

Research on the Blended Learning Model Based on “Internet+”

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Keywords: Blended; Model; Practice

Abstract: Due to the unexpected COVID-19 pandemic, traditional face-to-face teaching has become inadequate to meet actual needs. Under the normalization of pandemic prevention and control, the support role of “Internet+” in education has become increasingly significant, given the rapid development of network teaching fueled by innovative practical education and teaching models. Therefore, it is inevitable to integrate the blended learning model based on “Internet+” into education and teaching in the post-pandemic period. This research analyzes and elaborates on the theoretical basis of the blended learning model based on “Internet+”, and examines its practice through planning objectives and paths, fused curriculum construction and planning, school organizational structure and policies, digital teaching environment, information-oriented teaching ability development of teachers, and student learning support.

1. Theoretical Basis of the Blended Learning Model Based on “Internet+”

Due to the unexpected COVID-19 pandemic, traditional face-to-face teaching has become inadequate to meet actual needs. Under the normalization of pandemic prevention and control, the support role of “Internet+” in education has become increasingly significant, given the rapid development of network teaching fueled by innovative practical education and teaching models. During the COVID-19 pandemic, the “Internet+ education” online learning method has achieved the educational outcome of “suspended class, ongoing learning” with its unique advantages of abundant multimedia resources, convenient collaborative communication, and user-friendly interactive interface. However, the learning effect fell short of expectations due to the absence of face-to-face communication between teachers and students. As a result, blended learning came into being in response to the post-pandemic period. Blended learning combines traditional learning methods with digital networked learning to mobilize students’ initiative and creativity as learners to maximize students’ initiative and creativity as learners while fully leveraging teachers’ roles as guides, inspirators and monitors in the teaching process. Blended learning emphasizes the application of different learning modes at the appropriate time to achieve the best learning effect by making full use of the complementary advantages of online teaching and classroom teaching to improve the cognitive effects of students. Therefore, it is inevitable to integrate the blended learning model based on “Internet+” into education and teaching in the post-pandemic period.

In recent years, there has been an increasing interest among researchers in studying the reform of the blended learning model in colleges and universities. Graham et al. conducted a series of studies

on the implementation measures for the reform of blended learning models in American colleges and universities. They proposed implementation measures for the reform of the blended learning model, and put forward the implementation measures in three aspects: strategy, organization and support. The strategy involves five dimensions: purpose, advocacy, implementation, definition and policy, and the organization falls into four dimensions: management, infrastructure (professional development of teachers), course scheduling and evaluation. In addition, the support includes three dimensions: technology, teaching and motivation. Moreover, the three implementation stages were identified for the reform of blended learning. The first stage is the exploratory stage, where school administrators aim to conduct the reform of blended learning as one of the strategies to cope with the challenges. The second stage involves making early attempts for implementation, where schools begin to develop implementation schemes and adjust the organizational structure correspondingly to facilitate the initial experimentation and success of blended learning among part of students and teachers. The third stage is to promote and expand mature development, where schools modify and adjust relevant policies and strategies based on feedback from teachers and students in the initial experimentation phase. This will help to integrate blended learning into daily education and teaching routines and continuously improve it through further evaluation and data-based decision-making.

Through continuous research, it can be recognized that blended learning is a complex and dynamic system, involving factors such as lecturers, learners, learning content, information technology, support means, and organizational structures. Experts like experts such as Han Xibin of Tsinghua Online Education have presented a framework for implementing blending educational reform in universities and colleges. This framework includes eight aspects: vision and planning, curriculum system, teachers’ professional development, student learning support, network environment, policy and school’s organizational structure (as shown in Figure 1), partnership, research, and evaluation.[1] It has been pointed out that the development of blending educational reform in general universities and colleges should involve the process of not considering, applying integration and transformation with some practical research conducted. Research conducted at home and abroad has shown that the core elements (competency framework) of blending educational reform are basically consistent. Based on the competency framework of Tsinghua Online Blending Teaching Reform, the author conducts research and practice from the following aspects: planning goals and paths, blending curriculum construction planning, school’s organizational structure and policies, digital teaching environment, teacher information based on teaching ability development, student learning support, and so on.[2]

