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Research on the Current Situation of Hybrid Learning for Domestic College Students Based on SPOC Background

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Abstract: With the development of the promotion of information technology, teaching methods are becoming diversified, and traditional teaching methods are being drastically impacted. MOOC plays an important role during this process. However, as its application expands, problems and controversies also arise. In order to make up the deficiencies that MOOC brings to education field, the concept of Small Private Online Course (SPOC) comes up. The advantages and potentials of SPOC are understood through the support of SPOC to the teaching mode, the optimization of personalized learning, the degree of online participation, and diversified presentation. At the same time for SPOC applied to hybrid learning, it can help teachers return to classrooms, focus on efficient teaching. In this work, through the study of the current situation of SPOC in China combined with the case study analysis of hybrid learning, the study hopes to further promote the popularity of SPOC and provide some references to the outlook for its future development underlining hybrid learning environment.

Keywords: hybrid learning, SPOC, Constructivism

1. Introduction

A research report released by the U.S. Department of Education in 2009 pointed out that hybrid learning is the most effective way of learning compared with traditional face-to-face classroom teaching and distance online learning [1]. The concept of hybrid learning has appeared in the field of education for many years, with the development of educational technology and learning theory, hybrid learning is generally defined as the combination of "face-to-face teaching" and "online learning", and from the traditional classroom gradually evolved into a flipped classroom and other teaching modes. A variety of teaching methods have evolved from the traditional classroom to the flipped classroom and so on. However, its deeper level includes the mixing of teaching methods based on different learning theories (e.g., constructivism, behaviorism and cognitivism), the mixing of teacher dominate activities and student as the main body of participation, the mixing of classroom teaching and different learning environments of online learning, the mixing of different teaching media, the mixing of classroom lectures and virtual classrooms or communities, etc. [2]. Thus hybrid learning makes learning itself more convenient and improves learning efficiency.

As a very influential form of online teaching in China, MOOC has gradually revealed its drawbacks in recent years. In the context of the information age, the static, traditional dogmatic teaching method has been unable to meet the demand of college students, but through the analysis of

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domestic and foreign related literature and platform open data integration, it is found that MOOC have a low rate of course completion in China's open education, difficult to achieve personalized learning, using a single method of teaching, unclear assessment and certification methods and the lack of humanism, emotional values training and other problems [3].In 2013, Prof. Fox first proposed the concept of SPOC, which means "Small Private Online Course". Small and Private correspond to Massive and Open in MOOC's concept respectively, and "Small" means that the size of students is small, usually between dozens and hundreds, and "Private" means that restrictive place are set for student applications, and only qualified students can be included in the SPOC, so there is a kind of privacy. There are two main teaching method in SPOC. One is based on hybrid learning that combines classroom education and online teaching. Another one is that selects a small number of people that they match the needs of the program from the global applicants to participate the SPOC. Since this paper explores the situation of hybrid learning in China, it focuses on the first SPOC courses. This teaching method is within a university classroom, where the online part of the teaching is assigned by the teacher to learn videos, often using MOOC lectures, which are then studied by the students on their own. Questions during the self-learning process, as well as other tasks assigned by the teacher, are then addressed during face-to-face teaching.

In this paper, writer wants to show more about the current situation of hybrid learning in China by exploring the advantages that the emerging SPOC based on hybrid learning environment. The article will first explain how hybrid learning has caused reflection on constructivism, and then will start with the emergence of SPOC, and by comparing the differences between SPOC and MOOC, as well as analyzing the application cases of SPOC to explore how it can be carried out more effectively to help build a course more suitable for learners.

