Application of Digital Education Technology in Belarusian and Chinese Universities in the Context of the "the Belt and Road" Initiative

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With the deepening of the «the Belt and Road» initiative, international cooperation in the field of education has become increasingly frequent, in which digital education technology plays a crucial role. Especially in the higher education cooperation between Belarus and China, digital education technology has not only brought education closer between the two countries, but also promoted deep integration in academic, research, and cultural exchanges between the two sides. This article aims to explore in depth the current application status of digital education technology in Belarusian and Chinese universities in this grand context. We will see that although both countries have made significant progress in the digitization and networking of educational resources, they still face many challenges, such as the unification of technical standards and the balanced allocation of educational resources. At the same time, the article will also look forward to the future development trends of digital education technology, in order to provide new ideas and directions for cooperation between Belarus and China in the field of higher education, and promote education cooperation between the two countries to a new level.

Introduction

The «the Belt and Road» initiative aims to promote comprehensive exchanges and cooperation in the economic, cultural, educational and other fields of countries along the Belt and Road. As an important force to promote social progress and economic development, education's digital process is particularly important under the framework of the «the Belt and Road». Belarus and China, as important participants in the «the Belt and Road» initiative, have broad prospects for cooperation between their universities in the field of digital technology in education.

Methods

The theoretical and methodological basis of the work included: When writing this conference paper on the application of digital technology in education between the two countries, firstly, by reviewing and summarizing academic literature, policy documents, etc. in relevant fields at home and abroad, we aim to gain a deeper understanding of the historical background, development status, and theoretical basis of the application of digital technology in education. Secondly, conduct in-depth analysis of representative cases of educational digital technology applications, revealing the situations and potential problems in practical applications. In addition, processing and analyzing relevant data on the application of digital technology in education to reveal application effectiveness, existing problems, and future development trends. By comparing the practices and effectiveness of digital technology applications in education between China and Belarus, and drawing on advanced experience and practices. Based on the analysis, it is concluded that in the context of the «the Belt and Road Initiative», the application of digital education technology in Belarusian and Chinese universities has broad prospects, but also faces many challenges. In order to promote the in-depth development of digital cooperation in education between the two countries, it is suggested to strengthen the construction of technological infrastructure, optimize the allocation of educational resources, enhance cultural exchanges and language training, increase teacher training efforts, and strengthen awareness of data security and privacy protection. Through joint efforts, it is believed that the digital cooperation in education between China and Belarus in the context of the «the Belt and Road» will achieve more fruitful results.

Results

1. The current application status of educational digital technology in universities in Belarus and China

   1.1 Current Status of Application in Belarusian Universities

   The higher education system in Belarus is rich in resources, of high quality, and relatively evenly distributed. Belarusian universities actively develop and apply digital educational resources, including e-books, online courses, virtual laboratories, etc., to provide students with rich and diverse learning materials and interactive platforms. These resources not only enrich the teaching content, but also enhance students' learning enthusiasm and autonomy. In recent years, Belarus has actively promoted the digitalization of education by building convertible learning spaces based on modern digital technology, creating a more flexible and personalized learning environment for students. For example, Belarusian universities have utilized augmented reality (AR), virtual reality (VR), and mixed reality (MR) technologies to conduct immersive and experiential teaching activities, which have increased students' interest and effectiveness in learning. The digital literacy of knowledge dissemination entities is crucial for the effectiveness of embodied practice in international Chinese education knowledge dissemination. [1, p. 55] Subject based digital literacy is the driving force for the digital transformation and development of international Chinese education, and the knowledge dissemination subject is the knowledge element The integration and enhancement of digital literacy are fundamental forces driving the process of digital transformation; Driven by the embodied environment Under the action, the knowledge dissemination subject needs to enhance their digital competence and numbers even more. Character literacy to adapt to the embodiment of sustainable development environment One of the digital developments in international Chinese education It is to enhance the digital literacy of teachers, students, and educational administrators Ability, [2, p. 1–8]. Enhance the digital competence of international Chinese teachers and cultivate the digital literacy of Chinese learners. Belarusian universities are actively promoting the construction of smart campuses, integrating various intelligent systems and applications to achieve intelligent and efficient campus management. Smart campus not only improves the efficiency and quality of campus management, but also provides students with a more convenient and personalized service experience.

