

Digital transformation of education systems: current status, challenges and future perspectives

Ge Congcong, Yang Jie

Shenyang Normal University, Shenyang, China

With the rapid development of information technology, the digital transformation of the education system has become an important trend in the global education field. The digitalization of education is a key driving force to accelerate the construction of a strong education nation. The core value of education digitization to empower a strong education nation lies in meeting the social needs of the new era, promoting cultural creation and triggering a cognitive revolution. The logic of education digitization empowering a strong education nation is mainly reflected in the fact that education digitization generates educational changes, promotes scientific and technological innovation, and improves talent cultivation. This paper discusses the connotation of digital transformation of the education system, the opportunities brought about by the teaching mode and the distribution of educational resources, as well as the challenges faced by the application of technology, teacher competence, and educational equity, and puts forward targeted coping strategies, with the aim of providing theoretical basis and practical references for the promotion of digital transformation of the education system and the enhancement of the quality of education.

Keywords: *education power, education digitalization, education equity, China's education modernization.*

1. Introduction

General Secretary Xi Jinping pointed out that the national education digitalization strategy should be implemented in depth. The digitalization of education is not only the integration of digital technology and education, but also the innovation of education concepts, models and methods, and is the key path of education informatization and the core force of education change. It highlights the people's attributes of socialist education with Chinese characteristics, and is also an important support for China to build a strong educational country.

2. Theoretical foundations of the digital transformation of the education system

2.1. Constructivist learning theory and digital learning environments

Constructivism believes that knowledge is acquired by learners through meaning construction in a specific context and with the help of others and materials. In addition, online learning platforms allow students to choose resources according to their needs and explore independently; virtual laboratories help students to experience experiments and actively understand knowledge; and online collaborative learning communities, for example, promote students' interactions to accomplish tasks and construct knowledge systems together.

2.2. Relationship between innovation theory and digital transformation

Digital technology gives rise to new teaching models, changing the traditional teaching process and the roles of teachers and students; help education management innovation, big data analysis to assist schools in scientific decision-making, optimize resource allocation; promote education evaluation to

diversification, process transformation, with the help of learning analytics technology to comprehensively assess students. Educational innovation theory guides the direction of digital transformation, digital transformation provides practice scenarios and technical means, and the two promote each other to promote educational change.

3. Current status of digital transformation of the education system

3.1. Progress in the global digitization of education

The United States is a leader in the field of education digitization, with the extensive use of smart whiteboards, electronic textbooks and other digital tools in the classroom, and teachers tracking students' learning with the help of learning management systems and providing personalized advice. Finland has incorporated digital education into its national strategy, focusing on cultivating students' digital literacy, providing digital technology learning opportunities from the stage of basic education, and developing teaching resources through cooperation between schools and enterprises in the field of vocational education, so as to cultivate digitally skilled talents.

China has achieved remarkable results in the digitization of education, promoting the construction of «three passes and two platforms», improving the network access rate of primary and secondary schools, promoting the dissemination of high-quality resources, and the online education market is booming, providing a variety of learning options. However, China also suffers from regional imbalances in development, with rapid development in the east and gaps in digital infrastructure and resource application in remote areas of the central and western regions.

3.2. Use of digital technologies in education

VR and AR technologies bring new experiences to education. In history teaching, VR can reproduce historical scenes, such as students can use VR equipment to “be in” ancient battlefields and palaces to deepen their understanding of historical knowledge. In the field of science education, AR can transform abstract concepts into three-dimensional models, and students can observe scientific phenomena with AR applications on cell phones or tablets.

Artificial intelligence is widely used in education, and personalized learning is an important direction. For example, the Knewton platform analyzes data in real time to adjust the difficulty and sequence of teaching. Artificial Intelligence is also used in intelligent tutoring systems that provide 24-hour tutoring to understand questions and answer them.

4. Challenges to the digital transformation of the education system

4.1. Lack of teachers' digital literacy

Some teachers are rusty in the operation of digital teaching tools and platforms, have insufficient capacity for teaching design and implementation of digital teaching, have difficulty in integrating digital technology and teaching content, and lack the knowledge and skills to use big data to carry out personalized teaching.

4.2. Educational equity issues

The digital divide is significant. Developed regions and key schools are rich in resources and can quickly update equipment and introduce resources; remote and weak schools lag behind in digital education due to a lack of funds. Family economic conditions also affect students' digital learning, with the gap between rich and poor leading to a wider learning gap.

Strategies for the digital transformation of the education system

5.1. Enhancing teachers' digital literacy

Plan a tiered and phased training program for teachers' digital literacy, including basic digital skills, tool use and teaching design innovation. Novice teachers learn the basic operation of office software and online teaching platforms; experienced teachers participate in advanced training, such as optimizing teaching with big data and developing digital resources.

Correlate the improvement of teachers' digital literacy with title evaluation, performance appraisal, and merit assessment, set up digital teaching achievement awards, and hold regular teaching skills competitions to motivate teachers to participate in training and application.

5.2. Promoting Educational Equity

Build a platform for sharing digital education resources, integrate quality resources and distribute them according to needs. Deliver resources from developed regions and famous schools in the form of live and recorded courses, set up poverty alleviation programs, and accurately place equipment, software and courses for impoverished regions to narrow the resource gap.