2. Constructivism underlining hybrid learning

2.1. Reflection on constructivism

With the development of cognitivism, people began to believe that learning is a cognitive activity that occurs within the mind and is actively organized by individual, playing the main role of consciousness in the cognitive process. At this stage, teachers design courses include cognitive and metacognitive activities to help students understand their own learning. Self-regulation allows them to more effectively direct their cognitive activity by voluntarily setting learning goals, identifying methods for achieving them, actively pursuing those methods, and tracking progress toward the goals [4]. However the courses are designed to be "teacher-center" and students just rely on teachers' arrangements. Cognitivism was later further developed with the emergence of an important branch, the constructivist theory, which emphasized that meaning does not and cannot exist independently in the individual cognition. And people's knowledge relies on the individual's interpretation of their past experience. In the 20th century, the fragmented and unsystematic constructivism that had long existed was supported and guided by the growing development of educational technology. It is multimedia and network technology for the ideal learning environment advocated by constructivism provides a strong physical support, thus constructivism can be realized, so that the theory of constructivism out of the psychologist's "ivory tower". Therefor constructivism began to enter the classroom at all levels and types of schools, to become a support for multimedia and network teaching as well as "the integration of information technology and subject curriculum" as an important theoretical basis [5].However, Western constructivism has gradually gone to the other extreme in order to establish a clear boundary with cognitivism. First of all, contrary to the idea that education revolves around the teacher in the traditional classroom, Western constructivism emphasizes ignores the leading role of the teacher and perceive students as the main body of education. Students are freer in the classroom and have many rights, while teachers tend to let students go. This led teacher, disconnected from

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teaching activities and do their own thing on the side. Although domestic classes have not blindly copied this "student-centered" educational modes during the learning of constructivism in China, the situation of teachers' invisibility in the classroom has also appeared in the practical application.

Moreover, the problem emerged when some constructivist scholars explicitly declared that constructivism is subjective. According to the scholar Jonathan, reality is nothing more than what is in people's minds, it is the learner who constructs it or at least interprets it in accordance with his or her own experience; everyone's world is constructed by the learner himself or herself and there is no question of whose world is more real than anyone else's; people's minds are only a tool whose basic role is to interpret things and events, and these interpretations constitute the different knowledge category of individual's respective cognition[5,6]. The overemphasis on the learner's active construction of internal mental during the learning process neglect the role of the objective environment, allowing constructivist move to the direction that opposed to objectivism. As they view the point that the interaction between learners and environments is to generate subjective content from individual experience, so the teacher can not help learners to construct subjective cognition and thus loses the dominant position in the classroom. However in cognitivist theory, knowledge is the product of the interaction between external stimuli and internal mental processes. External stimuli refer to the content that objectively exist outside people's mind,which can be taught by teachers, afterwards the cognitive construction of internal mental processes requires to be based on their own past experiences, personal interests and hobbies, etc. Learning actually involves skills for reconstructing memories based on past experiences and cues in the present environment. experiences and cues in the present environment, rather than reproducing copies of an experience [4]. Pre-existing knowledge structures can play a role in the process of reconstructing memories. In contrary, according to Jonathan's interpretation of constructivism, learning is entirely a matter of the individual's understanding of objective things. This shows that the role of external stimuli in learning is still affirmed in cognitivism, while radical constructivism ignores the objectivity, commonality, logic and systematicity of knowledge. He Kexiang believes that "internal mental processing and the original cognitive structure is certainly important and varies from person to person, but existence determines consciousness, after all, external stimuli is the source of knowledge, abandoning objective world and only constructing subjective cognition will fall into the agnosticism pit of idealism."

Therefore, the reflection on constructivism is mainly two points, one is the combination of the student's main role and the teacher's dominant position during education, the other is to deny the radical constructivism, affirm the objective existence of knowledge. It avoids people building constructivism based on the purely subjectivist such extreme ideas, and maintain teachers' role in the classroom. So-call hybrid leaning play a positive role to provide self-learning opportunity to students. Then, based on the reflection on constructivism, hybrid learning should place more emphasis on the teacher's identity as an organizer and leader in the classroom, while viewing students as the main body of the education. In the following, it will start from the background concepts of SPOC and discuss how SPOC based on hybrid learning can help teacher becoming a success organizer and leader in the classroom, and help students to improve their learning efficiency.

2.2. Combination of SPOC and Constructivism

Traditional online teaching MOOC has a great influence on SPOC.When the wave of MOOC swept in, there were many problems. But teachers acknowledge that some excellent MOOC design still has high value for students. Initially, SPOC was proposed to bring out the potential of MOOC better, so that MOOC resources can be applied to a single school or even a class such as a small-scale user group [7]. It can be said that SPOC has inherited, improved and developed MOOC. SPOC, in a word, uses MOOC resources for small-scale, population-specific solutions.

