Optimization Strategy of Mixed Teaching Resources in Higher Vocational Colleges Supported by National Smart Education Platform

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Abstract: In the development of digital education, blended teaching in Higher Vocational Colleges (HVC) has gained new opportunities with the help of the national smart education platform, but it also faces problems such as inefficient resource integration, insufficient interaction and single assessment. This article focuses on the mixed teaching in HVC supported by the national wisdom education platform, and puts forward targeted optimization strategies by analyzing the existing problems. Firstly, the research expounds the related concepts and theoretical basis, and then deeply analyzes the existing problems in resource integration, interaction and assessment of mixed teaching, and takes specific majors and courses as examples, supplemented by tables for intuitive presentation. Based on this, this study puts forward some strategies from the aspects of integrating teaching resources to build a system integration system, enhancing interactive rich forms and optimizing incentive mechanism, optimizing assessment and building a diversified system. The research aims to improve the quality of blended teaching in HVC, promote the development of vocational education, realize the deep integration of intelligent education platform and blended teaching, and tap its potential to improve students' skill level and enhance autonomous learning ability.

1. Introduction

In today's digital age, higher vocational education and teaching are facing profound changes. As an innovative mode combining the advantages of online and offline teaching, blended teaching mode has gradually become an important way to improve teaching quality in HVC [1]. In this context, the national wisdom education platform came into being, which provided strong support for the development of mixed teaching in HVC [2]. At present, there are still many problems to be solved in HVC when using the national wisdom education platform to carry out mixed teaching [3]. In traditional blended teaching, the efficiency of resource integration is low, and various teaching resources, such as online courses, offline teaching materials and practical materials, have not been organically integrated, which makes it difficult for students to build a systematic knowledge system in the learning process. The lack of interactive teaching and the lack of in-depth and effective communication between teachers, students and students make students' learning enthusiasm frustrated and the classroom atmosphere dull [4]. The problem of single assessment method is prominent, relying too much on summative assessment, ignoring students' performance and efforts in the learning process, and unable to comprehensively and objectively reflect students' learning achievements.

The construction and practice of mixed teaching mode in higher vocational education based on the intelligent education platform of "classroom school" in the course of "live broadcast operation" provides useful ideas for solving the above problems [5]. This model improves the situation of resource integration, interaction and assessment to some extent through the "three-order and six-ring" model. This model significantly improves students' skill level and learning input, enhances classroom interaction and students' autonomous learning ability, and shows the potential and advantages of deep integration of smart education platform and blended teaching [6]. The purpose

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of this study is to further tap the functional advantages of the intelligent education platform, and put forward practical optimization strategies in view of the existing problems, so as to promote the improvement of the quality of mixed teaching in HVC and cultivate high-quality technical and technical talents to meet the needs of the times.

2. Definition of core concepts

National Smart Education Platform is a comprehensive platform that integrates high-quality educational resources and uses modern information technology to serve education and teaching, covering various types of education and providing rich resources and technical support for mixed teaching in HVC [7]. Mixed teaching in HVC is a teaching mode that organically combines traditional offline teaching with online teaching, gives full play to their advantages and improves teaching effect. Through online autonomous learning, offline classroom discussion and practice, students' personalized learning needs are met.

Constructivist learning theory emphasizes the process of learners actively constructing knowledge. In the mixed teaching in HVC, students actively explore knowledge and build their own knowledge system with the help of the rich resources provided by the national wisdom education platform [8]. Unicom learning theory holds that learning is a process of connecting specialized nodes and information sources. The national wisdom education platform gathers a large number of educational resources, just like nodes. In the process of mixed teaching, students establish contact with these nodes through online and offline ways to realize knowledge acquisition and innovation [9]. For example, students interact with teachers, classmates and industry experts on the platform to broaden their knowledge horizons and improve their learning effects.

