Application of information-based on network platform in experimental teaching of medical immunology

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Abstract: Internet platform have advantages of abundant teaching resources, which provides a solid foundation for the information teaching of modern medicine. Medical immunology is one of the professional basic courses to the student in medical university who major in clinical medicine, an interdisciplinary course with extensive integration with various subjects. The basic theory of this course is hard to understand. Immunology experimental course can not only help theoretical teaching on the basis of strengthening the understanding and memory of theoretical knowledge, but also cultivate and strengthen student's logical thinking, practical operating and problem-solving ability. The experimental teaching of medical immunology has the advantages of abundant resources, flexible and efficient application, real-time communication and interaction in the information teaching based on the network platform. It helps to stimulate students' interest in learning, improve the efficiency of learning and beneficial for expand the depth and breadth of teaching content.

1. Introduction

The proposal of the strategy of fully implementing healthy China has led to profound changes in the mode of modern medicine and medical services, which puts forward higher requirements for the cultivation of medical students' comprehensive ability. Traditional medical education mode can not meet the development of high-quality medical education. The information-based teaching mode based on network platform is a new generation of teaching mode for mobile internet. It can be used in both computer and mobile terminals. Teachers and students can effectively complete teaching or learning tasks through the network platform, while communicating with teachers at any time, so that students' question in the learning process can be solved timely, accurately and comprehensively, which is conducive to improving learning efficiency and teaching quality [1]. Immunology has a complete theoretical system and is widely infiltrated into various fields of clinical medicine, preventive medicine and life sciences. Although its theoretical knowledge is abstract and complicated, It is difficult to understand, but experimental teaching can cultivate students' logical thinking, practical operation ability and scientific research interest on the basis of strengthening the understanding and memory of theoretical knowledge [2]. As an important part of medical immunology, the experiment mainly adopts the teaching methods of lecture, demonstration and PPT courseware. Because of the limitation of hours, materials and venues, students have too few opportunities to operate, which eventually leads to poor understanding and mastering of experimental technology. It is difficult to achieve the desired teaching goals. The development of modern information technology, especially the wide application of various network platforms, such as MOOC, Micro Course and WeChat etc. has laid a solid foundation for the network information-based teaching [3]. By establishing the network platform, students can be provided with effective ways of self-learning, real-time answering questions and puzzles, stimulating students'

enthusiasm for learning, and cultivating independent thinking and ability to discover and solve problems, so as to achieve good teaching results [4].

2. Construction the internet teaching platform

The experimental teaching of medical immunology can be designed as follows: firstly, build the internet teaching platform, and establish a student-centered course system of experimental teaching of medical immunology [5]. The design for experimental teaching can be divided into four parts: before class, in class, after class, and reflection, all of which should be student-centered and focus on the management and evaluation of students' learning process. Before class, through WeChat or Other app program, teachers can send the contents of experimental course partially and successively according to the contents ofbasic immunology and the application of clinical immunology [6]. In class, various teaching methods can be adopted to improve students' communication and discussion, thus promote students' learning interests and enthusiasm. Meanwhile, teachers can timely know the mastering of students for experiments through online exercises, question and answer, which also enables teachers to adjust teaching method timely. After class, through homework, online tests, timely Q and A, students' learning efficiency and results can be improved. Finally, based on the contents of the above three parts, teachers can conduct formative evaluation and teaching reflections, and include the score of formative evaluation into the score of final examination, which greatly enhance students' learning enthusiasm to make use of the online platform and continuous teaching quality of the experimental teaching.

2.1 Pre-class design through different program

Before class, teachers often design special teaching according to the characteristics of different experiments [7]. Then, according to the teaching design, they put the materials needed to be previewed such as experimental teaching outline, video materials, exercises, etc to the network platforms[8]. The classes created by the students can register, draw support from teaching plans, coursewares, videos and other learning materials provided by these platforms and preview the basic theoretical knowledge and experimental principles related to experiment. Through the network platform, they will have a preliminary understanding of the basic process of the whole experimental operation. Teachers can gradually develop the mixed teaching of experimental teaching through the network platform. For example, in guinea pig hypersensitivity experiments, micro-class network teaching method can be adopted. The video about 5-6min with prominent themes, short and pithy, good interactivity make students experience the scene, and can make full use of a variety of perceptual means to obtain information, thus deepening the understanding of disease pathogenesis, prevention and treatment principles and other links, and gradually introducing of guinea pig rapid-onset hypersensitivity and clinical manifestations through pre-class questions. [9]. In serum reaction, PBL network teaching mode can be designed. Before class, the typical and clinical primary liver cancer cases can be carefully designed [10]. Owing to the limited experimental class hours, it can be designed to two sections, the first section of PBL and related reference materials and related problems, such as the preliminary diagnosis of patients? what is the basis? How to develop relevant immunological tests? These are send to network platform before class [11]. The second section of PBL mainly involves laboratory examination results, clinical diagnosis and treatment can be used as the main content in the class. Before class, students should participate actively and be divided into groups in advance so that the class can become an exchanging place for answering questions and solving questions, applying knowledge. Whichever teaching method is adopted, teachers should pay attention to the appropriate use of network interactive tools in the whole teaching process. In addition to timely putting the learning contents and related materials to students in time through network platforms, including rain classes, WeChat and forums, teachers can also strengthen communication and interaction by setting keywords, automatic reply and other functions. Information teaching methods on network platforms can make full use of students' fragmented time for learning and communication. A full set of experimental programs are prepared for exchange and

use in lesson preparation. Teachers should focus on stimulating students' thirst for knowledge, cultivate students' ability to think independently, analyze and solve problems, unite and cooperate during this process.

