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Online and Offline Mixed Teaching Reform and Practice of Exercise Physiology

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Abstract: With the development of information-based education, a constant stream of knowledge is growing exponentially on various platforms, and the online and offline mixed education mode can provide a multi-faceted knowledge output platform to meet the development needs of the times. In order to make up for the shortcomings of traditional education, higher education institutions can now use modern network platforms to explore a mixed teaching system that organically combines online education and traditional teaching, and build a teaching model suitable for this specialized course. In this paper, we focus on the teaching characteristics of exercise physiology, address the dilemmas and problems of traditional classroom teaching in exercise physiology, and actively explore the hybrid teaching mode based on the flipped classroom and the construction of online and offline hybrid first-class courses with high-quality online teaching resources, through promoting group discussion-based teaching and strengthening the assessment of learning process. The application of online and offline mixed teaching is explained in terms of the selection of the teaching platform before class, the design of the teaching mode during class, and the quality assessment after class, so as to consider the suitable high-quality teaching methods to build "useful, interesting and effective" online and offline mixed exercise physiology course.

Keywords: Online Courses, Teaching Research, Reform and Practice, Exercise Physiology

1. Introduction

The National Medium and Long-term Education Reform and Development Plan (2010-2020) released by the State Council proposes "accelerating the process of education informatization" [1]. In 2015, the government work report The "Internet+" action plan was formally incorporated into the national development strategy. The development of Internet technology has gradually become an important force for educational reform, building a bridge between the education field and other fields [2].

Relying on Internet technology to gain the ability of "Internet+" education, to achieve the integration of resources in multiple fields, to make education more open, to bring teachers and students closer together, and to realize online-to-offline (O2O) personalized education [3].

The continuous emergence of Internet education platforms has advanced the process of informatization of university education [4]. The growth of the Internet has led to the widespread use of distance learning models. Many universities have made "online teaching", which was once a supplementary teaching tool, an important part of their teaching methods. As the main online platforms for online education, Rain Classroom, Tencent Conference, and StudyTalk have become the means and platform to carry out normal teaching work for school students and home-bound students from abroad, which helps improve the quality of teaching and reduce the drawbacks of the traditional teaching model [5]. However, the coverage of online education, which seemed to be growing rapidly at that time, was not high in the curriculum of colleges and universities, and the increasing attention to online education in colleges and universities nowadays has pushed the construction of online courses to a new level.

In this paper, we take an online exercise physiology course as an example to explore the practical problems of online teaching and propose methods and strategies to improve

online teaching, to provide a useful reference for future experts and scholars to study online teaching.

2. Internet Technology in the Field of Education

In 2013, China officially launched a massive open online course (MOOC). MOOC (massive open online courses) [6]. MOOC has the following characteristics: (1) Knowledge points, and short videos. According to the research, the most suitable video length for learners' concentration is generally less than 15 min. MOOC is based on the teaching objectives, the course content is broken down into several knowledge points, and recorded into short videos of 10-15 min respectively, to facilitate short and efficient learning. (2) The exams are taken in the classroom, and the exams are crossed. MOOC borrows from the pass mode of online games and sets up a passing test, i.e., after each video, you must answer all the questions correctly or accumulate a certain score before you can continue to the next content. The combination of learning and training and comprehensive ranking stimulates students' sense of competition and thickens the learning atmosphere. (3) Big data analysis and timely feedback. Both learners, lecturers, and platform operators can get feedback on their most concerning situations through the platform's big data analysis [7].

At present, there are more mature MOOC online platforms in China, such as China MOOC launched by Xue Tang Online of Tsinghua University, ewant of Jiao Tong University Consortium, and MOOC of GoShell.com. Based on the concept and format of MOOC, Armando Fox of UC Berkeley proposed the concept of SPOC. It is a teaching solution that uses MOOC resources for small-scale and specific groups of people. Its basic form is to adopt MOOC's lecture videos or online evaluation and other functions to assist classroom teaching in traditional campus classrooms. At present, major universities in China have gradually carried out SPOC practice [8].

In addition, teaching network platforms that combine online and offline are also emerging, such as Super Star Learning, Rain Classroom, and Micro Assistant Teacher. Take Rain Classroom as an example, it is a smart teaching tool based on WeChat public platform jointly developed by Xue Tang Online and Tsinghua University Online Education Office and released in 2016. It applies cell phones to the traditional classroom, covering every aspect of pre-class - class - after class, so that classroom interaction never goes offline. It is thanks to the developed network technology and the popularity of smart mobile terminals as well as the advantages of Rain Classroom such as functional diversity and rich communication content that it successfully attracts students' attention and produces good practical effects. Therefore, the hybrid teaching mode combining online and offline online teaching platforms and traditional lectures such as Rain Classroom has been widely used in universities [9].

