

# Design and Practice of Hybrid Course Support Guarantee System Based on Learning Power Model

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## ABSTRACT

To promote the "learning-centered, teaching-led" classroom teaching reform, promote the integration of information technology and the teaching process, requires vigorous promotion of hybrid course construction. The questionnaire survey shows that there are problems of unclear construction goals, weak curriculum capacity of teachers, and unsuitable basic support guarantee of schools in the construction of hybrid courses. So this study introduces the learning power theory, organizes a survey on the current situation of learning power and the influencing factors, uses SPSS software to empirically analyze the survey results, and constructs a learning power model through stepwise multiple regression. According to the model, we construct the hybrid course construction support system of "three competency development and four guarantee support". The system will give full play to the role of teacher-led and school-based support, promote the transformation of teaching and learning styles, create a new type of teacher-student learning community, and enhance students' learning power.

**Keywords:** Learning power, Hybrid course, Support guarantee system

## 1. INTRODUCTION

The development of the Internet, artificial intelligence and other new technologies continues to reshape education, leading to profound changes in the way knowledge is acquired and imparted, and in the relationship between teaching and learning. It has become an inevitable requirement and a realistic choice to promote the classroom teaching reform of "learning-centered and teaching-led" and the integration of information technology and teaching process.

"Student-centered" is reflected as students as the main body and students' learning as the center. Its key focus is the attention and cultivation of learning ability, which is not only a solution to the problem of "what kind of people to cultivate" but also a solution to the problem of "how to cultivate people" [1]. Promoting the integration of information technology and teaching process" requires the use of information technology to gradually change the original education and teaching process and mode, promote the modernization of educational content, teaching methods and approaches, accelerate the digital transformation of courses and professions, innovate

information-based teaching and learning methods, and improve the level of personalized interactive teaching.

Course is the core element of talent cultivation and the "last mile" that reflects the concept of "Student-centered"[2]. We will vigorously promote the construction of hybrid courses, organically integrate the traditional advantages of offline face-to-face teaching with online learning, which will help to build a new teacher-student learning community dominated by students and teachers, promote the transformation of teaching mode and learning mode, and comprehensively improve students' learning effect and the quality of talent training.

To this end, schools need to adhere to the student-centered, teacher-led, and play a fundamental role, construct "three capacity development and four guarantee support" course construction guarantee support system based on the learning power model to ensure the effective promotion of hybrid course construction.

## **2. ADHERE TO THE STUDENT-CENTERED, BUILD A LEARNING POWER MODEL, AND DETERMINE THE GOAL OF COURSE CONSTRUCTION**

To promote the construction of hybrid courses, the first thing to solve is the problem of "why build", that is, to determine the goal of course construction. So that we can avoid the phenomenon of building for the sake of building, building but not using, focusing on the construction of resources, but not the application of the curriculum. To this end, we must establish the modern teaching concept of "student-centered" and emphasize the attention and cultivation of students' learning power in course construction.

### ***2.1. Introduce Learning Power Theory, Investigate and Analyze Factors Influencing Learning Power***

Learning power is the ability of the learner formed and developed in the learning process, which affects the efficiency of the learning effect and individual development. It includes the "four elements" of internal drive, cognitive power, willpower and application power. Internal drive is the internal driving force that activates, drives, and directs the learning activities of students; cognitive power is the ability of students to construct knowledge and solve problems; willpower is the ability of students to resist external interference and focus on learning; and application power is the ability of students to translate practice into learning outcomes<sup>[3]</sup>.

Hybrid course construction should measure the effectiveness of students' course learning by learning power. In order to understand the current situation of students' learning power and the main factors influencing learning power, we designed the Learning Power Questionnaire for College Students and conducted a research based on it. The results of the empirical analysis based on the 2470 survey data show that the learning power of students in the school is generally at an intermediate level; school support, teacher support and peer support are significantly and positively correlated with learning power.

