundations for understanding this problem. Regulatory governance scholarship emphasizes that effective regulation depends not only on formal rules but also on enforcement capacity, institutional learning, legitimacy, and accountability (Black, 2008; Lodge & Wegrich, 2014). Collaborative governance theory explains how complex policy problems require coordination among state agencies, universities, technology providers, civil society, and professional communities (Ansell & Gash, 2008; Torfing et al., 2021). Institutional theory shows that governance outcomes depend on historically embedded rules, incentives, and organizational routines rather than formal policy adoption alone (Ostrom, 1990; Hall & Soskice, 2001). These literatures are highly relevant to AI in education because algorithmic governance depends on multi-actor coordination across legal, technical, pedagogical, and economic domains.

Education governance scholarship has likewise examined how accountability, autonomy, decentralization, and marketization shape educational quality and inequality. Marginson (2016) argues that higher education operates as both a public and private good, generating individual returns, civic capabilities, and national innovation benefits. Rizvi and Lingard (2010) show that global education policy increasingly reflects transnational governance pressures, benchmarking, and knowledge-economy narratives. Verger et al. (2019) demonstrate that educational accountability reforms frequently produce mixed effects when measurement systems fail to capture institutional context. These studies help explain why AI governance cannot be reduced to compliance: algorithmic systems may alter the meaning of assessment, academic labor, educational inclusion, and public responsibility.

A growing literature on educational technology and AI has identified risks of datafication, surveillance, platform dependency, commercial influence, and automated inequality. Williamson (2020) argues that digital education platforms reconfigure educational governance through data infrastructures and private-sector involvement. Selwyn (2022) warns that technological solutionism often obscures political and institutional choices embedded in educational technologies. Holmes et al. (2022) emphasize that AI in education requires ethical and pedagogical scrutiny because algorithmic systems can amplify bias, reduce transparency, and reshape teacher-student relationships. UNESCO's guidance on generative AI in education similarly stresses the need for human-centered governance, protection of learners, and public responsibility (UNESCO, 2023). OECD analysis further notes that education systems need governance arrangements capable of managing AI risks while enabling responsible innovation.

However, existing scholarship remains limited in four respects. First, many studies examine AI in education as a pedagogical or ethical question without sufficiently analyzing the legal architecture that determines institutional responsibility. Second, legal studies of AI regulation often focus on markets, privacy, employment, or consumer protection rather than higher education as a distinct governance field. Third, comparative education policy studies frequently compare digital strategies without tracing the causal mechanisms through which legal design affects institutional implementation. Fourth, development-oriented studies emphasize digital skills and human capital but rarely integrate educational AI regulation into broader theories of economic development and institutional capacity.

This article addresses these gaps by developing a comparative institutional analysis of AI governance in higher education in the European Union and the United States. The novelty of the article lies in linking four domains that are often treated separately: legal regulation, educational governance, institutional accountability, and development outcomes. It asks how different legal-regulatory models structure university-level AI governance and how these models influence educational quality, institutional trust, and human capital development. The article does not assume that stricter regulation is always better or that flexibility necessarily produces innovation. Instead, it analyzes the institutional conditions under which law enables universities to convert AI adoption into legitimate, equitable, and developmentally productive educational reform.

The analytical framework links regulatory governance to educational and development outcomes through three causal pathways. First, legal classification of AI risk determines whether universities must conduct impact assessments, ensure transparency, document data quality, provide human oversight, and establish rights-protective procedures. Second, institutional coordination determines whether ministries, regulators, accreditation bodies, universities, technology vendors, faculty, and students can translate legal norms into operational governance. Third, accountability infrastructure determines whether AI use improves educational quality and labor-market preparation or produces opacity, discrimination, credential distrust, and institutional fragmentation. The framework can be summarized as follows: **regulatory capacity → institutional coordination → educational accountability → human capital formation → economic and social development**.

The research objective is to explain how contrasting legal and governance models in the European Union and

the United States shape AI adoption in higher education and to identify the institutional mechanisms through which AI regulation affects educational accountability, student rights, and development-oriented human capital outcomes.