In addition, Belarus actively participates in international digital education cooperation projects, such as conducting extensive cooperation with Chinese universities in scientific research and achievement transformation through platforms such as the China Belarus Industrial Park. These collaborations not only promote academic exchanges and resource sharing, but also provide more practical opportunities and employment choices for students from both countries.

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1.2 Current Status of Application in Chinese Universities

Since the implementation of the «National Education Digitalization Strategy Action» in early 2022, China has achieved significant results in promoting the digitization of higher education. The National Smart Education Platform not only provides rich online courses and learning resources, but also realizes the interconnection, sharing, and intelligent

analysis of educational data, providing strong support for educational decision-making and management. Chinese universities have achieved optimized allocation and widespread sharing of educational resources through the construction of smart campuses, the development of online courses, and the promotion of Massive Open Online Courses (MOOCs). Especially during the COVID-19, Chinese universities quickly adapted to online teaching needs, ensuring the smooth progress of teaching activities. At the same time, China actively participates in international digital education cooperation, providing a large number of high-quality MOOC courses to university students and learners around the world, and has released the international version of China's National Smart Education Public Service Platform, providing convenient learning opportunities for global users. The rapid rise of China's online education market has become an important component of the digital education field. During the epidemic, Chinese universities quickly adapted to the demand for online teaching, ensuring the smooth progress of teaching activities. At the same time, more and more online education platforms and enterprises are emerging, providing diverse learning choices and personalized services for students. Chinese universities widely use various digital teaching tools and equipment, such as intelligent blackboards, online homework systems, virtual simulation experiment platforms, etc. These tools not only enhance the interactivity and fun of classroom teaching, but also provide students with more convenient and efficient learning methods. China actively promotes the application of big data in education, providing support for personalized teaching and learning path planning by collecting and analyzing students' learning and behavior data. The application of educational big data not only improves teaching effectiveness and learning efficiency, but also promotes the balanced development of educational equity and high-quality educational resources.

2. Challenges Faced

2.1 Uneven application of technology

On September 30, 2016, China and Belarus issued a joint statement on establishing a comprehensive strategic partnership of mutual trust and win-win cooperation, emphasizing that both sides are willing to deepen cooperation in the field of scientific and technological innovation, promote cooperation between scientific research institutions, universities, enterprises, etc. in microelectronics, information technology,

optical technology, mechanical manufacturing, and continuously improve the level of scientific and technological cooperation between the two regions; Continue to expand and strengthen cooperation in education, culture, and other fields. [7, p. 40]. Although both Belarus and China are actively promoting the digitization of education, there are still significant differences in technological infrastructure between the two countries. Belarus is relatively backward in terms of technological equipment and network coverage, which to some extent limits the effectiveness of digital technology in education. To improve this situation, intelligent classroom technology can be introduced, such as interactive whiteboards that provide touch and gesture recognition functions to enhance teacher-student interaction. Utilizing virtual reality (VR) and augmented reality (AR) to create an immersive learning environment, allowing students to conduct experimental operations, reproduce historical scenes, and enhance learning interest and effectiveness in the virtual environment. Reasonable use of remote collaboration tools such as Zoom, Microsoft Teams, etc., supporting real-time communication between teachers and students from multiple locations, crossing geographical limitations., These technologies can provide stable and easily accessible learning resources, helping to compensate for the shortcomings of technological devices. Although China has a strong technological foundation, it still needs to consider how to better adapt to the technological environment of different countries in cross-border cooperation, such as providing technical training and support to help Belarus enhance its capabilities in educational technology.

2.2 Unequal distribution of educational resources

Unequal distribution of educational resources is a common problem faced by higher education worldwide. In Belarus and China, despite efforts by the government and educational institutions to optimize resource allocation, the concentration of high-quality educational resources still exists. This poses a significant challenge to ensuring fair distribution of resources and enabling more students to benefit from digital cooperation in education. With the widespread application of digital technology in the education industry, education has become more accessible and equitable. In order to allocate educational resources more effectively, cloud computing technology can be used to achieve the sharing and distribution of educational resources, enabling high-quality educational resources to transcend geographical

