

Towards AI: The Evolution of Digital Education Policy in the United Kingdom

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Abstract This study examined the evolution of digital education policy in the United Kingdom (UK) from 2008 to 2024 based on a discourse analysis of 21 policy documents retrieved from the UK government's official website, GOV.UK. For this purpose, the shift from early digital education initiatives to the integration of artificial intelligence (AI) in educational frameworks was traced and analyzed. The analysis revealed a progressive transition beginning with foundational digital literacy programs and infrastructure development and then followed by the incorporation of data-driven decision-making and personalized learning technologies. The most recent policies highlight the strategic adoption of AI to enhance educational outcomes, teacher support, and administrative efficiency. This evolution underscores the UK's commitment to leveraging technological advancements to address educational challenges and prepare students for a rapidly changing digital economy. The findings provide valuable insights for policymakers and educators globally that emphasize the importance of adaptive policy frameworks that anticipate and respond to technological innovations.

Keywords digital education policy, artificial intelligence (AI), the United Kingdom, personalized education

1 Introduction

In the contemporary era of rapid technological growth, digital education has ascended to the vanguard of global educational transformation. Digital education has redefined the educational paradigm by leveraging digital technology and Internet platforms, enriching educational activities, such as online courses, virtual

classrooms, educational software, and e-textbooks. The emergence of artificial intelligence (AI) has revolutionized digital education by tailoring learning experiences to meet specific and personalized requirements and learning schedules (Alenezi et al., 2023). This process transcends the temporal and spatial limitations of traditional education and empowers learners with unparalleled flexibility in knowledge acquisition.

The evolution of digital education has also presented challenges. Issues such as unequal distribution of educational resources, lack of standardized technology application, and, more recently, the complex ethical and security concerns with emerging technologies such as AI have come to the fore. As digital education continues to evolve, especially with the increasing integration of AI, it has become imperative for governments worldwide to intervene in well-crafted policies.

Policies play a crucial role in shaping the development of digital education. According to Conrads et al. (2017), effective digital education policies should follow a holistic approach that considers multiple elements, such as infrastructure, teaching capacity, and stakeholder involvement. A well-designed policy framework can better promote the integration of digital technologies in education and improve educational quality. As a guiding framework, it addresses various aspects, such as infrastructure development, technology standardization, teacher training, and research-driven policymaking. For instance, policies aim to ensure high-speed Internet access in educational institutions, enabling seamless access to digital resources. They also set standards for educational technology products to safeguard data security and educational quality. Moreover, policies support teacher training programs to enhance digital teaching skills and encourage educational research to inform and optimize policymaking.

In the United Kingdom (UK), digital education has been a trailblazer in educational innovation. The

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UK government has been proactive in formulating policies to harness the potential of digital technologies in education. Against the backdrop of technology continuously reshaping social operation models, digital education provides strong support for economic transformation and individual development needs through resource optimization and technological integration. As the Internet becomes omnipresent, the government recognizes the significance of lifelong learning and encourages individuals to upgrade their skills to meet the demands of the evolving economy. To this end, policies are designed to ensure an adequate supply of resources and technology in educational institutions, promote investment in digital technologies, and enhance teaching resources, such as online course materials and digital libraries.

As technologies transition from the digital age to the AI era, the UK's digital education policies are undergoing significant transformations. With the increasing application of AI in education, such as in personalized learning, intelligent tutoring systems, and automated assessment, the government is formulating policies to ensure the responsible and effective use of this technology. These policies focus on aspects such as data protection, the ethical use of AI, and the integration of AI into teaching and learning processes. By doing so, the UK aims to stay at the forefront of global digital education, leveraging AI to enhance educational quality, innovation, and competitiveness in the AI-driven global education landscape.

As a pioneer in educational innovation, the UK has witnessed profound changes in its digital education policies over the past decade or so. Thus, this study focused on the digital education policies of the UK from 2008 to 2024. The aim was to accurately analyze their evolution trajectory and provide key experience references and forward-looking ideas for global digital education policymakers. In-depth research on this process is of great practical significance for countries worldwide to develop digital education policies that meet the needs of the times.

To achieve the abovementioned research objectives, this study revolved around a series of specific research questions that are logically coherent and hierarchical. First, how has the UK's digital education policy been adjusted to adapt to the changes in the times? From the initial exploration to the current deep integration, policymakers must have faced numerous challenges and opportunities, and their coping strategies are worthy of in-depth exploration. Second, how have the power structure and ideology behind policymaking and implementation played a role in the evolution of the UK's digital education policies? This question helped reveal the deep-seated driving forces behind policy evolution and provided more comprehensive references for other countries. In terms

of policy implementation, the UK promotes AI education policies through interdepartmental collaboration. The Department for Education of the United Kingdom (DfE) and Department for Digital, Culture, Media and Sport of the United Kingdom (DCMS) jointly established the AI Education Implementation Working Group to monitor policy execution progress. After the release of the *Generative artificial intelligence (AI) in education* (DfE, 2023a), the UK government allocated £20 million for AI tool procurement and teacher training in 100 pilot schools, requiring quarterly implementation reports to ensure that policy goals are translated into practical teaching practices.