Method

This study

This study employs comparative institutional analysis combined with socio-legal and regulatory governance analysis. The research design is structured around a most-different systems comparison between the European Union and the United States, selected because both are advanced knowledge economies with globally influential higher education sectors, high levels of educational technology adoption, and significant digital-skills policy agendas, yet they differ sharply in legal architecture, regulatory centralization, public-law traditions, and institutional coordination. The EU case represents a supranational, risk-based, rights-oriented regulatory model anchored in the AI Act, the General Data Protection Regulation, digital market regulation, and coordinated education policy instruments. The U.S. case represents a decentralized, sectoral, guidance-based model shaped by constitutional federalism, federal civil rights law, student privacy rules, state experimentation, institutional autonomy, accreditation processes, and private-sector innovation. The unit of analysis is not a single university but the regulatory-governance system through which AI use in higher education is authorized, constrained, monitored, and translated into institutional practice. The principal comparative variables are legal scope, risk classification, enforcement structure, institutional coordination, accountability mechanisms, educational quality safeguards, equity protections, innovation incentives, and developmental orientation.

The empirical base consists of legislation, official policy documents, regulatory guidance, OECD, UNESCO, World Bank, Eurostat, National Center for Education Statistics, and European Commission sources, supplemented by peer-reviewed literature in law, governance, education policy, and development studies. The analysis uses structured focused comparison and process tracing to identify causal mechanisms linking legal design to institutional implementation. Triangulation is achieved by comparing formal legal texts with policy strategies, statistical indicators, institutional governance patterns, and secondary academic literature. No interview data are used; therefore, the study avoids fabricated qualitative testimony and relies on verifiable public records. Ethical considerations concern the responsible interpretation of public documents, avoidance of institutional misrepresentation, and careful distinction between binding law, non-binding guidance, and policy aspiration. The study is limited by the rapid evolution of AI regulation and by the fact that many AI governance regimes remain in early implementation stages; nevertheless, the comparison provides analytically useful evidence for understanding how legal capacity and institutional coordination shape educational AI governance.

Findings and Discussion

1. Legal Design and Regulatory Capacity: Risk-Based Public Law versus Decentralized Institutional Governance

The comparison reveals a fundamental divergence in legal design. The European Union has constructed AI governance through a risk-based legal framework that classifies certain AI systems according to potential harm and imposes obligations on providers and deployers. The AI Act's entry into force in 2024 created a binding regulatory structure whose implications extend to educational and vocational training contexts, particularly where AI systems influence admission, assessment, progression, certification, or access to educational opportunity. This reflects a public-law approach in which educational AI is treated as a rights-sensitive technology requiring ex ante governance, documentation, oversight, and compliance infrastructures.

In the United States, by contrast, AI governance in higher education is distributed across multiple legal and institutional domains. The U.S. Department of Education has issued guidance emphasizing human-centered AI, equity, transparency, and educational improvement, but such guidance does not constitute a comprehensive statutory regime equivalent to the EU AI Act. The White House Blueprint for an AI Bill of Rights articulates principles that are normatively significant but legally softer than EU regulation. Universities must navigate existing obligations under civil rights statutes, disability law, privacy law, procurement law, intellectual property rules, state consumer protection frameworks, accreditation standards, and institutional policies. This produces a governance environment that is flexible but fragmented.

The EU model's core strength is regulatory coherence. By defining high-risk categories and establishing obligations concerning risk management, data governance, transparency, human oversight, accuracy, and documentation, the EU creates a legal infrastructure that can make university AI adoption more auditable. This has important implications for student rights. For example, if AI tools are used to rank applicants, predict student success, monitor engagement, detect misconduct, or allocate academic support, legal obligations can create procedural safeguards against arbitrary or discriminatory outcomes. This supports Bovens's (2007) argument that accountability requires answerability and enforceability, not merely internal professional ethics.

