



Research on Hybrid Learning Mode of Financial Management Course in Cloud Classroom Environment

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Abstract. In order to realize the practical application value of the blended learning model and establish a more complete practical environment for financial management courses, this research focuses on the blended learning model of financial management courses in the cloud classroom environment. Realize the specific connotation conditions of blended learning by defining blended learning, and then clarify the theoretical support content of blended learning. On this basis, the B/S system structure is established, and after designing the blended learning design process, the activity system theory of blended learning is verified, so as to realize the smooth application of the blended learning model of financial management courses in the cloud classroom environment. Based on this, this study combined with the development status of the blended learning model in the university environment to verify the practical application value of the above learning model.

Keywords: Cloud classroom environment · Financial management course · Hybrid learning mode · B/S architecture

1 Introduction

With the development of educational technology, traditional classroom is gradually being replaced by blended learning. The use of computer and other high-tech equipment can help learners to achieve the optimal learning effect [1, 2]. The so-called blended learning is to combine the advantages of traditional learning methods with the advantages of network learning. That is to say, teachers should not only play the leading role of guiding, inspiring and monitoring the teaching process, but also fully reflect the initiative, enthusiasm and creativity of students as the main body of the learning process.

Blended learning can be summarized into the following aspects: the mixing of learning theories, learning resources, learning environments and learning styles. This study focuses on the blended learning mode of financial management courses under the cloud classroom environment, in order to better promote the development of financial management course education. In this paper, first of all, the specific connotation conditions of blended learning are analyzed, and the theoretical support content of blended learning is clarified. Then the B/S architecture is established and the hybrid learning process is designed.

2 Theoretical Basis of Blended Learning in Cloud Classroom Environment

2.1 The Definition of Blended Learning

Blended learning has experienced more than ten years of development since it was proposed. Due to the rich content involved, domestic and foreign scholars still do not have a unified and authoritative definition of this. Different experts and scholars have given different definitions of blended learning due to the different focus of research or the constraints of the research conditions at the time.

Blended learning is supported by brand-new ideas. According to the characteristics of the teaching process, the instructor or scheme designer divides it into several stages, and optimizes the teaching of each stage, so as to realize the learners' understanding and mastery of the whole. Some people also think that "blended learning" should be defined as a learning mode, including real-time online learning, face-to-face learning and self-designed pace learning [3, 4]. In addition, most of the time, blended learning is also considered as a hybrid application of various technical support, including intelligent learning tutor, e-learning, electronic performance support (EPSS) and knowledge management practice. Relevant scholars believe that blended learning should be regarded as a kind of ability, and explained from the perspective of learners, teachers or instructional designers and teaching managers. This ability includes the ability of learners to choose suitable learning resources, the ability of teachers to organize and flexibly use teaching equipment and teaching tools, and the ability of teaching managers to manage and distribute teaching equipment, teaching media and teaching materials.

Domestic scholars believe that the so-called "blended learning" is to combine the advantages of traditional classroom teaching with the advantages of online learning, that is to say, it is necessary to give play to the leading role of teachers in the teaching process, and to fully embody students as learning The initiative and creativity of the subject. Only when the two are combined to realize their complementary advantages can the best learning effect be expected. "Blend learning" means "integrated learning", which focuses on optimizing the combination of teaching media, teaching methods, and teaching strategies. The reasonable use of teachers and students in the process of teaching practice ultimately achieves the purpose of optimizing teaching and promoting students' learning.

The main idea of "blended learning" is to integrate face-to-face classroom teaching and online learning, so as to reduce teaching costs and improve teaching efficiency. In form, it is a mixture of face-to-face learning and online learning. In essence, it contains a mixture of different teaching theories, different teaching environments and different teaching media.

In summary, although the definitions of blended learning by domestic and foreign scholars are not the same in terms of description, there is no substantial difference in the deep level. By summarizing it, this research summarizes blended learning as: blended learning is a new teaching mode that combines traditional teaching and online teaching. Teachers can flexibly choose different teaching environments and teaching according to the type of knowledge and teaching goals. In this way, students choose different learning

and communication methods according to their personal cognitive characteristics and knowledge mastery in order to optimize the teaching effect.