Whether it is the sole online classroom or online and offline hybrid teaching, all adhere to the "Internet +" education concept [10]. Compared with the traditional teaching mode, Internet teaching has obvious advantages: (1) Break the limitation of space, time, and the number of students. With the accelerated pace of life, the new trend is to use the fragmented time for online open course learning, and learning anytime and anywhere becomes a reality. (2) Breaking the traditional teaching mode. The widespread use of Internet tools in the teaching process has changed face-to-face teaching between teachers and students, resulting in new teaching modes such as O2O, flipped classrooms, and peer-to-peer learning. (3) Break the inherent thinking mode. The traditional teaching mode relies on simple lectures and boards to complete in the limited classroom time, knowledge transmission lacks collision and communication, students belong to passive reception, and active knowledge seeking and thinking is restricted. Internet teaching, on the other hand, is student-centered, emphasizes communication and interaction, and cultivates scientific learning methods, independent thinking habits, and innovative consciousness [11].

3. The Implications of Online and Offline Mixed Courses

Mixing instruction combines the benefits of online courses with traditional classrooms so that part of the student learning process takes place online and the other part takes place through a physical classroom. Its essence is reflected in three aspects: first, the advantages of online and offline are fully and effectively integrated, and high-quality resources are introduced to bring students a good learning experience; second, the invisible integration of information technology provides services for intelligent teaching and efficient learning; third, the flexible and flexible learning process, students can independently arrange learning time, place and content, and learning materials, learning activities, learning The learning materials, learning activities and requirements are relatively new. Blended teaching should focus on: how to "mix" and how to "combine"? After all, "mixing" is the means, and "combining" is the goal.

According to the requirements of the Ministry of Education for the "Golden Course", the construction of the hybrid golden course should reflect higher order in the course objectives and course content, develop the breadth and depth of the course, and cultivate students' comprehensive ability and advanced thinking; it should highlight innovation in the teaching content and teaching methods, keep the content up-to-date with the use of modern information technology, and help students conduct inquiry-based and personalized learning; it should increase the challenge in the course design and assessment, "increase the burden" for students in science, and let students "jump to get" [12].

In traditional teaching, students have differences in their knowledge base, learning style, and learning ability, as well as different individual needs. The teaching content has many knowledge points and is abstract and difficult to understand,

which leads to limited attention within the class and some objectives are more difficult to achieve [13].

In addition, the limitation of classroom hours makes some activities may not have time to carry out or carry out process management difficulties. The starting point of blended teaching is to make up for the shortcomings of traditional teaching by starting from the problems that exist in traditional teaching, to achieve complementary advantages [14].

4. "Student-Centered" Instructional Design

4.1. The Design Process of the Three Dimensions of the Mixed Course

(1) Overall program design. Before the course starts, it is necessary to determine the teaching contents, whether they need to be added or reduced; what contents are suitable for students to learn online and what contents need to be taught in class; what are the overall teaching sessions, the tasks and teaching objectives of each teaching session and the schedule, which can be reflected in the form of teaching calendar.

(2) Implementation program design. The design of the implementation plan should be specific to the specific activities of each teaching session, including classroom interaction, discussion topics, quiz topics, etc., as well as the evaluation methods of each teaching session, and also consider how to take into account the excellent students and weaker students.

(3) Design of classroom teaching activities. The design of classroom teaching activities needs to consider what teaching activities are to be available in the classroom and how to use information technology, including the number and timing of accompanying exercises, the way and timing of group discussions, etc.

4.2. Teaching Design Based on "Before Class + During Class + After Class"

Before the class, students are given a list of tasks to watch catechism videos to learn the knowledge points, take online study notes, and complete self-quizzes to test the learning effect; they can be assigned tasks to find information, conduct inquiry-based learning, and group discussions; and identify students who are slow to progress and provide timely reminders and interventions.

During the lesson, the teacher can issue a pre-class quiz to let the teacher understand the students' online learning and start lecturing on key issues and students' difficulties, explaining cases or practical operations to internalize the knowledge; report the results of the pre-class group discussion in groups, and let the teacher and students jointly comment on them, while the teacher summarizes and composes the knowledge points and deepens the migration.

After the class, students complete homework or quizzes and evaluate each other. In the process of mutual evaluation, we can find out the common problems of everyone, and also consolidate knowledge and deepen understanding; evaluate classroom teaching, including teachers' process evaluation of students and students' evaluation of teaching and suggestions; listen to students' feedback and give timely learning support and counseling to students, especially to help students with academic difficulties.

