

Reform Pathways for Digital Technology-Empowered Practice Teaching in Culinary Arts and Nutrition

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Abstract: Against the backdrop of the deep advancement of the educational digitalization strategy and the intelligent transformation of the catering industry, the practice teaching of Culinary Arts and Nutrition is confronted with the practical problems such as disconnection between traditional teaching models and industry demands, limitations of practical operation teaching, and insufficient accuracy of nutrition teaching. The rapid evolution of digital technology has provided fire-new support for the reform in the practice teaching of Culinary Arts and Nutrition, enabling to effectively address the pain points in teaching and achieve normalization, precision and personalization of practice teaching. This paper integrates the core needs of the practice teaching in Culinary Arts and Nutrition to deeply analyze the application value and current problems of digital technology in practice teaching, and explores the concrete reform pathways for digital technology-empowered practice teaching from five dimensions curriculum architecture restructuring, teaching model innovation, practical training resource construction, teaching staff cultivation, and evaluation system optimization, aiming to provide theoretical reference and practical guidance for improving the quality of practice teaching and cultivating high-caliber skilled talents aligned with industry demands.

Keywords: Digital Technology; Culinary Arts and Nutrition; Practice Teaching; Reform Pathways

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1.Introduction

The Culinary Arts and Nutrition programs are centered on cultivating technical talents with hands-on culinary skills, nutritious meal planning capabilities and industry-fit competencies. Practice teaching serves as a crucial bridge between theoretical knowledge and job requirements. Currently, the catering industry is accelerating its paradigm shift toward intelligence, standardization and healthiness, and new scenarios, such as the application of intelligent cooking equipment, digital nutritious meal planning, and the digital transmission of culinary arts, are constantly emerging, which place higher demands on the digital literacy and integrated skills of professional talents. However, the traditional practice teaching models suffer from many limitations. Practical operation teaching relies on experiential learning, nutritional teaching lacks precise support, and the practical training scenarios are monotonous with high cost, failing to meet the demands of industrial upgrading for talent cultivation. As the core driving force for educational transformation, digital technology can integrate virtual simulation, big data, artificial intelligence and other technologies with practice teaching content, such as culinary arts and nutritious meal planning, to break through temporal-spatial limitations and model silos of traditional teaching. Based on this, conducting in-depth exploration of the reform pathways for digital technology-empowered practice teaching in Culinary Arts and Nutrition to resolve teaching issues and strengthen teaching effectiveness has become an inevitable choice for promoting the high-performance development of Culinary Arts and Nutrition and meeting the demands of industrial transformation.

2.Core Value of Digital Technology-Empowered Practice Teaching in Culinary Arts and Nutrition

2.1 Overcoming the Constraints of Practical Operation Teaching to Improve the Effectiveness of Skills Training

The practical operation teaching of Culinary Arts is strict with details. In traditional teaching, it is difficult for teachers' demonstrations to cater to all students, and there are deviations in the impartation of operational details for partial complex techniques, resulting in that students are challenging to quickly master the core points and it is prone to problems such as food material waste and operational safety risk in practical operations. Through virtual simulation, high-definition demonstrations, etc., digital technologies enable to break down and present complex

cooking techniques. By repeatedly playing back and observing them at all angles, students can precisely grasp the details of each procedure. Digital technologies make up for the deficiencies of traditional demonstration teaching effectively. And, virtual simulation practical training can simulate all kinds of cooking scenarios, enabling students to practice high-risk operations and complex techniques again and again in the environment with no material consumption or safety risk, which not only reduces practical training cost, but also enhances the pertinence and effectiveness of skills training and facilitates students to quickly lay solid foundations for practical operations [1].

2.2 Enhancing the Accuracy of Nutrition Education to Emphasize the Disciplinary Features

In Culinary Arts and Nutrition programs, the core content is nutritious meal planning. Theoretical explanations are the primary teaching method in traditional nutrition education. There is a lack of precise and visual practice support. This makes it challenging for students to effectively integrate nutrition theories with meal planning practice or to precisely balance the nutrient components of food materials and the nutritional needs of people. Through tools such as nutritious meal planning software and food nutrition databases, digital technologies enable to realize precise calculation of nutritional ingredients and intelligent optimization of meal planning schemes. After inputting the information of food materials, students can understand the nutritional ingredients of various food materials visually and integrate the dietary needs of people to quickly design a scientific and reasonable meal planning scheme. This method enables to enhance the practical operation embedment of nutrition education, cultivate the precise nutritious meal planning ability of students and enhance disciplinary nutrition features. It aligns with industry demands for health meal planning talents [2].

