

# Research on the Hybrid Classroom Teaching Mode Based on SPOC in China

**Dong Haiyang**

*Qiongtai Normal University, Haikou 570000, China*

**Abstract:** *As an effective way of mixed classroom teaching mode, SPOC not only maintains an open online learning method, but also combines the advantages of face-to-face offline classroom teaching, promotes the integration of information technology and education, and is also conducive to improve the quality of teaching. SPOC-based hybrid classroom teaching in colleges and universities should scientifically plan teaching around the three aspects of learners, instructors, and curriculum resources, forming an organic and unified teaching and learning community, and promoting deep learning and autonomous learning.*

**Keywords:** *SPOC; blended classroom teaching; autonomous learning; deep learning*

Under the background of "Internet +", the traditional university teaching model is facing unprecedented challenges. In recent years, MOOCs (MOOCs, large-scale online open courses), a new type of online open courses, have been favored by colleges and universities. Although the emergence of MOOCs has changed the traditional teaching methods, a large number of online courses have brought new learning problems. Among them, the most obvious problem is that MOOC teaching separates the face-to-face relationship between teachers and students. In order to further solve this problem and improve the teaching effect of higher education, an effective online learning method-SPOC, has been generally valued and favored by people. SPOC integrates rich online teaching resources and offline high-quality design classroom face-to-face teaching, which can significantly improve the autonomous learning ability of college students. It is currently a widely accepted and applied hybrid classroom teaching model.

## 1. The definition of SPOC

SPOC (Small Private Online Course), also known as "small private online course". In 2013, the University of California, Berkeley took the lead in proposing the concept of SPOC, which used the SPOC model to teach courses on the edX platform. In the SPOC teaching model, the most primitive MOOC resources are applied to a specific small-scale group. SPOC combines online teaching resources with offline classroom teaching and is considered to be an effective way to improve the quality of MOOC teaching.

The core content of SPOC includes online learning and offline discussion. In the first stage, online preview before class. According to the course syllabus, the instructor releases teaching materials (including teaching handouts, teaching videos, homework, etc.) to the teaching network platform in a regular and quantitative manner. Under the guidance of the uploaded learning tasks, students choose their own time to complete the pre-class preparation tasks related to the course. In the second stage, face-to-face communication in the classroom. In this stage, under the guidance of the instructor's excellent teaching design, the instructor and the learner face-to-face classroom exchanges, discussions and presentations. Teachers guide students to conduct classroom interactions, group discussions, and results presentations according to their teaching goals, deal with questions and answers in the online learning stage, guide students in deep learning, and conduct knowledge point tests and summary reflections. In this combination of online and offline communication, the SPOC-based teaching model allows teachers and students to shift their limited time and energy to higher-value activities, such as group discussion, classroom presentations and exhibitions.

## **2. The generation and application of SPOC teaching model in other countries**

### ***2.1. SPOC experiment at Harvard University***

In 2013, Harvard University's "Copyright", "Central Challenges of American National Security, Strategy and the Press: An Introduction" (Central Challenges of American National Security, Strategy and the Press: An Introduction), and "Architecture Hypothesis" (The Architectural Imaginary) three courses conducted SPOC experiments.

The "Copyright Law" (Copyright) course is opened on the edX online platform. Courses are divided into project teams, with teaching assistants. Each project team has no more than 25 members, and the teaching assistant organizes offline discussions. After the course is over, online students are required to take a three-hour regular exam, and those who pass will receive a course completion certificate.

"Central Challenges of American National Security, Strategy and the Press: An Introduction" (Central Challenges of American National Security, Strategy and the Press: An Introduction) course requires students to use extracurricular time to watch online instructional videos and complete all online assignments; Read about 75 pages of course-related literature every week. Offline activities mainly focus on topic discussions and are organized by teaching assistants, such as discussions on the course online platform, and theme discussions initiated by teaching assistants based on the course content. At the end of the course, students who complete the course objectives will be awarded a HarvardX certificate.

### ***2.2. SPOC experiment and promotion of the University of California at Berkeley***

The branded course "Software Engineering" of the University of California, Berkeley is also opened on the edX platform. The central feature of this course is the automatic scoring system. Once a student submits an assignment, the system can immediately give scores, and allows students to submit assignments multiple times to improve grades. In addition, due to the high efficiency of SPOC in teaching, students can be used to test the degree of mastery of knowledge in the course.

The automatic grading function reduces the burden on teachers; at the same time, students can pause and review any knowledge point in the course lecture video. Through such an efficient and convenient way of information transmission, the SPOC teaching mode has significantly improved the teaching effect of teachers and the learning efficiency of students.

### ***2.3. SPOC experiment at the University of Massachusetts Boston***

At the University of Massachusetts Boston, the "Basic Biology" course taught by Professor White was the first to use the SPOC teaching model. This course sets learning goals and designs more experiments in the course teaching to motivate students to learn actively. In order to achieve the purpose of SPOC teaching, part of the course content is allocated to self-study after class. This kind of teaching reform helps to improve students' problem-building ability and problem-solving ability. In terms of course evaluation methods, Professor White divided the courses into 30 independent units on the edX platform. Each unit includes a video lecture and several self-test questions. This new teaching method optimizes the original course structure and improves the teaching effect of the course.

