

The Paradigm Construction and Implications of Artificial Intelligence Education Governance in the United Kingdom

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Abstract: In the global landscape of artificial intelligence (AI) governance, AI education governance has become a prominent key issue. As a pioneer in global AI governance, the United Kingdom has built a distinctive AI education governance system through systematic policy design and institutional innovation. This study adopts an “idea–mechanism–action” analytical framework to systematically examine the governance philosophy, governance mechanisms, governance experiences, policy trends, and international role of UK AI education governance. The UK’s core values center on “human-centricity, transparency and explainability, inclusive good governance, and supporting innovation.” Through four major mechanisms—prevention, regulation, collaboration, and ethics—the UK has established a comprehensive AI education governance system. It has accumulated rich experience in evidence-based policymaking, standardization and norms, and collaborative cooperation. Current UK policies show trends of transitioning from digitalization to intelligent transformation, emphasizing educational equity and inclusion, and empowering teachers. On the international stage, the UK actively plays the roles of governance standard-setter and development cooperation promoter. Finally, this paper offers implications for AI education governance in other countries: establishing the core concept of “technology empowerment, innovation-driven,” constructing a multi-stakeholder collaborative governance framework, adopting a composite “agile governance + cooperative governance” approach, and promoting the scientific and efficient development of AI education governance.

Keywords: Artificial intelligence education; Education governance; Agile governance; Evidence-based policymaking

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1. Introduction

Artificial intelligence is currently developing at an unprecedented pace, offering immense possibilities for reshaping education. As AI becomes deeply integrated with education, how to systematically regulate and supervise the research, development, deployment, and application of AI technology in the education sector has become a focal issue for governments, academic communities, and international organizations. As a pioneer in global AI governance, the United

Kingdom has in recent years launched a series of AI governance initiatives, striving to position itself as a leader in global AI governance ^[1-7].

AI education governance is a complex, systematic project that crosses disciplines, sectors, and levels. Drawing on the theoretical framework of education governance, AI education governance can be defined as: a governance process through multiple mechanisms such as policies, laws, ethics, and technology, with the participation of multiple actors including government, educational institutions, technology enterprises, academic organisations, and the public, to systematically regulate and supervise the R&D, deployment, application, and management of AI technology in education. Its core objective is to achieve both improved educational equity and quality, while preventing risks such as technological alienation, data privacy infringement, and algorithmic discrimination, ultimately promoting the deep integration and sustainable development of AI and education.

This study adopts a “value–mechanism–action” analytical framework to systematically examine the paradigm construction of UK AI education governance from five dimensions: governance philosophy, governance mechanisms, governance experiences, policy trends, and international role, aiming to provide theoretical reference and practical insights for AI education governance in other countries.

2. Governance philosophy: Human-centricity, transparency and explainability, inclusive good governance, and supporting innovation

The UK’s AI education governance is built on four core concepts, using clear values to guide governance practices and ensure that innovative applications of AI in education truly serve human development and social progress.

2.1. Human-centricity: AI technology should serve people

“Human-centricity” is the primary philosophy of UK AI education governance, emphasizing that the development, deployment, use, and monitoring of AI systems must always center on respecting human rights and human values. The essence of education lies in the holistic development of people, and AI, as a tool for education, must also pursue this fundamental goal.

In practice, this concept is first reflected in the strict protection of learners’ privacy and security. The UK Information Commissioner’s Office’s “Protecting children’s online privacy: Our Children’s Code strategy” requires that AI education platforms comply with data protection laws and meet the standards of the Children’s Code ^[2,4]. Second, it respects learners’ human rights, ensuring fairness and justice in AI education systems. When formulating and implementing AI-related policies and regulations, the UK government prioritizes learners’ basic human rights, such as privacy, equality, and information freedom. Third, it builds a clean and safe online environment to ensure the safe use of AI. The UK Department for Education’s “Keeping children safe in education” statutory guidance regularly updates educators on online safety knowledge and strategies.