2.3 Integrating Industrial Job Requirements to Promote Industry-Education Integration

Current digital transformation of the catering industry has shifted job requirements toward dual core architecture of "skill + digital". Digital cooking equipment operational skills, digital food material management skills, and online catering operation management skills have become essential requirements for the positions in the industry. Digital technology-empowered practice teaching can integrate the latest digital equipment, operation specifications and meal planning standards in the industry into the teaching process, enabling students to be exposed to the cutting-edge technologies and job requirements in the industry during the period of learning, and adapt to the digital work environment in advance. Concurrently, school-enterprise synergistic teaching bridges can be built through digital platforms to realize school-enterprise resource sharing and teaching synchronization, make practice teaching align with industry realities more, effectively enhance students' position-fit capabilities and promote deep industry-education integration.

3.Current Problems in Digital Technology-Empowered Practice Teaching of Culinary Arts and Nutrition

3.1 Superficial Curriculum Architecture-Digital Technology Integration

Current curriculum architecture is still centered on traditional Culinary Arts and Nutrition Theory courses. Related digital curriculum settings are rather fragmented, mostly focusing on monolithic courses on software operations or equipment application, failing to deeply integrate digital technology with core practice courses such as Culinary Arts and Nutritious Meal Planning. The curriculum content lacks systemic coherence and there is no "digitalization + practice" integrated curriculum architecture that is established according to the requirements of industrial digital transformation, resulting in that the digital skills students acquire are disconnected from their core professional competencies, struggling to achieve the organic integration of digital technology and disciplinary practice [3].

3.2 Inadequate Innovation in Teaching Models, and Their Superficial Application

The traditional "demonstration + practice" teaching model is still adopted by some teachers. The application of digital technologies remains superficial mostly. They are merely used as auxiliary demonstration tools. The

advantages of digital technologies fail to be fully leveraged in personalized teaching and precision instruction. There is no study on the "virtual simulation + practical training" and "online + offline" blended teaching model, which leads to that students passively receive knowledge and fail to develop their ability to proactively apply digital technology to solve problems in practice, and the empowerment value of digital technology has also not been fully realized.

3.3 Lagging Digital Construction of Practical Training Resources

Practical training resources constitute the cornerstones of practice teaching. Currently, in some higher education institutions, the cooking practical training venues still mainly employ traditional equipment, which are equipped with insufficient digital practical training devices, and incomplete virtual simulation practical training platforms, lacking digital practical training resources covering the entire process across culinary arts, nutritious meal planning, cuisine innovation, etc. Meanwhile, digital teaching resource libraries are under-developed, lacking high-quality digital courseware, practical training videos, case resources, etc., which makes it difficult to meet the needs of students' self-directed learning and teachers' digital teaching and restricts the application of digital technology in practice teaching.

3.4 Digital Literacy of Teaching Staff Remaining to be Improved

Teachers serve as the core force in the digital teaching reform. Current Culinary Arts and Nutrition teachers mostly possess solid professional skills, but lack digital literacy generally. They lack digital teaching philosophy and methods, struggling to proficiently use virtual simulation platforms, nutritious meal planning software and other digital tools to conduct practice teaching. Some teachers do not have a good understanding of digital development trends in the industry. They are unable to effectively integrate the cutting-edge digital technologies with the teaching content, resulting in that it is difficult for the digital teaching reform to be effectively implemented ^[4].

3.5 Evaluation Systems Failing to Meet the Needs of Digital Teaching

Traditional practice teaching evaluation is mainly centered on practical operational outcomes and written exams, with monotonous and one-sided evaluation methods. Its evaluation scope does not cover students' digital skills and digital practical capabilities. There is no precise and digital support in the evaluation process. It is incapable of comprehensively and objectively reflecting students' professional skills and digital literacy, struggles to play the guiding role in the digital teaching reform and goes against the development of students' digital capabilities.

4.Reform Pathways for Digital Technology-Empowered Practice Teaching in Culinary Arts and Nutrition

4.1 Restructuring the Curriculum Architecture to Promote the Deep Digitalization-Curriculum Integration

Higher education institutions should restructure the practice-oriented curriculum architecture for Culinary Arts and Nutrition based on the demands of industrial digital transformation, and fully integrate digital technology into the core courses. And they should optimize the curriculum settings, add core courses such as digital culinary skills, digital design of nutritious meal planning, and virtual simulation cooking practical training, delete the content that is disconnected from industry demands, and enhance the praxis embedment and digital orientation of the courses. In addition, they should construct course modules consisting of "fundamental skills, digital skills, and position-specific skills", and integrate digital skills training throughout whole-process practice teaching of culinary arts, nutritious meal planning, cuisine innovation, etc. to achieve the organic integration of digital technology and specialized courses, enabling students to master the core professional skills while enhancing their digital application capabilities.

