

# Blended Learning Model of University Courses Based on SPOC

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**Abstract:** *With the gradual development of computer technology, the tide of informatization has also promoted the development of society in various fields, especially having a revolutionary impact on teaching concepts and teaching models. Through blended learning, traditional teaching and online learning are organically integrated. This has formed a very important teaching concept, and is generally recognized by the education circle to cultivate learners' enthusiasm and self-learning ability. The author of the thesis conducted a survey on SPOC's blended learning model of university courses, and then based on the literature understood the relevant theoretical knowledge of the blended learning model of university courses, and then constructed the SPOC-based blended learning model of university courses, and made an evaluation of the learning effect of the constructed model. The result is that more than 49% of learners prefer to adopt the SPOC hybrid teaching method.*

**Keywords:** *University Teaching, Blended Learning, Learning Mode, SPOC*

## 1. Introduction

The continuous advancement of education informatization has led to major changes in the school teaching environment [1-2]. Traditional schools and classrooms are slowly evolving into a new learning environment built through the Internet, communication tools and smart terminals to promote resource integration, learning in schools, and gradually building a campus, Internet, virtual learning space, 3D chemistry learning resources etc, a comprehensive learning system [3-4]. The Ministry of Information Education has also created a new learning model of "Internet+ Education", which has the characteristics of strong dissemination, platform compatibility, and strong mobility [5-6]. Nowadays, new learning methods such as online learning and mobile learning are becoming more and more popular among students, meeting the needs of students for mobile learning and fragmented learning, while supporting and connecting traditional learning. Informatization of education not only promotes the transformation of learning methods, but also promotes the transformation of teaching models, teaching methods, teaching resources, teaching activities, teaching management, etc, so that information can better adapt to the needs of the teacher's environment [7-8].

Regarding the study of blended learning, some researchers said that the inverted classroom is student-centered, based on technology, emphasizes teacher-student interaction, emphasizes students' independent learning, internalizes and exchanges knowledge, and creates new educational forms. In other words, the characteristics of inverted classrooms are student-centered, and based on further improving teachers' information teaching ability; in classroom work, optimize and integrate two cognitive links: extracurricular knowledge education, classroom learning activities, evaluation guidance [9]. Some researchers suggest that learning resources based on SPOC should not be limited to MOOC videos. SPOC has a wide range of video resources to support school classroom courses, including MOOCs, online videos, high-quality courses and micro-classes. Where permitted by law, resources that do not infringe the copyrights of other authors can be used to educate SPOC and achieve high-quality resource sharing [10]. Some scholars have proposed that the SPOC learning platform is mainly used for online learning. Offline classes allow teachers to organize educational activities such as discussions, exercises, and competitions. Online and offline are mixed, learn from each other's strengths, and give full play to their respective advantages. Appropriate teaching methods can be adopted according to the teaching content, such as classroom inversion, face-to-face instruction, etc, which are very flexible [11]. In summary, there are many research results on blended learning models, but the research on blended learning models in university courses needs further exploration.

This paper conducts research on SPOC's blended learning model of university courses. Based on

the literature, it analyzes the problems of blended learning of university courses and the principles of SPOC's blended learning model of university courses. Then it analyzes the blending of university courses based on SPOC to construct a learning model, and then test the constructed model, and draw relevant conclusions through the test results.

## **2. Research on Blended Learning Model of University Curriculum**

### ***2.1 Problems of Blended Learning in University Courses***

#### (1) Insufficient use of new media technology

Blended learning is highly dependent on the platform. Currently, most online learning platforms are only used as support tools for e-learning. They are obviously not enough to improve students' independent learning ability and meet their individual learning needs [12]. Some blended learning platforms are the same as platforms for browsing learning resources and submitting homework, and the application of new media technology in classroom teaching is not high. Most teachers stay at the application level of using PPT education, and do not use new media technology, so that the use of resources is insufficient, so the online learning environment that combines technology and supervision. This requires the introduction of new educational tools and models to improve the status quo, so as to improve students' autonomous learning ability and meet their individual learning needs.

#### (2) Obviously insufficient student status

Blended learning includes face-to-face learning and online learning. Online learning mainly uses student-based autonomous learning, while face-to-face learning continues to use education-oriented teaching methods. In a large classroom education environment, students are only in the state where the knowledge content receiver is not fully integrated into the console. In addition, in the current educational environment, teachers are unable to meet the needs of students within a limited time due to differences in students' personalities, unable to evaluate and encourage them in a timely manner, and their motivation to learn decreases.

### ***2.2 SPOC's Principles for Constructing Blended Learning Models of University Courses***

#### (1) Goal-oriented principle

The educational goal is the model for completing the educational content of the "Curriculum Standards" proposed by the Ministry of Education to teachers, and is the starting point and destination of educational activities. The clearer the educational goal, the smoother the educational process, and the more specific the educational goal, the more orderly the development of educational activities. With accurate educational goals, traditional teaching and SPOC can give full play to their respective advantages and provide teachers and students with action guidelines. Teachers know what they want to teach, and students know what they want to learn. Educational goals can enable teachers and students to synchronize the probability orientation and promote the smooth development of educational activities in the established direction. Setting educational goals plays an important role in the blended learning process. Therefore, blended learning based on SPOC must follow the goal-oriented principle.