2.2. Emphasizing transparency and explainability: Building trust in AI education

Transparency and explainability in AI education are key drivers of trust. Transparency refers to communicating appropriate information about AI systems to relevant people—i.e., information about how, when, and for what purposes AI systems are used. Explainability focuses on providing the basis for AI decisions, enabling stakeholders to understand the decision-making process of AI systems.

The UK’s practices in transparency and explainability are reflected in two levels. The first is data transparency, requiring that data inputs to machine learning models be made public on a regular basis, with remedial strategies for contestability of output predictions. By linking collected student personal information with educational institution performance data, the UK has created a National Pupil Database, where all data is rigorously and openly published, and learners have the right to dispute output results or decisions. The second is process transparency, requiring documentation

and logging of key decisions throughout the system development and deployment process. The “Explaining decisions made with AI” guidance published by the UK Information Commissioner’s Office in partnership with the Alan Turing Institute provides practical advice for the education sector on explaining processes, services, and decisions that are AI-provided or assisted.

2.3. Embracing inclusive good governance: Democratic decision-making for mutually beneficial development

“Good governance” enables “good AI.” The UK AI Council’s 2021 “AI Roadmap” emphasizes that good governance, as a form of pluralistic and harmonious governance, is an important means to advance AI education governance systems and capabilities. The concept of inclusive good governance requires the participation of multiple actors in governance decisions, ensuring that the needs of different stakeholders are fully expressed and reasonably balanced.

2.4. Supporting holistic innovation: Creating an enabling environment for technological development

Supporting innovation is another core concept of UK AI education governance. The UK government recognizes that the rapid development of AI technology requires a governance framework that adapts accordingly—neither over-regulating to stifle innovation nor allowing it to run unbridled, leading to uncontrolled risks. Therefore, its governance design focuses on creating a favorable environment for technological innovation, using mechanisms such as “regulatory sandboxes” to allow new technologies to be tested and iterated in controlled environments.

3. Governance mechanisms: A four-dimensional structure of prevention, regulation, collaboration, and ethics

The UK has built a comprehensive AI education governance system through four major mechanisms: prevention, regulation, collaboration, and ethics.

3.1. Prevention mechanism: Proactive risk identification and mitigation

The prevention mechanism focuses on identifying potential risks before the large-scale application of AI technology and taking corresponding preventive measures. The UK government, in collaboration with technology companies, has developed a safety expectations framework for AI products, specifying that technology companies should prioritize child-centered design and strengthen filtering of harmful content^[5]. Additionally, the government regularly checks the effectiveness of web filtering and monitoring software to identify and reduce potential risks to children.

3.2. Regulation mechanism: Flexible and pragmatic agile regulation

Facing rapidly iterating technology, the UK adopts a flexible rather than rigid regulatory strategy. Ofsted (the Office for Standards in Education, Children’s Services and Skills) has made clear that it will not evaluate AI technology in isolation, but rather assess educational institutions’ decision-making processes regarding AI use and the actual impact on students. The regulatory focus is on whether schools have carefully considered risks such as data protection, student safety, and algorithmic bias, and taken reasonable measures.

Operationally, the UK government has established an “EdTech Evidence Board” to evaluate the quality of education technology products, providing a basis for school procurement. The government has also launched a pilot project worth £1.1 million to study which technology tools are effective in improving teacher workload, student outcomes, and inclusion.

3.3. Collaboration mechanism: Multi-stakeholder co-governance

The collaboration mechanism emphasizes the construction of a co-governance structure involving multiple actors, including government, markets, schools, and social organizations. At the policy-making level, the Department for

Education collaborates with the Department for Science, Innovation and Technology, the Department for Digital, Culture, Media and Sport, and other ministries to jointly promote the formulation and implementation of AI education policies. At the policy implementation level, the UK has established an AI Education Implementation Working Group to monitor progress.