4.2 Innovating Teaching Models to Highlight the Advantages of Digital Empowerment

Higher education institutions should break through the limitations of the traditional teaching models and innovate a "virtual simulation + practical training" and "online + offline" blended teaching model. They can leverage online digital teaching platforms to feed digital courseware, practical training videos, case resources, etc. to students

and guide them to independently learn about the use of digital tools, the detailed deconstruction of cooking techniques, and the design methods of nutritious meal planning, etc., and rely on offline practical training venues to conduct practical training, integrating the knowledge learned online with practice. Teachers provide precision guidance on students' practical operations and digital technology application through digital monitoring, real-time comments, etc. Concurrently, they should implement project-based teaching, using real-world industry projects as carriers to guide students to apply digital technology to solve practical problems such as optimization of culinary arts and design of nutritious meal planning, thereby cultivating students' comprehensive application capabilities and innovation capabilities.

4.3 Improving Practical Training Resources to Solidify the Foundations for Digital Teaching

Higher education institutions should increase investment in the construction of digital practical training resources, improve the digital transformation of practical training venues, equip them with intelligent cooking equipment, virtual simulation practical training platforms, nutritious meal planning software and other digital devices, and build "virtual- real" integrated practical training environment. Professional digital teaching resource libraries should be built to integrate high-quality resources such as videos on digital practical training, courseware, cases, and food nutrition databases. They should cover various sectors such as culinary arts, nutritious meal planning, and culinary innovation. The aim is to achieve resource sharing and meet the self-directed learning needs of students and the teaching needs of teachers. School-enterprise cooperation should be strengthened. Higher education institutions should cooperate with catering enterprises and technology companies to establish digital practical training bases, equip them with the latest digital equipment and operation specifications in order to make the practical training teaching align with the industry realities more and improve the effectiveness of practical training.

4.4 Cultivating Teaching Teams to Enhance Their Digital Teaching Capabilities

A "normalized training + special study + practice empowerment" faculty cultivation system should be established to enhance the digital literacy and teaching capabilities of teachers. Teachers should be organized to engage in digital teaching training termly, with a focus on training on how to use digital tools such as virtual simulation platforms & nutritious meal planning software, digital teaching philosophy and teaching methods. And teachers should be sent to enterprises for research and learning so as to understand digital development trends, and learn digital operation specifications and technologies. This can drive teachers to integrate the cutting-edge industry technologies into the teaching process. Digital teaching exchange platforms should be built for teachers in order to encourage them to conduct research and practical exploration in digital teaching, share teaching experience and achievements, and promote the integral elevation of their digital teaching capabilities.

4.5 Optimizing the Evaluation Systems to Enhance Digital-Driven Capabilities

The practice teaching evaluation systems must be restructured to break monolithic evaluation methods and establish a "digital skill + professional skill + practical application" multi-dimensional evaluation system. The evaluation system should cover the digital tool application ability, digital practical application ability, and digital design ability for nutritional meal planning of students and employ the evaluation method integrating process-based evaluation and summative evaluation to comprehensively and objectively evaluate the learning outcomes of students. Digital platforms can be leveraged to realize digital and precise evaluation process. By monitoring students' learning behavior, practical operation processes, and digital application ability, digital platforms can generate personalized evaluation reports to offer support for students' learning improvement and teachers' teaching optimization. At the same time, the digital teaching capabilities and achievements of teachers should be incorporated into faculty evaluation systems, thereby arousing the enthusiasm of teachers for implementing digital teaching reform.

5. Conclusion

In order to align with the digital transformation in the catering industry, accelerate the high-quality development

of Culinary Arts and Nutrition, and cultivate high-caliber skilled talents, the inevitable choice is to conduct digital technology-empowered practice teaching reform. Digital technologies enable to effectively overcome the constraints of traditional practice teaching, improve teaching effectiveness, enhance disciplinary features and promote industry-education integration. Currently, the application of digital technology in practice teaching still faces problems such as superficial integration with courses, insufficient innovation in teaching models, lagging practical training resources, insufficient faculty competencies, and incomplete evaluation systems. By restructuring curriculum architecture, innovating teaching models, improving practical training resources, cultivating faculty teams, and optimizing evaluation systems, these reform pathways can promote the deep integration of digital technology and practice teaching, fully leverage the empowering value of digital technology, enhance the quality of practice teaching, and cultivate Culinary Arts and Nutrition professionals with professional skills and digital literacy and aligned with industry demands, thereby providing talent support for the high-performance development of the catering industry.

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