2.2 Class implementation by using multiply methods

Classroom teaching should be student-centered, presenting and discussing in class according to the group divided before class, students constantly improve their experimental scheme by asking questions [12]. In experimental operation, students discuss according to the established experimental operation flow, because students are familiar with the operating process, teachers only need to guide students to record the experimental process and results correctly and comprehensively, observe whether the experimental results are consistent with the expected results, and organize discussion. Each group will make an entire summary of this group of experiments, and submit the report on the network platform. To bring network PBL and the experimental project of reverse classroom into force, the consolidation of experimental basic theory can be deepened by analyzing cases or problems, attention should be paid to guiding students' innovative, making it a class of comprehensive and systematic mastering of the experimental design, implementation and result analysis [13]. And guide students to analyze various abnormal results actively, review possible causes, thus to cultivate certain scientific thinking. In the class, online exercises or tests can also be used to test students' in real time. Teachers send class tests through program, which can be done in a designated, random and Rush-to-Answer manner, this system can automatically correct and immediately complete the analysis of test questions and the statistics of scores. At the same time, this result can be included in the usual achievement, so as to improve students' concentration and efficiency in classroom learning.

2.3 After-school reflection

First of all, teachers will focus on the problems in case analysis according to the classroom performance of each group in the design, operation, discussion and other aspects of the experiment, make a summary, share and expand the knowledge points discussed through the network platform, to deepen students' knowledge and understanding of class-related knowledge [14]. For example, making a standard curve in ELISA experiment, for various reasons like operation, reagent, there will appear deviation of standard curve which can be used as a discussing center, and open discussion around its influencing factors, timely reply to students' questions. By expanding learning content, promoting direction and horizontal expansion of knowledge, thus continuously optimize the learning process, improving teaching efficiency, achieve better learning effects. On the network platform, teachers can also press students to finish the mutual evaluation of teachers and students, students and students, and students' self-evaluation for the learning process. Secondly, students need to complete online assignments or tests through the question bank in the network platform. According to the teaching objectives, teachers can examine their students based on the differences of their majors and classes, realizing hierarchical design of network, homework and testing. Part of the item difficulty can be put up by setting the test questions, try to make students of different levels study and explore with interest, and increase the difficulty and challenge of the experimental course, develop students' ability of knowledge use and innovation in a better way. Students can complete assignments at any time through terminals such as smart phones and computers, design the evaluation system as a submission-scoring model, both teachers and students can know the understanding of students' knowledge in time. Through the network platform, teachers can easily collect and analyze students' data in the process of teaching, getting feedback information of teaching content in time. Supported by real-time data, teachers can adjust their teaching strategies or methods, continuously optimize the teaching process, and then improving teaching quality.

2.4 Formative evaluation system should be established

Finally, by establishing a formative evaluation system which is connected with network platform of information in order to feedback to the whole teaching progress [15]. Through evaluation

-feedback -correction -improvement and other stages of teaching process, the formative evaluation can help teachers analyze specific problems, inspire students' potential in a targeted way, teach students according to their ability and improve the teaching efficiency of experiments [16]. The formative evaluation system of experiment is based on a network platform. As a muti-level, diversified, multi -aspect evaluation system, it includes several parts like the attendance of the relevant network platform, preview, online class exercise, class quiz, after class exercise and test, homework, experimental operation and group discussion, experimental report of relevant offline class, experimental operation and group discussion. For some experimental program's evaluation system, it can also include parts like experimental design, report writing or experimental mind map drawing. During the process of formative evaluation, we can have multi-level conversations between teachers and students. Face-to-face feedback greatly and inspire students' interest and initiative. More importantly, it can help students to find advantages and disadvantages of themselves in order to adjust their learning methods in a targeted way. Teachers can also find disadvantages of their teaching in order to adjust their teaching methods in a targeted way [17].

3. Conclusion

Medical immunology is a forefront subject which is connected with various subjects and developing rapidly. Through experiments of medical immunology, students can have a better and deeper understanding of the basic theoretical knowledge of this subject. Experiments are not only helpful to improve student's ability of analyzing and solving problems but also helpful for the establishment of their thinking patterns and innovation. In this way, it builds a strong foundation for their future clinical scientific research. Traditional teaching pattern fails to fully inspire student's initiative of learning. And it is always limited by class time, space and other conditions. So the chances for a student to practice and think are limited. Some important and key problems can't be explained clearly and thoroughly. What's more, the teacher can't exactly know the student's mastering of knowledge after class [18]. Therefore, Traditional teaching can't meet the needs of cultivating high-quality modern medical students. Teaching based on the network can be combined with various teaching methods and means. It is helpful for the establishment of the online and offline fixed teaching. What's more, it has rich professional information resources. It enables teachers and students to interact with each other in real time. It can be operated flexibly and efficiently. Also, it breaks through the time and space limitation of teachers and students communication and expands the depth and width of the profession learning. Gradually, it will become an important supplement of traditional learning. It truly reflects on the teaching concept of taking students as a principal part. It is helpful to develop student's innovation and meet the social development needs of the cultivation of high-quality medical talents under the background of great health.

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