Provide assistance to poor families and students with learning difficulties. Provide network equipment, mobile terminals and traffic subsidies for students from poor families, and organize volunteers to provide online learning guidance for students with learning difficulties, solving technical and learning problems.

6. Future outlook for the digital transformation of the education system

6.1. Deep integration of artificial intelligence and education

The deep integration of artificial intelligence and education has prompted a change in the role of teachers. Teachers no longer simply impart knowledge, but become more of a guide, inspirer and facilitator of student learning. Teachers use intelligent education system data to understand the characteristics and needs of students and provide personalized guidance. In the classroom, the system is used to create a variety of teaching situations, organize group discussions, project-based learning, and cultivate students' innovative and collaborative abilities.

6.2. Wide application of virtual reality and augmented reality technologies

VR and AR technologies bring students an immersive learning experience. In history classes, students wear VR devices to “travel” through history and “talk” with historical figures, making knowledge vivid; in the field of natural science, AR presents textbook content in three dimensions, making it easy for students to observe features and laws.

VR and AR technologies promote remote collaborative learning. Students from different regions can interact with each other in real time in the virtual environment and complete tasks and projects together. For example, in the environmental protection research project, students from all over the world share their results and exchange their experiences in the virtual laboratory, thus cultivating cross-cultural communication and teamwork skills.

6.3. Global Education Cooperation and Resource Sharing

Digital transformation has brought cross-border educational cooperation closer. Educational institutions from different countries use online platforms to carry out joint teaching, academic exchanges and scientific research cooperation, for example, well-known universities jointly offer international courses, and students participate in online learning and assessment to experience internationalized education.

Global educational resources are optimized through the digital platform. Online courses and other high-quality resources can be quickly disseminated, and students from developing countries can use them to access the resources of developed countries and make up for their shortcomings. The special educational resources of each country can also be displayed and utilized, thus promoting the diversification of global education.

6.4. Lifelong learning and continuous innovation of education systems

In order to meet the needs of lifelong learning, education systems are constantly innovating. Educational models are more individualized, diversified and flexible, and new educational models, such as project-based and interdisciplinary integration, are widely used to cultivate comprehensive abilities and innovative thinking. The education evaluation system is also being revolutionized, shifting from single-exam evaluation to multi-dimensional, process-oriented evaluation.

7. Conclusion

7.1. General Research and Findings

The global digitalization of education has started in full swing, with developed countries accumulating rich experience and developing countries actively exploring and making progress. Digital technology is widely used in education, AR and AR technology create immersive experiences, artificial intelligence promotes personalized learning, and the results are beginning to show in improving education quality and promoting education equity.

However, there are many challenges to the transformation, such as insufficient digital literacy of teachers, prominent educational equity issues, and hidden dangers in data security. This study proposes strategies to address these challenges, including improving teachers' digital literacy, promoting educational equity.

7.2. Research Prospects

In the future, the digital transformation of the education system will continue to deepen. Artificial intelligence will integrate more closely with

education, and intelligent education systems will help scientific decision-making and personalized teaching; VR and AR technologies will be widely used to create immersive learning environments; global education cooperation and resource sharing will be strengthened to promote the internationalization of education; the lifelong learning system will be perfected, and the education system will continue to innovate in order to meet the needs of talent cultivation.

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About the authors:

Ge CONGCONG – master's degree, Shenyang Normal University, Faculty of Education (China, 110034, Shenyang, Huanghebei Avenue, 253), e-mail: Taozi324@hotmail.com

Yang JIE – Associate Professor, Doctor of Philosophy, Shenyang Normal University, Faculty of Education (China, 110034, Shenyang, Huanghebei Avenue, 253), e-mail: taozi324@hotmail.com

Цифровая трансформация систем образования: текущее состояние, проблемы и перспективы на будущее

Ге Конгконг, Ян Цзе

Шэньянский педагогический университет, г. Шэньян, КНР

С быстрым развитием информационных технологий цифровая трансформация системы образования стала важной тенденцией в сфере мирового образования. Цифровизация образования является ключевой движущей силой для ускорения строительства сильной образовательной нации. Основная ценность цифровизации образования для расширения возможностей сильной образовательной нации заключается в удовлетворении социальных потребностей новой эпохи, содействии

культурному творчеству и инициировании когнитивной революции. Логика цифровизации образования, расширяющая возможности сильной образовательной нации, в основном отражается в том факте, что цифровизация образования генерирует образовательные изменения, способствует научным и технологическим инновациям и улучшает развитие талантов. В этой статье обсуждается значение цифровой трансформации системы образования, возможности, предоставляемые режимом обучения и распределением образовательных ресурсов, а также проблемы, возникающие при применении технологий, компетентности учителей и образовательного равенства, и предлагаются целевые стратегии преодоления с целью предоставления теоретической основы и практических рекомендаций для продвижения цифровой трансформации системы образования и повышения качества образования.

Ключевые слова: *сила образования, цифровизация образования, равенство в образовании, модернизация образования в Китае.*

Об авторах:

Ге КОНГКОНГ – магистр, Шэньянский педагогический университет (КНР, 110034, г. Шэньян, ул. Хуанхэбэй, 253), e-mail: Taozi324@hotmail.com

Ян ЦЗЕ – доцент, доктор философии, Шэньянский педагогический университет (КНР, 110034, г. Шэньян, ул. Хуанхэбэй, 253), e-mail: Taozi324@hotmail.com

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