This study used Foucault's theory of power discourse to deeply examine why policies matter in the context of the evolution of the UK's digital education policies and the underlying logic. Foucault's theory of power discourse posits that the discourse serves as a concrete externalized form of power, and it is precisely through the medium of discourse that power realizes the construction of social order and the shaping of knowledge systems (Foucault & Rabinow, 1991). In the process of formulating and implementing digital education policies in the UK, this theory is manifested in many ways. For example, when promoting digital resource integration projects in the early stage, policymakers issued documents to prioritize specific projects, guiding educational resources to flow toward them. This exercise of power influenced the direction of educational resource allocation, determining which digital education areas could receive more attention and investment, thus shaping the development path of digital education at that time. This indicates that power, expressed through policy discourse, plays a guiding role in determining the flow of educational resources and the focus of educational development, which is why policies matter in this respect.

By comprehensively applying this theoretical framework, this study can deeply understand why policies matter in multiple dimensions. It can uncover power relationships, the social intentions behind policy texts, and the interaction between policies and social development, providing a more comprehensive and in-depth perspective for understanding the evolution of policies.

In the following sections, we will present digital education policies from the official website of the UK government (GOV.UK) and use discourse analysis to examine how these policies have evolved toward the AI era. To systematically address the research questions, this paper is structured as follows: Section 2 outlines the phased evolution of UK's digital education policies (2008–2024) and analyzes the underlying logic through Foucault's theory of power discourse; Section 3 summarizes the core trends in policy development,

including technology integration, personalized education, and literacy cultivation; and Section 4 focuses on policy transformation in the AI era, exploring AI's impact on learning experiences, educational equity, and response strategies. The final section concludes the findings of this study and explores potential directions for the development of global digital education policies, drawing on international experiences.

2 Review of the UK's Digital Education Policies

This study employed the contextual analysis method to delve deeply into the development of the UK's digital education policies from 2008 to 2024. In the data collection phase, an Internet search was conducted using the keyword "digital education policy" in the "Policy papers and consultations" section of GOV.UK. Initially, 105 relevant results were obtained. Considering the accuracy, relevance, and timeliness of the research, strict screening criteria were established. After taking into account factors such as the degree of fit, time frame, and diversity of document types, 21 core policy documents were ultimately selected as the research samples. These documents cover the crucial stages of policy development and provide rich data support for the research.

The contextual analysis method interprets policies within specific social, political, economic, and technological contexts. In this study, the period from 2008 to 2024 is divided into four stages. By integrating

technological innovations, economic developments, and changes in social demands in each stage, we analyzed the reasons for the fluctuations in policy release frequencies and examined the rhythm and trends of policy development. For example, the global financial crisis of 2008 prompted the government to drive economic transformation through digital innovation. In the same year, the establishment of the Computing at School (CAS) organization in the UK jointly influenced the subsequent direction of digital education policies.

The contextual analysis method was chosen because it is highly compatible with the Foucauldian theory of power discourse and Fairclough's critical discourse analysis framework utilized in this study. In the formulation and implementation of the digital education policies in the UK, policy discourses affected the allocation of educational resources and the direction of development. The contextual analysis method uncovered the power operation mechanisms behind the policy discourses in different periods. For instance, the support for specific projects in early-stage policies reflects how power guides the flow of resources and shapes the path of educational development.

Therefore, the contextual analysis method can systematically reveal power relationships, the social intentions behind policies, and the interactions between policies and social development. It provides a strong support for studying the evolution of digital education policies in the UK, is closely integrated with the theoretical framework and objectives of this research, and exhibits great rationality and applicability (see [Figure 1](#)).

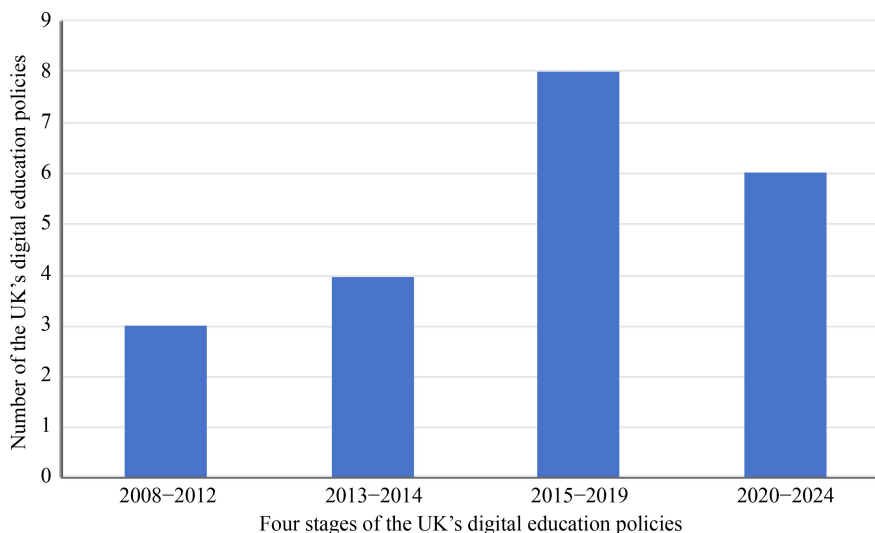


Figure 1 Phased release frequency of digital education policies in the UK. The table of the UK's digital education policies from 2008 to 2024 is uploaded in Electronic Supplementary Material.