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SPOC facilitates the reconstruction work of teachers' dominant roles and improves the effectiveness of hybrid learning. Armando Fox survey found that teachers want to integrate SPOC platform course materials into their physical classrooms to improve the quality of in-school teaching, which is a contribution of constructivism to knowledge and learning [8]. Relying on the strong resource background of the MOOC, platform guarantees the richness of SPOC course content. Meantime, the mature social media reduces the burden of teachers' evaluation and management. Teachers can better invest in the design and teaching of the course. Then teacher's leading role to play properly, help design the couse that around the learner, thus reflecting the student's subjective position. In general, the theoretical foundations of hybrid learning include constructivist learning theory, humanistic learning theory, educational communication theory, activity theory, the theory of the virtual and real, situational cognition theory, etc [9]. So in Mr. He Kexiang's opinion, the subsequent hybrid learning development cannot only be guided on a single constructivism to deepen the reform of education.

3. Discussion

3.1. Advantage of SPOC

SPOC can better utilize advantages of MOOC, which effectively make up for the shortcomings of MOOC and the deficiencies of traditional teaching by designing and combine excellent MOOCs resources and traditional classes. The basic value orientation of SPOC is: "Designing and utilizing excellent MOOCs resources, changing or reorganizing the school teaching process, and promoting hybrid learning and participatory learning, and solidly improve the quality of learning and teaching [10]" Therefore, the following will mainly analyze in which aspects SPOC exceeds MOOC.

3.2. Comparison between SPOC and MOOC

3.2.1. For teachers

In MOOC, there is almost no real-time interaction between teachers and students. Teachers' main assignment is to produce educational videos and assign homework to students. Teachers seldom communicate with students. Therefore, teachers actually do not know the students' learning progress and learning effect. Because a MOOC will have a large number of students. So the teacher cannot pay attention to each student and they don’t have such energy to carry out targeted teaching. Online teaching form of MOOC create obstacle for teachers to restrain the behavior of the students. Teacher who lose their right of arrangement also lose the dominant position in the classroom. However, SPOC allows teachers to return to the campus, return to the small online classroom, and become the real course controller [8].

First of all, starting with an important step of teaching that teacher need create a situation to help student learning. The situation refers to the environment to support students to carry out exploration and learning, this situation can be either a real entity of the learning environment, or with the help of information technology form a virtual environment [11]. Consider with that MOOC is only available in the form of online teaching, so it limited the creativity during teacher design the situation. For instance, the video watched before the class is a kind of situation to help student construct knowledge. Some subject such as chemistry are more effective when teachers design situation in the lab than in an online course. Since MOOC has no size limitation, the complexity of students’ backgrounds aggravates teachers’ pressure. The prerequisites that teachers need to consider when designing the teaching context have increased. To ensure that more students can engage in positive knowledge construction, they need to refer to more factors. But even they do their best to design the online course, teachers cannot know whether the course can help students make meaning construction or not.

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Because they don’t have interaction to know their students in time. Secondly, when choosing learning strategies, they need to consider students' past experience, which is students' original cognitive structure, so teachers need to correct their teaching to meet the needs of the students. Moreover, in addition to the large size of students number, MOOC has no prerequisites for their applicant, so there is no standard for teachers to refer to when designing the course. In order to mobilize students' interest in learning, help construct new content with past experience, and provide students with knowledge connections, understand student’s level and reconstruct classes is necessary for teachers.

In the type of SPOC, teachers already know the overall level of the class because students have been tested before get in the course. Therefore, teachers can find suitable learning materials before the class, and integrate online and physical learning resources. SPOC has both synchronous and asynchronous modes, synchronous SPOC is to completely follow the semester of a MOOC source course that is in progress, and the teacher can only supplement the content, but can not modify the original content of the source course; asynchronous SPOC is to copy the semester of a source course that has already been completed, and the teacher can delete the original content of the MOOC, and can also modify the original content of the MOOC. content of the MOOC and can also add content [12]. In both SPOCs, teachers apply MOOC resources in different degrees, but both set up their classes based on their students’ level. Thus, the teacher becomes a scaffold for students to easily access learning resources, utilize them, process information, and apply knowledge to real-world situations[13]. In addition to this, SPOC has offline courses that help teachers to understand the learning effect of students in time and facilitate the adjustment of their teaching strategies at any time. For example, they learn whether students complete the pre-class video assignment through communication and discussion during the face-to-face class. This interactive behavior not only allows teachers to reflect on their own teaching process immediately, but also helps teachers to create a learning environment that promotes students' to think and learn, which can help students better construct knowledge. This kind of hybrid learning based on SPOC innovates the teaching methods, turning MOOC into teaching resources that teachers can apply at will. Therefore teachers can become the organizer of course resources and can put more energy on personalized teaching for students. Overall, teachers are free to set and regulate the progress, pace and grading system of the course according to their preferences and students' needs [14].