The U.S. model's strength lies in institutional adaptability. Universities may experiment with AI-enabled advising, adaptive learning, research support, administrative automation, and workforce-oriented curriculum innovation without waiting for centralized regulatory approval. This may accelerate innovation in highly competitive research universities and technology-intensive regional institutions. Yet the weakness of this model is uneven protection. Wealthy universities can build sophisticated AI governance committees, legal review systems, procurement standards, and faculty development programs, while under-resourced institutions may depend heavily on vendors with limited internal capacity to audit algorithmic systems. This reflects what Lodge and Wegrich (2014) identify as the uneven distribution of administrative capacity in complex regulatory systems.

The legal divergence also affects market governance. In the EU, providers of high-risk educational AI systems may face stronger documentation, conformity, and risk-management obligations, which could raise

compliance costs but also increase trust and interoperability. In the United States, vendors may face fewer pre-market legal constraints but more heterogeneous contractual demands from universities, states, and accreditation bodies. This can stimulate product diversity but may also produce inconsistent standards, especially when institutions lack bargaining power.

From a development perspective, regulatory capacity matters because higher education contributes to innovation systems, labor-market readiness, social mobility, and civic trust. If AI adoption undermines student rights or credential reliability, the long-term developmental value of higher education declines. Conversely, if law creates overly burdensome compliance systems that discourage responsible innovation, institutions may fail to adapt to changing labor-market demands. The comparison therefore suggests that the central developmental challenge is not regulation versus innovation, but the design of legal capacity capable of supporting accountable innovation.

This finding extends existing scholarship on regulatory capitalism and education governance. Black (2008) argues that regulation increasingly occurs through dispersed regimes rather than hierarchical command alone. The EU and U.S. cases confirm this but show that dispersion operates differently: in the EU, dispersion is structured by supranational legal obligations; in the United States, dispersion is mediated by institutional autonomy, market contracts, and civil rights enforcement. The theoretical implication is that educational AI governance depends on the interaction between formal legal classification and institutional capacity for implementation.

2. Institutional Coordination and Multi-Level Governance: From Legal Norms to University Practice

The second finding concerns institutional coordination. AI governance in higher education requires coordination among legislators, ministries, data protection authorities, education agencies, accreditation bodies, universities, faculty, students, procurement offices, technology vendors, and labor-market stakeholders. The EU has attempted to coordinate these actors through overlapping regulatory and policy frameworks: the AI Act, GDPR, the Digital Education Action Plan 2021–2027, the European Education Area, digital skills targets, and national implementation measures. The Digital Education Action Plan explicitly sets out a common vision of high-quality, inclusive, and accessible digital education in Europe. This coordination architecture does not eliminate national variation, but it provides a shared legal-policy vocabulary for digital education governance.

The United States coordinates AI governance through a more pluralistic and decentralized system. Federal guidance establishes broad principles, while universities, states, professional associations, accreditation bodies, and vendors develop operational rules. This structure fits the broader institutional character of American higher education: diverse, competitive, stratified, and relatively autonomous. Elite research universities may develop internal AI principles, faculty guidelines, research integrity policies, and data governance boards. Community colleges and regional universities may focus more on workforce training, affordability, student support, and vendor-provided tools. The resulting governance system is adaptive but uneven.

The comparison reveals that legal norms do not implement themselves. In the EU, the presence of binding

regulation must still be translated into university-level practices such as procurement review, algorithmic impact assessment, data quality evaluation, student notification, appeal mechanisms, accessibility review, and faculty training. The EU's challenge is therefore implementation density: the more comprehensive the legal framework, the more universities require administrative, technical, and legal capacity. Smaller institutions may struggle with compliance unless regulators, ministries, and sectoral bodies provide templates, shared infrastructure, and capacity-building resources.

In the United States, the challenge is governance consistency. Universities may adopt AI policies at different speeds and with different levels of seriousness. Some may treat AI as an academic integrity issue; others as a teaching innovation issue; others as a data privacy issue; and still others as a workforce development issue. Such variation reflects institutional autonomy but can weaken student protection and public accountability. If a student is denied admission, flagged for misconduct, or routed into a remedial pathway by an algorithmic tool, procedural rights may depend heavily on institutional policy rather than a comprehensive national AI statute.

