

Digital engine boosts the new vitality of rural education: the role and innovation of college students

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Abstract. Education informatization has entered a new stage, and education digitalization is of great significance to promoting the high-quality development of rural education and helping rural revitalization. The research shows that the digital transformation of rural education in China is facing important problems such as the great difference in infrastructure level, the overall lack of digital application awareness and ability of rural teachers, and the mismatch between funding input and actual demand. In order to solve this series of challenges, this paper proposes a new way, by giving full play to the advantages of college students in digital technology, especially focusing on multimedia courseware production, to promote the high-quality development of rural education digitalization and provide strong support for rural revitalization.

1. Introduction

Digital economy era digital education transformation become the trend of The Times, however different countries digital education transformation are facing different situation, Russian scholars around its national digital economic development of digital education strategy put forward multiple different[1-3], Polish scholars summarize the characteristics of the world major countries digital education transformation[4], Ukraine scholars in Ukraine with the specific conditions of talking to rural digital transformation there are many problems to be considered[5]. This point coincides with the transformation of rural digital education in China. Therefore, it seems that the transformation of digital education, especially the transformation of rural digital education, is the focus of digital strategy research in various countries. How to effectively promote the revitalization of rural digital education in various fields has become a key problem to be solved urgently.

The Communist Party of China's 20th report points out that we should run education to the satisfaction of the people and promote equity in education. Developing rural education is the key to implementing the rural revitalization strategy[6]. In March 2023, the CPC Central Committee and The State Council issued the Overall Layout Plan of Digital China clearly stated that "the construction of digital China is an important engine for promote Chinese modernization in the digital era". In today's information age, education digitalization has become an important engine shaping the future of rural

education. It is of great significance to promote the high-quality development of rural education and help the rural revitalization[7]. However, despite the rapid change of digital technology, the current digital transformation of rural education in China is facing a series of severe challenges. The difference in infrastructure level, the overall shortage of digital application awareness and ability of rural teachers, and the mismatch between financial input and actual demand have all become important factors restricting their development[8].

To address this set of challenges, innovative approaches need to be sought. This paper presents a new solution to fully exploit the advantages of college students in the field of digital technology, especially in the production of multimedia courseware. Through their participation and contribution, they aim to promote the digitalization of Chinese rural education towards the direction of high-quality development and provide strong support for rural revitalization.

In this context, this paper aims to explore how to bring the new vitality, and provide a feasible path for the Chinese digital development of rural education. Through in-depth research and discussion, it is expected to provide new perspectives and solutions to solve the challenges faced by the digitalization of Chinese rural education, and contribute to the vigorous development of rural education.

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2. The importance of the digital transformation of rural education in China

In the Internet era, digital technologies such as artificial intelligence, big data and blockchain have become an important force driving the development of education informatization. The digital transformation of education is the integration of these digital technologies into all levels of the education field, in order to achieve all-round innovation and change. In the new stage, the digital transformation of education not only plays a key role in urban education, but also is crucial to the high-quality development of Chinese rural education. Here is a discussion of the importance and related aspects of the digital transformation of Chinese rural education.

2.1. The inherent requirements of the national digitization strategy

In 2018, the China's Ministry of Education issued the Action Plan for Education Informatization 2.0, clearly stating that intelligent technology should be promoted, it is deeply integrated into the whole process of education to promote the improvement of teaching, optimize management and improve performance. In 2021 and 2022, China successively issued the Digital Rural Construction Guide 1.0 and the Action Plan for Digital Rural Development (2022-2025), emphasizing the need to promote the development of Chinese rural education informatization and help teachers and students in Chinese rural areas to share high-quality education resources. In 2023, the Key Points of Chinese Digital Rural Development in 2023 proposed the continuous promotion of "Internet + education". We will further implement the national strategy of digitizing education, build a national public service platform for smart education, and continue to increase the supply of high-quality educational resources in Chinese rural areas. The country continues to take the digital Chinese rural construction as the focus of digital strategy, and the digital transformation of education is an important means to realize the high-quality development of Chinese rural education and a key starting point to promote education equity, which will inject strong impetus into the construction of high-quality education system in China.

2.2. The main way for the high-quality development of Chinese rural education

Chinese rural education has always been the weak link of education in China, education digitization can largely meet the personalized needs of students and improve students' interest in learning; the application of digital technology can overcome the problem of unbalanced allocation of Chinese rural education resources, feed urban education through digital technology, realize the complementary advantages of urban and Chinese rural education modernization[9].

