

## ИСПОЛЬЗОВАНИЕ ИНТЕРНЕТ-ТЕХНОЛОГИЙ В СИСТЕМЕ ОБРАЗОВАНИЯ КИТАЯ: ПЛЮСЫ И МИНУСЫ

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**Аннотация.** В статье рассматривается использование Интернет-технологий в системе образования Китая, анализируются их плюсы и минусы. Внедрение современных технологий в систему дает новые возможности для персонализации обучения и глобального доступа к образовательным ресурсам. Однако такие проблемы, как цифровое неравенство и вопросы безопасности данных, подчеркивают важность взвешенного подхода к интеграции технологий в образование с учетом справедливости и безопасности.

**Ключевые слова:** интернет-технологии; образование; Китай; преимущества; недостатки; персонализация обучения; глобальный доступ; цифровое неравенство; безопасность данных.

## THE USE OF INTERNET TECHNOLOGY IN CHINA'S EDUCATION SYSTEM: THE PROS AND CONS

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**Abstract.** The article examines the use of Internet technologies in the Chinese educational system, analyzing their pros and cons. The introduction of modern technologies into the system provides new opportunities for personalization of learning and global access to educational resources. However, challenges such as the digital divide and data security issues highlight the importance of a balanced approach to the integration of technology in education, taking into account equity and security.

**Keywords:** Internet technologies; education; China; advantages; disadvantages; personalization of learning; global access; digital divide; data security.

Education initially serves the purpose of educating people. Young children become smarter by immersing themselves in culture, assimilating knowledge, expanding their horizons and increasing their wisdom. Economist, educator and former vice-president of the Chinese Academy of Social Sciences, He Xiangchun, expressed it this way: «Education is reasonable learning» [1, p. 36]. The modern «smart» education in question is not limited to traditional methods, but includes the use of modern information technologies, the Internet, big data analysis and artificial intelligence. These technologies help teachers better understand individual differences and needs by offering intelligent solutions that meet diverse individual needs. Thus, they contribute to wise education and the development of wisdom.

Since the founding of the People's Republic of China, China's information industry has achieved historic successes, moving from zero indicators to significant achievements, from backwardness to leadership. The Chinese education informatization industry, being an important part of the national informatization strategy, has also achieved outstanding results that have attracted the attention of the whole world and outlined the pictures of continuous development and growth.

Since the creation of the world's first electronic computer in 1946, humanity has entered the «information age». In 1958, the first Chinese computer with an electronic lamp was successfully developed, and in 1973, the first Chinese computer capable of performing 1 million operations per second was successfully created in Beijing. This was an important stage in the development of electronic computers in China. Since the early 1990s, with the development of computer and network technologies, China has consistently formed the Leading Informatization Group of the State Council and the Ministry of Information Industry in order to develop strategies, unify planning, scientific implementation, strengthen management and accelerate the development of the information industry. In 1994, the State Plan approved the construction project of the «Demonstration Project of the Chinese Computer Network for Education and Scientific Research CERNET», which was connected to the Internet through the international export of NCFCC, becoming the first national computer Internet network in China operating over TCP/IP protocol. This laid the foundations for the comprehensive deployment of information infrastructure in China.

In November 1995, the CERNET network, which united 100 universities across the country, was put into operation a year ahead of schedule, and the first group of Internet users appeared in Chinese universities. Over 25 years of development, CERNET has become the world's largest academic network providing a platform for collaboration in the field of industrial innovation, especially within the framework of the current large-scale IPv6 deployment. At the moment, there are more than 5 million IPv6 users in the Chinese Computer Network of Education and Scientific Research. It is an important basic experimental facility for China in the field of new generation Internet technology research, large-scale application development and promotion of the next generation of the Internet industry.

By the 21st century, the education informatization industry in China has moved into a period of construction and applied development. By 2020, a system of informatization of education was created that corresponds to the modern development goals of the country. In this system, an informatized learning environment is mainly formed, providing access to high-quality educational resources for everyone, as well as an informatized system for supporting learning in society.

In the five years from 2012 to 2016, China took on the creation of an «online learning space accessible to everyone» as its main task and moved to the stage of deep integration of technology and education. The creation of an online learning space with the slogan «accessible to everyone» implies further changes in teaching and learning methods. This represents an additional development of the original «broadband network access in schools» and «access to high-quality resources in classrooms».

The characteristics of the development of informatization of education in China 40 years before reforms and openness can be summarized as «building infrastructure + equipment selection + application research». This stage is called the era of informatization of education 1.0. In October 2017, «effective online education» was included in the party report of the 19th National Congress of the Communist Party of China, which indicates that the informatization of education in China has begun a new era, known as the era of informatization of education 2.0.

In April 2018, the Ministry of Education published the «Action Plan for Informatization of Education 2.0», which is an integral step in adapting to the development of education in an intellectual environment. The main goal of this plan is to achieve «three full, two high and one high» by 2022. This includes providing all teachers with a learning app covering all school-age students, as well

as building digital campuses covering all schools. Additionally, the plan is aimed at increasing the level of information technology use, improving the information literacy of teachers and students, as well as creating an Internet + Education platform for training personnel in an Internet+ environment. It also includes the development of new models of educational services based on the Internet and the study of new models of education management in the information age.

