Research on the Construction Path of Teaching Workshops from the Perspective of Structural-Functionalism Theory

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Abstract. The construction of digital teaching factories is a critical component in the digital transformation of vocational education reform and the advancement of the "one body, two wings" strategic initiative. Based on this, using structural functionalism as a theoretical perspective and Parsons' AGIL model, this study analyzes the importance and practical issues of digital teaching factories in vocational schools. It points out that the construction of digital teaching factories in vocational schools is not merely a matter of technological application but also a significant innovation in educational concepts and methods. This requires deep integration and collaboration among schools, enterprises, and society, strengthening the integration of curriculum systems, teaching methods, and digital technologies, and emphasizing the cultivation and updating of the teaching workforce.

Keywords: Structural Functionalism; Digital Teaching Factory; Vocational Schools

1 Introduction

As information technology continues to be applied in teaching, the practical training process shows a trend of integrating online teaching platforms, resource platforms, simulation teaching platforms, VR/AR, and smart terminals. Vocational schools are actively building experimental training bases that combine virtual and real elements, developing interactive simulation training software, and integrating information technology into the construction of training bases. This breaks the limitations of closed physical spaces and fixed times, truly moving towards a boundaryless learning field that blends virtual and real elements. To provide a better and safer experimental training environment, schools are exploring paths to construct digital teaching factories based on industry-education integration. The construction wave of digital teaching factories in vocational schools, characterized by virtual-real integration, technological embedding, and functional aggregation, is flourishing.

This study aims to attempt to use structural functionalism theory, based on Parsons' "AGIL model," to analyze and discuss the functional orientation and real problems of digital teaching factories in vocational schools from the four functional dimensions of "adaptation, goal attainment, integration, and latency." Based on practical experience, it summarizes the construction paths of digital teaching factories in vocational schools, providing new ideas for the construction of digital training bases and teaching reform.

2 Structural Functionalism Perspective and Analytical Framework

2.1 The AGIL Model in Structural Functionalism

Chilcott, in his paper, delves deeply into the application of structural functionalism in the field of educational research, considering it a "Heuristic Device." Chilcott argues that structural functionalism not only reveals the operational mechanisms of educational systems but also provides theoretical and methodological support for addressing specific problems in the educational field. Twenty years ago, Chinese scholar Zhao Changlin pointed out that structural functionalism is an efficient analytical tool for explaining the status and functions of education within the social structure.

Reviewing past studies, Wang Weidong was the first to comprehensively analyze the main structure, form structure, hierarchical structure, and the functional structures of majors and curricula in vocational education from the perspective of structural functionalism. His analysis provided profound reflections for institutional innovation in the vocational education reform pilot zone of Henan Province.

However, in the following decade, the application of structural functionalism in Chinese vocational education research was relatively sparse. In recent years, some scholars have started to re-focus on this theoretical perspective, successfully applying it to various current research areas in Chinese vocational education and achieving significant results. This further demonstrates the strong relevance of structural functionalism as an educational sociology theory in contemporary Chinese vocational education research. It can provide new theoretical perspectives and research ideas for the study of the construction of digital teaching factories in Chinese vocational schools.

In 1953, Parsons proposed the "AGIL model" based on structural functionalism, emphasizing that the system needs to have four functional subsystems: A - Adaptation, referring to the system's ability to adapt to the environment or the degree of integration with the environment; the higher the integration, the stronger the system's adaptability; G - Goal Attainment, referring to the function of establishing goals in the process and the efforts of various organizations within the social system to achieve these goals; I - Integration, referring to the function of integrating the various components and action elements within the system to promote efficient operation; L - Latency, referring to the function of maintaining the continuous existence and operation of the system through cultural, spiritual, and patterned means.

2.2 Analysis and Application of the AGIL Model in the Construction of Digital Teaching Factories

An analysis of existing literature on digital teaching factories reveals that most of this research is based on practical experience and often lacks a certain theoretical depth. Therefore, structural functionalism theory provides an effective analytical framework for analyzing the construction of digital teaching factories in vocational schools.

From the perspective of the AGIL model, we can view the digital teaching factory in vocational schools as a complete system. Based on this model, it is evident that the construction and operation of digital teaching factories need to meet four core functions to ensure the system's effectiveness and sustainable development.

A - Adaptation: This part involves how digital teaching factories in vocational schools adapt to changes in the external environment to meet the growing demand for professional talent. As a product of industry-education integration and school-enterprise collaboration, the construction of digital teaching factories allows vocational schools to better integrate resources from enterprises, schools, and society. It expands teaching spaces, enhances capacity, deepens industry-education integration, innovates educational concepts and teaching methods, and promotes the modernization and digitalization of vocational education.

