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Exploration of Online and Offline Blended Teaching Mode in Undergraduate Nursing Physiology

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Abstract: ***This paper actively explores the application of the online and offline blended teaching mode in physiology teaching under the background of "Internet+". In terms of constructing the blended teaching mode, based on the Chaoxing Fanya network platform, course preparation is carried out from several aspects: teaching objects, teaching objectives, and the establishment of a teaching database. In terms of the implementation of the teaching mode, the OBE concept, VR technology, and ideological and political education are organically integrated with professional courses with the help of the network platform, while diversified assessment runs through the entire teaching process, to achieve the purpose of promoting the diversification of teaching methods, improving teaching quality, and cultivating students' comprehensive learning ability, and has achieved good results.***

Keywords: Physiology, Online and offline blended teaching, "Internet+", OBE concept**.**

1. Introduction

With the increasing perfection of various teaching technology platforms, large-scale online education has become a reality. However, many teachers have an obvious phenomenon of "reaching the form but not the substance" when implementing online teaching [1-2]. In addition, physiology is a discipline that studies the phenomena and laws of life activities of organisms. The explanation of life mechanisms is relatively boring and difficult to understand. Therefore, in order to ensure the quality of undergraduate teaching and learning outcomes during the epidemic prevention and control period, and to realize the Ministry of Education's requirement of "suspending classes without suspending teaching, and suspending classes without suspending production," it is necessary to explore new teaching models. The blended teaching mode combines traditional face-to-face teaching with online teaching, which can not only give full play to the leading role of teachers, but also reflect students' initiative, enthusiasm, and creativity in learning 3. Therefore, it is important to make full use of information technology to optimize teaching resources, innovate teaching methods, change traditional teaching models, and practice a new online and offline blended teaching model to promote classroom interaction and improve teaching efficiency.

2. Construction of Online and Offline Blended Teaching Mode Based on "Internet+"

"Internet+" is a combination of "Internet" and "various traditional industries." Among them, "Internet+Education" is a very important link. Through the deep integration of the two, a new development ecology is created 4. Therefore, under the background of "Internet+", making full use of network resources, and using the Chaoxing Fanya platform to build a blended teaching mode and apply it to physiology teaching work is very advantageous during the epidemic prevention and control period.

2.1 Analysis of Teaching Objects

Physiology is a compulsory course for undergraduate students in the Nursing College. Most college students are "post-95s," and they have grown up with the Internet. They have a high degree of acceptance of online education, and they respond to and process Internet information quickly. At the same time, communication between teachers and students is also very smooth with the help of the network platform. In addition, students have acquired basic medical knowledge in prerequisite courses such as Normal Human Morphology and Biochemistry, and they are more eager for knowledge related to human life phenomena. However, the physiology course has the characteristics of being abstract and difficult to understand. Although students are interested in clinical cases, their innovative thinking is relatively weak, and their clinical application ability needs to be improved. Therefore, how to stimulate students' active thinking and improve their ability to actively acquire knowledge is the key to designing a good class.

2.2 Teaching Objectives

As one of the core courses of medical foundation, physiology not only requires students to master the basic theoretical knowledge of physiology and understand the functional activities of normal human body, but also cultivates students' initiative, innovation and teamwork ability. According to the requirements of the "14th Five-Year Plan" for national education development, combined with students' needs and learning situation analysis, the research group divides the teaching objectives into three levels: The first level is to explain clinical cases in combination with students' interests, in addition to explaining the basic knowledge of the book, to strengthen the connection between subject knowledge and clinical practice, and to cultivate students' clinical thinking ability. The second level is to use technical means, such as medical animation, virtual simulation laboratory, etc., in difficult chapters, so that students' logical thinking, reasoning ability and innovative ability can be exercised in the process of hands-on operation. The third level is to divide groups and adopt a variety of teaching methods and means such as case-based, heuristic, discussion-based, task-driven, and PBL to stimulate students' desire for knowledge, improve students' ability to actively learn, and cultivate teamwork spirit.

2.3 Establish a Physiology Material Database

The physiology material database is the teaching assistant material for teachers and the main online learning material for students, including medical animation, operation videos, courseware, clinical cases, exercises, etc., which are presented in various forms such as videos, slides, texts, and tests. Make full use of existing national, provincial, and school online course platforms and other online education platforms and teaching resources, such as massive online open courses (MOOC), Small Private Online Course (SPOC), micro-courses, etc., to integrate and mobilize adapted education and teaching resources from public service platforms at all levels of education resources. Select high-quality physiology course videos through the Chaoxing Fanya platform and import them into the Fanya platform site of this course. For application-oriented courses that cannot be fully introduced, the teachers of the research group integrate and transform or self-build MOOCs to optimize and improve online teaching resources and build a high-quality physiology material database.