limitations and be utilized by more students. At the same time, using big data to analyze students' learning needs and performance can accurately push personalized learning resources and improve the efficiency of educational resource utilization. In addition, with the popularization of the Internet and the realization of distance education, online and offline hybrid teaching can make full use of high-quality educational resources to serve the backward areas. The application of digital technology in education has also made teaching more targeted and achieved personalized teaching. A large amount of digital media resources, virtual reality resources, game resources, experimental simulation resources, etc. are presented in front of students, allowing them to use their hands, brains, and various senses, which should be much better than the simple methods of teachers speaking and students listening before. In short, the application of digital technology has changed the current situation of the entire education system, and should promote a significant improvement in the overall education level and better cultivate innovative talents with core competitiveness. Obtain learning resources such as Coursera, edX, etc. on MOOCs (Massive Open Online Courses) platforms, provide rich online course resources, and achieve global sharing of high-quality educational resources. It is also possible to establish a learning management system (LMS), such as Moodle, Blackboard, etc., to help educational institutions manage online courses, learning progress, student grades, etc., and improve teaching management efficiency. Establishing a personalized learning platform based on the national situation can use big data to analyze students' learning behavior and performance, push personalized learning resources and paths, and meet the different needs of students.

2.3 Insufficient international cooperation mechanisms

At present, the cooperation mechanism between the two countries in the field of digitalization of higher education is not yet sound, lacking long-term stable cooperation platforms and project support. This to some extent limits the depth and breadth of cooperation between the two parties. In order to strengthen international cooperation mechanisms, cross-border educational cooperation projects can be established to jointly develop educational technology products and promote in-depth exchanges and cooperation between the two countries in the field of educational technology. At the same time, an educational technology exchange platform can be established, and regular educational

technology seminars and training courses can be held to promote the sharing and development of educational technology between the two countries. The two countries can use cloud computing services to provide elastic and scalable computing resources and storage space, supporting the smooth operation of large-scale online learning activities. Regularly conduct big data analysis to deeply mine and analyze educational data, identify problems and improvement points in the teaching process, optimize teaching strategies and resource allocation.

2.4 Data Security and Privacy Protection

With the advancement of digital education, issues of data security and privacy protection are becoming increasingly prominent. In cross-border education cooperation, how to ensure the secure transmission and storage of educational data, prevent information leakage and abuse, has become an urgent problem to be solved in the cooperation between both parties. In order to strengthen data security and privacy protection, encryption technology can be used to ensure the security of educational data during transmission, while establishing a data access and usage permission management system to strictly control data access and usage. In addition, the construction of data backup and recovery mechanisms can be strengthened to ensure timely recovery in case of data loss or damage. Add encryption technology to encrypt the storage and transmission of educational data, ensuring the security of the data at all stages.

Add access control and identity authentication, implement strict access control policies and identity authentication mechanisms to prevent unauthorized access and data leakage. Improve the data backup and recovery process, establish a comprehensive data backup and recovery mechanism, and ensure timely recovery in case of data loss or damage.

2.5 Cultural and language barriers

Cultural and language barriers are issues that cannot be ignored in international educational cooperation. There are significant differences between Belarus and China in terms of cultural background, education system, language habits, etc., which to some extent affect the effective application of digital technology in education. To overcome these barriers, multilingual learning resources and tools can be developed to help students and teachers overcome language barriers. At the same time, it can strengthen cultural exchanges and cooperation between the two countries, enhance mutual understanding and recognition of each other's cultures. In addition, virtual reality technology can be used to

create cross-cultural communication scenarios, allowing students to experience learning and life in different cultural backgrounds in a virtual environment. Provide machine translation, offering real-time or offline machine translation services to help teachers and students overcome language barriers for communication. Establishing a multilingual learning platform: supporting learning resources and tools for multiple languages to meet the needs of students from different cultural backgrounds. Provide cultural sensitivity and adaptability training for students: develop relevant training materials and courses to enhance their understanding and adaptability to different cultures.

2.6 Shortage of teaching staff

The application of digital technology in education cannot be separated from a high-quality teaching staff. However, both Belarus and China are facing a shortage of teaching staff. Especially in the field of digital education, teachers with interdisciplinary knowledge and proficiency in digital technology are even rarer. To address this issue, it is possible to strengthen teachers' digital technology training and enhance their interdisciplinary knowledge and abilities. At the same time, teachers can be encouraged to participate in international education cooperation projects to broaden their international perspective and teaching experience. In addition, teacher incentive mechanisms and career development paths can be established to attract more outstanding talents to join the field of digital education. By introducing online teacher training courses, we can provide online training courses on educational technology to help teachers improve their digital literacy and teaching skills. Establish a virtual mentor system to provide real-time guidance and feedback for novice teachers, accelerating their professional growth. To provide a platform for teacher career development, establish a teacher career development file and evaluation system, and support teachers' continuous learning and career advancement.