2.1 | Early Exploration and Slow Progress: 2008–2012

The five-year period from 2008 to 2012 was a stage of exploration for the UK's digital education policies. After the 2008 global financial crisis, people began to discover the potential of digital technology in education. However, the conditions were not good. At that time, the information technology infrastructure was in an early stage of development. Network speeds were slow, and sufficient digital devices in schools were scarce. Many schools used computers with limited functions, and broadband connections were not widespread enough to support large-scale digital education applications.

Most teachers used traditional teaching methods. They had little knowledge about digital education and had limited practical experience. Moreover, they had few opportunities to learn digital teaching tools and techniques. From a social and economic perspective, the demand for digital-skilled talent was not high. Most industries still operated in a relatively traditional way and did not attach much importance to the digital skills of the workforce.

These situations led to a slow development of digital education policies during this period. Only three policies were issued in these five years. In 2009, *Your child, your schools, our future: building a 21st century schools system* (Department for Children, Schools and Families of the United Kingdom (DCSF), 2009) was introduced to apply digital technology to education. As Foucault argued, power is productive and intertwined with knowledge. In the case of the UK's early digital education policies, the paper mentioned above was a display of power. It aimed to construct a new educational knowledge system to guide the view of digital technology integration in education. This new knowledge, in turn, strengthened policymakers' power in guiding digital education development. In 2010, *Investing in skills for sustainable growth: strategy document* (Department for Business, Innovation & Skills of the United Kingdom (BIS), 2010) was released. The former adjusted the funding strategy for further education, emphasized the cultivation of various skills, and optimized teaching investment in preparation for the cultivation of digital-skilled talent in the future. The latter mainly aimed to make digital content more accessible, promote the formulation of relevant standards, and improve product design to enable more people to use digital education resources. Although there were not many policies at this stage and implementation faced challenges, the initial policies laid the foundation for the development of UK's digital education policies.

2.2 | Policy Acceleration and Global Engagement: 2013–2014

From 2013 to 2014, the UK's digital education policies underwent significant changes. At that time, the global digital economy was developing rapidly, and competition among countries in the digital field was becoming more intense. The UK realized the importance of its digital capabilities to remain competitive globally. At the same time, a severe digital divide in the country was also evident.

To solve these problems, the UK government issued many policies in those two years. In 2013, three important policies were released. The *Memorandum of Understanding between the UK and the Republic of Korea on digital education, innovation and growth* (Cabinet Office of the UK et al., 2013) enhanced citizens' software skills and international competitiveness through cooperation with the Republic of Korea. *International education strategy: global growth and prosperity* (BIS & DfE, 2013) promoted the construction of international education platforms, commercialized educational technology innovation, and the enhancement of the UK's international influence in the field of education. In 2014, *Government digital inclusion strategy* (Cabinet Office of the UK et al., 2014) was introduced. It specifically addressed the digital divide issue and aimed to improve people's digital capabilities in many ways, such as by setting up digital capability programs and enhancing civil servants' digital literacy. In these two years, the UK quickly responded to the global digital development trends and domestic digital inequality issues. The increase in policy releases indicated that the UK's digital education strategy was becoming more diverse and in-depth.

2.3 | Diversification and Systemic Integration: 2015–2019

From 2015 to 2019, the digital economy grew vigorously. Emerging sectors such as AI and Big Data had a soaring demand for digital-skilled talent. As Foucault proposed, power and knowledge are interwoven, which was evident in the UK's digital education policies in this period. The discourses on new technology and equity in these policies, similar to Foucault's "regimes of truth," strongly shaped educational views.

The cultivation of digital skills emphasized in the policies serves a dual purpose. It meets the talent needs of emerging industries and is crucial for achieving equity. In the digital era, digital skills are key to opportunities. For instance, adults from disadvantaged groups can break through social barriers

by improving their digital skills through education. The focus of the policies on digital skills qualifications and adult skills enhancement, in a Foucauldian sense, guides educational and career paths. This supplies talent for emerging industries and bridges the social gap. People with better digital skills, regardless of their background, can access better jobs and educational resources in the digital economy, which promotes both the emerging technological growth and social equity.

In these five years, the UK issued eight policies that cover important aspects of digital education, such as *Digital skills and inclusion policy* (Department for Science, Innovation and Technology of the United Kingdom (DSIT) et al., 2017), *Regulating Basic Digital Skills Qualifications* (Office of Qualifications and Examinations Regulation of the United Kingdom (Ofqual), 2018), and *Improving adult basic digital skills* (DfE, 2018). These policies focused on various important aspects of digital skills cultivation, such as qualification certification regulation, adult skills improvement, and digital identity management. The government wanted to establish a comprehensive digital skills ecosystem to meet the needs of the digital economy and social development, and make digital education more diverse and systematic.

2.4 | AI-Driven Transformation: 2021–2024

From 2021 to 2024, the UK's digital education policies mainly focused on AI. Six policies were issued to actively respond to the opportunities and challenges that AI brought to education.