3. Implementation of Online and Offline Blended Teaching Mode Based on OBE Concept

Outcome-based education (OBE) is an educational philosophy that is oriented towards student learning outcomes 5. It follows the principle of backward design, determining the training objectives based on the development needs of the industry, using this as a starting point to design curriculum objectives and determine teaching content and methods 6. The OBE concept conforms to the general background of the transformation and development of universities, and also conforms to the general trend of changes in social demand for talents [7-9]. Apply the OBE concept to theoretical teaching, experimental teaching, ideological and political education, and assessment and evaluation to carry out the practice of online and offline blended teaching mode.

3.1 Theoretical Teaching

Teachers organize teaching based on the OBE education concept and in combination with the physiology teaching syllabus and teaching objectives according to the chapter content, designing a good class from three stages: before, during, and after class: Before class, in order to exercise students' self-learning ability and clinical thinking, teachers release related cases in this chapter on the network platform in advance, and combine the cases to release tasks, so that students can preview in advance, learn to think in mutual discussion, put forward new questions, and enter the classroom with questions; During class, in order to cultivate students' innovative thinking and teamwork spirit, the practice of physiology micro-courses, flipped classrooms, and other teaching methods is carried out through the Fanya platform in the form of topic discussions, selection of people, questionnaires, and voting; After class, publish classroom assignments to test the learning effect, record Q&A for high-frequency error points to solve doubts, and publish questionnaire surveys in a timely manner to provide feedback on the classroom effect and adjust teaching methods in a timely manner according to the feedback. For example, before class, a case of atrophic gastritis patients is released through the Fanya platform, and thinking questions are assigned to allow students to consult materials on their own, and upload their respective views and insights to the platform in groups for teachers and students in other groups to review; In the classroom, make full use of the advantages of "Internet+", insert professional website links into the courseware, play short medical teaching animations of the normal stomach anatomy structure, focus students' attention on the classroom screen, make abstract concepts concrete and simplified, and use this as a starting point to introduce the key knowledge of this chapter. Carry out a series of teaching activities such as random questions, group presentations, and theme discussions through the online platform to improve students' classroom participation; After class, timely release after-class assignments, tests, questionnaires, etc. through the network platform, timely test students' learning effects, obtain classroom feedback.

3.2 Experimental Teaching

The experimental class focuses on the cultivation of students' hands-on operation ability and practical ability. Due to the limitations of experimental sites and equipment, it is even more difficult to carry out during the epidemic period. In order to ensure the normal operation of teaching work, the physiology experiment course chooses to use virtual reality (VR) for online virtual simulation experiments. VR is a new type of teaching method that uses computers to highly restore real situations and immerses students in a virtual environment [10, 11]. Virtual simulation experiments are not only rich in content and realistic in picture, but also involve a wider range of organ systems than offline experiments, including basic operation teaching and experimental content for major systems such as the respiratory system, circulatory system, and nervous system. As a teaching method that integrates information technology and teaching, virtual simulation experiments can not only improve students' learning interest, help cultivate students' clinical thinking ability and innovation ability, but also improve teaching quality, promote the diversification of teaching methods, and achieve good teaching results 12, which has been widely recognized by teachers and students and is widely used in experimental classes of basic medicine at home and abroad [13-15].

3.3 Ideological and Political Education

Strengthening moral education and cultivating people is the fundamental task of socialist education development with Chinese characteristics in the new era 16, and it is the eternal pursuit of educational value of the Chinese nation. Ideological and political education in curriculum construction is of great significance for colleges and universities to adhere to the socialist orientation of running schools and ensure that the work of educating people runs through the entire process of education and teaching. Ideological and political education is not only the duty of ideological and political teachers, but also the work of professional course teachers. It is necessary to cultivate students to establish a correct outlook on life, values, and world outlook in the same direction in ideological and political education and professional teaching. In the context of "Internet+", the physiology course uses the "Chao Hsing Fanya" platform, based on the OBE concept, and guided by the ideological and political education goals, to take the following points as the entry point for the ideological and