This difference has implications for educational inequality. The World Bank's digital development analysis stresses that digital transformation can widen gaps when institutions and populations lack the skills, infrastructure, and safeguards to benefit from new technologies. In higher education, the same logic applies institutionally: universities with stronger legal offices, data science capacity, teaching innovation centers, and procurement expertise can govern AI more effectively than institutions serving disadvantaged populations with fewer resources. AI governance therefore risks becoming another dimension of institutional stratification.

The causal mechanism is institutional coordination capacity. Where coordination is strong, legal standards become institutional routines: procurement contracts include audit rights; students receive notice; faculty receive training; AI outputs are subject to human review; accessibility obligations are assessed; and data governance is monitored. Where coordination is weak, legal or ethical principles remain symbolic. This finding supports Ansell and Gash's (2008) claim that collaborative governance depends on structured participation, trust, and shared rules, but it adds that law can either enable or constrain collaboration depending on institutional design.

The EU's multi-level governance model may be more capable of generating common minimum standards, but it must manage bureaucratic complexity and national diversity. The U.S. model may better support experimentation and local adaptation, but it must address fragmentation and unequal institutional capacity. Neither model is inherently superior. The comparative lesson is that effective AI governance requires "regulated coordination": legal rules must be specific enough to establish rights and accountability, but flexible enough to allow pedagogical innovation and institutional learning.

3. Educational Accountability, Student Rights, and the Transformation of Assessment

The third finding concerns educational accountability. AI transforms the meaning of educational accountability because it can intervene directly in assessment, feedback, grading, plagiarism detection, student analytics, admissions, and credential evaluation. These functions are not merely administrative. They

determine how universities define learning, certify competence, and distribute opportunity. As UNESCO's AI competency frameworks emphasize, education systems must prepare students and teachers to engage with AI safely, ethically, and meaningfully, including through human-centered mindsets, ethics, technical understanding, and pedagogical competence.

The EU's legal framework provides stronger grounds for treating AI-mediated assessment and decision-making as rights-sensitive. When AI affects access to education or evaluation of students, legal safeguards become central to educational legitimacy. This is especially important because algorithmic systems can reproduce bias through training data, proxy variables, or opaque scoring models. In the EU, the interaction between the AI Act and GDPR strengthens the accountability environment by linking AI governance to data protection, transparency, automated decision-making safeguards, and institutional responsibility. The result is a legal environment more conducive to procedural accountability.

The United States relies more heavily on existing civil rights, disability, privacy, and institutional governance structures. This may provide meaningful protection when discriminatory effects can be linked to established legal categories such as race, sex, disability, or national origin. However, AI-related harms may not always fit neatly into existing legal frameworks. For example, an AI advising system may systematically direct first-generation students away from selective majors, or an automated proctoring tool may disproportionately flag students with disabilities or unstable internet access. Such harms may be legally actionable in some circumstances, but governance often depends on institutional review before litigation or regulatory enforcement occurs.

The accountability challenge is particularly acute in assessment. Generative AI undermines traditional assumptions about authorship, originality, and individual demonstration of learning. Universities have responded with policies ranging from prohibition to permitted use with disclosure, redesigned assessment, oral examination, process-based evaluation, and AI literacy training. Yet the legal implications remain underdeveloped. If institutions rely on AI detection tools, they must address false positives, explainability, due process, disability accommodation, linguistic bias, and appeal rights. If institutions permit AI use, they must define acceptable collaboration, authorship boundaries, intellectual property rules, and professional competence standards.

The comparison shows that AI governance must move beyond academic integrity enforcement toward educational accountability reform. The problem is not simply that students may misuse AI; it is that universities must redesign assessment to evaluate reasoning, judgment, creativity, disciplinary competence, and ethical use of tools. OECD analysis of digital education governance emphasizes that responsible AI integration requires dialogue with teachers and safeguards against biased content, privacy risks, and reinforcement of stereotypes. This supports the view that accountability should measure educational process and institutional responsibility rather than merely student compliance.