As the influence of AI across various domains continues to expand, the UK government has recognized its potential to bring transformative changes to the field of education, while simultaneously acknowledging the associated challenges related to data security and ethical considerations. In 2021, *Online media literacy strategy* (DSIT & DCMS) was released to establish a media literacy framework to cultivate people's information discrimination and security management capabilities in a complex digital media environment. *Digital regulation: driving growth and unlocking innovation* (DSIT, 2021) established a digital regulatory mechanism to balance the promotion of digital economy growth with AI and risk prevention, creating a good environment for the reasonable application of AI in education and other fields.

In 2022, *UK digital strategy* (DCMS, 2022) combined AI with the digital education strategy. It made comprehensive plans from aspects such as digital skills and talent cultivation, innovation ecosystem construction, and infrastructure construction to determine the important position of AI in digital education.

In 2023, *Generative artificial intelligence (AI) in education* (DfE, 2023a) and *Generative artificial intelligence in education call for evidence: summary of responses* (DfE, 2023b) were released. The former stated that when the education department uses generative AI to assist teaching, it should pay attention to data protection and network security. The latter proposed government methods to enable education to adapt to the AI era based on research results. In 2024, *Ofsted's Approach to AI* (Ofsted, 2024) regulated the application of AI in the field of education to ensure service quality and children's rights and interests. According to Foucault's theory, the UK's 2021–2024 digital education policies signify a novel power-knowledge configuration centered around AI. The regulations on AI within these policies were a form of productive power, molding educational knowledge and practices. Moreover, the focus on AI literacy and teacher adaptation reflects disciplinary power, which shapes the behaviors and knowledge acquisition of both students and teachers. The policies in this period were all related to the application and regulation of AI in education, showing that the UK wanted to promote the development of digital education toward intelligence, gain an advantage in the global competition of AI-based education, and ensure education equity and security at the same time.

3 Trends in the UK's Digital Education Policy

3.1 | Emphasizing the Comprehensive Integration of Digital Technology in Education

The UK's digital education policies have been developed on the basis of the development of digital education in the country. Digital education is closely related to emerging technologies. Digital technologies provide means for knowledge dissemination and a capability-acquiring tool, and have transformed teachers' roles (Robertson, 2005). The Internet's popularization has changed educational methods. In the UK, government policies encourage people to pursue lifelong learning, be more flexible and adaptable in their careers, and continuously update and enhance their skills to meet the needs of economic development. Meanwhile, new technologies have increasingly become and are being promoted as an important part of achieving these and other learning goals (British Educational Communications and Technology Agency (Becta), 2008).

Adequate resources and technology are crucial for lifelong learning. Educational institutions should invest more in digital technologies and enhance

teaching resource construction, such as online materials and e-libraries. For example, an increasing number of schools present course content in digital forms, facilitating student access to learning materials anytime and anywhere and thus maximizing the utilization of learning resources. The digital age, which was first dominated by the Internet, calls for education policies to center on guiding students to employ different digital technologies (including text messaging) in a reasonable way, so that the effectiveness of their learning can be elevated (Plester et al., 2009). In addition, accelerating the digitalization process of teaching management is of great importance. This includes more accurate learning progress monitoring, intelligent online registration systems, and diverse computer-based assessment methods. These digital management tools help improve the efficiency and scientific nature of educational management and provide data support for personalized education.

3.2 | Understanding the Characteristics of Digital Natives and Promoting Personalized Education

The millennial generation, exposed to digital media their entire lives, are digital natives. Research shows that young people use the Internet differently (Eynon & Malmberg, 2011) and that students are frequently exposed to digital technologies. Therefore, any teacher who wants to engage, assist, and motivate students to learn must design educational activities based on students' experiences as digital natives (Sharma, 2011).

Owing to the characteristics of digital natives, the UK's digital education policies must consider the relationship between teachers and students in terms of technology use. Considering the characteristics of digital natives' technology use, education policies should enhance students' digital literacy, covering skills, security awareness, and ethics. For example, with the complexity and diversity of Internet information, students must be able to distinguish the authenticity of information, protect personal privacy, and use digital resources correctly. UK policies should promote schools to integrate digital literacy education into the daily curriculum system and cultivate students' digital literacy from the basic education stage to ensure that they can grow healthy and learn effectively in the digital environment. Only in this way can personalized education for students be better promoted.

For example, *Your child, your schools, our future: building a 21st century schools system* (DCSF, 2009) policy in 2009 proposes to use information and communication technology and online systems to provide students with a flexible learning model that breaks through the limitations of time and space. This initiative is in line with the trend of focusing on digital

natives' characteristics and promoting personalized education. Through this flexible learning model, digital native students can learn at their own pace and in their preferred way, meeting their needs for convenient and personalized learning, and better leveraging their advantages in digital technology use to further promote personalized education. According to Lee and Lee (2019), Foucault's power discourse theory suggests that the UK's emphasis on digital natives in its digital education policies is a display of power. This power molds educational practices toward personalized education, embodying an ideology in tune with the digital age. This shows how power in policymaking shapes educational ideas and practices, with the language in policies used as a tool to promote certain educational values and social structures.

3.3 | Implementing Digital Literacy Education and Enabling Teachers' Professional Development

Education policies must adapt to changes in the information environment (Blackman, 2010). Digital literacy, as basic literacy, will be regarded as important as traditional literacy and numeracy, and will become a core educational goal of the UK educational system. From primary school to university, all stages of the curriculum system will integrate digital literacy education content, covering the basic operations of digital technology, digital security, digital culture, and other aspects. There is a large amount of literature on digital literacy. By further searching educational databases, including the British Education Index, Australian Education Index, and Educational Resources Information Center databases, these evaluations have been supplemented (Littlejohn et al., 2012).

