

# Construction of an effective integration path based on CEPRE informatization and teaching

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## ABSTRACT

The in-depth and effective integration of informatization and teaching is the key to the current education informatization. To satisfy the needs of the modernization and development of vocational education, and explore the effective integration path of informatization and teaching, based on the comprehensive analysis of the current in-depth and effective integration of informatization and teaching, the paper explores the path of in-depth and effective integration of informatization and teaching from five aspects, including cultivation system, teaching environment, teaching platform, teaching resources and evaluation mechanism, and finally provides ideas for solving the contradiction between planned education and personalized training.

**Keywords:** CEPRE, informational teaching, effective integration, vocational education

## 1. INTRODUCTION

The Internet has significantly impacted learning and teaching. With the rapid development of information technology such as 5G, artificial intelligence, and virtual reality, as well as the promotion of the Education Informatization 2.0 Action Plan, education informatization has advanced at an unheard-of rate. After going through the process of building an information infrastructure system, vocational institutions and universities have also reached the stage of intense integration of information technology and instruction<sup>1</sup>. It is crucial to use contemporary information technology to enhance teaching strategies, create high-quality, professional, and innovative teachers, nurture high-quality, innovative technical talent, and continuously promote the deep integration of information technology and teaching in order to meet the development needs of “Internet + vocational education”. Therefore, it has become urgently necessary to find a solution for how to achieve the deep and effective integration of information technology and education.

## 2. BACKGROUND

### 2.1 The effective integration is the requirement of the times to achieve high-quality development of vocational education

Vocational education has recently moved from a stage of rapid development to one of enhancing quality and nurturing excellence as a result of the sequential introduction of a number of programs, such as the “National Vocational Education Reform Implementation Plan”. “To boost the reform and innovation of teaching, we should promote the deep integration of information technology and teaching, encourage vocational schools to use modern information technology to facilitate the reform of talent training models and to meet the diversity learning needs of students, and vigorously accelerate the new form of “Internet +,” according to the “Vocational Education Quality Improvement Action Plan (2020-2023)” promulgated in 2020. Technology is driving the significant historical developments in education. To achieve high-quality growth of vocational education, investigating the deep and effective integration of information technology and teaching has become a contemporary necessity. The goal of integration is to implement the fundamental task of cultivating people by virtue, emphasizing the “complete meaning construction” of the curriculum structure and the “complexity and variety of the process” in the implementation of links. It is not to change for the sake of educational reform or use technology for the sake of using technology.

### 2.2 The effective integration is the source of living water to solve the problem of large-scale teaching to meet the individual development of students at different levels

The traditional teaching style and organization have evolved as a result of information technology’s widespread adoption.

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But a number of issues, including a poor fit between information technology and instruction, weak application skills, and disorganized resources, have also emerged as a result of many circumstances. Information technology and instruction are effectively incorporated into a variety of teaching links, including learning strategies, lesson plans, instructional designs, teaching techniques, and course delivery formats. It involves shifting the conventional teaching model and structure into a new one that integrates students as the primary body and teachers as the leading body. The integration considerably improved the instructional material. While teachers take on new roles as mentors, facilitators, collaborators, and learning partners for students, this effectively resolves the tension between large-scale instruction and individualized instruction while also innovating teaching models, structuring lessons, and enhancing lesson material.

### 2.3 The effective integration is a key strategy to develop teachers’ information literacy and elevate their instructional skills

In the modern era, the capacity to use information technology has evolved into the fundamental characteristic of excellent teachers. Cultivating teachers’ information-based teaching ability is the core issue in the construction of high-level teachers. The “Education Informatization 2.0 Action Plan” proposes that the current educational informatization has problems such as weak development and poor service capabilities of digital educational resources, low level of informatization learning environment construction and application, and insufficient teaching innovation ability of teachers. Teachers should continually improve the integration and utilization of rich network resources after the effective deep integration of informatization and teaching, use a variety of teaching platforms and new technologies proficiently, and at the same time, give more thought to how to use the informatization platform to design teaching activities and assist students in fully participating in the teaching activities. The building and application level of the information learning environment at vocational colleges can also be enhanced by teachers’ activities, which also supports the close coupling of information technology and subject instruction<sup>2</sup>.

## 3. PATH CONSTRUCTION

The building of “Internet + Vocational Education” resources and supporting the transformation of the education and teaching system and mechanism through informatization are the two courses that make up the effective integration path of CEPRE informatization and teaching<sup>3</sup>. Figure 1 shows the integration path of informatization and teaching. C stands for a cultivation system. “E” stands for educational setting. P stands for “platform” in a classroom. R stands for resources for teaching. Mechanism for evaluation is the final “E”<sup>4,5</sup>. In order to accomplish a thorough and successful integration of information technology and teaching, the aforementioned five dimensions are intended to deepen the reform.