### ***2.2. Constructing a Learning Power Model and Defining Course Construction Goals***

Based on the above analysis, the learning power model was constructed using stepwise multiple regression analysis based on the survey data as

$$\text{Learning power} = 1.115 + 0.351 \times \text{teacher support} + 0.192 \times \text{school support} + 0.115 \times \text{peer support}^{[4]}$$

It can be seen that the improvement of learning power depends on three influencing factors: school, teacher and

peer, among which teacher is the key core element, school is the basic guarantee factor and peer is the supporting factor. The goal of the course construction is to build an interactive teaching model that integrates online and offline, before, during and after class, and to create a new teacher-student learning community that is student-led and teacher-led, so as to improve students' learning power.

## **3. INSIST ON TEACHER-LED, STRENGTHEN "THE ABILITIES" TRAINING, AND IMPROVE TEACHERS' COURSE ABILITY**

Teachers' course competence is the dynamic force that directly affects the achievement of the goals of course activities and their effectiveness. It includes course design ability, course implementation ability, and course evaluation ability<sup>[5]</sup>. The improvement of teachers' course ability plays a decisive role in course construction. However, in reality, the phenomenon of teachers' weak course competence is common, manifested by teachers' poor understanding of the laws and paradigms of hybrid course construction, weak IT application level, failure to design teaching from students' perspective, failure to achieve organic integration of online and offline before and after class in teaching implementation, and failure to implement effective course evaluation for continuous improvement. To this end, teachers' course ability is enhanced through standard leadership, process specification, and three-dimensional training.

### ***3.1. Reinforcing the Development of Course Design Ability***

Course design ability refers to the ability of teachers to make systematic planning and arrangement of course objectives, course content, course activities, teaching methods, course evaluation, course structure, etc. Hybrid course construction requires teachers to have the ability to design online and offline integration according to the chosen platform function on top of the general course design ability.

The school researched and developed templates for overall hybrid course design and unit design to guide teachers' design direction; formed a four-stage design flow chart for pre-analysis, overall course design, course unit design, and online SPOC design to standardize the design process. The school carried out conceptual training, information technology training, and training on course design ideas and method to promote teachers' course design optimization by combining online and offline through expert lectures, platform technology team training, holding hybrid course design seminars, organizing hybrid teaching workshops, and offering online classes on "Hybrid Course Design".

### **3.2. Reinforcing the Development of Course Implementation Ability**

The ability to implement the course refers to the teacher's ability to put the course design into practice and effectively carry out teaching activities. The implementation of hybrid course requires teachers to be able to adjust the teaching design according to the teaching reality, give full play to the advantages of online and offline, use teaching methods and means flexibly, organize classroom teaching activities effectively, play the role of teacher guidance, and improve students' learning autonomy and initiative.

The school designs a flow chart for the implementation of SPOC-based flipped classroom interactive hybrid teaching, emphasizing the organic integration of online and offline classroom teaching, before and after class, and encouraging each course to innovate its teaching mode according to the course objectives and learning environment requirements. We publish the teaching guidelines for hybrid courses, put forward specific requirements for course implementation, and standardize the course implementation process. Through organizing seminars on blended teaching experience, teaching salons, demonstration class observation, expert listening and evaluation, holding smart teaching competitions, and releasing a collection of classic cases and results of hybrid courses, we promote teachers' course implementation improvement.

### **3.3. Reinforcing the Development of Course Evaluation Ability**

Course evaluation ability refers to the teacher's ability to analyze, judge, evaluate and control students' learning activities and processes throughout the teaching process in order to ensure that the teaching achieves the expected purpose. Hybrid courses require teachers to be able to give full play to the advantages of online timely tracking and analysis to strengthen process monitoring and learning effect evaluation.

