

Original Research Article

A Path Study on the Impact of the New Generation of Information Technology and New Business Models on Education and Teaching in China*Zheng Xiao**State Information Center, Beijing, Xicheng District, No. 58 Sanlihe Road, 100045*

Abstract: The swift progress of the new generation of information technology has propelled rapid evolution in China's economic landscape. Under the impetus of such technological advancements and market forces, significant transformations have emerged in the developmental paradigm of learning sciences in China, alongside substantial shifts in classroom dynamics and teaching feedback mechanisms. These new technologies and new business models pose several challenges to Chinese education systems. Higher qualifications are now demanded of educators, especially when implementing these advanced teaching tools; however, some regional and age-related disparities persist, hindering teachers' adaptation to current requirements. Furthermore, the Matthew effect in educational resource accessibility is exacerbated by these technological innovations, intensifying the disparity in knowledge acquisition quality among students and jeopardizing social educational equity. Additionally, these new technologies and business models contribute to a heightened sense of pressure and anxiety in the student learning experience, thereby diminishing overall learner well-being. To address these challenges, it is recommended to expedite the balanced deployment of new technology-driven educational infrastructure, bridging urban-rural and regional divides. It is also crucial to delineate clear boundary regulations for online and offline learning durations and to establish well-founded new technology teaching management systems. Efforts should be made to foster a comprehensive societal understanding of the positive role that new technologies and business models can play in educational enhancement.

Keywords: New technology; New business models; Education and teaching

1. Introduction

With the rapid evolution of next-generation information technology, China's new economic patterns are developing swiftly. Driven by technological advancements and market dynamics, significant changes have occurred in China's learning science development model, classroom formats, and educational feedback mechanisms. From a technological perspective, new innovations such as 5G, big data, artificial intelligence, blockchain, and the industrial internet are profoundly transforming fundamental educational methodologies (Shang Junjie, 2020; Jia Jiyou, 2018), significantly reshaping the basic framework of learning science and altering existing pedagogical pathways. From the standpoint of the market environment of new economic patterns, these evolving market conditions have given rise to more contemporary educational technology concepts. This progression has consistently enhanced the quality of education in China (Wang Wuyun et al., 2019; Luo Zhen, 2018). President Xi Jinping has emphasized the importance of striving to build an educational system that comprehensively nurtures moral, intellectual, physical, aesthetic, and labor education, thus creating a higher-level talent cultivation system^①. Therefore, adapting to new technologies and emerging economic patterns to establish a high-level learning science system is a vital implementation path for constructing a modernized education system.

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Currently, with the accelerated evolution of the global new generation information technology revolution, the application of new generation information technology has accelerated its penetration into various fields. In recent years, the level of informatization in education has greatly improved the knowledge carrying capacity of classroom teaching, the diversity of teaching methods, and the sense of classroom participation. New technologies have also had a profound impact on the industrialization development of education, continuously improving the interactive relationship between parents, students, and school teachers, and optimizing the overall business model of the education industry. Specifically speaking, the new generation of information technology has changed the technological environment of education and teaching in China. The new economic format continues to optimize the application scenarios of education and teaching in China, and new technologies and formats continue to bring important changes to the entire teaching ecosystem. Meanwhile, it is worth noting that, the influence of new technologies and new economic patterns on education and teaching presents certain risks and challenges, necessitating the enhancement of policy mechanisms to promote the high-quality development of education through these new advancements.

2. The Advent of New Technologies and New Business Models Presents Multifaceted Challenges to China's Education and Teaching System.

New technologies impose higher standards on the quality and competencies of the teaching workforce. Educators in various regions and age demographics struggle to meet the evolving demands of contemporary educational paradigms. From an economic development perspective, teachers in economically advanced regions benefit from superior technological training. They have access to high-quality educational technology tools that enhance their teaching efficacy, making their roles more competitive. Conversely, in economically underdeveloped regions, teachers find it difficult to adapt to the educational requirements imposed by new technologies. This technological transition has led to a “barrier effect,” causing a decline in classroom teaching quality. Secondly, considering the age gradient among teachers, younger educators more readily embrace new technological knowledge. They integrate advanced teaching technologies into their instructional methodologies. On the other hand, older teachers lag behind younger counterparts in enhancing teaching strategies through new technologies. As a result, younger teachers gain more technical resources and improve their teaching quality, exerting pressure on the older teacher demographic. The influence of technology on older teachers' teaching activities marginalizes the wealth of experience they have accumulated over the years. The advantageous effects of new technologies and industries, therefore, create a “crowding-out effect” on traditional teaching expertise.

New technologies and new business models will exacerbate the Matthew effect in accessing educational resources among students, thereby widening the disparities in knowledge acquisition quality and undermining social educational equity. Advanced technologies will intensify Matthew effect where the strong become stronger. On one hand, the integration and enhancement of teaching resources through new technologies and emerging industries predominantly occur in key institutions and research institutes, establishing a positional advantage over general institutions. Schools that harness these technological advancements access superior teaching resources, attracting better faculty and students, thereby boosting educational quality and admission rates. On the other hand, such technological advancements increase the quality disparity in knowledge acquisition among student groups. As technologies evolve, the associated paid products and classroom teaching resources become further monetized, necessitating higher financial investments to access more high-quality educational resources. Consequently, new technologies and emerging industries create more opportunities for high-income students

and families to opt for superior educational services, while low-income families are limited to the more socially inclusive, albeit basic, classroom services provided by new technologies. This widening gap in educational resources accentuates the educational inequities between different socio-economic groups.

