

# The Dilemma and Countermeasures of Digital Transformation in Vocational Education Teaching

Yaping Wu

Tianjin University of Technology and Education, Tianjin, China

## Abstract

The digital transformation of vocational education is an inevitable trend in the future development of vocational education in China. The connotation of digital transformation of vocational education indicates that it is a comprehensive and deep-seated process of transformation. Although significant results have been achieved, we should face the challenges of weak digital technology literacy among teachers, limited by the "digital divide", "technologization only" stifling the "experiential curriculum" and "generative curriculum" of vocational education, and the low degree of compatibility between the digital supply of vocational education teaching and the needs of teachers and students. Breaking through these difficulties requires cultivating teachers' basic digital literacy and abilities, promoting experiential courses and generative courses with digital intelligent technology, and empowering teachers and students with digital intelligent technology to reshape the focus of vocational education supply and demand.

## Keywords

Vocational education; Digital transformation; Digital literacy.

## 1. Introduction

In September 2020, the Ministry of Education and other nine departments jointly issued the "Action Plan for Improving the Quality and Excellence of Vocational Education (2020-2023)" document, with the aim of promoting the digitization of vocational education teaching. The Vocational Education Department of the Ministry of Education believes in promoting the upgrading and reform of vocational education teaching. The digital transformation of vocational education is the historical mission of vocational education in the context of the intelligent era, and it is also an inevitable choice to comprehensively and deeply implement national strategic requirements and serve the digital digital economy. Vocational education must seize the opportunity of digital development, promote its high-quality development with digital thinking, and enhance social adaptability and attractiveness.

In the era of highly sought after digital technology, the digitization of vocational education teaching is an inevitable trend for the future development of vocational education in China. How vocational education teaching can effectively promote transformation and development by leveraging the digital trend has attracted widespread discussion. The teaching front of vocational education mainly focuses on empowering professional upgrading and digital teaching through digital intelligent technology. Through empowering teacher teaching methods and textbook reforms, it adapts to the trend of technological progress and industrial change, gradually generates digital awareness among teachers and students, enhances digital literacy and practical operation capabilities, and opens up a new track and path to promote high-quality development of vocational education. However, further rational thinking is still needed on some unavoidable issues. In the process of digital transformation in vocational education teaching, what is the connotation of digital transformation in vocational education? What difficulties or challenges exist? How should we respond? Is intelligent technology a

"blessing" or a "trap" for vocational education, and how to grasp the value scale of vocational education teaching. Scientifically answering such questions will help clarify the root causes of digital transformation in vocational education, and grasp the implementation focus and development trend of digital teaching in vocational education at present and in the future.

## 2. The Basic Connotation of Digitalization in Vocational Education

To achieve the digital transformation of vocational education, it is first necessary to clarify the connotation and basic characteristics of the digital transformation of vocational education teaching. Some scholars believe that the digital transformation of vocational education teaching is a comprehensive and deep-seated transformation process. For example, Wang Jingjie believes that the digital transformation of vocational education cannot be seen as a simple combination of transformation and digitization, but rather a comprehensive and deep integration with vocational education driven by digital technology. Zhu Zhiting also believes that digital intelligence technology should be deeply integrated into various levels of vocational education theoretical and practical courses, to assist in the comprehensive development and reform of vocational education teaching paradigms, teaching processes, and digital thinking of teachers and students.

Some scholars discuss the digital transformation of vocational education from the theoretical level. Firstly, according to epistemology, digital intelligent technology reshapes the new ecology of vocational education; In addition, ontology and axiology believe that the digital transformation of vocational education is the result of the synergistic construction of the embedding of intelligent technology into vocational education and the technological evolution of vocational education itself. Focusing on the empowerment of digital intelligent technology to the main body of vocational education, it is more necessary to emphasize the return to the essence and development characteristics of vocational education, that is, to strengthen humanistic care for vocational students and improve the social adaptability of vocational education. To facilitate the digital transformation of industries and the development of the digital economy.

## 3. The Dilemma and Challenge of Digital Transformation in Vocational Education

Through the promulgation and implementation of national digitization related policies, vocational education digitization has achieved good results. The digitization of vocational colleges continues to improve, digital intelligent technology helps teachers develop teaching and learning models, teachers' digital teaching abilities continue to improve, the construction of governance systems and models in the information age has achieved initial results, and digital institutional mechanisms are gradually improving. Based on this, it can be seen that digitalization of vocational education can improve its adaptability and attractiveness, as well as promote high-quality development.

By conducting research, statistics, and analysis on the implementation of digitalization in vocational education, and comparing relevant statistical reports such as the 2018 "Report on the Development of Informatization in Vocational Education" and the 2020 "Special Research Report on the Application of Online Education in the Field of Vocational Education during the Epidemic", as well as policies and regulations related to the digitalization development of vocational education in China, it is found that the digitalization transformation of vocational education is in the context of the digital intelligent technology era, We still face many problems and challenges.

