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Research on the Application of SPOC-based College Physical Education Curriculum Teaching

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Abstract: This research is based on the theoretical knowledge of SPOC teaching model. Through the online education platform of UMOOC with the daily offline physical education classroom teaching arrangement, it can break the conventional physical education classroom teaching organization form. By combining the traditional offline classroom teaching mode with the online teaching mode of the online education platform, learners will not affected or restricted by space or time; the research aims to collect research information through interview and observation, questionnaire survey, and to demonstrate the research content through logical analysis.

1. Introduction

In the context of "Internet plus" education, for modern education, the arrival of the 5G era can more easily show the content that was not easy to show in the past to learners in a high-speed and convenient manner, so as to help learners understand and master knowledge in an all-round way [1, 2]. This study is based on the theoretical system of SPOC teaching model. Through the online education platform of UMOOC and with the daily offline physical education classroom teaching arrangement, it breaks the conventional physical education classroom teaching organization form, By combining the traditional offline classroom teaching mode with the online teaching mode of the online education platform, the educated objects are not affected or restricted by space or time [3]; in addition, the integration of modern information technology enables teachers to supervise and guide learners in a more vivid way, maximizing the leading role of teachers and students, fully mobilizing the enthusiasm and initiative of students in learning, strengthening the communication and interaction between teachers and students, and improving teaching efficiency and teaching effect [4]. During the construction and implementation of the course learning mode, it will be divided into three teaching stages, namely, before class, during class and after class, which enable teachers to make reasonable overall arrangement according to the teaching focus of each stage [5].

2. Construction of Online and Offline Hybrid Learning Mode of SPOC

2.1. Before Class

Before class, teachers upload the learning resources to the online education platform of UMOOC of Shandong Jiaotong University, release the learning tasks in the learning group, and remind students to prepare for class. This link mainly focuses on students' active self-study and enables teachers to guide students to learn independently by arranging teaching tasks purposefully.

2.2. In Class

The in-class part refers to offline classroom teaching in outdoor sports venues. According to the teaching principle of "teaching" and "learning" subjectivity "of students, the instructor organizes and guides students to carry out teaching activities mainly by offline teaching methods on the basis of independent learning and exploration before class. The instructor also adds learning and discussion links in classroom teaching, namely offline" classroom teaching+learning and discussion ".

2.3. After Class

After class, teachers use the online education platform of Shandong Jiaotong University UMOOC to release the after-school exercise tasks and learning content to track the mastery of classroom teaching content and motor skill learning. Students can interact with teachers in various ways through WeChat learning groups, QQ learning groups or UMOOC learning platform, which enable them to use WeChat official account to push high-quality teaching resources, and achieve diversified learning methods through diversified teaching methods. As shown in Figure 1:

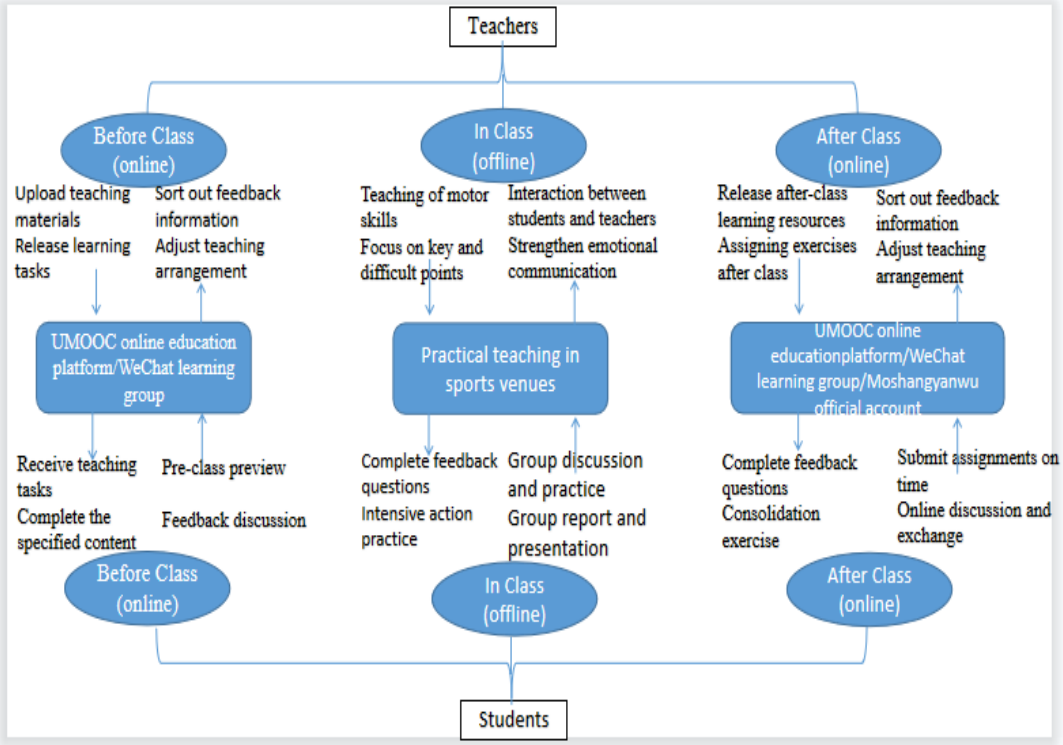

Figure 1: Construction of SPOC blended learning mode [6].