Informatization of education 2.0 is designed to contribute to the transformation and improvement of informatization of education based on the «three links and two platforms» laid down at stage 1.0. The goal is to comprehensively increase the level of development of informatization of education, bringing the informatization of education in China to the forefront in the world and providing global leadership influence. In general, the reform of informatization of education in China has achieved significant success over the past 40 years. The new era of informatization of education 2.0 must meet the new requirements of the development of education in a new era. It also represents a step forward in the concepts of development and methods of building informatization of education.

On April 3, 2019, People's Daily published an article «Network Cable connects urban and rural classes» with «three links and two platforms» as the basis. We have successfully completed the project «Full coverage of digital educational resources in educational institutions». The level of Internet access in primary and secondary schools across the country has increased from 25% to 96%; the share of multimedia classes has increased from less than 40% to 92%; the system of public services of national educational resources is connected to 73 online platforms, including 19 provincial and municipal. There are 28 national-level platforms and 26 district- and district-level platforms. According to the Ministry of Education, as of September 2018, more than 14 million primary and secondary school teachers across the country have signed up to participate in events, having conducted more than 12.9 million lessons and continuing more than 175,000 «excellent lessons» and «ministerial level» at the provincial level. About 60,000 excellent courses were created, more than 28 million generative resources, and the total number of unique visitors exceeded 170 million [2, p. 9].

In February 2019, the Central Committee of the Chinese Communist Party and the State Council published «Modernization of Education in China 2035». «Accelerating reforms in education in the information age» is included in the top ten strategic tasks to promote the modernization of education, and attention is paid to supporting the use of intellectual education.

The deep and widespread use of artificial intelligence technologies in education will completely change the temporal and spatial scenarios, as well as the levels of education supply. It implements information exchange, data integration, business cooperation and the provision of intellectual services. These changes will contribute to the overall changes in the educational process, making possible personalized and diversified education based on scaling. Then a new flexible, open and personalized ecosystem of lifelong learning will be created. The penetration of intelligent technologies into the educational industry disrupts the traditional ecosystem of education and begins to move towards a new form of intellectual education. Faced with the opportunities and challenges of the time, China is developing a «China Intellectual Education Development Plan» to plan the future development path.

Today, virtual reality (VR) research is booming, and experts are beginning to explore innovative techniques that can make the virtual experience more immersive and real. Now VR technology goes beyond sight and hearing, allowing users to interact with virtual objects, feel changes in wind and temperature, and even study and teach in virtual reality, try out virtual food and visit the «live» Forbidden City.

In June 2019, the Ministry of Industry and Information Technology officially issued a 5G commercial license, which became a symbol of the official beginning of the 5G era in China. With the advent of 5G, the form of education is also undergoing significant changes. In August 2019, President Xi Jinping, in his congratulatory letter on the occasion of the Second China International Intellectual Industry Exhibition, stressed that China pays great attention to the development of intellectual industries, accelerates digital industrialization and digitization of industry, contributing to the deep integration of the digital economy and the real economy. Experts said this year is «the first year of 5G.» The «digital highway», built on 5G technology, will provide a convenient and efficient information channel for the integration and innovation of modern information technologies, such as big data and artificial intelligence, with real data. Economic development, social progress and other aspects have led to «unimaginable» changes.

Today we have entered the era of artificial intelligence, and thus the concept of smart education has emerged. This concept is not to replace educational technologies, but to iteratively develop educational technologies in order to make the use of information technologies in the field of education more intellectual. It should be noted that the use of information technology in education always lags

behind other areas, and this is not typical only for China, but also for other countries [3, p. 1].

For many years, the use of information technology was mainly limited to computer-based learning, and teachers used PowerPoint presentations for teaching. In the last two years, due to the consequences of the new coronavirus epidemic, online learning has developed. However, information technologies have not yet been implemented in all areas of education, and the advantages of such technologies as interconnection, openness and virtuality have not yet been fully utilized. The reason for delays in the use of information technology in schools, of course, are technical factors. However, more importantly, education is an activity aimed at educating people and enriching the spiritual world of students. The leadership of this process lies with teachers, who cannot be replaced by technology. Therefore, when talking about the future of education, many believe that the essence of education aimed at the education of moral qualities and the formation of personality will not change, and the role of teachers will remain irreplaceable.

The introduction of Internet technologies into China's education system involves a number of winning points, but also causes certain challenges and risks. On the one hand, modern information technologies make it possible to personalize education, taking into account the individual needs of students. They provide access to global educational resources, expanding the horizons of knowledge and providing opportunities for virtual learning.

However, at the same time, it is necessary to take into account potential problems. Uneven access to technology can create digital inequality among students, which can exacerbate social differences. In addition, there are concerns about data security and digital privacy in educational processes, which requires careful implementation of technologies and strict security measures.

The advantages of using Internet technologies in China's education system include improving the efficiency of teaching, improving the availability of educational resources, and stimulating innovation in educational practice. However, special attention should be paid to ensuring equality in access to technology, teacher training, and the development of strict standards to ensure data security and confidentiality.

Thus, the integration of Internet technologies into China's educational system provides an opportunity for a qualitative transformation but requires a careful and balanced approach to maximize the benefits of these technologies, minimize risks and ensure equal educational opportunities for all.

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