4.3. "Student-Centered" Teaching Tools

"Student-centered" is a teaching concept and a teaching method, which changes from "teacher subject" to "student subject" in the traditional classroom, and the focus has changed, making it more suitable for the era when knowledge is readily available. It is suitable for the era when knowledge is readily available. Teachers should take advantage of students' psychological characteristics, provide opportunities for independent and mutual learning, and provide instruction in effective learning skills so that students can influence the content, format, materials, and pace of their learning [15].

(1) Breakout quizzes. Many online platforms have a breakthrough mode, where students can only take the chapter quiz if they complete the required task points, and can only move on to the next chapter if they pass the chapter quiz (and reach the score set by the teacher). This kind of breakthrough mode simulates the feeling of passing a game, sets goals for students, and gives them a sense of accomplishment and motivation to advance level by level, and if the quiz does not reach the set score, they have to try again and again, which also deepens their understanding and memory of knowledge points.

(2) Seminar presentation. The teacher assigns the research task before class, lets the students choose the topic independently through the paper search for group discussion, and at the same time writes a seminar report or makes a PPT. the class is in the form of a group report for the students to explain, and the class can also start the seminar, and the results of the seminar are evaluated by students and the teacher, and the final grade is used as part of the process evaluation.

(3) Peer teaching method. As the saying goes, "there must be a teacher for three people", we can stimulate people's "interest in being a good teacher", group students randomly, letting them and their peers discussion-based learning, or explaining their understanding of a certain problem to their peers, or can be in the peers to give each other problems to do and mark them. Being able to explain a problem clearly shows that you understand it, which helps both others and yourself.

(4) Virtual-style honors. This approach still simulates the common score ranking when playing games. Ranking lists can be established based on learning in online learning, and point lists can be established based on classroom interaction in offline classes. The leaderboard ranking is updated in real-time, and different ranks are given corresponding titles, medals, or honors. This way, students will always keep an eye on their ranking changes and have the motivation to catch up if they fall behind [16].

5. Practice and Exploration of Mixed Course Construction of "Exercise Physiology"

5.1. Mixed Online and Offline Teaching with Rich Quality Online Teaching Resources Integrated Teaching

The course has three sets of physiology teaching videos of different lengths, including 45-minute regular classroom teaching (72 videos), 25-minute lecture videos (62 videos), and 15-minute micro-lessons (109 videos), which can meet the needs of students with different preferences for teaching videos. The videos meet the needs of students with different preferences. We redesign the teaching process through flipped classrooms and develop a flipped classroom based on physiological SPOC for online and offline hybrid teaching.

5.2. Scientific Questions and Clinical Cases Drive the "Every Class - Every Week - Every Month" Series of Group Discussions

In addition to the clinical questions that drive the "per class" in-class group discussions during each class, the "weekly" group discussions are also driven by weekly group assignments outside of class. The weekly group work will be open-ended questions, using research cases or scientific problems to drive the "weekly" group discussion after class. The results of the discussion will be presented to the whole class to guide students to review relevant literature and discuss in the group after class to form group opinions, promote cooperative learning, stimulate learning interest, enlighten students' thinking, and cultivate critical thinking and innovation. The results of the discussion will be presented as a whole class. In addition, we compress about 10% of the classroom teaching time (6 hours) and conduct monthly group discussions, 2 hours/time, 10-15 students/group, to guide students to review the literature with scientific and clinical problems, relate to prior knowledge as much as possible, lead to the integration of what they have learned, strengthen the ability to apply what they have learned to solve complex clinical problems, and further enhance higher-order cognition. The students will be guided by scientific and clinical problems, review the literature as much as possible, integrate their knowledge, apply their knowledge to solve complex clinical problems, and further improve their higher-order cognition.

5.3. Conduct "Pre-test - Post-test - Semi-monthly Test" to Urge Students to Study Independently According to the Plan

The "pre-test" and "post-test" are conducted 3 minutes before each class and at the end of the class by the self-developed cell phone APP to test the students' independent learning before the class and their mastery of the knowledge learned in the class, respectively. Every 2 weeks, we conduct an online quiz through SPOC, forming a "semi-monthly quiz". 10 online quizzes of SPOC, students can submit their answers 3 times, and the highest score will be the final score of the quiz. Each online quiz is used as a means to supervise students to complete online independent learning according to the teaching schedule, and also as a process for students to practice online.