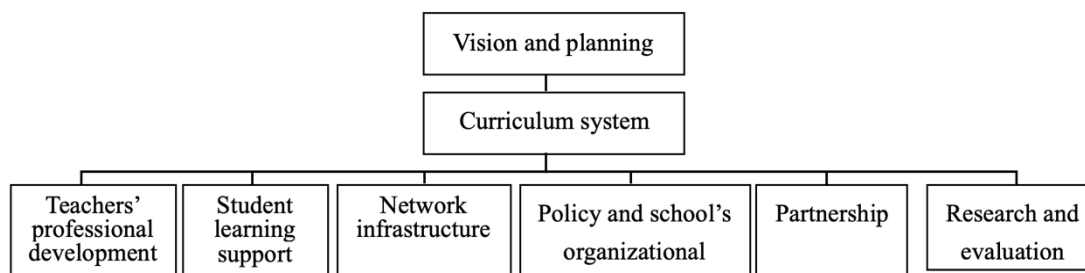


Figure 1: Framework for Implementation Measures of Blending Educational Reform in Colleges and Universities

2. Research and Practice of Blended Learning Model Based on “Internet+”

2.1. Planning objectives and implementation path

Specification for Digital Campus in Vocational Colleges, issued by the Ministry of Education in

June 2020, clearly outlines the importance of utilizing the Internet, big data, and artificial intelligence technologies to build an online learning space. The goal is to expand teaching time and space while promoting the deep integration of information technology and curriculum. Information technology was combined with work process-based teaching and project teaching to implement differentiated teaching, promote personalized learning, strengthen process evaluation and dynamic and timely feedback, and form new teaching models, such as the information-based teaching model of online and offline blended learning. In addition, it was pointed out that the online and offline blended teaching models. For teachers (including part-time teachers in enterprises), it is necessary to build a full-process and multimodal online teaching space that enables everyone to interact. This approach will support teachers in carrying out blending learning with multi-dimensional interactions inside and outside the classroom, online and offline for developing information-based teaching capabilities for job performance, and supporting students to conduct multiple modes of knowledge learning and skill training, which clarifies the direction for the implementation of blending learning.

The implementation path of blending educational reform in colleges and universities is a continuous cycle of optimization and improvement. This is a systematic project that is explored collaboratively by colleges, external expert teams, enterprise teams, and other parties. The aim is to build a full-process, multi-mode, and interconnected online course teaching space as well as a specific framework for transforming traditional course teaching to a blended model. An implementation path is built as shown in Figure 2:

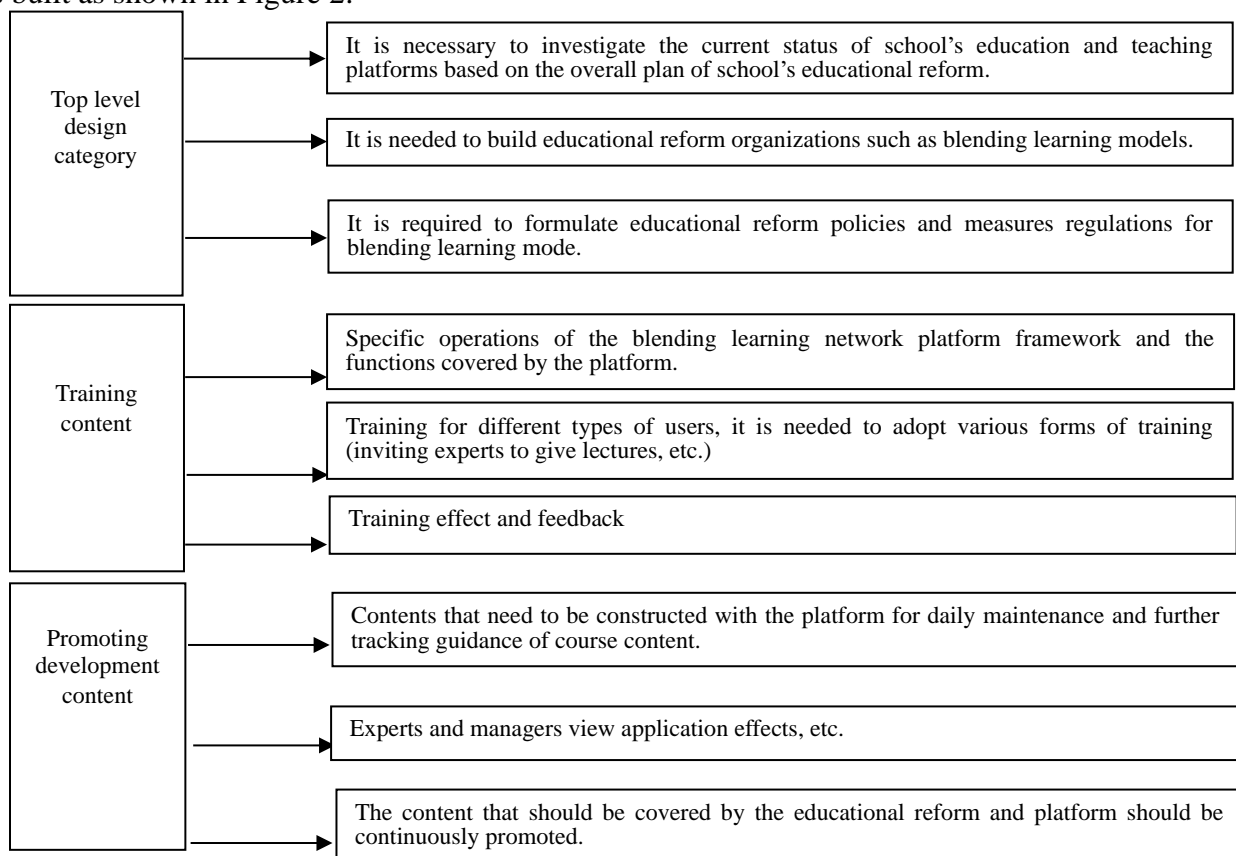


Figure 2: Specific Framework for transforming traditional course teaching to a blended model

2.2. Organizational structure and policy system

The blended educational reform organization is led by the teaching management department (Academic Affairs Office, etc.), and coordinated by relevant functional departments (information

centers) and departments to clarify the division of labor and responsibilities of each department. This helps to establish a standardized management system that leverages the platform's functions, technologies, applications, and more to timely feedback and handle emerging issues. It is important to evaluate and monitor the project implementation process to ensure the effective implementation of the project. In addition, it is also necessary to formulate policies and systems to promote the application of blending educational reform by teachers with clear rewards and punishment measures in the system, to promote the motivation of teachers to carry out mixed teaching reform, accelerate the progress of teachers' teaching reform as well as implement blended educational reform.

2.3. Blended learning environment

The blended learning environment includes a network teaching platform, smart classroom, digital experiment environment, and supporting basic network facilities, which support blended learning, various teaching forms such as mobile teaching, and gradually create new teaching modes such as active, collaborative and independent teaching methods. This environment significantly enhances teaching effectiveness and encourages students to engage in "fragmented" learning on mobile devices during their spare time. By seamlessly integrating online and offline learning, it achieves a complementary approach to education and facilitates the integration of technology with teaching. Furthermore, it facilitates the organic combination of teaching application, management, evaluation, and the analysis of learning process data.

2.4. Building an information-based teaching ability development system

It is required to continue carrying out training related to the blended learning model using methods such as “going out” and “inviting in”, to improve teachers’ abilities in designing, implementing, and evaluating blended courses. This will also help to develop teachers’ teaching and research capabilities and build a system for the development of teachers’ informatization teaching ability. Teacher training can be simply divided into four levels and three development goals. The first development goal is to understand the basic knowledge level of blended learning and expand the application stage of knowledge level, mainly to understand information technology knowledge, master professional technology knowledge of information technology, professional technology knowledge of information technology, and vocational teaching methods that integrate technology; The second development goal is the integration stage of the blended learning fusion knowledge level, which mainly focuses on the practical knowledge of information technology, the vocational science teaching method that integrates technology, and the vocational technology teaching method that integrates technology; the third development goal is the integration of knowledge. The innovation stage at the level mainly focuses on teaching methods with professional practice knowledge and integrating technology. The connotations of the three development goals are as follows:

Building understanding and application goal connotation: First, it is required to master the basic operation of information technology, apply and take advantage of the strength of network communication in network teaching to understand the frontier of career, promote career development, and carry out teacher-student communication and interaction in network courses. It aims to gradually form an understanding of the role of information technology during the development of education and teaching careers and form the concept of information technology teaching and information technology to promote career development.