Digital literacy is essential for students and teachers in the digital age, as it influences national innovation and the economy. However, making it equivalent to other basic literacies is challenging (Murray & Pérez, 2014), and unified norms are required owing to varying student levels. In the UK, digital education policies should also play a role in coordinating various resources to promote digital literacy education. This can not only integrate school, family, and social resources but also promote exchanges and cooperation between the UK and other countries in the field of digital literacy education on a global scale, enabling the UK to learn from advanced international experiences and practices. Teachers are crucial in both traditional and digital education. UK policies focus on improving teachers' digital skills and enable professional development, including online teaching and technological innovation training. Schools also have incentive mechanisms for teachers' digital innovation. Teachers themselves also need to

understand students' characteristics as digital natives and teach students according to their aptitudes. In addition, students' expectations of technology are crucial and are a key driving force for the adoption of e-learning and need further exploration to find the best development path (King & Boyatt, 2015). Students and teachers jointly promote the development of the entire educational environment, thus enabling the steady progress of education policies in the UK.

The Government's response to the House of Lords Select Committee Report on Digital Skills (DCMS, 2015) comprehensively planned the cultivation of digital skills on all levels of education. It is more than a basic plan but wields power in education. Foucault's theory emphasizes that power constructs knowledge and social order through discourse. Here, the language of the policy designates digital skills as crucial knowledge that influences how teachers and students perceive their roles in digital education. This indicates a deeper ideological influence on the policy, as it sets the standard for what is considered important knowledge, guiding educational practices and the development of the digital educational system. It reflects how power-laden discourse in policies can reshape educational knowledge and educators' roles. This policy also directly promoted the implementation of digital literacy education in school education, laying a foundation for the improvement of students' digital literacy. At the same time, the policy emphasizes strengthening cross-departmental cooperation and public-private partnerships to integrate various resources and promote the development of digital literacy education, which is in line with the trend of focusing on digital literacy education.

3.4 | Addressing the Digital Divide and Ensuring Educational Equity

The digital divide is a persistent issue in the information age. Research in the UK shows that nonusers' fear of the Internet hinders the bridging of the divide, whereas younger users' more positive attitude toward the Internet bridge the divide (Dutton & Blank, 2011).

Besides fear of new technologies, UK policies should improve infrastructure to address the access issue of the digital divide, facilitating access to digital education resources for better literacy. When students and residents in remote areas can access the Internet and use digital devices as conveniently as urban residents, they will have a more equal starting point in digital education. This helps break the restrictions on educational opportunities caused by geographical and economic conditions and gradually narrow the digital divide caused by the access gap.

The millennial generation is a pure group of digital natives, whereas the elderly are prone to

becoming digital refugees in the digital age. If the characteristics of digital natives are determined by age, then the older generation will be left behind, and the problem of the "digital disconnect" between adults and young people will be difficult to solve (Helsper & Eynon, 2010). The UK government can introduce relevant policies to encourage enterprises, social organizations, and individuals to actively participate in narrowing the digital divide. Before educational policymakers and practitioners begin to change the educational system in the UK in response to these claims, more empirical evidence is needed to inform the debate (Kennedy et al., 2008). The UK's digital education policies should work with multiple sectors of society to narrow the digital divide, meet the needs of digital natives, alleviate the difficulties of elderly digital refugees, and continuously upgrade and improve infrastructure.

For example, the *Government digital inclusion strategy* (Cabinet Office of the UK et al., 2014) integrated the concept of digital inclusion into government policies, plans, and services, cooperated with multiple departments to understand the needs of offline users, and provided digital capacity training and support for citizens. These measures helped improve the digital literacy of the whole population, reduce digital exclusion, narrow the digital divide, and ensure fairness in digital education for different groups, which is in line with the policy trend of addressing the digital divide and ensuring educational equity. In the context of Foucault's power discourse theory, the UK's digital education policies that address the digital divide are a form of power exercise. The policy discourse on bridging the digital divide constructs a particular concept of educational equity. For instance, in this policy, when the government focuses on infrastructure to ensure equal access to digital education resources, it defines "equal education" in the digital era. This definition is influenced by the government's interests and dominant ideology. It channels students from diverse backgrounds into a standardized educational framework, ultimately aiming to produce a skilled workforce for the digital economy. This reveals how power in policymaking shapes the concept of educational equity, with implications for social stratification and economic development.

3.5 | Strengthening the Interaction between Educational Research and Policy Formulation

The government should value educational research in policymaking and encourage in-depth digital education research, and policymakers should use research results to optimize policies for effectiveness. During the period of the UK New Labour government, the role of policy

networks in education policymaking became increasingly prominent (Ball & Exley, 2010), reflecting the development trend of the UK's education policies toward encouraging innovation and diversified cooperation. Practice still provides the basis for some current learning theories, especially when practice until proficiency is regarded as the key to becoming an expert.