### **3.1. Teachers' digital technology literacy is weak and limited by the "digital divide"**

The key to the high-quality application of digital intelligent technology in the teaching process of vocational education and the effective improvement of teaching quality lies in the teachers in vocational colleges. The awareness and attitude of teachers towards digital intelligent technology determine their ability to effectively integrate with digital technology. Some teachers do not fully understand or support digital transformation, and lack awareness of digital transformation in vocational education. They still have unfamiliar, confusing, and resistant understanding of the digital development of vocational education, and have a limited understanding of the relevant background and policies of digital development in vocational education. If you hold a negative or hesitant attitude, it will hinder the digital transformation process of vocational education.

Some teachers blindly believe that the digital teaching transformation of vocational education is difficult to implement, the cost of trying is too high, and there is a fear of difficulty and rejection. Separating oneself from digital teaching, lacking objective evaluation and reflection on digital teaching, and failing to fully understand the positive effects of digital intelligence technology on teaching, has increased digital bias. Some teachers only stay at the stage of being able to operate courseware in the application of digital intelligence technology, and lack systematic learning about deeper educational technologies.

In addition, teachers' understanding of digital data information and digital ethics still needs to be deepened. Some teachers do not pay attention to analyzing the unique attributes of their profession and the development characteristics and cognitive level of students, and mechanically pile up numerous digital intelligent technologies and even irrelevant educational content in teaching courseware. They excessively focus on digital technology while neglecting teaching effectiveness, which not only disturbs students' attention, Furthermore, the transformation of digital and intelligent technology in vocational education has shifted towards formalism.

### **3.2. "Technologization" stifles the "experiential curriculum" and "generative curriculum" of vocational education**

With the continuous development of digital intelligent technology, some scholars believe that intelligent technology is universal in the process of education, which deviates from the characteristics and essence of vocational education. In the process of the integration of vocational education practical training courses and digitalization, new teaching models such as virtual reality technology and simulation practical training technology have been produced, although some funds for practical training equipment in vocational schools have been eased. However, it ignores the presentation of teachers' technical operation experience and craftsman spirit, which are crucial for students, especially splits the relationship between cognition and practical operation, and objectively leads to the distortion of experience in practical training classes.

The generative experience of teachers in the long-term teaching process, the generative experience of students' practical operations, and the subjective expression of students' movements, facial expressions, learning attitudes, and other generative behaviors may be filtered out by intelligent technology or ruthlessly ignored by teachers. In addition, vocational school teachers and students are easily trapped in the "information cocoon" when facing the complex digital intelligence technology, losing the ability to think independently and reflect, and mechanically and rigidly learning according to the logical programming of digital intelligence technology.

### **3.3. The digital supply of vocational education and teaching does not align well with the needs of teachers and students**

Some vocational college teachers lack practical, user-friendly, and convenient specialized teaching resources, flexible teaching models, and diversified teaching evaluations. Among them, in terms of professional teaching resources: firstly, teaching resources are mainly focused on vocational colleges, while vocational colleges still need to be enriched; The second is that the resources are relatively abundant in text, images, and video resources, but there are few resources suitable for skill practical simulation training; Thirdly, digital course resources do not align with teachers and students, and many professional courses with high demand from teachers and students still need further development, and the speed of resource updates is lagging behind; Fourthly, the correlation between digital course resources and excellent practice cases in enterprises is relatively low. In terms of flexible teaching modes, firstly, traditional teaching modes are difficult to transform at the moment, and the integration of human-machine collaborative teaching modes is not high; Secondly, under the background of digital intelligent technology, the integration of project-based teaching mode, school enterprise cooperative teaching mode, and applicable practical teaching simulation teaching mode is not strong enough to continuously stimulate students' learning interest and improve teaching quality. In terms of teaching evaluation, there is a lack of specific data collection, analysis, and feedback on students' implicit performance and phased achievement evaluation in moral education, aesthetic education, labor education, and other aspects during the learning process.

## **4. Countermeasures for the Digital Transformation of Vocational Education**

### **4.1. Cultivate teachers' basic digital literacy and abilities**

The focus of digital transformation in vocational education is on vocational college teachers, who should also form basic digital literacy. Firstly, it is necessary to enhance the sense of identity recognition of "digital teachers". The integration of digitalization into vocational education is an inevitable trend for future development. By deeply understanding the era background, value implications, and ethical standards of digital transformation in vocational education, we can achieve a transition from "passive adaptation" to "active transformation", gradually establish the concept of digital thinking, form basic digital literacy for teachers, cultivate digital ethics and ethics, and enhance digital capabilities.