political and physiology teaching in the same direction: First, use the research history of physiologists who have played an important role in the development of physiology to carry out ideological and political education and compile them into short and wonderful short stories, such as Jens Christian Skou's discovery of the sodium-potassium pump, William Harvey's discovery of blood circulation, Marshall's stomach trial bacteria, Tu Youyou's trial drug [17, 18], to stimulate students' patriotism and national spirit through the outstanding contributions and patriotic deeds of physiologists, and to guide students to learn the spirit of the older generation of scientists who are not afraid of hardships, do not remember fame and wealth, and work hard; Second, use students' strong interest in the magical life activity phenomena in physiology research to introduce to students the complexity and sophistication of physiological mechanisms and the endless exploration of life by human beings, to guide students to feel the mystery of life, for example, when students are doing the excitability test of frog sciatic nerve, they are very surprised by the contraction phenomenon of gastrocnemius muscle, the teacher can use students' strong desire for knowledge to introduce the arduous and interesting exploration history of the excitation mechanism 19, to cultivate students' scientific attitude of perseverance and dedicated research, and to exercise students' logical reasoning ability and dialectical thinking ability. Third, use the teacher's own knowledge, quality, words and deeds, and moral cultivation to influence students, give full play to the teacher's moral exemplary role, set an example, and achieve the purpose of ideological and political education. Fourth, take advantage of the fact that the experimental objects in the physiology experimental course are mostly experimental animals, and emphasize the need to revere life and cherish life by explaining the unity of structure and function that can be seen everywhere.

3.4 Assessment and Evaluation

Each link in the teaching process needs strict inspection and supervision in order to better grasp students' learning dynamics, discover and solve problems in a timely manner, and ensure students' learning outcomes and teachers' teaching quality. The physiology course conducts a comprehensive assessment from all dimensions, including the usual scores, experimental scores, and final scores into the students' final course scores, in which the usual assessment includes the process evaluation before, during, and after class. Therefore, it is not a single use of final scores to evaluate students' learning outcomes, but an organic combination of process assessment, formative evaluation, and summative evaluation to examine students' learning process and results in multiple dimensions, forming a diversified evaluation, and running through the entire teaching process to improve students' learning motivation and ensure that the results of the assessment and evaluation are true and reliable. For example, for pre-class evaluation, related cases are released on the online platform in advance, and students are required to read and consult materials, upload the case analysis results to the Chao Hsing Fanya platform, and use the platform's statistical function to understand students' enthusiasm for pre-class preview and the accuracy of case analysis, and grasp students' knowledge reserve about this chapter, so as to help teachers adjust teaching content, organize teaching activities in a targeted manner, and improve teaching efficiency. The knowledge mastery of students can be tested through offline questions, online tests, etc., and students' feedback opinions can be collected, the problems existing in the teaching can be reflected on, and timely adjustments can be made. Post-class evaluation can be used to understand students' knowledge consolidation by releasing assignments and exercises online and organizing tutoring and Q&A offline, and the platform's statistical function can be used to view the characteristics of students' score distribution and error-prone question types, and provide targeted guidance.

4. Teaching Effect of Online and Offline Blended Teaching Mode

After applying the online and offline blended teaching mode, students' learning outcomes have been significantly improved. Practice has proved that the online and offline blended teaching mode, coupled with the whole process of diversified evaluation mechanism, fully mobilized students' enthusiasm, comprehensively improved learning outcomes, and ensured teaching quality. According to a questionnaire survey of 198 students, 94.4% of the students were satisfied with the new teaching mode, 96.0% of the students believed that the new teaching mode had greatly improved the teaching effect compared with the traditional teaching mode, 90.4% of the students believed that the new teaching mode increased the fun of learning and mobilized their learning interest, and they were more willing to actively and proactively complete pre-class preview, 90.9% of the students believed that they were more handy than before in the learning process, and 99.5% of the students believed that their academic performance and learning ability had been greatly improved. In addition, according to the statistical results of the online platform, the degree of student classroom participation and the degree of completion of learning objectives are both above 95%, and the pass rate of graduation scores has increased by 48.7% compared with the past.

5. Conclusion

Through the construction and application practice of the online and offline blended teaching mode of the physiology course, it is concluded that the course reform based on the new teaching mode is welcomed by the vast majority of teachers and students. In the context of "Internet+", teachers can use the network platform to understand students' learning situation in a timely manner, obtain student feedback in a timely manner, so as to effectively arrange teaching content, combine advanced teaching concepts to integrate a variety of teaching methods, add classroom fun, and exercise students' comprehensive ability. On the other hand, the application of information technology promotes the diversification of teaching methods and the diversification of assessment methods, which makes students' learning interest more intense, the assessment and evaluation process more scientific and reasonable, and the assessment results more true and fair, while greatly improving students' learning motivation. In summary, the application of the online and offline blended teaching mode has achieved good results in the teaching of the physiology course, which not only overcomes the difficulties and challenges brought to the teaching work by the epidemic, but also further improves the teaching quality and teaching efficiency.

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