2.2 The Connotation of Blended Learning

Based on the research of domestic and foreign scholars, this research deeply analyzes the connotation of blended learning, and it is summarized as follows:

- (1) **Blending of learning environment:** Blended learning combines the real classroom teaching environment with the virtual network teaching environment, and gives full play to the advantages of the two teaching environments. In real classroom teaching, students do it themselves and personally participate in practice to provide environmental support. Teachers organize and monitor the entire teaching process and play a leading role. Through face-to-face communication, they can provide timely help to students and help good teachers. The establishment of student relationship; in the virtual network teaching environment, students can study at their own pace, giving full play to the subjectivity of students and stimulating their enthusiasm for learning. Through the mixing of learning environment, the coexistence of classroom teaching and network teaching, and the coexistence of synchronous learning and asynchronous learning are finally achieved.
- (2) **The mixture of learning theory:** learning theory includes many schools, such as behaviorism, cognitivism, humanism and constructivism in later development. Each learning theory has its own advantages and limitations. Therefore, we should not rely on a certain learning theory to guide all teaching and learning activities. In order to adapt to different learners and learning environments, blended learning cannot do without the support and guidance of a variety of learning theories [5, 6].
- (3) **Mixing of learning methods:** Learning methods mainly include independent learning and mutual collaborative learning. Learners can conduct independent learning at their own pace in the online course according to their own situation or conduct collaborative learning with their learning partners through the online teaching platform anytime and anywhere. Learners can also carry out networked autonomous learning in traditional classroom teaching or through face-to-face knowledge exchange and sharing between peers, so as to realize collaborative learning.
- (4) **The mixing of evaluation methods:** because a variety of learning methods and learning environment are comprehensively used in blended learning, there are more than one evaluation method, mainly including formative evaluation, summative evaluation and self-evaluation. Through the network teaching platform, with the help of related technologies, teachers can easily count the students' daily submitted homework, the completion of the work and the positive situation of participating in learning activities, so as to give students a fair and just formative evaluation. Through the mid-term and final examination organized by the school, the students can be evaluated in stages. Students can also make self-evaluation according to their homework, participation in activities and their understanding and mastery of knowledge.

Teaching activities are a complex process. In addition to the mixture of the above factors, blended learning also includes a mixture of other factors, a mixture of multiple learning resources, a mixture of formal and informal learning, and a mixture of different learning styles.

2.3 Theoretical Support of Blended Learning

Constructivist learning theory believes that the acquisition of knowledge is not the process of knowledge directly transferred from the outside to the brain, but the learner applies the existing knowledge to the external environment and constructs it through meaning on the basis of interaction (assimilation, adaptation) Way to get the process. This theory was first proposed by the Swiss psychologist Piaget on the basis of studying children's cognitive development. Later, with the further development of Vygotsky and others, this theory has been enriched and perfected and a unique learning outlook has been formed. Knowledge view, teaching view. From the perspective of learning, the theory believes that learning is not a process in which teachers directly transfer knowledge to students, but a process in which students construct their own knowledge under the interaction of new and old experiences. In the view of knowledge, the theory emphasizes the dynamic nature of knowledge, and emphasizes that the understanding of knowledge is constructed by individual students based on rich and unique experiences in specific situations [7]. In the view of teaching, constructivism believes that teaching is no longer the transmission of objective and definite existing knowledge, but to create an ideal learning situation for students to stimulate their original relevant knowledge and experience, promote the "growth" of knowledge, and promote students Knowledge construction.

In fact, in the early stage of the development of constructivism, because of the constraints of the teaching conditions at that time, it was difficult to implement the teaching methods advocated by constructivism. Since the 1990s, the development of computer and other related technologies has provided a reliable guarantee for the application of constructivism learning theory in the field of education and teaching. Under the guidance of constructivism learning theory, blended learning will optimize the combination of teaching elements, promote the meaning construction of personal knowledge, so as to improve learning efficiency and enhance learning effect.

3 Establishing a Blended Learning Model of Financial Management Courses Based on the B/S System Structure

3.1 B/S Architecture

Browser/Server mode is a calculation method developed from the traditional C/S. The C/S mode is loosely coupled. The dialogue between the server and the client needs to rely on the message transfer mechanism. First, the client sends a dialogue request to the server. The server receives the request and processes it accordingly, and then sends it back through the transfer mechanism. Client. Different from the C/S model, the B/S model further decomposes the server side into a Web server and multiple database

servers. In addition, the B/S model simplifies the client side and only retains the client’s presentation function. The computing function is moved to the decomposed Web server, thus becoming a three-tier distributed structure consisting of a presentation layer, a function layer and a database service layer. The B/S system structure consists of three parts:

- (1) Client. The client is in the presentation layer of the mixed learning mode of financial management course. The main task of the client is to guide the interface, accept the user’s input, send out the service request from the web server, and display the processing results.
- (2) Application server. The application server is in the business logic layer and integrates the two parts of web server application server through middleware. It is mainly used to execute business logic and send to database.
- (3) Database server. The database server is in the data storage layer, which is mainly used to execute data logic, run SQL stored procedures, and save the attributes of business objects permanently.