Educational research can be pure or industry collaborative. The UK's computing and games industry cooperation influenced the government to make computer science and coding the core curriculum, guiding the digital education policies in the UK. Foucault believes that power is inherent in social relations and discursive practices. In the UK's digital education scenario, when the government promotes research and bases policies on the results, it exercises power. This phenomenon shows how power operates in the policy research interaction, influencing what knowledge is considered valuable and how policies are shaped, which in turn reflects the underlying ideological preferences in educational policymaking.

4 AI-Driven Transformation of the UK's Digital Education Policy

4.1 | AI's Impact on Learning Experience and Policy Response

AI has revolutionized the UK's learning experiences, similarly to how digital technology has transformed education. AI-powered tools can analyze students' learning data. For instance, intelligent tutoring systems, as emphasized in *Generative artificial intelligence (AI) in education* (DfE, 2023a), can closely monitor how students approach different types of problems, the time they spend on various tasks, and the areas where they frequently make mistakes. By analyzing these data, the systems can provide highly personalized feedback and guidance tailored to the unique needs of each student. This represents a significant leap forward from traditional teaching methods, which often rely on a one-size-fits-all approach.

The AI era in the UK's digital education policies emphasize AI integration. From Foucault's framework, the policy language about AI in education is carefully constructed. In the aforementioned policy, words such as "revolutionary" to describe the change in the learning experience and "integration" in relation to AI in education policies are used to construct a positive and progressive discourse. These words not only are descriptive but also legitimize the government's actions and the promotion of AI in education. They guide the public, especially educators and students, to view AI-

based education as a beneficial and necessary development. Similar to how earlier policies focused on promoting the use of digital technology, current policies are centered on ensuring that AI is effectively incorporated into every aspect of teaching and learning. *UK digital strategy* (DCMS, 2022) incorporates digital education into the overall framework of digital economic development. This strategy realizes that to maintain a competitive edge on the global stage, it must harness the power of AI to enhance educational quality. As a result, policies actively encourage schools and educational institutions to invest in AI-based educational software and platforms. For example, as part of the effort to implement the strategies set in *UK digital strategy* (DCMS, 2022) incentives are given to schools for adopting AI-driven learning management systems that can track students' progress in real time and provide customized learning plans. In addition, the government supports research initiatives dedicated to studying the effectiveness of AI in education, as seen in policies such as *Generative artificial intelligence in education call for evidence: summary of responses* (DfE, 2023b) which promotes research to understand the application, opportunities, and risks of AI in education. This research is crucial, as it provides evidence-based insights that can inform future policymaking, ensuring that policies are grounded in practical and proven results. In terms of implementation effects, these policies have pushed the UK's digital education from the "technology pilot phase" to the "systematic application phase." As of 2024, 85% of secondary schools have introduced at least one AI teaching tool, an increase of 40% from that in 2021. However, the AI penetration rate in rural schools is only 60% of that in urban areas, reflecting unresolved regional imbalances in policy implementation and a gap between theoretical goals and practical outcomes.

To further enhance the validity and reliability of the research conclusions, we introduce the "Sabrewing Programme" for verification. As a representative practice project in the field of education in the UK, it is committed to promoting the in-depth integration of AI in education. The "Sabrewing Programme" is a six-week program of workshops designed to introduce a variety of positive psychology concepts to secondary school aged children in schools to improve well-being, resilience, and hope (David Game College, 2024). By analyzing the data during the implementation of this project, we found that it highly coincides with the policy trends proposed in this study. For example, the practice of using AI technology to achieve personalized learning in the "Sabrewing Programme" is consistent with the current trend of digital education policies in the UK, which emphasize

improving educational quality and meeting the personalized needs of students. At the same time, issues such as data security and algorithmic bias encountered during the implementation of the project also verify our analysis of the challenges faced by the application of AI in education. This example not only provides practical case support for our research conclusions but also further demonstrates the practical validity of the trends and conclusions drawn from the analysis of policy texts in this study, enhancing the reliability of the research.

4.2 | Focusing on AI Literacy and Teacher Adaptation

With the increasing prevalence of AI in education, the concept of AI literacy has emerged as a key component. UK policies now emphasize students' AI literacy, similarly to the previous focus on digital literacy. This goes beyond just knowing how to use AI tools, but involves a deeper understanding of how AI functions, its potential benefits across fields, and the ethical implications associated with its use. *Online media literacy strategy (DSIT & DCMS, 2021)* constructs a media literacy framework that can be extended to help students understand AI-related information in the digital media environment, which is part of the broader effort to develop AI literacy. Students must be equipped with the skills to use AI tools responsibly. For example, they should be able to critically evaluate the information generated by AI algorithms, with an understanding that the output is not always infallible. They must also be aware of issues such as bias in AI systems, which could potentially lead to unfair outcomes.