Particularly noteworthy is the emergence of collaborative governance forces spontaneously organized by the education community. The “AiEd Certified” certification framework, involving over 250 schools and educational institutions, is a certification framework created by educators for educators to support schools in adopting AI in ethical and effective ways. The framework is built around five pillars: AI literacy, policy and ethics, tools and systems, digital pedagogy, and collaboration and community, providing schools with a clear, research-supported, pedagogy-driven implementation pathway^[6].

3.4. Ethics mechanism: Ethical norms and value guidance

The ethics mechanism aims to ensure that the development and application of AI technology comply with social ethical norms. The UK government requires that technical and organizational practices in the service ecosystem meet safety and ethical standards, considering organizational processes, structures, and technical components based on the specific circumstances, stakeholders, and technical conditions of educational institutions. Whether social trust or system trust, the UK consistently values openness as a core value, bridging information inequality and enhancing transparency and explainability.

4. Governance experiences: Evidence-based policymaking, standardization, and collaboration

The UK has accumulated rich experience in AI education governance, mainly in three dimensions: evidence-based policymaking, standardization and norms, and collaborative cooperation.

4.1. Evidence-based policymaking: Policy formulation grounded in evidence

When promoting AI applications in education, the UK has adopted a cautious pilot and evaluation model. Through programs such as the “EdTech Testbed,” the government funds schools to trial AI tools in advance and collects large-scale real data on their impact on teaching outcomes. These empirical evidence bases serve as core foundations for subsequent national policies, standards, and procurement advice.

Education Secretary Bridget Phillipson has emphasized that these evidence-led initiatives help “squeeze every last drop of value from every penny of funding,” while ensuring that “no child misses out on a quality education due to circumstances.” This evidence-based policymaking model effectively avoids blind promotion of technology.

4.2. Standardization and norms: Providing clear guidance for technological innovation

The UK uses non-mandatory standards to communicate quality and safety requirements for product development to technology companies, guiding market self-regulation. In January 2025, the UK government published the “Generative AI Product Safety Expectations” framework, co-developed with leading global technology companies including Google, Microsoft, Adobe, and Amazon Web Services, specifying safety expectations for the use of AI tools in classrooms.

Additionally, the UK plans to release an “Education Sovereignty Benchmark” by the end of 2026, providing more specific quality standards and assessment criteria for educational institutions procuring AI products.

4.3. Collaborative cooperation: Building a government–industry–academia innovation ecosystem

The UK actively builds platforms to promote industry–academia–research collaboration. The Department for Education, together with the Department for Science, Innovation and Technology, has launched the “Educational Content Repository” pilot project, providing developers with reliable domestic educational data to encourage the development of high-quality

AI tools tailored to UK teaching needs. The government has also established a dedicated Education AI Taskforce, bringing together top experts in pedagogy, safety, and AI to advance key technical standards jointly.

5. Policy trends: Digital transformation, equity orientation, and teacher empowerment

From 2008 to 2024, the UK digital education policy has undergone a profound transformation from early exploration to AI-driven approaches. Based on discourse analysis of 21 official policy documents, the following core policy trends can be identified.

5.1. Strategic transition from digitalization to intelligent transformation

The evolution of UK digital education policy can be divided into four phases: the early exploration phase (2008–2012), focusing on infrastructure development and basic policy formulation; the policy acceleration and global engagement phase (2013–2014), addressing the digital divide and strengthening international cooperation; the diversification and system integration phase (2015–2019), emphasising digital skills development for emerging industries and educational equity; and the AI-driven transformation phase (2021–2024), prioritising AI integration, data security, and ethical use ^[7].

5.2. Emphasizing educational equity and inclusion

Equity orientation is a notable feature of UK AI education policy. The government found that one-to-one tutoring significantly improves learning outcomes, but children from affluent families are more likely to access it. To address this, the UK launched the “AI Tutoring Tools Program,” aiming to provide high-quality, personalized AI tutoring to 450,000 disadvantaged secondary school students by the end of 2027, scaling up through technology what was previously accessible only to a minority.

