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The Relationship Between SPOC Platform, Flipped Teaching Mode and Experiential Learning——Discussion Based on PST Framework

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Abstract: *With the development of technology, the forms of higher education are gradually diversified. The transformation of the focus of education platform and the expansion of education space have put forward new requirements for educators to research and design better teaching methods and improve students' learning experience. In view of the lack of research on this topic in the current academic websites, this paper analyzes the concepts of SPOC platform, flipped mixed classroom and experiential learning, and discusses the interaction between the three according to their respective characteristics. Finally, it uses the PST framework to stereoscopically think about the close relationship between the three, and proposes to use the problem oriented framework to spiral think about the relationship between the three, in the constant questioning, verification and reflection, It provides a theoretical basis for the diversified development of higher education.*

Keywords: *SPOC, flipped classroom, online and offline, experiential learning, PST*

Introduction

With the support of 5G network and intelligent mobile terminals, online education in China is booming, especially after the Coivid-19 in 2020, online education has become an indispensable part of daily education. Many scholars have studied this and put forward their own views. After searching the largest academic retrieval website in China, Knowledgeable, they found that most of the research on online SPOC platform focused on the construction of hybrid education model Online platform technology, online education evaluation and other aspects are relatively broad in scope, but research on how the mixed education model of SPOC platform can better improve students' learning achievements and promote the compatible development of education breadth and depth is relatively scarce. The PST framework is relatively advanced in linking education, space and technology, which solves the relationship between SPOC platform, online and offline education space and education methods, and provides theoretical reference for the further development of online education.

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Literature review

SPOC

SPOC concept

The development of MOOC has expanded the development space in the field of higher education, which has attracted the attention and research of many educational scholars. With the mutual development of relevant theories and practices, MOOC has also brought three aspects of pressure to the education sector: 1. It hinders the realization of the goal of improving personalized teaching; 2. Obstruct the realization of the intrinsic educational value of technology itself; 3. Affect the essential function of university education (Jiang Shuhui, 2014). Based on MOOC, the further proposed SPOC concept, which is famous for its small-scale and restrictive access, can significantly improve the learning effect of MOOC, enhance students' learning participation and interaction, give students personalized, complete and in-depth learning experience, and also help teachers achieve personalized teaching goals and improve the quality of teaching in schools.

Comparison between SPOC and MOOC

As an advanced product of MOOC, SPOC is mainly characterized by its openness, class form, class completion rate, learning cost and evaluation form, which affect the role, advantages and disadvantages of two different curriculum forms in higher education (Table 1).

	MOOC	SPOC
Openness	Fully open	Restricted application
Number of students	unlimited	small-scale
Learning form	Online learning, online learning community	Mixed learning, flipped classroom
Course completion rate	Low	High
Learning costs	Low (almost free)	High (tuition, fees, etc.)
Evaluation form	Online feedback test, homework, peer review	In addition to online evaluation, there are classroom interactions and tests
Advantages	1. Schools: improve the international brand and image of the curriculum, and may get fame and wealth feedback when the number of elective students is large. 2. Students: suitable for students with strong self-study motivation, and obtain learning results in the most economical way	1. School: relatively low cost compared with MOOC, focusing on improving the quality of school courses 2. Teachers: learning effectiveness oriented, teaching resources focused, improving teachers' teaching design and students' learning effectiveness
Disadvantages	1. High cost (manpower and capital) 2. The input cost may be disproportionate to the benefit obtained 3. The operation and maintenance of the platform and mechanism are relatively complex	1. Relatively low popularity compared with MOOC 2. As far as the educational objectives of colleges and universities are concerned, SPOC has almost no disadvantage compared with MOOC

Table 1 Comparison between SPOC and MOOC

Flipped Classroom

The traditional teaching process usually includes two stages: knowledge impartation and knowledge internalization. Knowledge impartation is accomplished through teachers' teaching in the classroom, and knowledge

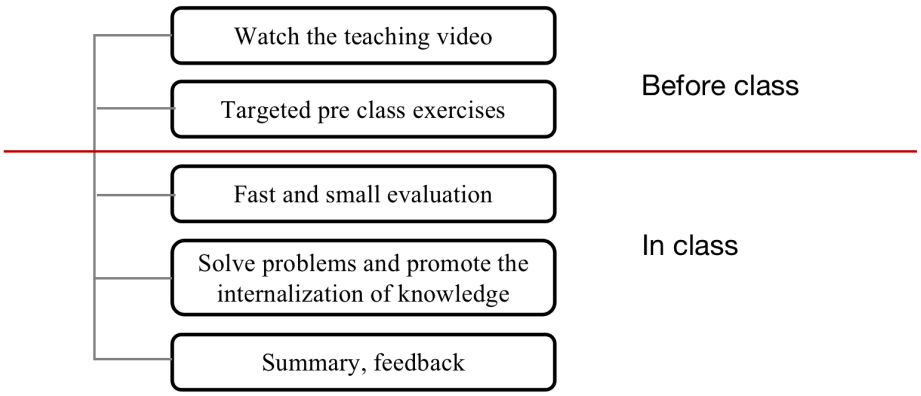
internalization often requires students to complete it in the form of homework, operation or practice after class. In the flipped classroom (widely used in SPOC courses), this form has been subverted. Knowledge transfer is completed before class with the aid of educational information technology, and knowledge internalization is completed in the classroom with the help of teachers and discussion with classmates, thus forming a flipped classroom. With the reversal of the teaching process, the content and form of each link in the classroom learning process have also changed. (Table 2)