The application mode of B/S architecture is shown in Fig. 1.

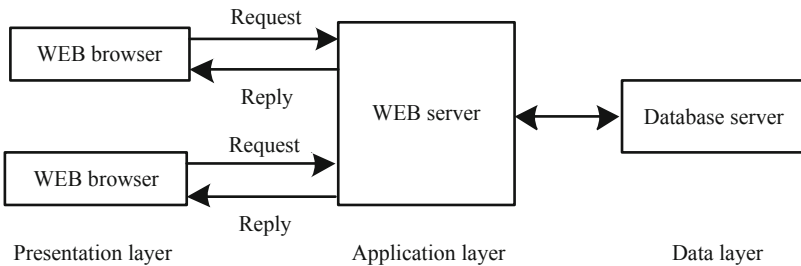


Fig. 1. Application mode diagram of B/S architecture

The complexity and mode of mathematical model and theoretical model of financial management decision are too high, and human’s computational ability is limited. If it is too difficult to calculate simply by manual means, few people really use the financial model, thus reducing students’ understanding and application of the model [8–10]. By embedding the complex financial management model into the system, students can easily use the complex model with a click of the mouse, which can reduce the amount of calculation in the application of the model, and enhance the students’ understanding and application ability of the model.

3.2 Design Process Analysis of Blended Learning

After years of development, relevant scholars have conducted in-depth research on blended learning, and now select the research results of several representative scholars to analyze, in order to provide reference for designing the blended learning model of the cloud classroom environment.

Josh Bersin blended learning is summarized and divided into four steps, namely:

- Step 1: identify and define learning needs;
- Step 2: according to the characteristics of learners, make learning plans and design measurement strategies;
- Step 3: select the learning content according to the existing basic conditions of blended learning;
- Step 4: organize the implementation according to the plan, observe the learning process and evaluate the results.

Based on the analysis of the four basic steps of Josh Bersin’s blended learning, related scholars further detailed the process of blended learning in the article “Principles and Application Models of Blended Learning”, which is mainly divided into 7 links, as shown in Fig. 2 Shown.

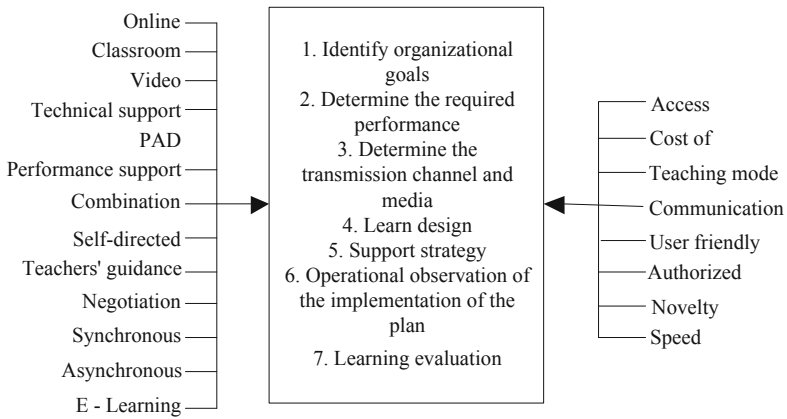


Fig. 2. Design steps of hybrid learning

Constructivism pointed out in the theory of learning that the learner should be regarded as the subject of learning and development in the first place when designing the curriculum. This requires us to focus on the needs of learners. Therefore, in the process of designing blended learning courses, we must insist on taking the learner as the center, fully mobilizing students’ enthusiasm, stimulating students’ interest in learning, and all serving students [11, 12]. At the same time, the leading role of teachers should not be ignored. Teachers, as important organizers and facilitators of the entire teaching process, should actively guide teaching activities, fully communicate with students, and complete teaching tasks in the collision of thinking.

As the carrier of knowledge transfer, curriculum resources are very important to the development of teaching activities. Various forms of resource design can attract students’ interest and achieve twice the result with half the effort. However, students with different learning styles have different sensitivities to different kinds of teaching resources, and their demands for different kinds of resources are also different. Some of them like the audio-visual materials and some like the static text materials. Therefore, in the process of blended learning, teachers should consider the personalized needs

of students as much as possible when selecting teaching resources. Different types of resources can also be developed in combination with specific teaching content, so that students of different styles can find their own satisfactory material resources, so as to facilitate the development of learning.