2.3. Chinese rural educational remodeling of the necessary conditions

Education modernization should include two major sections of urban education modernization and rural education modernization. Digital transformation provides a new opportunity for the modernization of Chinese rural education, and prevents the loss of the origin of Chinese rural education under the influence of modernity. Digital transformation needs to reshape the Chinese rural nature of Chinese rural education, to ensure that Chinese rural education does not lose its uniqueness in the process of modernization, and to realize the complementary advantages of urban and Chinese rural education.

2.4. The main carrier of local culture inheritance

Rural education is not only the link of cultivating talents, but also carries the mission of inheriting local culture. Digital transformation enables teachers' teaching and research, classroom teaching, and home-school and social interaction, and helps Chinese rural schools become dynamic and local schools. Digital transformation can also help build a home-school collaborative education system and accelerate the realization of high-quality and balanced development of urban and rural education.

Through digital transformation, Chinese rural education can better adapt to the needs of The Times, achieve high-quality development, and ensure the uniqueness of Chinese rural education and the inheritance of local culture. This will inject strong impetus into the construction of China's education system and promote the coordinated development of education equity and urban and rural education.

3. The digital status quo of rural education in China

At present, the digital transformation and development of Chinese rural education has a certain foundation. Data show that by February 2023, the Internet access rate of primary and secondary schools (including teaching points) has reached 100%, 99.9% of schools have export bandwidth of more than 100M, more than three quarters of schools have wireless network coverage, and 99.5% of schools have multimedia classrooms. However, the digital transformation of rural education in China is still faced with problems such as large differences in infrastructure configuration level, overall teachers' digital application ability and awareness to be improved, and different degrees of mismatch between funding investment and actual demand.

3.1. Differences in infrastructure

Chinese Rural education infrastructure is backward, with limited resources in school buildings, educational tools and teaching materials. City schools generally have better facilities and more resources, providing more learning opportunities for urban students. Regional differences

persist, with the central, southwest, northwest and northeast regions having different infrastructure levels, with the east as the main part and the south and north in the middle. In addition, the problem facing rural schools is the deterioration of multimedia teaching equipment, which affects classroom efficiency, while the slow upgrading of equipment further aggravates the problem.

3.2. Lack of digital literacy of Chinese rural teachers

Overall, Chinese rural educators lack digital literacy. They lag behind their urban peers in their information proficiency in awareness, knowledge, utilization, security, and sustainable development. Moreover, significant differences exist between the regions. A survey of 180,000 teachers nationwide in 2020 showed significant differences between the eastern, central and western regions in the treatment of online education, information technology capabilities, homework deployment methods, and online teaching time.

3.3. The mismatch between capital allocation and actual demand

Urban areas tend to have more financial resources, which have facilitated easier access to educational funds and equipment. In contrast, Chinese rural schools often face financial disadvantages, leading to the unequal distribution of educational resources in urban and rural areas. While recent financial investments in digital education have largely focused on hardware development to significantly improve IT infrastructure in Chinese rural schools, this further increases the burden of maintaining and updating digital technologies. As a result, some Chinese rural schools are unable to pay for the operation and maintenance costs, reducing the use of the equipment[10].

3.4.The digital supporting resources of teaching materials cannot meet the teaching needs of all teaching regions

Chinese countries in primary and secondary school education has set up a lot of network resource sharing platform, but the differences between regional configuration of teaching materials, syllabus also have different, supporting multimedia courseware cannot meet

the actual teaching needs, teachers' homemade teaching courseware quality is generally not high, new teachers tend to choose inherited the old courseware, few innovation consciousness. Township schools lack of multimedia courseware, the quality is uneven, as shown in Figure 1.

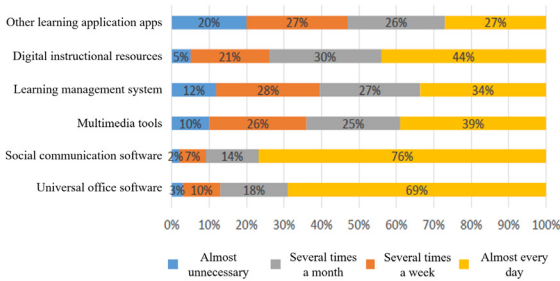


Figure 1. Teacher's use of various software and digital resources in rural areas of China

The investigation found that the digital resources that are frequently used by teachers in township schools are general office software (including PPT, Word, Excel, etc.), in which PPT is mainly used for the interaction of classroom multimedia technology. However, teachers have the following misunderstandings in the process of using: first, a skeptical attitude of multimedia teaching courseware; second, some young teachers are too blind to multimedia application as the leading classroom rather than auxiliary.