3. Analysis of the existing problems of mixed teaching in higher vocational education supported by the national wisdom education platform

3.1. Integration of teaching resources

With the popularization and application of the national wisdom education platform, blended teaching in HVC has ushered in a new opportunity, but in the process of practice, there are still some problems that need to be solved urgently, which restrict the improvement of blended teaching effect. The inefficient integration of teaching resources is one of the main problems currently facing [10]. Although the national wisdom education platform provides a huge amount of resources, it is difficult for HVC to organically integrate it with their own characteristic teaching content and offline teaching resources when applying it. There are differences in knowledge system and difficulty level between online high-quality courses and self-made textbooks in our school. Teachers need to spend a lot of energy to coordinate in the teaching process, but it is often difficult to achieve the ideal integration effect.

Table 1 Integration Status of Blended Teaching Resources for the E-commerce Major in HVC

Resource Type	Number of Online Resources	Number of Offline Resources	Integration Description
Course Videos	50	-	Poorly aligned with the knowledge points in offline textbooks, with some content duplication and some missing parts
Case Materials	80	30	Online and offline cases are not categorized, making it difficult for students to access them in a targeted manner
Training Projects	30	20	The procedures for online virtual training and offline practical training are inconsistent, causing confusion among students

From the perspective of resource types, different forms of resources, such as text, video and virtual simulation, lack systematic integration planning. Some teachers simply list all kinds of resources without considering students' cognitive rules and learning needs, which leads to students'

confusion in the learning process and their inability to effectively use resources to build a complete knowledge framework. In order to present the problem of resource integration more intuitively, the following Table 1 is made by taking the integration of mixed teaching resources of e-commerce major in a HVC as an example. As shown in Table 1, the teaching resources of this major seem to be rich in quantity, but the integration is not good, which seriously affects the teaching effect.

3.2. Teaching interaction

The lack of interaction is another big dilemma of mixed teaching. In the traditional classroom, the interaction between teachers and students is limited by time and space. Although online teaching breaks the time and space limitation, it lacks the intuition of face-to-face communication, which greatly reduces the interaction effect. Students' participation in online discussion area is not high, and questions and answers are often a mere formality, so it is difficult for teachers to grasp students' doubts in time and accurately, and to give targeted guidance. There are also many problems in the interaction between students and students. When group collaborative learning is carried out online, some students' participation is low, and "hitchhiking" occurs from time to time. Mixed teaching lacks an effective interactive incentive mechanism, which makes it difficult to mobilize the enthusiasm of students to participate in interaction, and the classroom atmosphere is dull and students' learning enthusiasm is not high.

3.3. Teaching assessment

At present, the assessment of mixed teaching in most HVC is still based on summative assessment, which relies too much on the final exam results and ignores the performance of students in the learning process. This assessment method can't fully reflect students' comprehensive qualities such as learning ability, practical skills and teamwork ability. In the assessment of practical courses, there are few assessments on students' operation process and innovative thinking, and only the final works or achievements are scored. A single assessment method tends to make students only pay attention to the results and ignore the accumulation and growth in the learning process, which is not conducive to cultivating students' autonomous learning ability and innovative spirit. The assessment subject is single, and teachers mainly evaluate students, lacking the participation of multiple subjects such as students' self-assessment, mutual assessment and enterprise experts, and the assessment results lack comprehensiveness and objectivity.