3. SPOC Mode "College Physical Education" Course Content

3.1. Course Introduction

This course is based on the SPOC hybrid teaching mode, takes the online education platform of UMOOC as the online learning platform and supplemented by WeChat learning group and WeChat official account. By combining the daily teaching arrangement of offline physical education courses to create a student-centered online and offline hybrid teaching mode, educators can develop the supporting course teaching content, design the corresponding teaching process, and improve a set of effective teaching evaluation methods. During the construction and implementation of the course learning mode, it will be divided into three teaching stages, namely, before class, during class and after class, which help teachers to make reasonable overall arrangement according to the teaching focus of each stage [7-10].

3.2. Learning Resource

Using information technology means such as EV screen recording, video recorder recording, etc., teachers produce course teaching resources and online free and open MOOC resources as course learning resources, including basic theoretical knowledge, basic technical actions, etc., and produce PPT courseware related to its content.

3.3. Learning Activities

Based on the theoretical basis of the SPOC teaching model and the traditional offline classroom learning activities, some other activities are added, including teachers' guidance (online guide students to complete independent learning content), pre-class preview (MOOC materials or courseware uploaded on the platform, etc.), in-class answering (MOOC learning doubts), learning notes (one of the important bases for online learning grading), group discussion (learning management after class) and also exchange of information resources and teaching feedback.

4. Practical Application of Online and Offline Hybrid Learning of College Physical Education Based on SPOC Mode

This study is intended to be carried out in all classes offering the course of College Physical Education in all majors of Grade 20, Grade 21 and Grade 22. The experimental classes and the ordinary classes are set up simultaneously. In order to track the learning results of students well, after the research and discussion of the members of the research group, a questionnaire was designed, and related questions were set for the pre-class learning situation. The in-class learning effect, the after-class learning ability impact and other aspects are expected to provide a reference for the better development of hybrid teaching in the future.

The objects of this questionnaire survey are seven classes of students in some majors of Shandong Jiaotong University Weihai Campus, Grade 2020 and 2021, with a total of 213 students. The questionnaire is released through the questionnaire star and is anonymous. 201 students participated in the questionnaire, all of which are valid.

4.1. Learning Resource

Numbers can be seen in Table 1 for the specific questions and results of the pre-class learning survey. According to the survey results, 92.54% of the students can do regular pre-class preview,

which shows that the vast majority of students have good learning habits and strong learning motivation. 81.6% of the students think actively after learning the relevant learning content of the textbook, which shows that most of the students have a certain ability of independent learning and have a good learning attitude. 79.1% of the students believe that pre-class preview is necessary, and teachers should put forward requirements for pre-class preview and arrange certain homework tasks.

Table 1: Problems and Results of the Investigation on the Pre-class Learning of the Online and Offline Hybrid Teaching Mode in the Course of College Physical Education

Serial Numbers	Problems	Options	Proportions
Question 1	In the online and offline hybrid teaching of College Physical Education, can you preview before class every time?	A. Be able to preview before class every time	46.27%
		B. Pre-class preview is often conducted	46.27%
		C. Never preview	7.46%
Question 2	How do you prepare for class in the online and offline hybrid teaching of College Physical Education?	A. Look at the learning contents in the textbook "College Physical Education" or related materials	18.41%
		B. After reading the learning content in the College Physical Education textbook or related materials, they will record it when they encounter problems;	14.93%
		C. After reading the learning content in the College Physical Education textbook or related materials and recording the problems, I will check the relevant content and knowledge points online;	10.95%
		D. After reading the learning content in the College Physical Education textbook or related materials, I will search the relevant learning videos on the Internet;	7.96%
		E. After reading the learning content in the textbook "College Physical Education" or related materials, watch the video materials related to MOOC provided by the teacher to help preview before class	47.76%
Question 3	Do you think it is necessary to complete the content of online learning every time?	A. It is necessary	79.1%
		B. It is not necessary	20.9%

Table 2: Investigation Questions and Results of Learning Effect in Online and Offline Mixed Teaching Mode of College Physical Education

Serial Numbers	Problems	Options	Proportions
Question 4	Do you like online sports courses?	A. Like	47.26%
		B. I don't like it very much	20.9%
		C. Not to mention, in order to complete the course requirements	11.44%
		D. Whether you like it depends on the quality of MOOC videos and whether you can learn knowledge	20.4%
Question 5	Do you think that the learning videos and learning materials provided by the teacher can improve your practice efficiency?	A. It can improve the practice efficiency and help;	75.12%
		B. It can improve the practice efficiency, but it is not helpful;	21.89%
		C. No improvement, no help	2.99%
Question 6	MOOC videos and materials, have you deepened your understanding of the technical actions of sports courses?	A. Yes	88.56%
		B. Little effect	8.46%
		C. No	2.99%
Question 7	How long do you usually need to learn the MOOC videos and learning materials provided by teachers?	A.10-30 minutes;	41.29%
		B.30-45 minutes;	37.81%
		C.45-60 minutes;	15.92%
		D. More than 60 minutes	4.98%
Question 8	Do you think online learning will take up your study time and increase your study burden?	A. It will occupy the spare time and increase the learning burden;	13.93%
		B. Not too bad. I will choose to swipe the screen and play it quickly until it is finished;	7.46%
		C. I have not increased the burden of learning, and I have been used to this way of learning;	33.33%
		D. It doesn't increase the learning burden. I prefer this learning method.	45.27%