#### (2) Systematic principle

Facts have proved that systematics is very important in teaching design. Scholars at home and abroad have emphasized the importance of systematic principles in educational planning. Modern education theory believes that teaching methods and educational content are essentially logically related. The acquisition of new knowledge by students is also a process from known knowledge to new knowledge, which is a gradual process. If education is not carried out in the corresponding order, it is a violation of the objective laws of education. The principle of systematic education is an educational principle that has been repeatedly demonstrated through long-term educational practice, including student analysis, the composition of teaching content, the choice of teaching methods, and teaching evaluation. Each location is not only related to each other, but also relatively independent. In this research, the SPOC-based hybrid learning model is constructed by three main parts: preparation, learning activity planning, and learning evaluation design. These three parts belong to the whole in terms of systematic educational planning, and their existence is for students to build knowledge.

#### (3) The principle of convenience

In order for SPOC educational resources to support blended learning, three possible conditions must be met. One is to have corresponding subjective and objective conditions. Subjective conditions mean that learners have the knowledge level to be able to accept new educational content. The age characteristics of learners are suitable for this online and offline dual-platform teaching method, and teachers must have corresponding educational skills. Objective conditions mean that learners have appropriate equipment and wireless networks to monitor SPOC educational resources, which can bridge regional differences and even conduct face-to-face learning in the classroom. The mixed pedagogy must be successfully applied to educational practice, and the second is to be functional, including the following four aspects: relevant course leaders, teachers, interns, etc. Textbook resources, on-campus and off-campus multimedia equipment, on-site teaching, on-campus books and materials, off-campus books, network resources, etc. Financial resources, funds for the production of SPOC online education resources, online and offline training time for trainees, and teacher teaching time. Third, the educational plan can be completed under the guidance of the curriculum objectives and lead to specific practice.

### 3. Construction of a Blended Learning Model of University Courses Based on SPOC

#### 3.1 Design and Construction of SPOC Flipped Teaching Mode

As shown in Figure 1, it covers the main links of the SPOC flipped teaching model. The innovation of this model is not only the open sharing of educational resources, but also the innovation of curriculum forms, assessment management systems, and educational activities. Online and offline courses do not exist independently, but are based on teacher-student education activities. After students preview through the SPOC online education micro-video, fully pay attention to the benefits of the online learning community and teacher attendance guidance in the SPOC environment, and provide students with timely judgment and feedback. Classroom teachers and students can also use some community areas to discuss questions, interact, and give out and answer puzzles. The integration of SPOC teaching mode into educational practice reflects the combination of online and traditional classrooms, the combination of pre- and after-class learning, and the combination of online and offline learning.

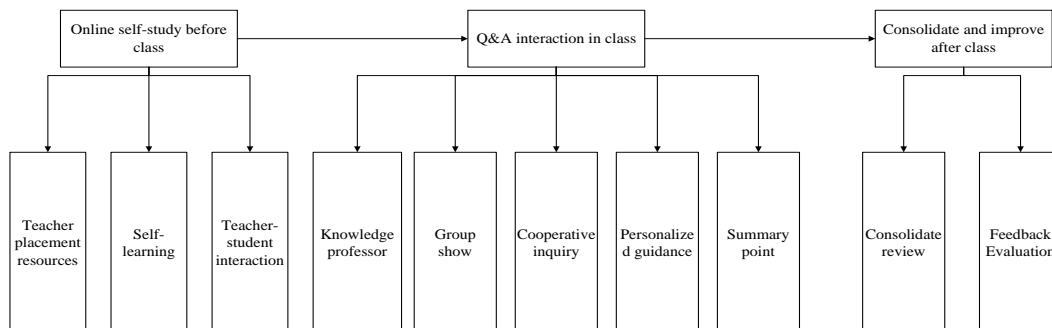


Figure 1: Design and construction of SPOC flipped teaching mode

#### 3.2 Online self-study Mode before Class

Self-study before class has a preview effect. The learning process of this function is that teachers place resources in Netease Cloud Classroom, allowing students to learn independently and then interact.

First, teachers design educational content based on educational content, create courses, videos, to-do items, or a large number of resources, and upload them to Cloud Classroom. Learners can preview by watching the micro-video of the SPOC course. In the learning task list, students recognize problem-based learning ("PBL") and provide help and guidance for students' independent online learning. Secondly, as students, they study independently, mainly according to the to-do list provided by the teacher, focusing on understanding the key points and difficulties of the content and summarizing their own confusions. Students need to understand what they have learned and summarize the problems after self-study and before class. If you have any questions, you can interact with the teacher in the teacher's question and answer area and the comprehensive discussion area. On this basis, first clarify the learning objectives. This helps to understand students' knowledge more deeply and

helps teachers teach according to their abilities.