G - Goal Attainment: This part includes the goal-oriented analysis of the construction of digital teaching factories in vocational schools. These goals reflect the precise alignment of digital teaching factories with industry realities and the innovation of teaching models. They aim to improve the quality and efficiency of talent cultivation, provide students with rich learning experiences and career development opportunities, and align with the national strategy of promoting the digitalization of vocational education and smart vocational education.

I - Integration: The integration function of digital teaching factories in vocational schools focuses on the coordination and fusion of different elements within the teaching environment. This includes integrating various components of teaching, such as space, technology, activities, and content, into a unified teaching field. It effectively gathers all elements in the talent cultivation process, enabling them to support each other and promote the positive operation of the entire system.

L - Latency: This part involves the renewal and maintenance of the cultural subsystem within the education system through digital teaching factories. This renewal is mainly reflected in the reshaping of teaching concepts and learning awareness to better meet the rapidly developing industry needs and cultivate high-quality talent.

These four dimensions collectively form the analytical framework for the construction of digital teaching factories in vocational schools, ensuring their sustainable development and success in educational reform and technological innovation.

3 Functional Orientation Analysis of Digital Teaching Factories in Vocational Schools

3.1 Adaptation Function Analysis of Digital Teaching Factories in Vocational Schools

Digital teaching factories consistently emphasize a school-based approach, utilizing current teaching systems to create a real enterprise environment for students through the rational allocation of teaching resources. Therefore, they do not exist independently but are deeply embedded in the existing administrative management and teaching development systems of schools. Digital teaching factories must continuously make necessary adjustments based on changes in the external environment (including policy, administrative, industrial, teaching, and technological environments) to align with professional and industry developments.

The "digital teaching factory" is a product of vocational schools adapting to environmental changes in the context of industry-education integration and school-enterprise collaborative education. Through the construction of digital teaching factories, the integration of resources from enterprises, schools, and society is achieved, opening up new pathways for talent cultivation, specifically manifested in the following three aspects:

1. **Expansion of Teaching Space:** The construction of digital teaching factories promotes the integrated upgrade of teaching facilities and equipment, transforming teaching spaces from "fixed classrooms and collective teaching" to "specialized spaces and targeted teaching," breaking the limitations of traditional teaching space layouts (Shi Jianjun, 2017).
2. **Enhancement of Capacity:** By combining virtual and real training equipment, digital teaching factories can significantly enhance the capacity for practical training, maximizing the potential of existing teaching equipment (Wang Jun, 2013). Additionally, digital methods for monitoring the training process can

timely identify and correct potential safety hazards, effectively ensuring the safety of the training process.

3.Deepening Industry-Education Integration: Digital teaching factories match the actual work scenarios of enterprises, deepening teaching reform through various collaborative operation forms such as work-study combination, industry-education integration, professional construction, curriculum reform, order-based training, shared resources, and technical services. This enables collaborative curriculum development, joint cultivation of teachers and students, cultural integration, and local service (Chen Anzhu, Su Honglin, 2019).

In summary, the construction of digital teaching factories in vocational schools is not just about the application and integration of technology; it represents a significant innovation in educational concepts and teaching methods. It is a precise adjustment of the existing ecosystem and marks a step forward for vocational education towards modernization and digitalization.

3.2 Goal Attainment Function Analysis of Digital Teaching Factories in Vocational Schools

These policies set clear goals for the construction of digital teaching factories, aiming to deepen vocational education reform. On a practical level, the goals can be summarized into four dimensions:

1.Further Aligning with Industry Needs: With technological advancements and industrial upgrades, there is a growing demand for highly skilled labor with modern technical knowledge. Digital teaching factories aim to provide teaching scenarios that mimic real work environments, allowing students to directly engage with the latest industry technologies and work processes, thus better meeting the market demand for skilled talent.

2.Cultivating Students' Practical Skills: By offering advanced training equipment and platforms simulating actual work environments, digital teaching factories strengthen students' practical skills. This model helps students combine theoretical knowledge with practical operations, enhancing their overall professional capabilities.

3.Improving Quality of Education and Teaching Efficiency: Digital teaching factories, by incorporating advanced educational technologies and management systems, can manage teaching resources more efficiently and improve educational quality. They also provide more teaching support and resources for educators.

4.Innovating Educational Models: The construction of digital teaching factories represents a significant innovation in traditional vocational education models. They not only utilize the latest educational technologies and teaching methods but also transform traditional roles of teachers and students and learning approaches. This encourages students to participate more actively in the learning process, increasing interaction and engagement.