	Traditional classroom	Flip class
Teachers	Knowledge imparter and classroom manager	Learning instructor and facilitator
Students	Passive receiver	Active researcher
Teaching Form	Classroom explanation+homework	Pre class learning+classroom inquiry
Course content	Knowledge explanation and teaching	Question exploration
Technology	Content display	Tools for independent learning, communication and reflection, and collaborative discussion
Evaluation	Traditional paper testing	Multi angle and multi mode

Table 2 Comparison of elements in traditional classroom and flipped classroom

Professor Robert Talbert, majoring in mathematics and computational science at Franklin College in the United States, summarized the implementation structure model of flipped classroom after a large number of classroom applications and assessments (Figure 1). This model briefly describes the main links in the implementation of the flipped classroom. However, Professor Robert Talbert's practical research subjects tend to focus on the operational courses of science, and the liberal arts courses need to be further improved.

Figure 1 Robert Talbert's Flipped Classroom Structure Chart



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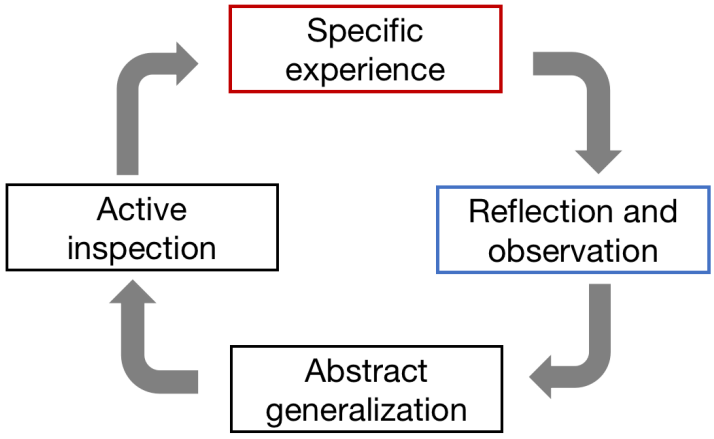
Experiential learning

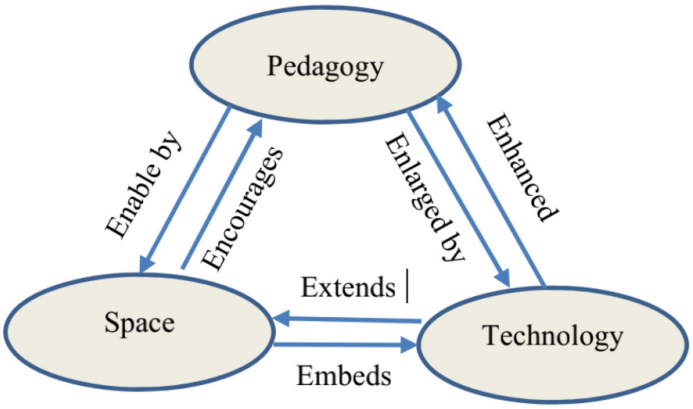
Experiential learning is a holistic philosophy of education based on the core role of personal life experience, education and work in their learning and understanding of new knowledge (Fry, Ketteridge&Marshall, 2009; Kolb&Kolb, 2009). It defines learning as a continuous process. Kolb (1984) described this process as a four stage cycle, starting with concrete experience, followed by reflective observation, abstract conceptualization and positive experiments. This continuous process makes learning "through a process, knowledge is generated through the transformation of experience" (Kolb, 1984, 41). In practice, the learning cycle is more like a spiral learning and re conceptualization, and each spiral will deepen students' understanding (Kolb&Fry, 1975). Experiential learning can be used as a teaching method to support personalized learning methods in the context of higher education. This method usually attaches importance to students' learning in a variety of campus based, project-based, work integration and community contexts.

Figure 2 Kolb experiential learning spiral framework (Kolb, 1984)



PST framework

Figure 3 Pedagogy-Space-Technology PST framework



As shown in Figure 3, the PST framework was proposed by Professor David Radcliffe of The University of Queensland in Australia and others in 2008 in the implementation of The Next Generation Learning Spaces

(NGLS) project, which means Pedagogy-Space-Technology. The project aims to help colleges and universities create new learning spaces and encourage students to devote more to learning, Get the best learning results. This framework is a guiding framework based on the question driven approach, literature research and innovative practices of countries around the world on learning space.