4. Optimization strategy of mixed teaching resources

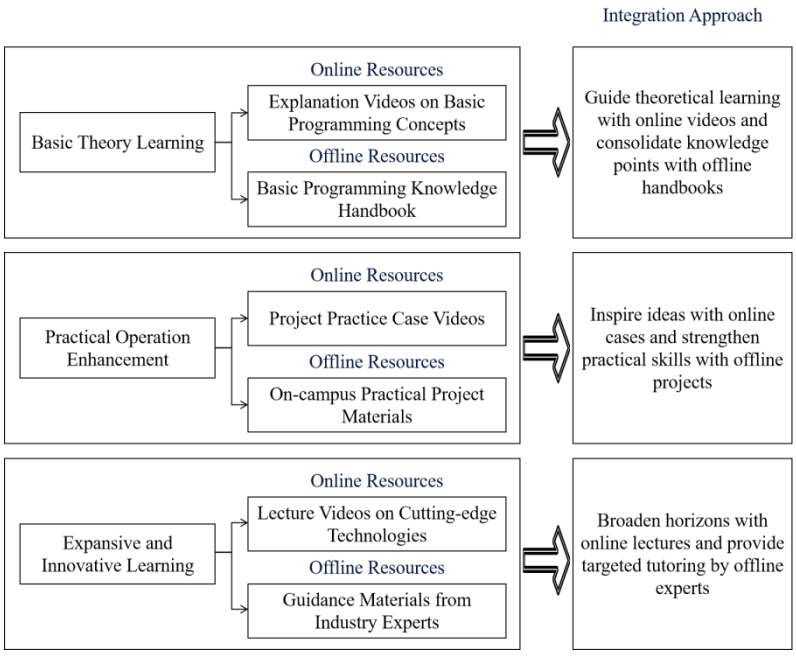

Figure 1 Computer Programming Curriculum Resource Integration Framework

In order to effectively solve the existing problems of mixed teaching in HVC supported by the national wisdom education platform and improve the teaching quality and effect, we need to formulate corresponding strategies from the aspects of integration of teaching resources, enhancement of interaction and optimization of assessment methods. In the integration of teaching resources, we should build a systematic resource integration system. Taking professional courses as a unit, the resources of the national smart education platform and the offline resources of our school are sorted out, and integrated according to the curriculum standards and students' learning needs. For example, for the computer programming course, we can combine the high-quality programming theory explanation video on the platform with the practical case manual compiled by our school, and plan the teaching content in the order from shallow to deep. In order to clearly present the idea of integration, Figure 1 is formulated.

Teaching platforms should utilize information technology to achieve intelligent push of learning resources. The system provides personalized resource recommendations to students through intelligent analysis algorithms based on indicators such as their learning progress, test scores, and behavioral data. The resource push logic is shown in Table 2.

Table 2 Personalized Resource Push Basis Table

Student Learning Status	Recommended Resource Type	Example
Weak in Theory	Basic Concept Explanation Materials	For students struggling to understand programming syntax, recommend detailed syntax explanation videos
Practical Skills Need Improvement	Practical Cases and Guidance	For students making many code-writing errors, recommend error-correction techniques and similar case analyses
Fast Learning Progress	Expansive Knowledge and Projects	For students who have completed basic learning, recommend industry cutting-edge application project materials

Teaching platforms should enrich interactive forms to enhance teaching interactivity. Online real-time interaction and asynchronous communication are carried out with the help of platform live broadcast, discussion forum, online question and answer and other functions; Organize group discussions, role-playing, project reports and other activities offline. Teachers should strengthen guidance, such as setting in-depth topics in the discussion area, encouraging students to speak actively, and responding and commenting in time. The teaching platform needs to optimize the interactive incentive mechanism and establish a complete interactive assessment system. Students can get points when they participate in interaction, such as asking questions, answering questions and initiating discussions, which can be exchanged for learning resources, opportunities to participate in practical projects or as extra points for their usual grades. In this way, the enthusiasm of students to participate in interaction is improved and an active teaching atmosphere is created.

The teaching assessment process should establish a diversified assessment system, by increasing the proportion of process assessment, including indicators such as students' online learning duration, classroom participation, interactive performance, and homework completion quality. The assessment system needs to introduce student self-assessment and peer assessment mechanisms to help students improve their self-learning ability through evaluating others and self reflection. At the same time, enterprise experts should be invited to participate in the assessment of practical courses to ensure that the assessment results meet the actual needs of the industry. For example, in the assessment of e-commerce live broadcast course, enterprise experts can give professional assessment from the aspects of live broadcast effect and marketing skills, and together with teachers' assessment and students' self-assessment, they form a comprehensive assessment result. Through these optimization strategies, we can give full play to the advantages of the national wisdom education platform and improve the quality of mixed teaching in HVC.

5. Conclusions

This study focuses on the optimization of mixed teaching resources in HVC supported by the national wisdom education platform, aiming at solving existing problems, improving teaching quality and effect, and promoting the development of vocational education.