From a development perspective, assessment legitimacy is central to human capital formation. Degrees function as signals of competence in labor markets. If employers lose confidence that university credentials represent genuine skills, the economic value of higher education declines. Conversely, if universities integrate

AI responsibly into curricula and assessment, graduates may become more capable of working in AI-augmented economies. The governance question is therefore developmental: how can law and policy ensure that AI-supported education produces authentic capabilities rather than superficial outputs?

This finding contributes to the literature by connecting educational accountability theory with legal governance. Verger et al. (2019) show that accountability systems can produce unintended consequences when measurement becomes detached from educational purposes. AI intensifies this risk because algorithmic systems can generate seemingly objective indicators that conceal contested assumptions. The EU model partially addresses this through risk classification and transparency obligations, while the U.S. model depends more on institutional discretion and professional norms. The theoretical implication is that educational accountability in the AI era requires legally supported epistemic accountability: institutions must be able to justify not only outcomes but also the knowledge processes through which outcomes are produced.

4. Digital Skills, Labor-Market Transformation, and Economic Development

The fourth finding concerns the relationship between AI governance and economic development. Higher education systems are increasingly expected to produce graduates capable of contributing to AI-intensive labor markets, public-sector innovation, digital entrepreneurship, and knowledge-based economic growth. Yet digital transformation is uneven. Eurostat data show that the EU remains below its Digital Decade target for basic digital skills, with significant variation among member states. The United States has high levels of postsecondary attainment relative to the OECD average, but access and enrollment inequalities remain significant, especially across race, income, and institution type.

The EU's AI governance model links education to economic development through regulated trust. The assumption is that digital innovation requires not only technical adoption but also public confidence, rights protection, and market harmonization. If AI systems are trustworthy, interoperable, and rights-compliant, universities can integrate them into teaching, research, and administration without undermining legitimacy. This may support the EU's broader strategy of digital sovereignty, skills development, and innovation within a rights-based market order.

The U.S. model links education to economic development through institutional innovation and market dynamism. American universities are deeply embedded in technology ecosystems, venture capital networks, research commercialization, and workforce partnerships. Decentralized governance allows institutions to experiment quickly with AI tutors, coding tools, analytics systems, and industry-aligned curricula. This may produce rapid innovation and strong links to labor-market transformation. However, the same model can generate unequal access to high-quality AI learning environments, especially if advanced tools are concentrated in wealthy institutions and commercial platforms.

The developmental tension is therefore between regulated trust and entrepreneurial adaptation. The EU may build stronger baseline protections but may face slower implementation and compliance burdens. The United States may innovate rapidly but risks fragmented standards and unequal student protections. The comparison suggests that economic development benefits from AI in higher education only when three conditions are met: students acquire transferable AI capabilities; institutions maintain credible assessment and rights

protections; and governance systems prevent digital inequality from reproducing social inequality.

This finding aligns with human capital theory but challenges narrow economic interpretations of education. Human capital is not simply the accumulation of technical skills; it includes the institutional conditions under which skills are recognized, trusted, and converted into productive social participation. Sen's capability approach is relevant here because AI-enabled education should expand students' real freedoms and agency, not merely increase technological efficiency (Sen, 1999). Similarly, Acemoglu and Restrepo (2019) show that automation can produce unequal labor-market effects depending on institutional choices. Higher education governance therefore mediates the developmental effects of AI.

The evidence suggests that regulatory capacity influences whether AI adoption strengthens or weakens development outcomes. When AI governance protects student rights, supports faculty capacity, improves educational quality, and aligns curricula with labor-market change, it can enhance human capital formation. When governance is weak, AI can produce surveillance, dependency, credential dilution, discriminatory sorting, and unequal access to educational advantage. This is why law is central to development: legal frameworks structure the institutional conditions under which technology becomes socially productive.

