

Research on the Digital Transformation Path of Higher Vocational Education Driven by New-Quality Productive Forces

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Abstract: Higher vocational colleges are important institutions for cultivating skilled talents. With the development of new-quality productive forces, these colleges need to meet the requirements of digital transformation and improve the effectiveness of talent cultivation. In the process of higher vocational education, it is essential to emphasize teaching innovation and enhance the level of digital teaching. From the perspective of new-quality productive forces, this paper analyzes the new requirements put forward for higher vocational education and proposes specific digital transformation strategies. The purpose is to improve the effectiveness of talent cultivation and accumulate experience for the subsequent digital transformation of higher vocational education.

Keywords: New-quality productive forces; Higher vocational education; Digital transformation

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1. Introduction

The core feature of new-quality productive forces is that scientific and technological innovation plays a leading role, demonstrating characteristics of high efficiency and high quality, which has promoted the transformation of industrial structure and economic development patterns. Higher vocational education is closely linked to economic and social development, and the effectiveness of its talent cultivation is related to industrial upgrading and the development of new-quality productive forces. Against the backdrop of the digital economy era, digital transformation has become an inevitable choice for higher vocational education to enhance its own competitiveness. Driven by new-quality productive forces, higher vocational education needs to break through the limitations of traditional teaching models, strengthen the application of digital technologies such as big data and cloud computing, and promote the innovation of teaching activities. Higher vocational colleges can align with the educational requirements of new-quality productive forces and actively explore digital transformation paths, thereby providing impetus for the development of vocational education.

2. New requirements of new-quality productivity for higher vocational education

2.1. Transformation of talent cultivation goals

New-quality productivity imposes higher demands on talents, and its development is inseparable from skilled talents with innovative and practical capabilities. To meet the needs of the times, higher vocational colleges must adjust their talent cultivation goals, they should not only focus on cultivating students' professional skills but also attach importance to enhancing their comprehensive quality. In the traditional higher vocational education model, teachers prioritized the cultivation of students' single operational skills to meet the requirements of specific positions ^[1]. However, against the backdrop of new-quality productivity, the deepening of industrial integration has led to positions with higher technological content and complexity, placing more in-depth demands on talents. Therefore, teachers need to help students master the application of digital tools, effectively solve practical problems, and develop their lifelong learning abilities. For instance, in the field of intelligent manufacturing, students are not only required to master mechanical processing skills but also need to become proficient in skills such as industrial robot programming to adapt to the needs of intelligent production environments.

2.2. In-depth advancement of industry-education integration

The development of new-quality productivity requires close cooperation between enterprises and higher vocational colleges. As one of the bridges connecting education and industry, higher vocational colleges must emphasize the deepening of industry-education integration ^[2]. In traditional school-enterprise cooperation, enterprises were mainly responsible for providing internships, while schools supplied interns to enterprises. Overall, the depth and breadth of such cooperation were relatively limited. Driven by new-quality productivity, industry-education integration needs to move toward a higher level to achieve collaborative talent cultivation.

Enterprises can actively participate in the talent cultivation activities of higher vocational colleges, jointly formulating talent cultivation goals and curriculum settings, and effectively integrating real enterprise needs into the process. Higher vocational colleges, on the other hand, can strengthen cooperation with enterprises to build corresponding practical training bases and provide technical and talent support for enterprises ^[3]. The deepening of industry-education integration helps connect the education chain with the talent cultivation chain, ultimately cultivating talents who meet the needs of new-quality productivity.

3. Strategies for digital transformation of higher vocational education driven by new-quality productivity

3.1. Innovating the vocational education system

First, develop a digital teaching ecosystem. Educational institutions can strengthen cooperation with governments, enterprises, and other entities to effectively build a digital vocational education ecosystem and enhance the effectiveness of talent cultivation ^[4]. Governments can issue relevant policies to increase support for the digital transformation of education, carry out appropriate guidance activities, and redirect social resources toward vocational education. Enterprises can also actively participate in the development of this ecosystem by providing technical support, employment opportunities, and other resources to higher vocational colleges. Meanwhile, industry associations can play their role as bridges to timely convey industrial information and talent demand. Through the cooperation and exchange among multiple entities, complementary advantages can be realized, resources can be shared, and a favorable ecological environment can be created ^[5].