In the process of research, firstly, the relevant core concepts are clarified, and the theoretical basis of constructivism learning theory and connectionism learning theory is expounded, which provides a solid basis for subsequent analysis and strategy formulation. Then, the existing problems are deeply analyzed, and it is found that the integration of teaching resources is inefficient, different types of resources are difficult to integrate, and it is difficult for students to use resources to build a knowledge framework; The interaction between teachers and students is limited by time and space and methods, and the interaction effect is not good. In addition, the teaching assessment method is single, relying too much on summative assessment, ignoring students' learning process, and the assessment subject is single, resulting in a lack of comprehensive objectivity.

Aiming at the above problems, this article puts forward a series of optimization strategies. In the integration of teaching resources, we should take professional courses as the guide, sort out and integrate online and offline resources, build a systematic resource integration system, and use information technology to realize personalized resource push. For example, in the integration of computer programming course resources, we can provide students with coherent and targeted learning content by planning the combination of resources in different teaching stages. At the same time, with the help of tables, the integration ideas and personalized push basis are clearly presented, which provides reference for teachers' practice. In the aspect of enhancing teaching interactivity, we should enrich online and offline forms of interaction, and set up an interactive integral system to optimize the incentive mechanism, so as to effectively enhance the enthusiasm of students to participate in interaction. In teaching assessment, we should build a diversified assessment system, increase the proportion of process assessment, and introduce students' self-assessment, mutual assessment and enterprise expert assessment to make the assessment more comprehensive and objective and meet the actual needs of the industry. Through these optimization strategies, it is expected to give full play to the advantages of national smart education platform, realize the deep integration of smart education platform and mixed teaching, solve the existing problems of mixed teaching in HVC, and improve students' skill level, learning input, classroom interaction and autonomous learning ability. However, in the process of implementing the strategy, there may be some new challenges, which need continuous attention and research in the follow-up practice, and constantly improve the mixed teaching mode to better meet the needs of educational development.

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References

[1] Liu Zhiguo, Liu Zhifeng. Research on the mode and strategy of co-construction and sharing of educational and teaching resources in higher vocational colleges[J]. Chinese Vocational and Technical Education, 2020, (29): 57-61.

[2] Li Yongsheng, Zhao Qin, Wang Mengxuan. Analysis on ideological and political quality portraits empowering the assessment of ideological and political education in higher vocational colleges[J]. Education and Vocation, 2025(1): 100-106.

[3] Feng Lidan. Strategies for the transformation and upgrading of professional teaching resource databases in higher vocational colleges under the background of a skill-oriented society[J]. Education and Vocation, 2022(16): 102-106.

[4] Wei Shunping, Wei Fangfang, Song Lizhe. Analysis on the structure and characteristics of inter-college cooperation in higher vocational colleges based on the professional teaching resource database of vocational education[J]. Chinese Vocational and Technical Education, 2021, (17): 31-40.

[5] Zhao Dazhi, Zhou Lulu. Construction and practice of modular blended teaching mode for professional courses in higher vocational colleges in the new era[J]. Vocational and Technical Education, 2024, 45(20): 44-50.

[6] Yang Zhiyong, Shu Jinqiu, Wang Haiyang. Innovation and practice of the "work-like system" talent training mode for software majors in higher vocational colleges[J]. Vocational and Technical Education, 2022, 43(05): 6-9.

[7] Suo Chenglin. Problems and countermeasures in blended teaching in higher vocational colleges[J]. Theory and Practice of Education, 2021(12): 25-27.

[8] Lin Suqin. Specific paths for higher vocational colleges to further carry out the construction of "ideological and political education in courses"[J]. Education and Vocation, 2021, 987(011): 83-88.

[9] Liu Hongbo, Peng Xiaoqing. Crowdsourcing teaching in colleges and universities oriented to smart education: value implication and realization path[J]. Heilongjiang Researches on Higher Education, 2024, 42(2): 149-153.

[10] Yin Chunli, Qu Tiehua. Construction of public service system for digital educational resources under the background of smart education[J]. Teaching and Management, 2024(19): 7-11.