Table 1. Analytical Matrix of Comparative Governance, Law, and Educational Development

Variable	Case 1: European Union	Case 2: United States	Empirical Evidence	Analytical Interpretation
Legal architecture	Risk-based, supranational, rights-oriented framework centered on the AI Act, GDPR, and coordinated digital education policy	Sectoral, decentralized, guidance-based framework shaped by civil rights law, privacy law, agency guidance, accreditation, institutional policy, and state variation	EU AI Act entered into force in 2024; U.S. Department of Education issued AI guidance in 2023; White House Blueprint provides non-binding principles	EU law creates stronger ex ante accountability; U.S. governance enables flexibility but produces fragmented standards
Governance model	Multi-level governance involving EU institutions, member states, regulators, education authorities, universities, and vendors	Federal-state-institutional governance involving agencies, states, universities, accreditors, vendors, and courts	EU Digital Education Action Plan 2021–2027 promotes inclusive digital education; U.S. higher education	Coordination is more formally structured in the EU; adaptation is more institutionally varied in the U.S.

			governance remains institutionally pluralistic	
Risk classification	Education-related AI may be treated as high-risk when affecting access, assessment, progression, or opportunity	Risk is assessed through institutional policy, procurement, civil rights compliance, privacy review, and litigation exposure	EU AI Act establishes risk categories; U.S. guidance emphasizes human oversight, equity, and transparency	Formal risk classification improves legal clarity but requires compliance capacity; decentralized risk assessment encourages experimentation but increases unevenness
Accountability mechanisms	Documentation, transparency, data governance, human oversight, conformity procedures, and data protection rights	Institutional review, FERPA compliance, Title VI/Title IX/ADA obligations, procurement contracts, academic governance, and accreditation	EU and U.S. both emphasize responsible AI, but differ in legal enforceability	Accountability is more rule-based in the EU and more institutionally mediated in the U.S.
Educational implications	Stronger procedural safeguards for AI-mediated assessment, admissions, and student analytics	Greater institutional discretion in AI use, assessment redesign, and academic integrity policies	OECD and UNESCO emphasize responsible AI integration, teacher agency, ethics, and learner protection	Educational legitimacy depends on aligning AI use with transparent assessment and student rights
Equity implications	Rights-based regulation may reduce discriminatory risks if effectively implemented across member states	Civil rights law can address discrimination, but protections may vary by institution and jurisdiction	Digital skills gaps remain substantial in the EU; U.S. higher education access remains unequal	AI governance must address institutional inequality, not only individual privacy or innovation

			across demographic groups	
Economic development implications	Regulated trust supports digital skills, market harmonization, and human-centered innovation	Entrepreneurial flexibility supports rapid innovation, labor-market alignment, and university-industry collaboration	OECD, World Bank, and Eurostat data link digital skills and education to productivity and labor-market participation	Developmental value depends on converting AI adoption into credible human capital formation

The table demonstrates that legal architecture shapes educational governance through institutional mechanisms rather than through formal rules alone. The EU case shows how binding legal classification can produce stronger accountability expectations, particularly where AI affects student rights and educational opportunity. Yet this advantage depends on administrative capacity, technical expertise, and coordinated implementation across member states and universities. The U.S. case shows how decentralization can support innovation and institutional experimentation, but it also reveals the risks of uneven protection, especially for students in under-resourced institutions.

The deeper analytical point is that AI governance in higher education operates as a developmental filter. Legal systems do not directly produce educational quality or economic growth; they structure the incentives, responsibilities, and capacities through which universities use AI. Where regulation creates transparency, human oversight, inclusive access, faculty capacity, and credible assessment, AI can support human capital development. Where regulation is fragmented or symbolic, AI can intensify inequality, weaken credential trust, and shift public educational functions toward private technological infrastructures.

Conceptual Model

This article proposes the following conceptual model:

Regulatory Capacity → Institutional Coordination → Educational Accountability → Human Capital Development → Economic Resilience

Regulatory capacity refers to the ability of legal systems to define AI risks, allocate responsibility, enforce safeguards, and provide rights-protective procedures. Institutional coordination refers to the ability of ministries, regulators, universities, faculty, students, vendors, and accreditation bodies to translate legal norms into operational governance. Educational accountability refers to the capacity of institutions to justify AI use in relation to learning quality, fairness, assessment validity, transparency, and student rights. Human capital development refers to the formation of authentic knowledge, digital competence, ethical judgment,

and adaptive skills. Economic resilience refers to the ability of societies to use higher education systems to support innovation, labor-market adaptation, productivity, and inclusive development.