3.3 Blended Learning Activity System Theory

When designing the blended learning activity system, it is necessary to consider the mixture of multiple learning methods (autonomous learning, collaborative learning, communication and discussion), learning theory (behaviorism, constructivism, cognitivism, humanism, etc.), teaching media (audio-visual, pictures, text, interactive media), learning environment (real physical environment, virtual network environment). As a kind of system, hybrid learning activity system has the general characteristics of generalized system [13]. At the same time, the main purpose of blended learning activity system is to improve teaching and improve teaching quality, so it also has teaching characteristics.

- (1) Diversity: The mixed learning activity system is composed of multiple elements (they can have different characteristics or attributes). For example, in the mixed learning activity system, teachers and learners exist at the same time, and learning activities are carried out both in traditional classrooms and virtual classrooms.
- (2) Coherence: The various elements in the mixed learning activity system are interconnected and influence each other. For example, teachers and students influence each other, students influence each other, and there will be interference effects between the learning environment and students.
- (3) Integrity: The various elements of the mixed learning activity system complement each other to form a whole. Only when the elements are coordinated will the system operate at its best state, otherwise it will be counterproductive. For example, setting up a lot of online learning activities can deepen students' understanding of knowledge, but they may also take up too much time and increase the burden of learning.
- (4) Dynamic: The mixed learning activity system is dynamically changing. For example, with the progress of the learning process, students' understanding of the learning content, familiarity between teachers and students, etc. will cause dynamic changes in the operation of the system [14, 15].
- (5) Controllability: The operation of the blended learning activity system can be controlled by external means. For example, if too many online learning activities are set up, the students' learning enthusiasm decreases and their satisfaction decreases, the teacher can appropriately reduce the online learning activities.

Assume that \dot{p} represents the set index of active application coefficient in the mixed learning system, and its calculation process is as follows:

$$\dot{p} = (e_1 + e_2)\kappa \quad (1)$$

Among them, e_1 and e_2 respectively represent two different financial management course implementation and application indicators in the cloud classroom environment, and κ represents the applied fuzzy coefficient.

On this basis, if λ_0 represents the minimum diversity coefficient related to financial management courses in the cloud classroom environment and λ_1 represents the maximum diversity coefficient related to financial management courses in the cloud classroom environment, then the blended learning mode of financial management courses can be defined as:

$$J = \frac{\left| \dot{p} - \beta \sum_{\lambda_0}^{\lambda_1} e_1 \sqrt{i_1^2 + i_2^2} \right|}{\sum_{\lambda_0}^{\lambda_1} e_2^2} \tag{2}$$

Among them, β represents the curriculum design coefficient under the mixed learning mode, e_1 and e_2 represent two different financial management curriculum implementation application indicators under the cloud classroom environment, and i_1 and i_2 represent two different power coefficient application conditions respectively. So far, the calculation and processing of coefficient index parameters are completed, and the smooth application of hybrid learning mode of financial management course is realized under the support of cloud classroom environment.

4 Model Application Ability Detection

In order to verify the practical application value of hybrid learning mode of financial management course in cloud classroom environment, the following experimental links are designed. According to the results of front-end analysis of learning mode, specific learning activities are designed as shown in Table 1.

Table 1. Learning activity design

Title	Blended learning stack organization for financial management courses
Activity goal	Know the characteristics of the blended learning stack of financial management courses and its abstract data types; Understand the implementation of the blended learning stack of financial management courses; Able to perform basic operations on the blended learning stack of financial management courses; Know what is function recursion; Understand the role of financial management course blended learning stack in function recursion; Able to compare and analyze sequential stacks and chain stacks

(continued)

Table 1. (continued)

Title	Blended learning stack organization for financial management courses
Activities	Teachers publish learning tasks through class discussion groups; Students learn the relevant theoretical knowledge of the stack through the cloud classroom; Teachers organize “problem solving” activities, requiring students to be able to perform basic operations on the stack; Students work in groups to collect relevant information, summarize and organize them, and summarize the difference between sequential stack and chain stack
Event organization	Activity form: independent learning + classroom teaching + problem solving + data collection + discussion and exchange; Role assignment: Heterogeneous grouping according to students’ understanding of the stack; Achievement form: data collection report, problem solving situation;
Activity evaluation	In-class test on the blended learning platform; Teacher evaluation (students’ performance in the classroom); Student mutual evaluation (student’s performance in the group)

Financial course management requires students to master the relevant knowledge of the stack, which is theoretical. First of all, the teacher asked the students to discuss the related learning tasks in the class. Then according to the students’ online course test and the problems reflected in the discussion group, the teacher re explained the key and difficult points in the form of classroom teaching, especially the knowledge point of function recursion, which was difficult for most students to understand, and the teacher explained through examples according to students’ life and learning experience. The basic operation of the stack (press into the top of the stack, pop up from the top of the stack), stack application and other knowledge points are explained in the form of “classroom Professor + PPT”, and then the students are tested whether they master it in the form of problem solving.

