Research on the Construction of Pathology Online Course Based on Mixed Teaching Model

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Abstract: Pathology teaching has gone through the traditional teaching mode, audio-visual teaching, multimedia computer-aided teaching and other stages to develop into network courses, teaching quality and teaching efficiency have been continuously improved. On the basis of the traditional teaching mode, the mixed teaching mode is applied to pathology classroom teaching. The mixed teaching mode is a new teaching mode with students' active learning as the main part and teachers' guidance as the supplement. Before class, students preview digital pathological slices and network materials. In class, students discuss and evaluate each other in groups, and teachers answer questions and puzzles. After class, the mixed teaching mode shows online review. Hybrid learning is an important way to integrate face-to-face teaching and online learning to integrate students' learning styles and improve teaching quality. The application of mixed learning can effectively improve students' interest in learning and thus improve the teaching effect.

1. Introduction

Pathology is a course that combines theory with practice. The key and difficult point of medical students' learning pathology is the characteristics of pathological changes. By observing specimens, they can understand the characteristics of pathological changes of various diseases and understand the occurrence and development of diseases [1]. In recent years, the construction of online open courses presents blowout mode, and more and more teachers join in the construction of online open courses. The key of online open courses lies in the application of learning. How to use the high quality resources of online open courses to teach is a new subject for higher education [2]. To improve the teaching effect, we need to follow the online-line-mixed teaching trend, follow the pathological online work rules, teach and educate people and the law of student growth, not only to play a leading role of teachers, but also to fully protect the subjective position of students. Fully mobilize the autonomy and enthusiasm of students' learning, and enhance the interaction between teachers and students. In the process of medical education, including the pathology and pharmacology of secondary vocational schools, there are also some preliminary research and applications [3].

The Pathology Network course includes three parts: classroom teaching, laboratory internship and online learning [4]. Classroom lectures are an important part of the online course. Teachers use electronic lesson plans to explain the key points, difficulties, frameworks and progress of pathology to students, and provide guidance for students' learning [5-6]. While the online open courses are widely spread around the world, many problems have also been exposed: There are many people who participate in the study, but there are very few people who can actually get credits, and they need the ability of learners to learn and control themselves online. The open class itself is difficult to guide students to the platform to learn [7]. In 2015, a study on medical students' assessment of interactive computer-aided learning procedures embedded in general pathology courses was proposed [8]. These drawbacks of online open courses lead to the fact that even if there are high-quality teaching resources and platforms, they will not necessarily have a good teaching effect. In order to further improve the teaching quality of pathology and more effectively cultivate students' autonomous learning, cooperative learning and innovative thinking ability, a mixed teaching model has been developed in pathology teaching, and good teaching results have been

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achieved [9].

2. Methodology

Traditional teaching mode is the main way of classroom teaching at present. According to the characteristics of curriculum, syllabus and content of teaching, and aiming at the acceptance of knowledge by most of the students in the class, teachers make a comprehensive teaching plan. In the classroom, teachers are the owner and authority of knowledge, and teachers play a dominant role in teaching knowledge. As well as the new progress of pathology, it provides students with online software with abundant pictures and texts, rich content, strong interaction and friendly interface [10]. Online homework, according to the needs of teaching, is issued to students by teachers, completed by students independently, submitted online, and corrected by teachers. At the same time, expand the knowledge of students. In the classroom teaching process, teachers make full use of a variety of media-assisted teaching, while taking advantage of traditional teaching. Use the general specimens to teach the observation methods of various diseases on site, and let the students carefully observe the whole picture of the general specimens. For example, when describing the general specimens of portal cirrhosis, the students are instructed to observe the surface of the liver as granular or small nodules.

From the student's current situation, most of the students have had an online learning experience, or have a certain understanding of online learning. According to statistics, most students feel “need to be instructed“ for online learning, and a small number of students feel “not needed“ or even “lost“. See Table 1 and Figure 1.