### **3.3 Classroom Flipped Teaching**

Classroom is the stage of knowledge internalization. Based on student-centered learning, students need to be encouraged to develop the habit of inquiry and innovation. It mainly includes the following steps:

(1) Interactive Q&A between teachers and students. Teachers discuss with students the questions they are most likely to think of in the forum and summarize the results of the discussion. This kind of communication and interaction has narrowed the distance between students and between teachers and students.

(2) Group discussion. Divide students into groups, ask questions about the key points and difficulties of this chapter, and discuss in groups. After the discussion, one person will report and discuss the whole class. Finally, the teacher gave more explanations and knowledge.

(3) Individual counseling. For students who are slow or difficult to learn, teachers need to be personalized so that they can master the skills and teaching methods of this course. Students can also ask the teacher about their homework before class or ask unanswered questions during the experiment.

(4) Display the result. The results of the experiment are displayed in the classroom. Students are graded through self-evaluation and mutual evaluation. Teachers teach homework problems and praise and encourage students to do well.

### **3.4 Consolidation Exercises after Class**

After class, check the lectures and discussions in get out of class in time to check knowledge gaps. At the same time, complete module assignments and online unit tests to integrate knowledge and verify learning results. After class, students need to complete their homework in the laboratory, or through group collaboration. In the process of completing homework, tests, and experiments, you need to actively discuss with your classmates.

## **4. Evaluation of the Application Effect of the Blended Learning Model of University Courses Based on SPOC**

### **4.1 Questionnaire Survey**

This article will investigate the impact of SPOC blended learning. Use online surveys to send to students through the QQ classroom team. A total of 48 questionnaires were distributed and 48 were retrieved, with a recovery rate of 100%. The questionnaire data analysis is as follows.

### **4.2 Data Processing**

It depends on the absence of variables. That is, if the target variable  $y$  is missing, it is only related to the variable  $X$ , and has nothing to do with  $Y_m$  (the missing part of  $Y$ ). In short, CDM has the following points:

$$L(A|Y, X) = L(A|Y_0, X) \quad (1)$$

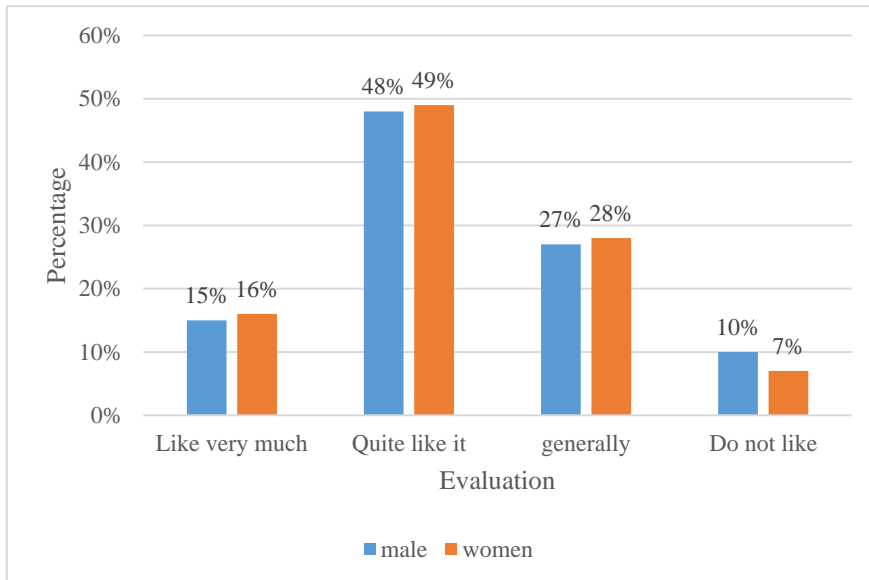
$$L(A|Y, X) = L(A|X) \quad (2)$$

This means that the missing value in  $Y$  is only related to the missing variable  $X$ , not to the missing value in  $Y$ , and the missing variable  $X$  is not missing.

It is aimed at students' satisfaction with SPOC's blended learning teaching. This article has designed the question: Do you like to use SPOC blended learning to teach in the course? The statistical results of the questionnaire are shown in Table 1:

*Table 1: Satisfaction of SPOC's Blended Learning Teaching*

	male	women
Like very much	15%	16%
Quite like it	48%	49%
generally	27%	28%
Do not like	10%	7%



*Figure 2: Satisfaction of SPOC's Blended Learning Teaching*

It can be seen from Figure 2 that almost half of the students who like it better account for 49% of the total, and only 10% dislike the SPOC blended learning model. This shows that most students are willing to accept and like educational activities carried out in this way of learning. This shows that students' awareness of this learning method is very high.

## 5. Conclusions

This article studies the SPOC blended learning model of university courses. After understanding the relevant theories, constructs the SPOC-based blended learning model of university courses, and then tests the constructed model. The test results show that most students willing to accept and like the educational activities carried out in this way of learning. This shows that students' awareness of this learning method is very high.

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