Finally, the students were divided into heterogeneous groupings, and the students collected and summarized relevant information. Each group finally reported the difference between sequential stack and chain stack in the form of a report. Subsequently, the teacher promptly encouraged and praised the good group. It can be seen from the report that students have basically mastered the related knowledge points of sequential stack and chain stack. After the learning activities, the students’ learning effects were evaluated by means of teacher evaluation (for students’ performance in the classroom), student mutual evaluation (for students’ performance in groups), and in-class tests on the blended learning platform. The evaluation results show that the students have basically mastered the knowledge points of the financial management course and reached the present learning goals.

Through the statistics and collation of relevant data, this paper analyzes the effect of blended learning, and draws corresponding conclusions, in order to provide reference

for college teachers to carry out hybrid learning based on cloud classroom environment. The analysis results of the questionnaire survey are shown in Table 2.

Table 2. Statistical analysis of blended learning effect

Questionnaire title	Questionnaire analysis
Acceptance of the learning style	88% of students said they could accept it; 10% of students said it didn't matter; only 2% of students said they could not accept it. This shows that the vast majority of students can accept blended learning
Can blended learning promote knowledge learning better	59% of students think it is very good; 30% think it is good; 10% think it is fair; 1% think it is not good. This shows that the vast majority of students believe that blended learning can better promote knowledge learning
Satisfaction with blended learning	75% of the students are very satisfied; 21% of the students are generally satisfied; 4% of the students are not satisfied. This shows that the vast majority of students approve of blended learning
A comparison between blended learning and traditional learning	70% of students think blended learning is better; 20% of students think the two are equally good; 10% of students think that traditional learning methods are better. This shows that most students prefer blended learning
Satisfaction with financial management course platform	80% of students are very satisfied with the MOOC platform; 10% are satisfied; 5% are generally satisfied; 5% are dissatisfied. This shows that the financial course management platform can provide good support for blended learning
Teacher's role in blended learning (multiple choice)	80% of students think teachers are guides; 35% of students think teachers are managers; 20% of students think teachers are knowledge transmitters; 3% of students think teachers are dispensable

It can be seen from Table 2 that the hybrid learning based on cloud classroom environment can better promote students' learning and mobilize their learning enthusiasm. Most students are satisfied with this learning mode. But there are still some students because of the inconvenient access to the Internet, unskilled computer operation and other factors, which makes them encounter some obstacles in blended learning, which requires teachers to provide appropriate help and guidance.

On this basis, in order to further verify the effectiveness of the blended learning mode of financial management courses in the cloud classroom environment, it is compared with the traditional learning mode. Under the condition of ensuring the same environment between the experimental group and the control group, 50 students and teachers were randomly selected to carry out evaluation on different learning modes, and the average score was calculated. The comparison results are shown in Fig. 3.

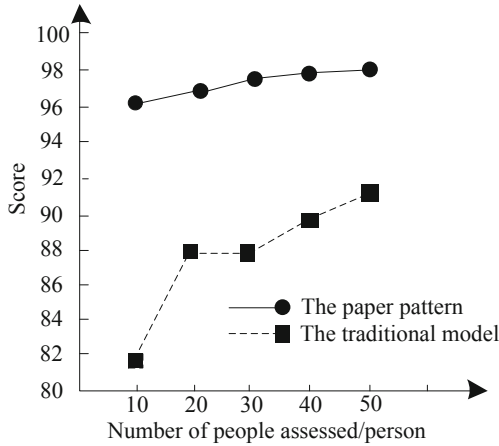


Fig. 3. Comparison of evaluation results of different learning modes

According to the results shown in Fig. 3, with the increase of the number of people assessed, the average test scores obtained by different learning modes also increased. However, in contrast, the average score curve of the learning model in this paper is always above that of the traditional model, which proves that the learning model in this paper has better evaluation extent effect. This result also explains the validity of the model in this paper to a certain extent.

5 Conclusion

The blended learning mode of financial course management based on cloud classroom environment designed in this study provides multiple evaluation methods and timely and effective feedback, which can help teachers to understand students' learning situation in time, so as to adjust the teaching schedule and methods timely.

In the following research, while further exploring the functions of the financial management course platform, the theoretical research of mixed learning will be deepened, and the best combination point of mixed learning and the platform will be explored, so as to continuously optimize the application effect of the mixed learning mode based on the cloud classroom environment.

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