Table 1 Student's online learning status

Student perception	Number	Proportion(%)
Need guidance	12	58.96
Unwanted	8	36.34
Get lost	5	18.45

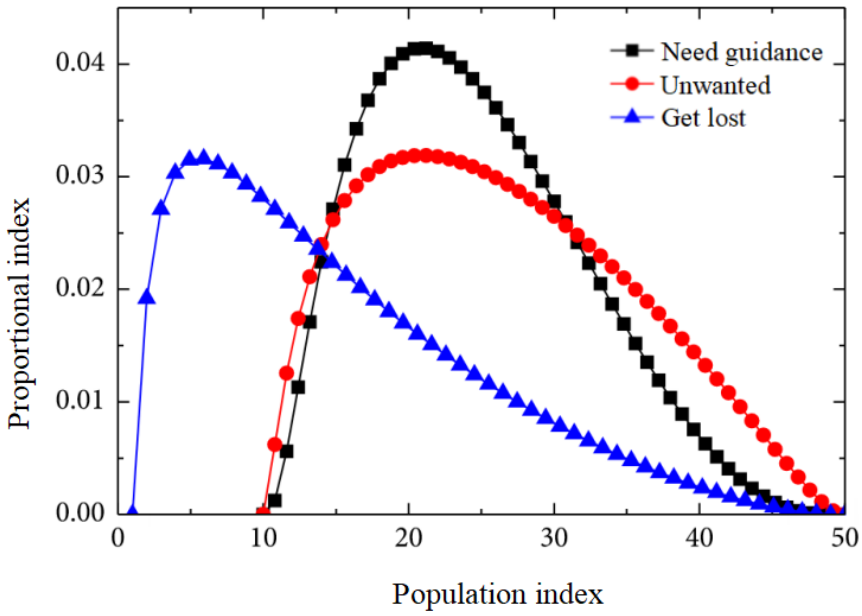

Fig.1. Student's online learning status

In the current teaching of Higher medical education institutions, classroom teaching still dominates. Classroom teaching is conducive to the emotional exchange between teachers and students. It is an indispensable part of shaping students' personality and morality. Especially in Higher medical education institutions, the practical curriculum is the main feature, and the professional or practical courses must be based on the on-site experimental teaching environment

and traditional face-to-face teaching. The main teaching content is to observe the structural morphology of various diseased tissues under the microscope. In traditional teaching, although students can directly observe pathological sections using a microscope, limited class hours, teachers, microscopes, and laboratories greatly hinder learning. At the same time, the main drawback is that the direct observation of the experimental class is out of touch with the theoretical knowledge in the classroom; and the fragility of the slices and the equipping of a microscope for each student lead to the extremely high teaching cost. While giving full play to the advantages of multimedia and network technology, the pathology network course also pays attention to reforming the traditional pathology teaching form and making it have modern connotation, so as to meet the needs of the information society and provide time and space for students to study independently and interactively.

The second important method of mixed learning mode is group cooperative learning, which is mainly carried out in the experimental class. The proportion of the experimental and theoretical hours of pathology in our school is 1:1. The experimental class of pathology is taught in a small class. The number of the experimental class is controlled within 80 people. The experimental class is grouped according to the voluntary principle or according to the random seat arrangement. In the process of construction, this course fully analyzes the characteristics of higher vocational teaching, professional construction, curriculum construction and students. On the basis of emphasizing basic theoretical study. The task-based development of the case, complete the study and application of theoretical knowledge, to achieve a combination of theory and practice. The computer software simulation microscope function realizes all the functions of the traditional microscope, and can not only observe various magnifications of any field of view, but also can perform functions such as labeling and modification, which are not available in the conventional microscope, and greatly enrich the slice observation function.

3. Result Analysis and Discussion

The third method of the hybrid learning model is based on the self-exploration of the network environment. Before the class, the teacher arranged the teaching task with the problem as the leader. The students performed clear and specific tasks, and used the network resources to conduct independent learning, group discussion, students ask questions, and teachers answered questions. And arrange the learning tasks on the online open course platform; students view the pushed learning content through We Chat and QQ platform, clarify the learning tasks, and follow the teacher's requirements, conduct self-learning of course content on the online course platform, and record the discovered problems. And feedback. Teachers can view students' learning situation through the platform, supervise and guide them through the platform, Weixin and QQ, receive students' feedback, and adjust the teaching content in time. Moreover, the Microscope simulation software is loaded on any computer to allow slicing observation in any environment, making the most flexible use of learning time. It can also be made into a CD-ROM for mailing or transmission to others through the network, and the teaching materials can be saved and shared to the greatest extent.