Governments can establish corresponding special funds to support the development of high-quality digital

platforms and teacher training programs. Enterprises, on the other hand, can transform their own data standards and other resources to enrich teaching materials, thereby facilitating the implementation of teaching activities.

Second, attach importance to the group-based development of vocational education. Digital technology can be used as a carrier to accelerate the group-based development of vocational education, with a focus on realizing the allocation and sharing of resources. Vocational education groups consist of higher vocational colleges, relevant enterprises, and industry associations. By building digital sharing platforms, these groups can effectively achieve the sharing of curriculum resources and practical training resources. Among them, colleges within the group can jointly develop online courses and share educational resources^[6]. Enterprises can provide practical training and technical support to colleges in the group, enabling the efficient use of educational resources. This will enhance the influence and coverage of vocational education and effectively improve the quality of talent cultivation.

3.2. Reforming vocational teaching models

First, attach importance to the implementation of online-offline blended teaching and give full play to the advantages of digital technology. Higher vocational colleges can build high-quality online learning platforms and effectively integrate educational resources, including micro-courses, teaching videos, and more, to provide students with a rich pool of learning materials. Students can also conduct independent learning based on their own learning needs and schedule, use the platform flexibly, and strengthen communication with teachers and peers^[7]. Offline classes can focus on activities such as case analysis and practical operations. Teachers can conduct explanations and tutoring based on the problems students encounter in online learning, realizing the organic integration of online and offline teaching. For example, when teaching content related to CNC machining technology in mechanical majors, students can independently learn relevant basic knowledge and operation procedures through the online platform. During offline practical activities, they can participate in hands-on operations, with teachers providing on-site guidance to help students solve problems encountered in practical operations.

Second, strengthen the application of technologies such as virtual reality (VR) and augmented reality (AR) to create a realistic practical environment. By building virtual training scenarios, students can participate in high-risk and high-cost practical operations, such as power system fault diagnosis in a safe and controlled environment. The application of advanced technologies can effectively transform abstract knowledge into intuitive 3D images, helping students understand and master professional knowledge^[8]. For instance, when teaching medical-related courses, teachers can use VR technology to simulate various clinical nursing scenarios, allowing students to participate in relevant operational training and effectively improving their nursing skills and emergency response capabilities. In the teaching of architecture majors, teachers can also use AR technology to guide students in understanding the internal structure of buildings and construction details, thereby enabling them to gain an in-depth understanding of the construction process.

Third, strengthen the application of big data technology and attach importance to the implementation of personalized learning and precision teaching, so as to effectively meet students' individualized knowledge learning needs^[9]. Through the application of online learning platforms and teaching management systems, students' learning data including learning duration, homework completion status and more can be continuously collected to understand students' knowledge mastery, learning behaviors, and learning status, and conduct corresponding analysis and evaluation. Based on the analysis results, teachers can timely identify students' strengths and weaknesses, and then develop personalized learning plans and tutoring programs^[10]. For

example, for students with a slower learning progress, teachers can recommend basic learning resources and corresponding tutoring courses to enhance the targeting of teaching activities and meet students' knowledge learning needs. For students with strong learning abilities and fast learning progress, teachers can provide extended content to effectively meet their needs for in-depth learning. In addition, big data technology can also provide teaching decision support for teachers, helping them adjust teaching content and methods in a timely manner, and making teaching activities more precise and effective.