3. Future Development Trends and Suggestions

Faced with the wave of digital education, the two countries need to jointly seize development opportunities and address potential challenges.

3.1 Strengthen infrastructure construction

The two countries should jointly increase investment in the construction of digital infrastructure for education, especially in the network coverage and terminal equipment configuration of universities in remote areas. By optimizing the network environment and improving

hardware equipment conditions, we ensure that all students can enjoy high-quality online education services. In 2019, education delegations from China and Belarus visited each other more than 70 times, and universities from both sides reached over 30 cooperation agreements based on mutual agreement. The Ministry of Education of China and Belarus officially signed an important agreement recognizing the academic degree certificates of the other party, which has broad influence. Under the influence and drive of the «Belarus Education Year» in China, some domestic higher education institutions have established several «China Belarus Research Centers». [5, p. 11]

At the same time, we will promote the construction of a digital education resource library for joint construction and sharing, achieve widespread sharing of high-quality educational resources, break geographical limitations, and promote educational equity.

3.2 Improve international cooperation mechanisms

In order to deepen cooperation between the two countries in the field of digital education, a long-term stable cooperation mechanism should be established. This includes strengthening policy communication to ensure collaboration between both parties in the direction of digital education development; Strengthen project coordination and jointly carry out joint scientific research and teaching projects; Strengthen talent cultivation and exchange, promote the deep integration and development of higher education between the two countries through student exchange activities and other means. During the 2019 «Belarus Education Year» in China, various higher education institutions in China and Belarus collaborated to hold multiple joint thematic forums, program performances, and seminar conferences. They also organized a higher education themed summer camp for middle school students – the Dalian University of Technology Belarusian State University 2023 International Summer Camp project. [4]

3.3 Strengthen data security and privacy protection

In the process of promoting digital education, data security and privacy protection are important aspects that cannot be ignored. The two countries should jointly strengthen the construction of data security management systems, implement strict technical protection measures, and ensure the security and privacy of educational data. At the same time, we will strengthen cooperation and communication in the field of data security, jointly address the challenges of data security in the

digital age, and provide solid security guarantees for the development of digital education.

3.4 Promote the innovative application of digital education

In July 2022, the sixth meeting of the China Belarus Education Cooperation Subcommittee was held, and both sides held consultations on further deepening cooperation in education digitization, higher education, vocational education, two-way study abroad, language teaching, and industry university research application, and reached consensus. [6] Both countries should actively explore new models and paths for innovative applications of digital education. Utilize advanced technologies such as artificial intelligence and big data to optimize teaching content and methods, enhance teaching effectiveness and learning experience. Promote the widespread application of blended learning models, combining the advantages of traditional and online teaching, to provide students with more flexible and diverse learning methods. At the same time, we will strengthen cooperation and communication in remote education, virtual laboratories, and other areas to jointly promote innovation and application of digital technology in education.

Discussion

This article delves into the development trend of digital education and puts forward specific suggestions for cooperation between the two countries. The digitization of education, as an important transformation in the field of education today, is profoundly affecting teaching modes, learning methods, and the allocation of educational resources. In this process, both countries face common opportunities and challenges. Strengthening infrastructure construction is the cornerstone of the digital development of education. Especially in remote areas, improving network coverage and terminal device configuration is crucial to ensuring educational equity. At the same time, the jointly built and shared digital education resource library will greatly promote the widespread dissemination and effective utilization of high-quality educational resources. Improving international cooperation mechanisms is the key to promoting the deepening development of digital education. Through policy communication, project alignment, and talent cultivation exchanges, the two countries can jointly explore new models and paths for educational digitization, achieving deep integration and development of higher education. The digitization of education has also brought new

challenges to data security and privacy protection. Establishing a sound data security management system and technical protection measures, strengthening cooperation and exchanges between the two countries in this field, are necessary conditions for ensuring the healthy development of digital education. Promoting digital innovation and application in education is an important direction for cooperation between the two countries. Utilizing advanced technology to optimize teaching content and methods, exploring blended online and offline teaching models, and strengthening cooperation in distance education, virtual laboratories, and other areas will bring new development opportunities for education in both countries. Digitization of education is a significant transformation that both countries are facing in the field of education. By strengthening infrastructure construction, improving international cooperation mechanisms, enhancing data security and privacy protection, and promoting innovative applications of digital education, the two countries can jointly seize this historical opportunity and promote the comprehensive development and progress of the education industry.

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