Pathology course is practical and theoretical examination alone is not enough to test students' knowledge, so the assessment model should be diversified. Another important measure of network course pilot is the reform of examination method. The original mid-term, mid-term and final examinations will be replaced by ordinary examinations. After each chapter, students have to take online examinations. Online examinations account for 55% of the total scores, online homework accounts for 15%, laboratory practice accounts for 20%, mid-term and final examinations account for 40%. This fully mobilized the enthusiasm of students to learn independently, while learning ability and quality have also been cultivated. The evaluation of learning effectiveness is the final test of the success of the teaching implementation process. In the evaluation, based on the traditional test scores, supplemented by the results of the flipping classroom teaching effect, it is reflected in two aspects. First, the case analysis questions in the written test paper accounted for 36%, in order to investigate the flip teaching Students' ability to distinguish themselves. The second

is to flip the chapters of the classroom teaching model as usual grades, accounting for 25% of the total score.

For purely traditional classroom learning, students generally believe that learning efficiency is not high enough. For the reasons, 45.36% of students admit that they are passive, and 24.37% of students admit that there is less interaction. See Figure 2.

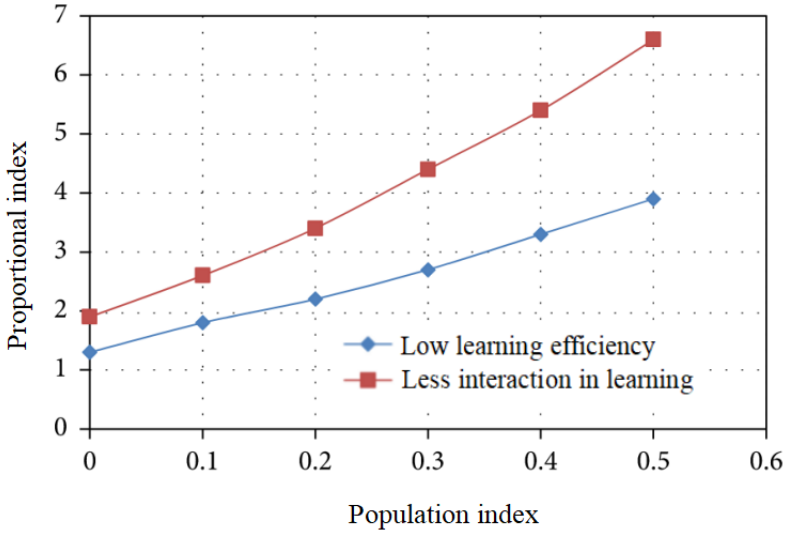

Fig.2. Statistics on the Reasons for the Low Efficiency of Traditional Classroom Learning

After class, the students complete the homework assigned by the teacher. According to the need, they can use the online open course platform to re-learn the individual knowledge points that they do not understand. When they encounter problems, they can also communicate through We chat and QQ, and submit homework after class. Teachers further communicate with students through We chat, QQ platform, push exercises after class, guide students to continue learning on the platform as needed, and check and feedback on the completion of students' homework. On this basis, teachers and students work together to complete the evaluation and summary of this learning task. This teaching method not only enables students to extensively collect, read, organize and process relevant materials outside the classroom, expand their learning horizons, but also enables teachers and other students to understand the speaker's views and ways of thinking and debate for other students. And teachers provide the basis for grasping the difficulties. Teachers not only play the role of active teaching, but also have the opportunity to learn actively and receive better teaching results. Under the guidance of this model, we need to further think about and explore the better teaching model in the future, in order to better improve the quality of teaching.

4. Conclusions

Hybrid learning is to promote and transform the traditional teaching model by “mixing“ and fully utilizing and utilizing the respective advantages of face-to-face teaching and online learning. At the same time, the teaching effect of mixed learning is improved by means of low input and high efficiency; mixed learning is to achieve the leading role of teachers and the main body of students' learning in the teaching process through "mixing". The application of big data has been quite extensive. In the education and teaching places, some people have conducted research. They can start with the relevant statistics given by the platform itself, or they can collect and conduct targeted research, and can pass the relevant results through the We Chat public. The platform and QQ group are pushed to students to help students learn better and more effectively. Of course, the network course is not perfect, there are still some problems, such as the complex disease process and clinical manifestations can not work well on the network, how to better mobilize students' enthusiasm and so on, which need to be explored and improved. However, the pilot project of pathology online course has just been carried out for several months, and has shown its strong vitality. It needs and deserves great efforts.

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