### ***2.4. San Jose State University SPOC experiment***

In the fall of 2012, Professor Gadiri started the "Circuit Analysis" course on the edX platform and applied the SPOC teaching method to all parts of the course content. As a professional engineering professional basic course "circuit analysis" in students' learning. The grades in this course are usually poor, with about two-thirds of the students having only C grades. Therefore, it is recommended to apply SPOC teaching to the course. In the process of SPOC teaching, students are required to watch the teaching videos played outside the classroom, and then have group discussions in the classroom. The students fill out the questionnaire after self-study in order to record the key and difficult problems first, and then the teacher sorts out the main problems and discusses the above problems with the students. Through the SPOC teaching method, students can learn the content of the course without being restricted by time and place. In addition, this flipped classroom teaching method stimulates students' enthusiasm for learning and strengthens the interaction between teachers and students. Compared with traditional learning, teaching methods, student attendance, classroom participation, and self-confidence in learning have been improved. Since then, the SPOC learning method has been increasingly applied to more

courses at San Jose State University.

### **3. The status quo and existing problems of the hybrid classroom teaching model in colleges and universities**

The Ministry of Education's "Opinions on Accelerating the Construction of High-level Undergraduate Education and Comprehensively Improving Talent Training Capabilities" pointed out that "Construction of high-level undergraduate education requires connotative development and quality improvement...promote the revolution of classroom teaching, and actively promote small-class teaching and mixed teaching. We will vigorously promote the construction of smart classrooms and build a teaching model that combines online and offline teaching." The SPOC-based hybrid classroom teaching model is the focus of the reform of classroom teaching informatization in colleges and universities. Based on this, this research conducted an investigation and research on a psychology course that used the SPOC teaching model. This course was also rated as a provincial-level boutique online open course.

#### **3.1. Teaching process**

##### **3.1.1. Before class: online teaching stage**

Instructors generally put the course content in advance on the online teaching platform (such as Xuetong, etc.) in the form of teaching videos, handouts, PPT or other learning materials network links, etc. The teaching videos are made according to different teaching knowledge points, and the whole process of wonderful teaching activities is carried out around the difficult and doubtful knowledge points in the teaching process inside and outside the classroom. PPT, handouts and other teaching resources help students better understand the content of knowledge. Therefore, in the time period before class, students can preview in advance through the teaching resources on the online teaching platform, first digest part of the theoretical knowledge content, and leave the knowledge that is difficult to understand or need in-depth explanation and expansion to be discussed in the classroom.

At the same time, the online teaching platform provides the form of online class forums, where teachers and students exchange and discuss the doubts, difficulties and problems in the learning process. Students can speak freely on the forum, express their own opinions, and at the same time obtain the opinions and ideas of other students, get more information about the problem, and finally gain more learning perspectives and perspectives, so as to open up their thinking.

##### **3.1.2. Offline classroom teaching stage**

Classroom teaching: In offline classrooms, teachers will spend more time and energy on summarizing, exploring and sublimating knowledge points in the classroom, so that students can grasp the overall framework of the course content, and guide students to actively explore, learn and explore Reflection.

#### **3.2. Classroom puzzles and discussions**

For students who have not solved the doubts, difficulties and problems during the online preview and teaching, the teacher will give a unified answer here, and put forward some in-depth thinking questions to the students, and the students will discuss and solve them in groups, To enable students to deepen their understanding of knowledge and cultivate deep learning capabilities.

#### **3.3. Classroom display**

For the homework assigned by teachers in the pre-class preparation stage, students are encouraged to display them in the classroom in the form of videos, dramas, sketches, and PPT.

#### **3.4. Classroom assessment**

Teachers set up classroom assessments for key chapters and knowledge points to assess students' real learning situation in the form of tests, replies, and expositions, and to a certain extent can urge students to consciously preview and adjust learning strategies.

### ***3.5. After class reflection phase***

After class, students integrate online and offline classroom teaching content for a new round of review and reflection, thereby deepening their understanding and grasp of the course content and promoting deep learning. Students' reflections can be displayed on the online platform, and teachers can check and evaluate them in time, which effectively promotes deep learning.

## **4. Existing problems**

According to the course online learning behavior observation and questionnaire survey analysis, the results show that although the teacher requires students to preview online before class, there are still a small number of students who have not completed the task. Most students do not complete the pre-class preparation because they are not yet familiar with the characteristics and processes of the SPOC teaching model. However, as the course progressed, they gradually adapted to the SPOC teaching mode, realized the importance of preview and review, and the time and frequency of pre-class preview gradually increased.

Because these students did not preview in advance, teachers had to teach the knowledge that should have been previewed in offline classrooms, which led to the extension of offline classroom teaching time and reduced the time for classroom discussions and classroom presentations.

Most students do not take a long time to summarize and reflect after class, and the effect of autonomous learning is not obvious.