Building the connotation of the integrated goals: To develop the concept of information technology and promote career advancement, a diverse range of information technology tools should be utilized in accordance with the specific teaching objectives and requirements. Various technical means should be applied to integrate teaching methods to create corresponding contexts, perform information-based

teaching organization, teaching evaluation, school-enterprise cooperation, and more, in the network platform environment. In terms of teachers' professional career development, information technology is used to realize the information-based development of professional practice knowledge.

Building the connotation of innovation goals: the connotation of this stage is to use information technology to carry out training & teaching activities that combine virtual simulations and practice experience. This approach allows for the continuous accumulation of knowledge in teaching and training, the creation of training situations using information technology, and the integration of professional practice with explicit knowledge. Ultimately, this will enhance the impartation of practical knowledge.

Additionally, information technologies should be applied to record students' practical training results, evaluate their mastery of practical knowledge and give continuous feedback. This will enable students to adjust and deepen their understanding through feedback from practice and ultimately achieve the goal of continuous innovation.

2.5. Student learning support system

To further improve the quality of talent training in higher vocational colleges, it is necessary to foster students' habits of independent learning and exploration of their vocational abilities, and to establish a student learning support system. Due to the characteristics of students' sources in higher vocational colleges, there are increasingly prominent differences in student learning level, learning ability and learning needs, and more students are lacking learning motivation, without the strong ability of active learning, which affects personal career development. However, the development of information technology, such as "cloud computing, big data, Internet of Things and mobile Internet", has enriched and expanded the connotation of student learning support systems in the educational field, and the blended learning breaks through time and space limits for education and learning, thus meeting learners' personalized learning needs. Only if schools really establish the subject status of learners and explore a variety of teaching service modes can schools adapt to the new requirements of information technology for higher education and allow full play to the positive role of information technology for higher vocational education.

2.6. Create a new ecology of intelligent online teaching with the root of the platform and the foundation of data

During pandemic prevention and control, the general requirements of "stopping the class without the stop of teaching and learning" put forward by the Ministry of Education are deeply implemented by schools, and the blended online and offline teaching model in the context of the pandemic is innovated, with the setup of rich content, diverse forms, excellent quality and obvious effect of online teaching activities, which guarantee the continuous teaching and personnel training work during the pandemic.

The research and exploration of the blended learning model are actively being carried out based on the "Intelligent Teaching Cloud Platform", and teachers can create courses online, construct course resources, complete the construction of question bank, set up course credit assessment mechanism, set up course presentation template and other course preparation work. Moreover, teachers can create a mobile lesson plan using the activity library of Xuexitong. In accordance with teaching plans, teachers can organize the teaching content in the learning space in advance. This includes the structured arrangement of the teaching activities including data push, sign-in, question and answer, quick answer and voting for the distribution and re-using in class. In addition, the teaching process design, flipped teaching, learning situation tracking, quality evaluation and big data statistics and analysis of all online courses can be successfully achieved.

Currently, more than 3000 online courses have been developed by teachers and are available through various online platforms, along with over 5000 internet classes. During the pandemic, teachers relied on online courses to ensure that normal teaching continued uninterrupted. In the post-pandemic period, teachers have continued to use online courses for blended learning, which allows for flexible teaching methods and encourages teachers to adopt independent and inquiry-based teaching styles, while also encouraging student participation. In addition, the construction and development of high-quality teaching resources in schools are promoted as well. Focusing on the student-centered design of teaching content, a blended learning model based on “Internet+” constantly improves students’ learning enthusiasm and initiative with information means. The blended learning model can also give full play to the guiding role of teachers, with the infiltration of learning methods imperceptibly, and thus it is the development trend of teaching reform in the era of “Internet+” education.

Acknowledgement

Sponsored by Research Projects in the 13th Five-year Plan of Research in Educational Science: Research on the Reconstructing of the Teaching Diagnosis and Improvement System in Vocational Colleges based on Big Data (CHD B2020178); Sponsored by Beijing Educational Informatization Research Project: Constructing Interior Quality Guarantee System in Vocational Colleges Based on Big Data, Sponsored by Research Projects in the 13th Five-year Plan of Research in Educational Science: Research on Skill Evaluation Methods in "1+X" System Construction (CDEA2020010).

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