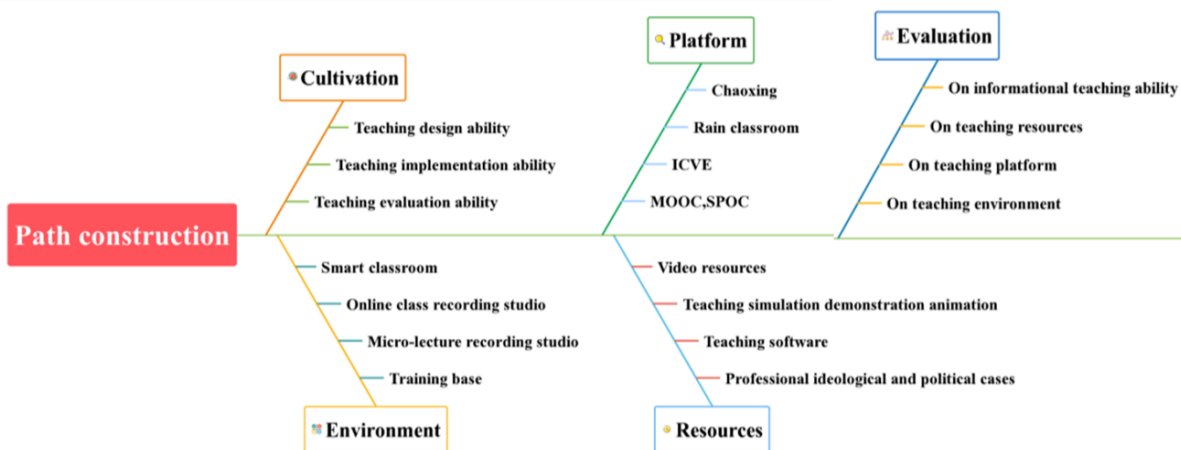


Figure 1. The effective integration path of informatization and teaching.

### 3.1 Establishing a training system, enhancing teachers’ informational teaching skills, and cultivating teachers’ information literacy are all part of the cultivation system

The current state of education reform’s deepening informational transformation means that teachers’ informational capacity cannot keep up with the expanding demands of instruction. Investigation and research have revealed that the lack

of systematic informatization training for instructors in the majority of vocational colleges is the key factor impeding the development of teachers' informational skills in these institutions<sup>6</sup>. Therefore, it is essential to build an information literacy training system in order to enhance teachers' information literacy, foster their ability to use information effectively, and further realize the deep and efficient integration of information and instruction.

3.1.1 Training for Teachers' Instructional Design Skills. Training teachers to select appropriate modern information technology, combine teaching methods, integrate teaching ideas, redesign teaching content, innovate teaching strategies, and optimize teaching paths according to the developing subject knowledge content is especially crucial for improving teachers' ability to design lessons and accomplishing learning objectives.

3.1.2 Conducting Training on Implementation Skills. Training for teaching implementation skills focuses primarily on developing students' understanding of and proficiency with information-based teaching tools and platforms, as well as their capacity to use multimedia resources and integrate information sources. The training should concentrate on using contemporary teaching platforms like MOOCs, microlessons, and the technology for producing and processing the audio and video files that teachers need for their lesson plans. These might enhance instructors' abilities to use information technology to create instructional resources even further.

3.1.3 Training in Evaluation Capability. The purpose of training teachers in their ability to evaluate teaching is to prepare them to gather and analyze data from students' learning, testing, and other processes, with a particular emphasis on teaching them how to use current information technology to thoroughly evaluate teaching goals, processes, challenges, effects, and reflection on teaching activities, as well as to diagnose themselves. It evaluates the benefits and drawbacks of resource development, teaching design, information collecting, and execution.

### **3.2 To support information-based teaching, the teaching environment should be made smart**

The "Code for the Construction of Digital Campuses in Colleges and Universities (Trial)" was published in March 2021 by the Ministry of Education and outlines the requirements for campus infrastructure network facilities, an information-based learning environment, and digital teaching tools<sup>7</sup>. Vocational colleges are given specific instructions on how to create a teaching environment that is information-based. The informatization teaching environment, with informatization facilities as the skeleton, is the foundation for the thorough and successful integration of informatization and teaching. Therefore, building informative facilities is essential to achieving thorough and efficient integration. To fulfil the demands of teaching, it is necessary to speed up the building of contemporary informative facilities and pay attention to the construction of supporting facilities. The following factors are taken into account:

3.2.1 To Design a Smart Classroom. Smart classroom integrates multi-screen interaction in teaching, complete recording and broadcasting of courses, and modern teaching tools such as virtual simulation and VR can provide support for a series of new teaching modes like collaborative teaching, flipped classroom, and task-driven teaching. Teachers have a platform to create digital teaching resources thanks to the establishment of the learning environment.