Secondly, in the context of the rapidly changing technology and knowledge transformation in the digital intelligent technology era, vocational education needs to continue to develop in a "dynamic" and "innovative" manner. Therefore, vocational college teachers should use digital intelligent technologies such as AR/VR and blockchain to strengthen the assistance for students' learning, life, and practical exercises. In addition, teachers must possess the awareness and ability of lifelong learning, closely monitor the development and changes of relevant industries in society and the development demands of students. Teachers themselves must actively break free from the constraints of traditional thinking, maintain an "actor" posture in the context of digital intelligent technology, assume the role of inheritors and innovators of technical skills, and become important creators of skilled craftsmen and craftsmen from major countries.

### **4.2. Digital Intelligence Technology Boosts Experience Courses and Generative Courses**

Vocational education curriculum teaching should be based on the classification of curriculum knowledge and implement the methods of adapting to local conditions, times, and courses. Implement a "online+offline" bilateral interaction between technical and operational

knowledge in practical courses, and build a virtual reality system platform for students to transcend reality, experience multiple senses, and collaborate with teachers and students through human-machine integration, thereby improving the tangible experience of online virtual cognition in vocational education courses. In addition, the teaching of experiential courses such as ideological and political courses, moral education, and craftsman spirit should not only rely on digital intelligence technology, but also rely on their own professional ethics, "teaching by example", and "setting an example" to effectively convey the spirit, experience, and methods of teachers.

Digital intelligence technology is only a tool to promote the high-quality development of vocational education. If there is a lack of humanistic care for students during its integration into vocational education, not only is its integration meaningless, but it will also backfire and deviate from the essence of vocational education. On the one hand, teachers can leverage the openness and scalability of digital intelligence technology to improve students' ability to access information and self-study. It also helps to stimulate students' interest and enthusiasm in learning through communication between teachers, students, and students. On the other hand, teachers should strengthen the cultivation of students' information identification ability, independent thinking ability, and innovative and creative ability.

#### **4.3. The focus of digital intelligent technology empowering teachers and students to reshape the supply and demand of vocational education**

Firstly, digital intelligent technology promotes the development of teacher teaching. In terms of digital professional resources, expand the coverage of vocational education teaching resources and gradually improve the quality of digital resource construction and development, especially by increasing simulation based practical resources supported by AR/VR and artificial intelligence technologies that connect research and development with enterprises. In terms of teaching modes, provide diversified and intelligent teaching modes, explore intelligent teaching scenarios, implement generative teaching modes, and integrate online and offline teaching modes.

Secondly, digital intelligent technology empowers students' learning activities. On the one hand, digital intelligence technology can understand students' learning situation based on their existing learning data information, predict their future learning performance, understand their characteristics, and develop learning plans for students based on this, thereby promoting their individual development and improving learning outcomes. On the other hand, personalized teaching resources and learning strategies such as vocational education teaching resource databases, practical guides, precautions, and troubleshooting are matched for students according to their characteristics.

Finally, digital intelligent technology helps teachers and students interact efficiently. Digital intelligent technology records the data of teachers' teaching, students' learning, and interaction between teachers and students in the entire teaching scene, analyzes the generated real-time monitoring reports of the classroom, and helps teachers evaluate the classroom effect and form teaching feedback.

## **5. Conclusions**

The digital transformation of vocational education teaching is an inevitable trend in the future development of vocational education, and it is also a comprehensive and deep-seated transformation process. Teachers need to improve their digital awareness and ability, digital intelligent technology is needed to promote "experiential courses" and "generative courses", and it is also necessary to understand the needs of teachers and students for digital intelligent technology.

## References

- [1] RIEMER K, GAL U, HAMANN J, et al. Digital disruptive intermediaries: finding new digital opportunities by disrupting existing business models[R]. Sydney: Australian Digital Transformation Lab, 2015.
- [2] Morakanyane R, Grace A. Conceptualizing Digital Transformation in Business Organizations: A Systematic Review of Literature[A]. Pucihar A. 30th Bled Econference: Digital Transformation from Connecting Things to Transforming Our Lives[C]. Bled: University of Maribor, 2017. 427-444.
- [3] Reis J, Amorim M, NFR Melão, et al. Digital Transformation: A Literature Review and Guidelines for Future Research[A]. Rocha Á., Adeli H., Reis L.P., Costanzo S. World Conference on Information Systems and Technologies[C]. Naples: Springer, Cham, 2018. 411-421.
- [4] Sandhu, G. The Role of Academic Libraries in the Digital Transformation of the Universities[A]. International Symposium on Emerging Trends and Technologies in Libraries and Information Services (ETTLIS)[C]. Noida: IEEE, 2018. 292-296.
- [5] María L, Benavides C, Alexander J, et al. Digital Transformation in Higher Education Institutions: A Systematic Literature Review[J]. Sensors, 2020, 20(11): 1-22.