The overarching goal of digital teaching factories is to deepen vocational education reform. By creating an ecosystem that integrates virtual and real elements, embeds technology, and aggregates functions, digital teaching factories align with industry realities, innovate teaching models, improve the quality and efficiency of talent cultivation, and enhance students' professional skills. This ensures that students are job-ready upon graduation (Guo Dandan, Chen Anzhu, 2023), providing them with a richer learning experience and career development pathways. Additionally, the construction of digital teaching factories responds to the national initiative to promote the digitalization and informatization of vocational education, aiming to build smart vocational education.

3.3 Integration Function Analysis of Digital Teaching Factories in Vocational Schools

According to the theoretical perspective of structural functionalism, during the actual operation of a system, various key factors within the system are constantly in a state of either interaction and coordination or conflict. To maintain orderly and healthy operation of the system, it is necessary to coordinate and integrate these key factors, ultimately transforming dispersed elements into usable resources.

Currently, digital teaching factories, which are still in the development stage, lack a unified and clear concept. Generally speaking, digital teaching factories are not only intelligent training platforms but also teaching environments designed around the entire process of actual production. They coordinate resources from schools, enterprises, and society, addressing the needs of education, talent cultivation, and moral development, and are oriented towards vocational education, research, and training in vocational schools.

A major feature of this environment is the integration of various elements in teaching, including space, technology, activities, and content, within the same field. Specifically, this involves the digital upgrade of enterprise production environments, production line equipment, and production processes using a combination of virtual and real technologies. Students can apply what they have learned to actual job operations while integrating various software and hardware resources to create a distinctive teaching environment that blends teaching, research, and industry (He Xiao, 2019).

The integration function of digital teaching factories relies on the participation and cooperation of schools, society, and enterprises. This effectively gathers all elements involved in the process of talent cultivation, coordinates the relationships between these elements and organizations, and thereby promotes the healthy development and optimization of vocational education.

3.4 Analysis of the Latency Function of Digital Teaching Factories in Vocational Schools

The digital teaching factory is not just about the development and integration of educational technology; it is also a crucial means of updating and maintaining the cultural subsystem within the existing educational system, particularly the concepts of teaching and learning awareness. This approach better meets the rapidly evolving industry demands and helps cultivate high-quality talents who can adapt to the development needs of modern society.

In the field of vocational education, especially in professional teaching that emphasizes the integration of theory and practice, traditional teaching models that separate theory from practice are gradually being replaced by more modern teaching methods. With the rapid development of technology, especially the widespread adoption of internet technologies, digital teaching factories have become an essential solution to the problem of "integration without fusion" in industry-education integration.

The construction and application of digital teaching factories optimize the cultural subsystem within the educational system, significantly updating the teaching concepts of educators. In a digital teaching factory, the role of teachers transforms into that of mentors and facilitators, guiding students to explore and solve problems in practice, rather than merely transmitting knowledge. This shift from the traditional separation of theory and practice involves collaborating with enterprises to provide students with more opportunities to participate in actual production practices or project tasks. This model allows students to gain systematic and comprehensive theoretical knowledge while engaging in job-related skill training, ultimately achieving the integration of theoretical teaching and practical application. Students can conduct practical learning around the entire production lifecycle, mastering basic knowledge and skills related to new equipment, technologies, and methods in production. This approach develops their abilities in professional production, teamwork, problem-solving, and innovation, fostering a culture of self-directed and lifelong learning.

Digital teaching factories significantly enhance the iterative development of students' learning awareness. Students are no longer passive recipients of knowledge but become active learners and practitioners. They learn, practice, and explore in real production environments. This "active learning" model not only enhances their absorption and understanding of knowledge but also cultivates their interest and motivation for learning. Students transition from "being made to learn" to "wanting to learn," discovering and solving problems during the learning process, continuously improving their practical skills and innovative thinking.

The significant update and optimization of the cultural subsystem within the educational system through digital teaching factories promote the transformation and upgrading of teaching concepts for teachers and learning awareness for students, injecting new vitality into vocational education.

4 Conclusion

This study, under the AGIL theoretical framework of structural functionalism, delves into the construction path of digital teaching factories in vocational schools. The research indicates that successful construction requires the coordination of interests and resources among educational departments, industries, and government agencies, fostering an innovative industry-education integration cooperation model to establish a multi-participant and efficiently operating cooperative ecosystem. This approach not only provides the necessary material and technical resources but, more importantly, ensures a close alignment between educational content and industry demands.

Future research can further explore the implementation effects of digital teaching factories across different disciplines and regions, as well as how to optimize their structure and function to better serve educational goals and student needs. Additionally, attention should be given to how digital teaching factories can adapt to rapidly changing technological and market demands and how they can be promoted and applied within the broader educational system.

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