New technologies and new business models impose psychological pressure and anxiety on students, ultimately diminishing their overall happiness index. From the perspective of course content capacity, the transition from blackboard teaching to two-dimensional media images, then to video animations, and now to immersive learning experiences has significantly increased the volume of classroom knowledge delivered through innovative technological means and advanced teaching models. Consequently, students are confronted with an elevated amount of information intake, which intensifies the burden of extracurricular assignments and review tasks to a certain extent. Examining the general learning processes, knowledge acquisition, retention, and application require relatively intricate “reflective” activities. Excessive information input exacerbates students’ cognitive load, thereby decreasing the effectiveness of learning. From an accessibility standpoint, mobile applications and tablets offer constant course engagement opportunities, which, notwithstanding their convenience, perpetually expose students to learning pressures. This ongoing psychological reminder of the need to maintain a state of constant academic readiness may incrementally heighten anxiety levels within a subset of the student population, thereby further eroding their study-related happiness index over time.

3. Policy Paths for the High-Quality Development of Education and Teaching in China under the Development of New Technologies and New Business Models

3.1. Achieving Equitable Distribution of Innovative Teaching Infrastructure Ushered in by New Technologies and Ameliorating Disparities Between Urban and Rural Areas

The first is to bridge the gap in new technology education between urban and rural areas. This involves significantly increasing educational financial investment in rural, especially remote rural areas. By enhancing the informatization of teaching methods and promoting the widespread adoption of new technology education, rural education can be substantially improved. Secondly, addressing regional disparities requires boosting investment in new technology education in central and western regions. Through regional collaboration mechanisms and integrative cooperation, the capacity of the central and western regions to accommodate educational talent from the southeastern areas will be strengthened. This will expand and elevate the scale and quality of educators in these regions. Efforts must also be intensified to improve the foundational infrastructure for new technology education in central and western areas. In particular, major central-western cities should focus on narrowing the technology education gap with the southeastern coastal areas, while remote mountain villages should prioritize enhancing the overall informatization of basic education. Thirdly, the development of educational technology in underdeveloped areas should be propelled through innovative methods such as online courses and Massive Open Online Courses (MOOCs). By implementing strategies like long-distance collaboration between universities and city partnerships, the central and western regions can elevate their educational standards via remote learning tools including online courses and MOOCs. Additionally, specialized training programs on educational technology methods should be conducted in less-developed areas. Initiatives to expand the education industry should also be encouraged through educational interconnected platforms and other economic forms in the central and western regions.

3.2. Enforcing Stringent Regulations Delineating the Boundaries Between Online and Offline Learning Times, Establishing A Scientifically Sound Curriculum Management System for Emerging Technologies.

First, it is essential to clearly define the temporal boundaries between online and offline learning. Online learning sessions conducted during classroom time should be efficient and concise. Conversely, online learning outside the classroom must adhere to strict temporal limits to prevent unsupervised and disorganized study periods. Schools and families should co-create regulated learning schedules to avert the unchecked expansion of learning time in the context of emerging technologies and new business models. Second, the implementation and regulatory framework for new technologies and new business models must be explicit. Any form of educational advertising and promotional content must be strictly prohibited from saturating mobile internet platforms. Vigilance is required to curb the over-commercialization of the education sector under the influence of capital investment in new technologies and business models. This action will mitigate excessive learning pressures driven by market forces. Third, there should be enhanced categorization and management in the educational sector harnessing new technologies and business models. The focus must be on students' well-being and experiential satisfaction. This approach entails developing a curriculum aimed at comprehensive skill enhancement and holistic development. Additionally, changes in online and offline teaching methodologies should align with the tax reduction and fee relief policies shaping the future of the educational industry. This alignment will create strong incentives for the sector to reduce excessive teaching intensity and promote a return to a more balanced educational ecosystem.

3.3. Effectively Guiding Societal Understanding Regarding the Positive Impact of New Technologies and New Business Models on Education and Teaching Requires A Multifaceted Approach

Firstly, amplify efforts to promote classroom teaching through new technologies and business models by utilizing integrated media, mainstream media, and interpretative articles. These efforts should actively communicate to further instill the concept of reasonable utilization of new technologies in classroom teaching and the development of the educational industry. Secondly, all governmental levels must enhance the integration of industry, academia, and research with new technologies and business models. Establishment of co-initiated support funds by government, enterprises, and educational institutions is crucial. These funds should aim to accelerate the support for classroom teaching construction through new technologies and business models. Thirdly, increase support for teachers' professional development in applying new technology in classroom teaching. This involves setting up key scientific research funding projects to support research on the application of new technology in teaching and establishing comprehensive new technology classroom teaching support plans. Fourthly, guide societal capital to participate in new technology teaching within educational institutions in an orderly manner. Various methods, such as mixed-ownership operations and social donations, should be employed to enhance societal support for education and teaching using new technologies. Particular attention should be paid to directing social capital towards underdeveloped regions in Central and Western areas for new technology teaching.

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