3.5. Lack of township primary and secondary school information technology personnel zha village guidance.

The rise of digital rural education also means that teachers' education level and information technology level need to be improved in order to better adapt to the mode and demand of digital education. As shown in Table 1, there is a shortage of full-time information technology support personnel in rural areas and central and western regions, and about 10% of schools have no support personnel. Even in first-tier cities, only 30 percent of the full-time IT support staff work. A lot of support work is done part-time by subject teachers, especially IT teachers. Due to the availability of teachers, 20 to 30 percent of schools in central and western China and rural schools are employed part-time by teachers of other disciplines.

Table 1: Information technology training content of teacher participation

		Basic Operations of Information Technology	Authorware	Informatized Instructional Design	The use of teaching software	Subject resource retrieval and acquisition
Urban and rural	Urban area	87%	91%	83%	79%	61%
	Township	92%	90%	80%	76%	60%
	Rural area	86%	89%	78%	69%	57%

4. The advantages of college students in digital technology

At present, college students, as the main force of the

society, undertake the key tasks of the country's future construction. With the rapid development of Internet technology, contemporary college students show a high sensitivity to new technologies in their growth process. In higher education, college students acquire in-depth

knowledge and skills through learning and practice, cultivate innovative thinking and problem-solving ability, and lay a solid foundation for the future social construction.

Especially in the Internet era, college students' learning and mastery of basic computer operation is an indispensable part of daily learning. Among them, Microsoft Office PowerPoint (PPT) has a relatively high use frequency and proficiency, making it one of the necessary office software in the workplace. As shown in Table 2, PPT skills have become one of the important skills for college students to enter their employment.

Table 2: PPT usage in the workplace

Serial Number	Research content	Percentage
01	Using PPT as a presentation tool	Over 90%
02	PPT can improve speech effectiveness and persuasiveness	Over 5%
03	PPT is an important tool for cross departmental and cross-cultural communication	70%
04	PPT can enhance professional image and quality	Over 80%
05	PPT can bring business opportunities	Over 60%
06	PPT can increase performance confidence	40%
07	PPT can improve work efficiency	70%

We used the questionnaire survey method to investigate college students' views on improving the digital teaching in Chinese rural areas. In received more than two hundred questionnaires, 89.02% of respondents think teachers make PPT quality affect learning effect, as shown in Figure 2, nearly 80% of respondents think their PPT level is not skilled, nearly 93% of respondents think Chinese rural digital level to improve and the vast majority of willing to join the PPT community public power rural education revitalization.

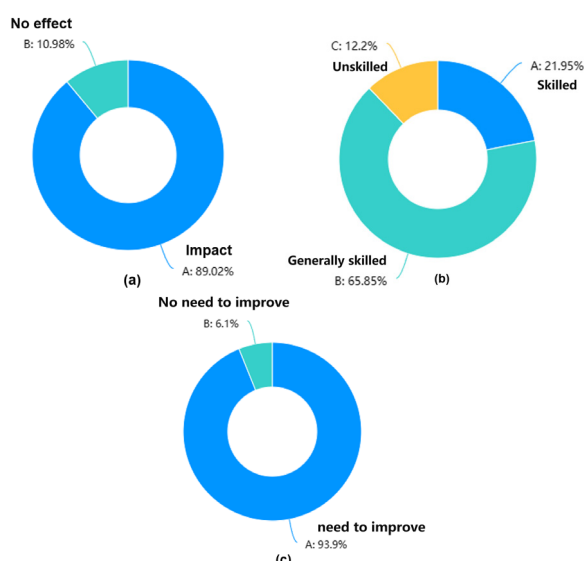


Figure 2. The questionnaire shows: (a) the respondents' evaluation of teachers' PPT quality on teaching effect; (b) the respondents' self-evaluation of PPT level; and (c) the respondents' views on Chinese rural digital revitalization.