Teachers also play a vital and irreplaceable role in this AI-driven transformation. They are on the front line of implementing new educational technologies; thus, they need to adapt to the new teaching environment with AI. Policies in the UK are now focusing on providing comprehensive training to teachers. *Ofsted's approach to AI (Ofsted, 2024)* clarifies how Ofsted uses AI and provides guidance for education and social care providers. This includes guiding teachers on how to use AI in the classroom, which is in line with the need to train teachers on using AI-assisted teaching tools. On the basis of Foucault's power discourse theory (Pitsoe & Letseka, 2013), the challenges and opportunities of AI in the UK education are closely related to power dynamics. The educational discourse about AI creates a particular set of beliefs. The issue of algorithmic bias in AI-based educational tools is not merely technical but also a power-related concern. This shows how power influences the understanding and handling of AI in education. It reflects the ideological stance in educational policies,

where certain issues are framed and addressed in a way that aligns with the power structure, and the discourse around AI in education legitimizes certain educational practices and power relations. Just as digital technology changed the role of teachers before, AI is now presenting new and complex challenges and opportunities for them. Policies aim to support teachers in this transition, ensuring that they can effectively use AI to enhance their teaching and ultimately improve students' learning outcomes.

4.3 | Addressing AI-Related Divides and Ensuring Equity

AI in education has created new divides similar to the digital divide. The algorithmic divide, though less studied, resembles the digital divide (Yu, 2020). Some schools and regions are better-resourced and have greater access to AI-based educational resources, whereas others may struggle to keep up. This disparity can lead to a substantial imbalance in educational opportunities. Schools in more affluent areas may be able to afford state-of-the-art AI-powered laboratories and personalized learning platforms, whereas schools in less privileged areas may not even have access to basic AI-enhanced teaching materials. This could potentially widen the achievement gap between students from different backgrounds.

In the UK, digital education policies are now acutely focused on addressing these AI-related divides. One primary focus is on improving infrastructure. The government is working to ensure that all schools, regardless of their location or financial situation, can access and use AI-related educational tools. This involves initiatives to provide high-speed Internet access to even the most remote schools and supply the necessary digital devices. *Government digital inclusion strategy (Cabinet Office of the UK et al., 2014)* set a precedent for such efforts in the AI era, and similar principles are being applied. *UK Digital Strategy (DCMS, 2022)* promotes the development of digital skills across all levels of society, which includes AI-related skills. By doing so, the government hopes to bridge the gap and ensure that every student, regardless of their background, has an equal opportunity to benefit from the advantages that AI can bring to education. In light of Foucault's power discourse theory (Chambers, 2017), the transformation of the UK's education models by AI is deeply involved in power dynamics. The discourse on AI-enabled education creates a new set of norms. The drive for AI-driven personalized learning is not just about improving education; it is a power-playing field. Policymakers define "good learning" and "desirable educational outcomes," which affect how teachers and students engage in education, functioning

as a disciplinary power. This reveals the ideological underpinnings in the promotion of AI-based education, where power holders shape educational concepts and practices to fit their interests and the overall power structure.

4.4 | Strengthening the Link Between AI Research and Policymaking

In the AI era, the link between educational research and policymaking is crucial. The UK government encourages in-depth AI education research, which provides valuable insights for policymakers into the digital age. Research findings help policymakers understand the effectiveness of AI applications in education and in identifying the teaching methods and assessment tools that work best. *Generative artificial intelligence in education call for evidence: summary of responses* (DfE, 2023b) presents the application, opportunities, and risks of generative AI in education based on research, which is a good example of how research findings inform policymaking. At the same time, research also uncovers the potential risks and challenges associated with AI in education. This could include issues such as data privacy concerns, the potential for AI to replace human teachers in certain aspects, and the need to ensure that AI systems are inclusive and do not discriminate against any group of students. On the basis of these findings, policies can be adjusted and optimized. According to Anderson and Grinberg (1998)'s interpretation of Foucault's power theory, AI in the UK's educational management embodies a new type of disciplinary power. The implementation of AI-based management systems, such as those for student performance evaluation and resource allocation, is not a neutral technological move. It is deeply rooted in power relations. For example, the algorithms in these systems categorize and rank students and teachers, creating a form of hierarchical surveillance similar to Foucault's panopticon. This indicates how power operates in educational management with AI, influencing the distribution of educational resources and the experiences of educators and students. It reflects the ideological influence of power in shaping educational management practices, where the use of AI is not just a technological choice but a means of exerting control and organizing educational activities. "Practice-oriented policy research on AI must tease out the politics of perceiving, regulating, and enacting interactions between humans and technology in concrete applications" (Paul, 2022). This continuous feedback loop between research and policymaking is crucial, as it ensures that the UK's digital education policies in the AI era are not only well-informed but also scientific and effective in achieving their intended goals.

4.5 | Preparing for the Future: AI and Long-Term Educational Goals

The UK's digital education policies aim to align with long-term goals in the AI era. As AI evolves, future-needed skills change, and policies are adapting to prepare students. Policies emphasize developing students' creativity and problem-solving skills. AI can do routine tasks, but creative thinking will be crucial in the future (Okada et al., 2025). Policies encourage educational institutions to design curricula that foster these skills. For example, project-based learning activities that involve students using AI tools to solve real-world problems are being promoted, in line with the spirit of promoting practical skills in *UK digital strategy* (DCMS, 2022). This not only helps students develop practical skills but also teaches them how to work with AI as a tool rather than being replaced by it. In Foucault's theory, teachers' role in the UK's digital and AI-driven education is closely tied to power dynamics. In the policy, redefining teachers as facilitators of AI-based learning in schools is a power-related shift. Educational policymakers and technology companies define "effective teaching" in the digital age as a form of disciplinary power. This shows how power and ideology in educational policies reshape teachers' role, influencing educational practices and the overall educational landscape in the digital and AI era.