Focus	Conception and Design	ImplementationandOperation
Overall	What is the goal of the new learning space?	What should the new learning space look like?
Pedagogy	What kind of teaching do we want to carry out? How do we want students to learn? What is the reason for this?	What changes can be observed in teaching and learning? What evidence do you have?
Space	What aspects of space design, table and chair placement, and wall layout will affect the teaching (learning) mode? How did this impact come about?	What is the role of space design and facility layout' What didn't work? Why?
Technology	How to effectively use technology to improve space design, in order to give full play to the function of teaching and learning?	What technologies are most effective in strengthening teaching and learning? Why?

Table 3 PST framework design and evaluation

Discussion

Advantages of SPOC in Distributed Flipped Classroom

Small scale specific population, in line with the majors division of universities

At present, SPOC flipped classroom is often used in professional teaching in universities in China. Therefore, students who enter the unified curriculum have a relatively unified learning foundation and professional achievements, which helps to provide more targeted and stronger professional support.

The development of educational technology gradually reduces the difficulty of blended learning

The SPOC platform contains rich all media learning resources, and provides students with various forms of pre-class learning by means of videos, PPT files, web links, etc; The SPOC platform also has social media to facilitate students' sharing and discussion before/after class; At the same time, it also has a perfect evaluation system, which can provide learners with credit certification and course certificates.

Redefine the roles of teachers and students to improve the effect of blended learning

In the SPOC flipped classroom, the role of teachers is the curriculum setup, guide and evaluator, while students are important participants, sharers and questioners. The roles of teachers and students are gradually equal, which is more conducive to the scientific and objective dissemination and discussion of knowledge and the improvement of teaching quality.

Interaction between Flip SPOC Mode and Experiential Learning

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Flip SPOC mode provides an ubiquitous experiential learning environment

Online autonomous learning has the problem of insufficient interaction and poor communication between teachers and students, and between students and students. From the perspective of education theory, the most effective education method is face-to-face teaching between teachers and students. The pronunciation, intonation, body language, etc. are very good for refreshing the learning experience. However, face-to-face teaching has limited knowledge content, and asynchronous learning is inevitable in the information age. Therefore, the flipped SPOC mode combines online "ubiquitous" autonomous learning before class with face-to-face "experiential" communication in offline classes to form an "experiential ubiquitous learning environment", which includes four aspects: segment based learning, mobile learning, task-based learning and scenario based semester.

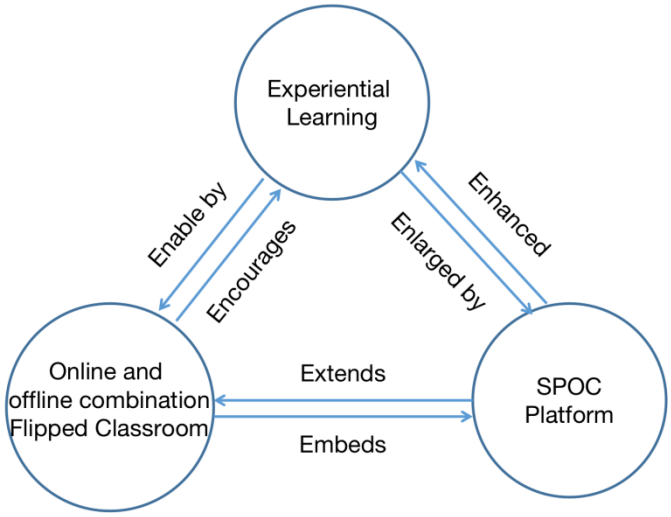
Upgrading experiential learning style Flipping SPOC teaching mode

At present, most of the available research on flipped SPOC teaching mode focuses on how to more reasonably arrange the distribution of online and offline curriculum content, and how to efficiently link offline and online teaching content; Another part of the research focuses on the evaluation system of online teaching, while less academic research focuses on improving the experience and student satisfaction of flipped SPOC classroom. The four step development cycle of the experiential learning model provides a good solution for this topic, allowing teachers to pay more attention to students' learning process and learning gains in the course of curriculum setting, and also provides a powerful reference standard for the evaluation of flipped SPOC courses, making the flipped SPOC model more meaningful.

Conclusion

Based on the above discussion on the relationship between the three, we can use the PST framework to look at experiential learning (Pedagogy), online and offline flipped classroom (Space) and SPOC platform technology (Technology) (Figure 4), and consider the relationship of the three as a whole to ensure that all designs are based on enabling students to enhance their learning experience and obtain the best learning outcome. PST, a problem driven framework, can enable practitioners to constantly ask for reasons, rationally think about finding evidence to prove the effectiveness of the results, and promote the stable development of diversified education adapted to modern higher education.

Figure 4 The Framework of PST about Experiential Learning, Flipped Classroom & SPOC



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