3.2.2. For students

One of the most criticized aspects of MOOCs is the low completion rate of learners. Which means, a MOOC will have many registrants, but not as much as those participants will persist in completing the learning tasks. Even after completing the learning content, the certification of MOOC credits is problematic because the online format and course design of many MOOCs do not ensure that students actually learn the knowledge and build new cognitive structure.

The first reason is that MOOCs have no enrollment requirements while SPOCs are restricted applications. Student enrollment require can search out some students who unable to finish course, which is conducive to divide students in different level. According to their ability, students can sign up SPOC that more suitable for them. At the same time, it differentiate student s with different groups based on their learning attitudes. It has a certain disciplinary effect that helps to solve the problem of high dropout rate and low completion rate of MOOC students[15]. Prerequisites likes a kind of filter to keep students who are truly capable and interested in this course. When the number of places in SPOC is limited, students will become more eager to it, which will increase their motivation to learn. The interaction between niche groups is higher and they have strong "stickiness", which is beneficial to increasing the completion rate[10]. Students will more cherish the opportunity to participate in the course, thus they won’t quit the course for any simple reason.

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Furthermore, online learning method of MOOC totally relies on the network to communicate. Although platform set up discussion boards and student forums, the interaction about the course are hardly show up. First, because of the large student population, it is difficult to interact between teachers and students. Students' personal question cannot be solved. Moreover, due to the large size of class, management problem affect students' enthusiasm of communication. Atmosphere of communication online between students and students usually stray from the courses' topic. Without any interaction and only rely on students' independent learning is also one of the reasons for the low completion rate of the course. Because students lack the experience of actively constructing knowledge. Constructivism emphasizes the fact that learning is a social construction that needs to emerge from people's collaborative activities and interactions. Based on this sociocultural theoretical perspective, van de Pol, Mercer, and Volman point out that learning is often guided by others, especially by more knowledgeable people and the most common example is their teacher[16].By reducing the size of the course and selecting a small group of suitable students from a large number of applicants, SPOC ensures that students possess a more similar knowledge background and academic ability, thus contributing to more targeted and stronger professional support[8]. Teachers, as organizers of the teaching process, intentionally provide students with further educational goals after they get know with students' level of knowledge. Vygotsky's sociocultural theory introduced the concept of the zone of proximal development, which refers to the space between a learner completing a task independently and under the guidance of someone with more knowledge[17,18]. SPOC can better utilizes the zone of proximal development and provides students with proper scaffolding to stimulate their potential. What's more, offline SPOC classes in universities provide students with a collaborative learning environment. They can feel free to discuss any problem with their classmate and teachers. Students gradually form new perceptions and achieve a deeper understanding of knowledge by communicating and sharing of knowledge, inspiring , evaluating and correcting each other [19].

4. SPOC Case and Current Situation Analysis

4.1. Case Study

"Cloud Computing and Software Engineering" is one of the first pilot courses in Tsinghua University using SPOC hybrid learning method[7]. Before they start each lesson, students watch the original edition of English teaching. After they watched those videos, teachers and students discuss their confusion and share difficult understanding of the course. Later the teacher will assign homework and student can submit it online. The course based on group work methods, students will simulate real application development process. Finally, the course ask different students to report their learning result every two weeks. After using SPOC class, the average grade of students in the experimental computer science class at Tsinghua University is as basically the same as that of Berkeley University; nearly 70% of the students have a positive attitude towards their team work[7].The SPOC hybrid learning method makes the lesson become more profound, and the students are willing to devote more time to this class. Therefore, this learning method helps to optimize the teaching effect and changes the traditional way of learning of the students. Meanwhile, Tsinghua University has launched courses such as "Physics" on the SPOC platform named "ZhiXueYuan". They cooperated with China University of Geosciences, Southwest Jiaotong University and other universities to carry out course practice.