## **5. The causes of problems in the SPOC-based hybrid classroom teaching model**

### ***5.1. For learners***

SPOC-based hybrid classroom teaching focuses on stimulating students' interest and potential in learning, and students' subjective initiative will restrict the effectiveness of learning. Students' cognition and psychological acceptance of SPOC-based blended classroom teaching are directly proportional to their learning motivation. The higher the ratio, the more self-directed learning and deep learning can be carried out. The higher the student's self-efficacy, the more inclined to adopt SPOC for autonomous learning, the better the learning effect, and vice versa, the poorer the learning effect. In addition, factors such as the learner's online learning self-regulation ability, the ability to understand teaching materials, and the ability to summarize and reflect will also affect learning.

### ***5.2. For instructors***

The advantage of the SPOC-based hybrid classroom teaching model lies in the combination of online and offline teaching. Whether instructors can clarify the tasks of online and offline teaching, it is very important to set up a complete and clear course flow. At the same time, teachers' teaching ability, subject knowledge reserve, comprehensive quality, online and offline interaction between teachers and students, teachers' support and participation in SPOC courses, as well as online and offline problem solving and feedback, will seriously affect the effective learning effect. .

### ***5.3. For Course resources***

High-quality online course resources are the basis for the effective development of SPOC classroom teaching, and are directly related to whether students can be attracted to carry out independent learning. High-quality curriculum resources include a complete and clear curriculum structure, a reasonably related knowledge point map, which can adapt to the characteristics of learners, can give play to learners' subjective initiative to mobilize learning interests, and attract learners to learn independently.

## **6. Suggestions**

### ***6.1. Teachers: update teaching concepts and guide in-depth exploration***

There are obvious differences between SPOC-based hybrid classroom teaching and traditional

classroom teaching in teaching methods and methods. Under the background of "Internet +" in the 21st century, teachers must change their inherent traditional teaching thinking and actively improve their information literacy in order to be qualified for SPOC teaching. Teachers should continue to study and research the characteristics and key points of blended courses, and actively explore the "integration method" of blended teaching methods. Online learning is the foundation of offline classroom teaching, and offline classroom teaching is the extension and expansion of online learning.

In addition, teachers should train college students to adapt to the mixed teaching model during the teaching process. Teaching activities that can be completed online are placed online, and offline classrooms are mainly used for communication and interaction. Basic knowledge and skills mainly rely on learners' online self-learning, abstract and misunderstood concepts, etc., are arranged in offline classrooms. Such an arrangement and distribution are conducive to students' repeated attendance, review and review, and consolidation of many times. At the same time, it can cultivate knowledge of inquiry and discussion, and cultivate learners' ability to analyze and solve problems.

### ***6.2. Curriculum: Refining course resources and ensuring course quality***

High-quality curriculum resources are the key to developing SPOC blended classroom teaching. The high-quality free resources on the Internet and the teachers' independent and original resources must conform to the characteristics of online learners and highlight the characteristics of independent learning, strengthen the association, organization and management of online course content. The content of online knowledge points should be miniaturized, and the course design should not be too long. This is because one of the important features of online learning is the fragmentation of time. Teaching videos that are too long are not easy to attract students' attention. The video duration should be set reasonably; at the same time, the teaching navigation structure should be clear, so that students can easily find what they need. . Online courses generally focus on chapter knowledge points, adding guide sheets, tests, expanding knowledge, games, practical activities, etc. to specific chapters of the course, and solving problems in the learning process through interaction with peers or instructors.

### ***6.3. Classroom interaction: construct teaching interaction and realize deep learning***

The design of online teaching curriculum content should add interactive elements and pay attention to the role of online interaction. Such as embedding games, fun tests, exploratory question discussion, and expansive question discussion in instructional videos. In offline classroom face-to-face teaching, the functions of the online teaching platform, such as call-in, real-time testing, brainstorming, answering, polling questionnaires, group duels, etc., help assist the development of classroom teaching, mobilize students' enthusiasm for participating in the classroom, and encourage them to actively participate in the discussion, communication, and speculation of the content of the course to stimulate students' sense of participation and sense of accomplishment.

### ***6.4. Improve the soft environment of courses and improve the teaching supervision mechanism***

The SPOC online learning platform is the most basic and indispensable part of the curriculum environment. In the effective teaching process of SPOC using mature online teaching platforms such as Chaoxing Xuetong and Lanmoyun Class, the background automatically records learning behaviors, and teaching administrators can analyze classroom effects in real time to achieve personalized diagnosis and evaluation of the teaching process.

At the same time, further improve the supervision mechanism of the learning process. Before class, during class, and after class, we should keep a record of students' classroom learning interaction in an all-round way, and grasp the overall learning situation of students in real time, so as to provide learners with targeted guidance. For example, the learner's test scores, homework and test conditions can be recorded in the online learning platform.

Continuously encourage students to carry out independent learning online to improve the quality of self-learning. At the same time, the SPOC platform is used to track and collect learners' learning behaviors to obtain a comprehensive, objective and true evaluation of the learning situation. For example, the instructor can analyze learners' preferred learning methods from the three aspects of resource operation sharing, online chat and forum communication in the online learning platform. For example, "resource views", "resource uploads", "resource downloads", "forum visits", and "posts" can all reflect learners' independent learning and independent thinking.

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