3.2.2 To Establish Experimental Training Base. Enterprise technicians and teachers interact and share knowledge. The integration of production and education is realized, pooled teacher resources are established, and school-enterprise integration is strengthened. The partnership may give educators access to a teaching, training, and scientific research environment that is integrated.

### **3.3 The goal of the teaching platform is to create a hybrid platform that will support both large-scale and individualized instruction**

With the current information technology's rapid development, many smart teaching platforms have emerged, such as Chaoxing, Rain Classroom, and ICVE. Based on these information platforms, the advantages of smart teaching platforms have been fully exploited. Combined with the advantages and disadvantages of offline teaching and online teaching environment, a hybrid integrated teaching platform is constructed through the use of modern information technology<sup>8</sup>. The platform can realize a series of functions such as course teaching, course resource sharing, teacher-student synchronous interaction, student process evaluation, and teaching evaluation. The innovative teaching methods and improved classroom aesthetics of the new teaching models can more effectively transform conventional education and teaching. The improvement of teaching quality is promoted by the efficient integration of information technology and classroom instruction.

### **3.4 Building a professional teaching resource library based on the integration of production and education is the goal of teaching resources**

For teachers to teach and for students to learn, teaching resources are a crucial assistance. The creation of teaching resource libraries has thus become necessary in order to fully integrate information technology into the classroom. Vocational colleges combine and maximize high-quality instructional resources through the use of information technology<sup>9</sup>. Vocational colleges should create digital teaching resources like video, animation, digital audio, simulations, and micro-lectures based on the teaching environment and teaching platform, relying on school-enterprise cooperation, seizing the current “Double-High Plan” as an opportunity, enticing enterprises to participate in all teaching links of higher vocational education, and creating a school-enterprise co-constructed digital learning space that integrates professional qualifications.

### **3.5 Setting an evaluation mechanisms to create and enhance an integrated evaluation system**

In order to accurately and impartially evaluate the informatization cultivation system, the construction of the teaching environment, the construction of the teaching platform, and the construction of the teaching resource database, it is crucial to concentrate on developing an integrated evaluation system in accordance with the construction goal of National Higher Vocational Education Informatization 2.0<sup>10</sup>.

3.5.1 Informational Skills of Teachers. Firstly, the assessment of a teacher’s capacity for information technology develops a framework for rating the teacher’s capacity for designing, implementing, and evaluating information technology-based instruction. The evaluation may raise the level of instruction. It can simultaneously encourage an increase in instructors’ degree of personal information literacy. . Secondly, a system of rewards and penalties for teachers’ daily informational teaching performance is established by the evaluation. The system can assess a variety of items, including the success of the library’s creation, the innovations and transformations made in the field of informational education, and the degree of students’ and teachers’ information literacy.

3.5.2 Teaching Resources. The evaluation of teaching resources is based on the evaluation of teachers’ informatization. It evaluates the construction of teaching resources through the certification standard system of the construction results of the teaching resource library and the development results of digital resources in the teachers’ informatization ability, and further evaluates the information technology capabilities of teachers or their team.

3.5.3 Teaching Platform. The primary goal of the teaching platform evaluation is to assess the functionality of the integrated hybrid teaching platform, including its capacity to support the creation of instructional resources, fully capture and analyze student learning data, and satisfy the demands of teaching activities. The effectiveness of the teaching platform can be increased, and instructors’ capacity to apply knowledge can be raised, through the evaluation of the teaching platform.

3.5.4 Teaching Environment. The major goal of the evaluation of the teaching environment is to create an evaluation framework for the digital campus-based informational teaching environment. The first step is to assess the infrastructure’s level of construction, the capital investment percentage, and the management of the facilities. The second is to assess how the environment for information technology education was built, including the recording studio and the training facility. The evaluation should take into account factors, such as the wireless network’s coverage, the teaching system’s efficiency and applicability, the average number of computers per student, and how well teachers and students adjust to an information-based learning environment, etc.

## **4. CONCLUSION**

The examination of the path encourages not only the reform of teaching methods but also the thorough fusion of contemporary information technology and education. It creates a framework for teachers to enhance their ability to innovate and integrate technology, and it fully supports the informatization of teaching in vocational colleges. The fulfillment of “Internet + Vocational Education” is another benefit of the CEPRE path. The application of the integration path in practice is insufficient. The integration model could be continuously complemented and enhanced through the practice of informational teaching.

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