The model suggests that AI does not generate educational or economic value automatically. Its developmental effects are mediated by governance. A university that adopts AI without legal safeguards may increase administrative efficiency while weakening rights and trust. A university that prohibits AI without curricular reform may preserve formal integrity while failing to prepare students for labor-market transformation. The governance task is therefore to create institutions capable of accountable adaptation.

The model also clarifies why comparative legal analysis matters. In the EU, regulatory capacity is stronger at the level of formal law, but the system must strengthen institutional coordination and reduce compliance asymmetries. In the United States, institutional experimentation is stronger, but regulatory capacity must become more coherent to ensure baseline student protections. Both systems need governance models that treat AI literacy, assessment reform, privacy, anti-discrimination, procurement, accessibility, and labor-market alignment as interconnected rather than separate policy domains.

Conclusion

This article set out to explain how contrasting legal and governance models in the European Union and the United States shape AI adoption in higher education and how these models influence educational accountability, student rights, and development-oriented human capital outcomes. The comparative analysis demonstrates that AI governance in higher education is not a narrow technology-management issue but a core problem of law, governance, education policy, and economic development. The findings indicate that legal frameworks structure the institutional conditions under which AI becomes either a tool for accountable educational innovation or a mechanism for opacity, inequality, and credential weakening.

The main analytical finding is that the European Union and the United States embody different governance logics. The EU model prioritizes regulatory coherence, risk classification, rights protection, and supranational coordination. Its strength lies in establishing common accountability standards for AI systems that may affect educational access, assessment, and opportunity. Its weakness lies in the administrative burdens and implementation challenges created by complex multi-level regulation. The U.S. model prioritizes flexibility, institutional autonomy, innovation, and sectoral governance. Its strength lies in enabling rapid experimentation and university-industry alignment. Its weakness lies in fragmented safeguards, uneven institutional capacity, and unequal student protection.

The theoretical contribution of the article is to show that regulatory capacity mediates the relationship between digital education reform and development outcomes. Law matters not only because it constrains harmful technologies but because it creates the institutional conditions for trustworthy innovation. The article contributes to education governance scholarship by arguing that AI accountability must include epistemic accountability: universities must be able to justify how AI affects learning, assessment, authorship, and the

credibility of credentials. It contributes to development scholarship by showing that human capital formation depends on institutional legitimacy, not merely on access to advanced technology.

The empirical contribution lies in the structured comparison of two influential governance systems. The evidence shows that digital skills gaps, higher education inequalities, and labor-market transformation make AI governance a developmental priority. The legal and policy implications are substantial. Governments should establish baseline safeguards for AI systems affecting educational opportunity, require transparent procurement and human oversight, support institutional capacity-building, protect students from discriminatory or opaque algorithmic decisions, and align AI literacy with curriculum reform. Universities should move beyond reactive academic integrity policies and develop integrated AI governance frameworks covering assessment, privacy, accessibility, research ethics, procurement, faculty development, and student rights.

The study is limited by the rapid evolution of AI regulation and by the early implementation stage of many legal frameworks. Future research should examine university-level implementation, compare additional jurisdictions such as Canada, Australia, South Korea, Singapore, and the United Kingdom, and analyze how students, faculty, regulators, and employers perceive the legitimacy of AI-mediated education. Longitudinal research is especially needed to assess whether legal governance improves educational quality, labor-market outcomes, and institutional trust over time.

Ultimately, the central lesson is that AI will not automatically democratize higher education or accelerate economic development. Its effects will depend on the legal and institutional systems that govern its use. Higher education can contribute to inclusive digital development only when law, governance, pedagogy, and economic policy are integrated into a coherent framework of accountable innovation.

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