In this context, it is wise to choose college students' PPT to use skills as the entry point to help Chinese rural digital education. First of all, college students have a large group of technology users in this respect, low technical difficulty, and it is easier to cultivate and popularize. Secondly, college students have relatively more spare time and have enough time to carry out practical activities, providing active participants for Chinese rural digital education. Although the limited resources of college students make it difficult for them to build a complete digital information platform for education alone, they can provide beneficial support for Chinese rural primary schools through collective efforts and cooperation.

In addition, college students have a sense of social responsibility and volunteer service in Chinese rural education, as well as the sense of innovation, which makes them have a unique advantage in improving the quality of Chinese rural teaching courseware. While college students are about to face workplace challenges, they can improve their office software skills and enhance their career competitiveness by learning PPT making and beautification skills. In the modern workplace, PPT has become an indispensable tool in the fields of business demonstration, education, teaching and promotion, and the improvement of college students' PPT production skills will help them better complete work tasks, efficiently communicate with colleagues and customers, so as to achieve better performance in the workplace.

Therefore, by cultivating college students' PPT production and beautification skills, they can not only fill their shortcomings in the understanding of office software, improve their professional skills and professional quality, but also provide them with a broader career development direction and enhance their employment competitiveness. This approach will help to shape a more comprehensive and competitive college students and make a positive contribution to the development of the country and society.

5. A new way to help revitalize Chinese rural digital education

In general, it is fully feasible to give full play to the advantages of college students in the process of digital Chinese rural transformation, and it is fully feasible for college students to form PPT learning associations. By attracting students who are interested in PPT production to participate in the club and using network resources to learn, the members of the community can gradually master PPT production skills. After having the practical operation ability, we can first pilot in the colleges and universities, cooperate with the school teacher development center, and provide the courseware beautification service for the school teachers. In this way, we can be familiar with the courseware beautification ideas and improve the beautification ability and efficiency.

After the completion of the school pilot, students can set up a college student volunteer service team by themselves, or cooperate with the school youth volunteer

association and volunteer service team, and investigate the digital teaching situation of Chinese rural primary schools and the use and quality of PPT courseware of teachers during the winter and summer vacation. Through face-to-face in-depth interview, questionnaire survey and on-site observation, to understand the courseware to be beautified, and arrange team members to provide online remote services.

With the success of the first batch of Chinese rural primary school pilot, it can expand its influence through media communication, form sustainable public welfare groups, promote the cooperation of surrounding universities, and jointly help the revitalization of digital Chinese rural education. With the enhancement of the strength of the community, we can try to cooperate with relevant departments to build large-scale and standardized digital teaching demonstration bases and demonstration schools, so as to further promote the development of digital Chinese rural education.

Through such measures, college students can help Chinese rural teachers to improve their teaching effect and improve the quality of education by providing courseware beautification services. At the same time, cultivate college students' teamwork ability, social responsibility and innovative spirit, and make positive contributions to Chinese rural education. Such efforts will help to promote the development of digital rural education, and realize the fair distribution of educational resources and the popularization of high-quality education.

6. Conclusion

In today's education field, PPT (PowerPoint), as a widely used demonstration tool, provides multimedia and visual assistance for teaching, displays knowledge points in a vivid and vivid way, and helps to stimulate students' interest in learning and improve the teaching effect. With the continuous development of science and technology, the teaching methods have also evolved. The Chinese government provides more education subsidies to the less developed areas, and at the same time, in promoting the project of "building beautiful villages", it will constantly improve the digital teaching infrastructure in towns and townships, and improve the hardware level of township schools[11].

According to the Chinese national research report, many township teachers do not make full use of multimedia equipment, even if they can skillfully operate PPT for playback, but there is still room for improvement in PPT production. At the same time, many township schools have a shortage of teachers, teachers need to be responsible for the teaching work of multiple classes, and less opportunities to receive information teaching training.

In view of this, this paper puts forward a new way to help the digital rural revitalization according to the many problems faced by the township digital teaching. This approach aims to make use of the ability of college students to skillfully use PPT, exercise their workplace competitiveness, and help township teachers to improve

the level of digital teaching. At the same time, through volunteer service to support Chinese rural school teachers to beautify PPT courseware, remote assistance in township teaching work, promote the implementation of Chinese rural revitalization strategy from the perspective of teaching, and contribute to the sustainable development of Chinese rural education.

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