5.3. Strengthening teacher empowerment and professional development

The UK places great emphasis on enhancing the digital technology capabilities of teachers and school leaders. Through national digital platforms, the government provides online courses and learning materials for teachers and administrators, actively creates a digital research environment, organizes relevant lectures and seminars, and encourages teachers to deeply explore digital teaching topics. Institutions such as the National Center for Computing Education offer professional training courses on machine learning and AI ethics for teachers and develop supporting online resources and toolkits.

6. International role: Standard setter and development cooperator

On the international stage, the UK strives to become a shaper of AI governance standards and to expand its technological influence through development cooperation.

6.1. Shaping cutting-edge governance standards and norms

Through the publication of influential policy documents (e.g., AI Product Safety Expectations) and leading governance practices (e.g., principles-based agile regulation), the UK seeks to export its governance paradigm, which balances innovation and risk, during the formative period of global AI governance rules. Education Secretary Bridget Phillipson explicitly stated at the 2025 Education World Forum that “getting AI on the right track is the most important contemporary global education challenge,” and that the UK will lead the global education technology revolution.

The UK government is funding a joint project with the OECD to develop a global guideline for generative AI in education, aiming to build international consensus to ensure that this technology can be deployed safely and effectively in classrooms worldwide. The UK also plans to host the first government-led AI Education Summit in 2026 to further promote global cooperation.

6.2. Promoting technology inclusiveness through development cooperation

The UK integrates AI education governance into its international development cooperation framework. By supporting partner countries in establishing regulatory frameworks and developing models based on local data and computing power, the UK cultivates partnerships across the whole chain of talent development, standard setting, and technology R&D, deepening strategic influence and potentially opening future markets for its domestic industry.

7. Implications

Drawing on the paradigm construction and practical experience of UK AI education governance, the following implications are offered for AI education governance in other countries:

7.1. Establish the core concept of “technology empowerment, innovation-driven”

The UK’s experience shows that a clear governance philosophy is the cornerstone of effective AI education governance. Countries should establish the core concept of “technology empowerment, innovation-driven,” adhere to a human-centric approach, and ensure that AI technology serves the essence of education and holistic human development. At the same time, a balance should be sought between technological innovation and risk prevention, creating an enabling institutional environment for AI education applications.

7.2. Build a Multi-stakeholder collaborative governance framework involving government, research institutions, schools, and other sectors

The UK has built a multi-stakeholder collaborative governance framework through four mechanisms: prevention, regulation, collaboration, and ethics. Countries should learn from this experience and establish a sound multi-stakeholder collaborative governance system with government leadership, research institution support, schools as the main implementers, active business participation, and public oversight. They should give full play to the synergy of ministries such as education, science and technology, and industry and information technology to form policy coherence. At the same time, they should encourage in-depth cooperation among the education sector, industry, and academia to advance the innovative development of AI education jointly.

7.3. Adopt a composite “agile governance + cooperative governance” approach

Given the rapid iteration of AI technology, the UK has adopted a flexible and pragmatic agile regulatory strategy. Countries should learn from this experience and explore establishing a composite governance approach combining “agile governance” and “cooperative governance.” On the one hand, through mechanisms such as “regulatory sandboxes,” they can provide controlled testing environments for new technologies, allowing innovation exploration under manageable risks. On the other hand, they should strengthen international cooperation, actively participate in the formulation of global AI governance standards, and help forge an open, inclusive, fair, and equitable new international governance order.

7.4. Strengthen evidence-based policymaking and standardization

The UK places great emphasis on evidence-based policymaking and standardization in AI education governance. Countries should strengthen empirical research on AI education applications, accumulate real data through pilot projects, and provide scientific bases for policy formulation. At the same time, they should accelerate the development of quality standards, safety norms, and ethical guidelines for AI education products, guiding orderly market development and ensuring the security and stability of education systems.

Disclosure statement

The authors declare no conflict of interest.

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