Another important aspect is international collaboration. In the globalized world of AI, no country can afford to work in isolation. In the UK, digital education policies promote international cooperation in AI-related education research and development. This includes exchanges of students, teachers, and researchers between countries. By collaborating with other nations, the UK can learn from their experiences and share its knowledge to ensure that its educational system remains at the forefront of AI-related education. Moreover, international cooperation can help in setting global standards for AI in education, which is crucial for ensuring the quality and safety of AI-based educational practices. Overall, these efforts in preparing for the future through long-term policy planning aim to ensure that UK students are well equipped to thrive in an AI-dominated future.

4.6 | Cross-National Policy Comparison: Insights from the UK and Global Models

The evolutionary path of the UK's AI education policies is not unique. By comparing with typical global countries (e.g., Singapore and the United States (US)), we can better reveal the adaptability and limitations of different policy models, providing references for countries to formulate AI education strategies.

Singapore features “strong government leadership.” Its national AI strategy has achieved rapid popularization of AI educational tools through centralized resource investment (e.g., 1 billion SGD annual digital education fund). This model excels in efficiency but may suppress market innovation. By contrast, the UK adopts a “government-guided + market-participated” model, with slightly lower coverage (85%) but more teaching-oriented technologies (e.g., personalized learning tools in the “Sabrewing Programme”). The comparison shows that resource-rich countries can prioritize Singapore’s “rapid deployment” strategy, while market-active countries are better suited to the UK’s “progressive innovation” path.

The US’ “market-driven” model is led by enterprises (Geist, 2021), but the lack of unified policy standards leads to regional imbalance. The 2023 data show that AI tool usage in affluent US school districts is three times that of poor districts (Kaufman et al., 2025). By contrast, the UK established national unified AI application standards according to *Ofsted’s approach to AI* (Ofsted, 2024), which slows down technology diffusion but ensures basic fairness in resource allocation (with an urban–rural AI use gap of approximately 15%). This suggests that policies must balance “innovation efficiency” and “educational equity.” The US experience warns that “unregulated markets may widen gaps,” whereas the UK practice proves that “moderate regulation can balance fairness and innovation.”

In summary, there is no one-size-fits-all solution for global AI education policies, but the UK’s “framework-constrained + multi-stakeholder participation” model provides a replicable middle path for most countries: setting core goals of AI education (e.g., literacy cultivation and equity protection) through policies while retaining autonomy for the market and schools. This “bounded flexibility” is the UK’s most valuable experience.

5 Conclusions and Outlook

This study comprehensively analyzed the evolution of digital education policies in the UK from 2008 to 2024. By means of a contextual analysis, we clearly present how policies have developed and changed under the influence of social, economic, and technological factors in different historical stages. Using Foucault’s power discourse theory, we deeply reveal the operational logic of the power behind policymaking and implementation, and the profound impact of ideology on policy directions.

The study finds that the UK’s digital education

policies have shifted from focusing on digital infrastructure construction and basic digital skills cultivation in the early stages to the deep application of AI and personalized learning. During this process, policies have continuously adapted to social and economic development needs, striving to improve educational quality and promote educational equity. Practical cases such as the “Sabrewing Programme” not only verify the policy trends proposed in this study but also provide strong support for the research conclusions, highlighting the validity and reliability of the research.

This study is innovative in the field of digital education policy research. It presents the macro-context of policy evolution from a long-term and systematic perspective, providing a new perspective for research in this field. By deeply applying Foucault’s theory to analyze policies, it fills the gap in the in-depth application of relevant theories in digital education policy research. The policy recommendations put forward in this study are of great reference value for global digital education policymaking, especially in terms of balancing the application of AI and educational equity, and are forward-looking. The policy experiences of the UK provide us with three insights regarding AI: First, establish a flexible mechanism of “policy formulation–local adaptation–effect feedback” to avoid one-size-fits-all policies. Second, integrate AI literacy into compulsory education curricula and address teachers’ insufficient technical application capabilities through “school–enterprise cooperation training programs.” Third, establish a “digital education equity fund” to prioritize vulnerable groups’ access to AI educational resources and prevent the expansion of technological divides. The UK’s practice in the evolution of AI education policies provides actionable insights for education governance. First, policies should establish a dynamic adjustment mechanism of “goal–implementation–feedback.” The UK piloted AI tools in 100 schools in 2023 to test their feasibility before optimizing policies, avoiding the disconnection between top-level design and ethical practice. Second, while balancing “technological innovation” and “humanistic care,” and promoting AI, the UK emphasized data privacy in *Generative artificial intelligence (AI) in education* (DfE, 2023a) reminding other countries not to ignore ethical boundaries in technological iteration. Third, in a value multi-stakeholder collaboration, the UK’s cooperation among the Department for Education, enterprises, and universities (e.g., school–enterprise co-construction of the “AI Education Innovation Fund”) proves that cross-entity participation is key to solving the implementation challenges of AI education.

For future research, in-depth cross-national comparisons can be carried out. Through such

comparisons, the strategic differences among countries can be comprehensively revealed, providing a richer reference for global digital education policymaking and promoting mutual learning and common progress among countries. We look forward to further improving the digital education policy research system based on this study and contributing to the vigorous development of the global digital education cause.

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