The school builds a hybrid course evaluation system, emphasizing process and summative, combining online and offline, and integrating online participation in discussions, online tests, online assignments, reading and viewing learning resources, etc. with participation in offline teaching activities for a coherent and complete evaluation. The school focuses on process evaluation and learning effect evaluation, designs learning process record forms and evaluation feedback requirements to ensure process tracking and targeted guidance for students. The school empowers teachers with autonomy and encourages the use of oral defense, skill tests, text reports, practice reports and summaries, and works to design diversified evaluation programs. The school organizes seminars, special training sessions, and mock evaluations to promote scientific evaluation.

## **4. PLAY THE ROLE OF THE SCHOOL AND PROVIDE "FOUR GUARANTEES" TO ENSURE THE IMPLEMENTATION OF THE COURSE**

The school's various safeguards are the basis for the promotion of hybrid course, therefore, the first step is to solve the problem of unsuitable basic school support guarantees. Specifically, the school curriculum construction incentive mechanism is not sound, it is difficult to mobilize teachers' enthusiasm. The lack of professional organization and leadership of curriculum construction, it is difficult to provide targeted guidance. The platform function is not perfect, the level of information technology teaching environment construction is not high, it is difficult to effectively support the integration of online and offline teaching. The quality standards and evaluation methods of course construction are lacking, the assessment method is too single, and the quality information is not fully utilized. To this end, the university needs to build a multi-level promotion incentive mechanism, create a multi-departmental cooperation and collaboration community, invest in the construction of the supporting environment in all aspects, and build a diversified quality evaluation system to play a fundamental guarantee role.

### **4.1. Multi-level Incentive Guarantee**

The school builds a multi-level promotion incentive mechanism with three stages of advancement, five levels of progression, and synergy of each project to stimulate teachers' building momentum.

#### **4.1.1 Three-stage Advance**

The first stage of special support for demonstration and leadership, select high-quality courses, in the form of special teaching and research projects to establish a special construction, each to give special financial support. The second stage of independent construction to encourage recognition, point by point, the independent construction of non-project teachers to carry out the recognition of courses, the recognition of the coefficient of reward support for extra hours of classroom pay. The third phase of the regular recognition of comprehensive promotion, requiring 50% of the courses in the undergraduate talent program to pass the recognition, carried out regularly every semester, a one-time cash incentive for courses that pass the recognition.

#### **4.1.2 Five-stage Progression**

The school has a five-tier progression pathway of "hybrid course - school-level model - school-level first-class - Beijing-level first-class - national first-class". The school sets up different progression criteria and related reward mechanisms, such as cash rewards for the school-

level first-class courses and the completion of key school-level projects, to help the continuous construction and progressive growth of the courses.

#### ***4.1.3. Multi-project Synergy***

The school systematically plans and organically integrates the construction of courses with golden courses, famous teachers and quality teaching materials, and concentrates its strengths to create "famous teachers" and "golden courses" to support the construction of first-class majors and improve the quality of talent training. For example, we implement the "Famous Teachers and Golden Courses" program, and include teachers of school-level model courses in the program list, so as to cultivate them as a resource pool for Beijing-level teaching competitions, high-quality undergraduate courses, high-quality undergraduate teaching materials and courseware, high-quality undergraduate teaching reform and innovation projects, etc., and recommend them on merit.

#### ***4.2. Multi-sectoral Organization Guarantee***

The school unites the strengths of both the school and the department, and sets up relevant organizations horizontally and vertically to provide precise guidance and services for the implementation of blended teaching and learning in the whole process.

First, we set up an online technical support service center, joined by members of the Academic Affairs Office, Information Center, Curriculum Building Committee, Tsinghua Institute of Educational Technology, and outstanding teachers, to provide consulting services for teachers and students through WeChat groups and service hotlines.

Second, we expanded the course construction committee to include curriculum construction managers and practitioners from each academic department. New subcommittees for course construction in each academic department are created to clarify the responsibilities of the course committees at the school and department levels, to compact responsibilities, and to play the role of planning, guidance, coordination and service in course construction at the school and department levels.

Third, we constructed the course team, and implemented the responsibilities of course leaders for course construction, course quality sharing and course promotion and application. Course teams work together to build course resources, complete course design, and achieve course replication and sharing.