3.3. Optimizing the transformation support mechanism

First, attach importance to the construction of digital infrastructure. Higher vocational colleges can increase investment in the construction of relevant facilities to provide hardware support for the digital transformation of education. They can build a stable campus network to achieve full coverage of wireless networks, ensuring the smooth implementation of online teaching and practical training. Additionally, higher vocational colleges can be equipped with corresponding teaching equipment, such as multimedia classrooms and virtual simulation laboratories, to effectively meet the needs of teaching and practical training^[11]. At the same time, they can also construct data centers to ensure the management and storage of teaching and student data. By introducing cloud computing technology and building corresponding data centers, colleges can centrally store and manage teaching resources, thereby improving resource utilization. Second, cultivate a digital teaching workforce. Higher vocational colleges need to attach importance to enhancing teachers' digital literacy. By formulating corresponding teacher training plans and organizing teachers to participate in digital technology training such as online course development and big data analysis, colleges should improve teachers' ability to apply digital technologies^[12]. Furthermore, they can expand the teaching workforce by recruiting professional talents with digital experience to work as teachers. For example, higher vocational colleges can strengthen cooperation with Internet enterprises and invite corporate experts to conduct training on artificial intelligence, big data, and other fields, so as to enhance teachers' digital skills. Third, focus on the optimization of digital management systems. Higher vocational colleges can understand and standardize digital teaching and management work. By formulating corresponding rules and regulations, such as online course construction standards and digital teaching resource management methods, they can ensure the smooth development of digital teaching^[13]. Meanwhile, colleges should monitor and manage the digital teaching process, build a teaching quality supervision system, conduct regular evaluations and inspections of online course quality, and promptly identify and solve problems. Finally, teachers also need to protect students' personal information and learning data, and formulate corresponding management methods to effectively prevent data leakage and abuse.

3.4. Innovating teaching quality evaluation

First, attach importance to the development of a diversified teaching quality evaluation system. Higher vocational colleges should focus on transforming traditional quality evaluation methods and build a diversified quality assessment system. Among this system, evaluation subjects can include teachers, enterprises, and students, who provide objective evaluations of teaching quality from different perspectives^[14]. The evaluation content can cover aspects such as students' mastery of knowledge and skill levels; it should not only focus on students' learning outcomes but also track their learning processes and monitor the improvement of their abilities. When evaluating students' practical abilities, higher vocational colleges can invite enterprise technicians to observe students' internship processes and conduct reasonable evaluations. For the evaluation of students' innovative abilities, teachers can make scientific assessments based on the projects students participate

in and their competition achievements.

Second, strengthen the application of big data technology in teaching quality evaluation. Higher vocational colleges can flexibly use big data technology to collect various types of data throughout the teaching process and conduct corresponding analysis, thereby realizing dynamic teaching evaluation and precise feedback. By analyzing students' teaching-related data, colleges can effectively assess teachers' teaching effectiveness and professional competence, providing sound guidance for teachers' professional development. For example, teachers can analyze students' online learning situations to identify the difficulties students face in knowledge acquisition, and then conduct targeted knowledge explanations and tutoring on relevant content^[15]. Through the implementation of the aforementioned teaching evaluation measures, students can be helped to identify gaps in their own learning, enabling them to conduct targeted knowledge exploration, enhance their professional competitiveness, and better adapt to the demands of new-quality productive forces.

4. Conclusion

In conclusion, the development of new-quality productive forces has brought unprecedented opportunities and challenges to higher vocational education. Digital transformation is an inevitable path for higher vocational education to adapt to the development of the times and enhance its core competitiveness. By implementing strategies such as innovating the vocational education system, reforming the vocational teaching model, optimizing the transformation support mechanism, and innovating teaching quality evaluation, higher vocational education can better meet the demand of new-quality productive forces for high-quality technical and skilled talents, and provide strong talent support for promoting the high-quality development of the economy and society. However, the digital transformation of higher vocational education is a systematic project that requires the joint efforts and long-term investment of multiple subjects such as the government, colleges, and enterprises. Therefore, it is necessary to continuously strengthen research and practical exploration, constantly improve the path of digital transformation, and promote higher vocational education to achieve higher-quality development driven by new-quality productive forces.

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