4.2. In-Class Learning Effect Survey

When the research group carried out the in-class learning effect survey, it was in a special period of the epidemic situation. The respondents used online learning in the second semester of College Physical Education. Numbers can be seen in Table 2 for the specific questions and results of the survey on learning effect in class. From the survey results of question 4, it can be seen that 79.1% of the students can accept the online learning method of sports. 20.4% of the students think that "whether they like it or not depends on the quality of MOOC videos and whether they can learn knowledge", which also shows the importance of the quality of online learning MOOC. It can be seen from the survey results in question 5 that 97.01% of students believe that the learning of online physical education courses can improve the practice effect and help the practice. From the survey results in question 6, it can be seen that 88.56% of the students believe that the MOOC video and online learning materials provided by the teacher can deepen the understanding of the technical actions of the physical education course in the online and offline hybrid teaching of the College Physical Education course. From the survey results of questions 7-8, it can be seen that 79.1% of the students spent 10-45 minutes studying MOOC video materials; 20.9% of students spend 45-60 minutes or more to learn online course content. Perhaps because of the short duration of online MOOC videos and learning materials, 86.06% of students believe that they do not increase the learning burden. It can be seen that the teaching design part of online course learning is very important for the development of online and offline mixed teaching mode.

Table 3: Problems and Results of the Investigation on the After-class Learning Ability of the Online and Offline Hybrid Teaching Model in the Course of College Physical Education

Serial Numbers	Problems	Options	Proportions
Question 9	Do you think the online and offline mixed teaching mode of College Physical Education course is helpful to improve your learning ability?	A. Have some help;	86.07%
		B. Not much help	13.93%
Question 10	Do you think the online and offline mixed teaching mode of College Physical Education has improved your ability to solve problems independently?	A. A certain degree of improvement;	84.58%
		B. Not much improvement	15.42%
Question 11	Do you think the online and offline hybrid teaching mode of College Physical Education has improved your interest in physical education?	A. A certain degree of improvement;	80.1%
		B. Little impact	19.9%

4.3. Investigation on Influence of Learning Ability after Class

Numbers can be seen in Table 3 for the specific questions and the proportion of the results of the survey on the after-class learning. From the survey results, the respondents' overall evaluation on the hybrid teaching mode of the College Physical Education course is good, and most students think that the hybrid teaching mode of the physical education course is helpful to improve their physical learning ability, which can improve the ability to solve problems independently and also improve my interest in physical education.

5. Reflection on the Practice of Developing Mixed Teaching Mode in College Physical Education

5.1. Teaching and Learning Methods

From the perspective of students, the learning mode has changed significantly, from the traditional offline classroom to the offline+online mixed learning mode. With the passage of time, students have gradually become accustomed to this learning method and can accept it. In this way, it provides a prerequisite for the development of online and offline mixed teaching mode.

For teachers, teaching methods have also changed, which also poses a greater challenge to them. Educators are expected to keep up with the pace of the times, seize the current opportunities, do a good job in curriculum reform, and gradually improve the comprehensive ability of personal work.

5.2. Teaching Content

Attention should be paid to the importance of teaching design, and the development of mixed teaching should fully consider the elements of each link online and offline. The quality and selection of online learning content is the key to the hybrid teaching mode of College Physical Education combined with the offline outdoor practice field classroom teaching, which should still focus on practical teaching.

5.3. Teaching Implementers

The transformation of teaching mode puts forward higher requirements for teaching implementers. First of all, the online learning platform that is suitable for the course should be selected. Secondly, educators should make full use of modern information technology as one of the auxiliary teaching methods to enrich teaching methods. Moreover, the process evaluation of the results should be set reasonably to reflect the diversified distribution of mixed teaching evaluation results.

6. Conclusions

At present, in the special period of the epidemic, the teaching methods are also changed immediately due to the instability of the epidemic, which puts forward higher requirements for the smooth development of college physical education courses. As college teachers, they should actively explore and build online and offline hybrid teaching modes to effectively ensure the smooth development of college physical education courses. Physical education teachers in colleges and universities transmit the basic theoretical knowledge related to physical education courses, the teaching of basic technical movements, the collection of sports competitions, the rules of competition and the functions of referees, as well as the physical training and the prevention and treatment of sports injuries online through the online learning platform, so as to stimulate students' interest in learning online content independently. Teachers answer students' questions online, and establish a

channel to contact students after class, which can help to guide students' technical actions offline more effectively. A teacher-led and student-centered online and offline mixed teaching mode is gradually formed.

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