4.2. Analysis of the current situation

Resent years, research on SPOC mostly focuses on two aspects: How to design SPOC class and How to practice it. There are many cases of combining SPOC with specific disciplines to carry out hybrid

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learning. Those SPOC course design consistent with the characteristics of SPOC courses and the practical demand of university reform. Combining the digital resource platform with the SPOC classroom such as “The C language programming course” and “Advance English”, have a relatively complete teaching method design. For instance, combining the virtual community with the real classroom, the teacher encourages collaborative learning by creating online and offline English learning situations. Students and teachers jointly completes the construction of generative resources, thereby to help learners actively complete the construction of English knowledge[20]. The National Medium and Long-Term Education Reform and Development Plan (2010-2020) puts forward the tasks including strengthening the development and application of high-quality educational resources, promoting the popularization and sharing of high-quality educational resources, strengthening the construction of online learning resource system, innovating the online teaching method, carrying out high-quality and high-level distance education, and running a good open university[3]. The advantages of SPOC are exactly meet the requirements of these tasks. As university introduce those courses into the campus can lead to the development of learning in this information age. The introduction of this course into the campus can lead to changes in education in the information age, help teachers find their own position in the classroom, improve the efficiency of students' independent learning, develop more teaching resources, build personalized learning networks, and carry out higher quality teaching.

5. Prospect of SPOC Courses

Compared with MOOC, SPOC has more advantages to achieve educational goal, but it still lacks exposure in China. The domestic practice of SPOC classroom is still in the exploratory stage. So there are many places that can be improved in further development. Zhang Qi et al. believe that China's E-Learning achievement for supporting teaching and learning, promoting personalized learning and achieving higher-order learning goals still exists a large gap. Learning resources and e-learning activities have not been significantly innovated, and learning motivation and self-control are at a low level[21]. To solve this problem, it is necessary to strengthen the supervision of students' learning process. Online learning exist several problems such as be lazy and plagiarism, which need to be strengthen management by cooperating with offline process, increasing exam, improving group assistance and other ways. A pilot at Tsinghua University found that the degree of students' participation in discussions can be used as a direct evidence for judging whether students watched the video or not[7]. It shows that offline supervision functions are effective. Secondly, by enhancing the interactive behavior during the SPOC classroom, helping students to form their own knowledge constructs. Therefore they are more likely to engage in profound learning. Individual cognitive structure help them reflect their knowledge process and complete learning goals. Moreover, interaction between teachers and students helps to achieve targeted teaching and then the teacher can understand more about student which continue help them promoting targeted teaching design. At the same time, SPOC should create more real situations and meaningful learning contexts for students. Built in real and complex problematic situations, the restricted application mechanism of SPOC helps to teaching in accordance of students’ aptitude. The high-quality personalized and localized setting effectively also promotes the construction of knowledge in real situations, and the transfer of application and creation in similar situations[22]. With the promotion of SPOC, students' lake of learning motivation, personalized learning and other issues can be reduced. As the result, the subsequent cultivation of students' innovative thinking, problem solving ability, critical thinking and other advanced thinking in the hybrid learning method based on SPOC can be gradually improved. The Ten-Year Development Plan for the Informatization of Education (2011-2020) points out that the development of information of education should be guided by the innovation of educational concepts. The construction of high-quality educational resources and informational learning

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environments should be the basis, and the innovation of learning styles and educational method should be the focus[23]. Assistint with the existing online teaching resources, China also needs to train teachers who adept at using technology. Under the environment of digital educational transformation, China pay more attention to the digital transformation of the teacher, emphasizing the use of the Internet and artificial intelligence technology to help teachers' professional development model innovation and boost the construction of the teaching force[24]. Therefore the promotion of SPOC applied to hybrid learning in the environment of the Internet is just around the corner.

6. Conclusion

As a continuity innovation of classroom teaching method, hybrid learning can provide students with services far beyond the existing educational system, and can also provide a broader space for the development of teachers' teaching knowledge[25]. Through this study, we can know that SPOC not just innovated on theoretical concept. It perfect teaching method of hybrid learning established based on the huge MOOC resources. Students and teachers still need to get use with each other in this method, but they respectively find a balance for their role in the classroom. Fox said SPOCs serve as supplemental material for students on campus, who have different deadlines and grading strategies. What is certain is that SPOCs can encourage campus student and faculty to engage in activities, which is our primary goal[10]. SPOC classroom is a new attempt made after deep thinking about the shortcomings of MOOC and traditional classroom. Recently, there are still many aspects that can be designed and improved for the practice of SPOC in China. Those innovations such as combining the flipped classroom and the project teaching method are still in the exploratory stage. At the same time, they are also facing a lot of problems. Through the advantages of SPOC, this study hopes to promote hybrid learning using in universities, and to improve the quality and efficiency of teachers' teaching and students' learning.

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