Fourth, we formed the teaching assistant teams, composed of students with strong learning ability from each class by the academic department teaching department to coordinate the management. Each team builds a WeChat group by grade, communicates within

the group, does a good job of linking and bridging between the academic department, teachers and students, gives timely feedback on the curriculum and platform application, and provides consulting services for class students.

#### ***4.3. Total Environmental Guarantee***

The school has increased investment to promote the construction of support to create a good environment for blended learning, to ensure the implementation of blended teaching design for teachers, and to focus on enhancing the internal drive and willpower of students to learn.

##### ***4.3.1. Upgrade The Online Teaching Platform***

The school invests special funds in online teaching platform and supporting mobile learning client to meet the needs of teachers to carry out teaching activities such as lesson preparation, teaching and learning guidance and students to carry out independent learning, collaborative learning and inquiry learning. So that it can provide a controlled and manageable high-level teaching and communication space for teachers and students across the university.

##### ***4.3.2. Building A Smart Campus***

The university focuses on the construction of a smart campus based on the 5G layout, building a student-centered active learning environment, and constructing smart classrooms on a large scale to meet students' learning needs inside and outside the classroom such as course teaching, extracurricular communication, innovation workshops, and corporate salons.

#### ***4.4. Diversified Quality Guarantee***

The school forms multi-dimensional curriculum quality standards, carries out multi-lateral evaluations, directed feedback, and builds a diversified quality evaluation system to form a closed loop that guarantees continuous quality improvement.

##### ***4.4.1. Develop Multi-dimensional Quality Standards***

Based on the three stages of course promotion, the school sets the criteria for mid-term and final acceptance evaluation of course construction, the criteria for recognition of independent construction of the course, and the criteria for recognition of course normalization. Based on the key design and implementation aspects of the course construction, the school sets standards for the overall teaching design of the course, the teaching design of the course units, the construction and use of the online teaching platform of the course, and the teaching

implementation guidelines of the course. For the evaluation of course effectiveness, the school sets the evaluation standards for classroom teaching effectiveness from two dimensions: supervisors' listening to classes and students' evaluation of teaching.

#### 4.4.2. *Conducting Multiple Evaluations*

The school conducts evaluations based on multidimensional quality standards through the school, the school division, the students, and the community. For example, the acceptance and recognition of courses are mainly carried out by experts through the evaluation of materials and teaching presentations. The evaluation of the teaching effect is done through supervisors, peers, leaders and students' evaluation. The university also implements the stage evaluation of teachers' teaching implementation process through student interviews, student questionnaires, teacher questionnaires and data monitoring by the platform.

#### 4.4.3. *Targeted Feedback*

For the problems found in the evaluation, schools provide targeted feedback through special reports of supervision, weekly quality reports, monthly quality reports, semester application reports of the platform, survey reports, and feedback with the classroom, forming a closed loop to ensure continuous quality improvement.

## 5. CONCLUSIONS

After more than 5 years of practice, the school has built the first learning power model applied to hybrid course support and guarantee, a three-dimensional teacher training system based on the improvement of teachers' hybrid course ability, and a new mechanism of support and guarantee based on the continuous promotion of hybrid course construction. The trend of blended teaching in the school is normalized, the incentive mechanism of school informatization application and informatization learning environment are increasingly perfected, and the basic guarantee ability is strengthened continuously. Teachers have updated their teaching philosophy and improved their ability in blended courses, transforming from "classroom leader" to "learning guide". Students' learning enthusiasm and independent learning ability have increased significantly, 89.52% of students are very satisfied with the online and offline hybrid learning method, and 89.2% of students are willing to continue to learn other courses through hybrid teaching.

## AUTHORS' CONTRIBUTIONS

Li Min conducted the teaching management practice and wrote the manuscript.

Li Dandan conducted teaching management practices and provided constructive input to the manuscript.

All authors reviewed the final manuscript.

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