5.4. Online and Offline Mixed Learning Performance Assessment

The total final grade for students consists of two parts: the final offline exam and the usual process grade. The usual process grade is increased from 30% to 50% of the total score. The usual process grade consists of the SPOC online grade (20%), a pre-test before each offline flipped class (5%), three "monthly" group discussions (10%), and an offline midterm (15%). The SPOC online grade consists of 10 online quizzes, students' participation in the catechism forum discussions, completion of the basic video viewing requirements, and the final exam at the end of the catechism. The three "monthly" group discussions are graded based on the number of times students speak and the correctness and depth of their statements, which reflect the students' usual learning status. Since the process grades include a series of objective tests and subjective evaluations of the three "monthly" group discussions, a process evaluation system combining objectivity and subjectivity is built, which makes the students' process grades more objective and fair [17].

6. Conclusion

This course has accumulated some experience in teaching practice for the construction of hybrid gold class and found that for students with clear learning goals and strong independent learning ability, hybrid teaching can open up their horizons and make the good ones even better, while for students with unclear learning goals and poor independent learning ability, hybrid teaching can become a burden for them. Solving the problems of struggling students in blended teaching and urging them to progress is the key to successful blended teaching. The road to building the Golden Course is still long, and the course team will listen to students' feedback during each round of operation and keep exploring proven practices to improve and perfect it.

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References

[1] Chen Y, Yang R, Tang Y. Evaluation of Online and Offline Mixed Teaching Results of Chemical Equipment and Machinery Fundamentals Under Epidemic Situation. Journal of Research in Vocational Education 2022; 4 (7).

[2] CUI C. Application of Online and Offline Mixed Teaching Mode in French Teaching Reform. 2022 3rd Annual Conference of Education, Teaching and Learning 2022.

[3] Hu R, Qian L. Analysis of Online and Offline Mixed Teaching Mode. 2021 3rd International Modern Education Research Conference 2021.

[4] Li F. Mixed Teaching Mode for Online and Offline under COVID-19 Epidemic Situation. Frontiers in Educational Research 2022; 5.0 (1.0).

[5] Yu X, Jin Y. Online and Offline Mixed Teaching of Japanese Courses to Carry out Course Ideological and Political Research. Frontiers in Educational Research 2022; 5.0 (13.0).

[6] Guangwei W, Xiaomei C. Evaluation of the Online and Offline Mixed Teaching Effect of MOOC Based upon the Deep Neural Network Model. Wireless Communications and Mobile Computing 2022; 2022.

[7] JosepMaria T, Claudia M, Victòria F. Co-Occurrence of Online and Offline Victimization: A Latent Class Analysis in University Students. Social Sciences 2022; 11 (1).

[8] Ying L. Analysis of Online and Offline Mixed Teaching Mode Based on “Mooc + Spoc”. Applied & Educational Psychology 2021; 2 (1).

[9] Yuemin D, Weida S, Aiqing L, Xiong Z. Application of Online and Offline Mixed Teaching Combining Virtuality and Reality in Physiological Experiment Course. Science Innovation 2021; 9 (5).

[10] He J, Jiang W, Hou K. Investigation Report on the Application of Online and Offline Seamless Learning Mode in Obstetrics and Gynecology. Frontiers in Medical Science Research 2022; 4.0 (1.0).

[11] Silvio B, Massimo F, Alfonso C. Comparison of online and offline deep reinforcement learning with model predictive control for thermal energy management. AUTOMAT CONSTR 2022; 135.

[12] Jingchao H. Application of online and offline mixed teaching mode in the teaching of Chinese modern and Contemporary Literature. Frontiers in Educational Research 2021; 4.0 (16.0).

[13] Zhang T. Research on Teaching Design and Practice of Online and Offline Hybrid Courses for Japanese Majors. Adult and Higher Education 2021; 3 (3).

[14] Hongbum K, Ho RM, Daeho L, Hyun KJ. Should a small-sized store have both online and offline channels? An efficiency analysis of the O2O platform strategy. J RETAIL CONSUM SERV 2022; 64.

[15] Yee LIP. (Dis)Engagement with queer counterpublics: Exploring intimate and family lives in online and offline spaces in China. The British journal of sociology 2021; 73 (1).

[16] Liang S. Research on the Influence of Online and Offline Mixed Teaching Method on Students' Autonomous Learning Ability. 2020 4th International Conference on Advancement of the Theory and Practices in Education 2020.

[17] Qing L. The Reform and Practice of the School-Based Course of Public English Spoken English in Higher Vocational Colleges Based on Online and Offline Mixed Teaching. 2021 2nd Annual Conference of Education, Teaching and Learning 2021.