

Application of Online and Offline Teaching Based on Transformative Learning in Biochemistry Teaching

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Abstract: The third global medical education reform put forward a medical education model with system as the center, post competency as the guide and transformative learning as the core. Now, it has become the main guiding direction of medical education reform in China, which is a learning model of memory-based learning and further development after formative learning. With the high-speed development of information technology, digital, artificial intelligence, the advent of the era of 5G network, the traditional mode of teaching learning into online and offline teaching. On the basis of transformative learning, in the biochemistry of the important medical basic course teaching, we will develop online teaching innovation, combine the basic theory with clinical application, train high-quality medical talents to meet the needs of society.

1. Introduction

In 2010 international education expert conference was held, symbolized the third global medicine education reforms the comprehensive advancement, the transformative learning become the modern medicine education reform pattern. In the influence of informationization technical level high speed development and the crown virus epidemic situation, the transformative learning research system based on which several renowned educationists such as Jack Mezirow, we optimized reform online and offline teaching imperatively. Transformative learning^[1] is a process of effecting change in a frame of reference, which is characterized with critical thinking. This research will elaborate the transformative learning which to develop online and offline teaching, and provide reference for the medicine basic course educational reform.

2. The Construction of Teaching Reform

Now the rapid development of network, online teaching has become a good complement to offline teaching, especially in certain conditions, someone can not study in the classroom, online teaching become a necessary teaching means. Online teaching is very flexible and convenience. However, offline teaching, as a classical teaching form, is realistic and vivid, in the offline environmental students focus on studying, which is bound to have irreplaceable advantages. In the future teaching reform, online and offline teaching needs complementary advantages, based on the transformative learning system will optimize the online and offline teaching reform.

Transformative learning^[2] is the process of constantly exploring and evaluating. This teaching mode, that is to say, to change the process of the original reference department, is the memory-based learning, formative learning after the further development of the learning model, system-centered, job competence-oriented, through direct, personal experience to stimulate students to carry out critical reflection, to achieve deep-seated learning and internal concept of change. The basic characteristic is to attach importance and to cultivate students' critical thinking and lifelong learning ability, and to guide students to obtain the inner transformation of knowledge. The medical concept of transformative learning^[3] permeates the online and offline teaching reform of biochemistry, promotes students to learn with new problems, can form new explanations from their own experience through critical reflection and guide future actions, provides diversified growth and

development space, strengthens lifelong learning ability, guides students to explore actively, and acquires clinical competence to meet the needs of future medical development.

3. Transformative Learning Mode Optimizes the Exploration and Practice of Integrating Online and Offline Teaching Content

3.1 The Teacher Selects the Course Content, Gives the Student Issue Online

The teacher designs the good teaching courseware link with the clinical case carefully, using the internet platform fixed time according to the chapter push study content, each time the curriculum chooses a special content, lets the student in the clinical situation the bitter experience in difficult, the viewpoint choice, reconsidering, the idea transformation. The student through the consult electron material, study network online curriculum, the group explores the deliberation, solves in the reality problem with the critical thinking, the drive innovation thought. Through the online study curriculum such as MOOC and the micro class to cause the students study the content before class, grasping the main point of the biochemistry by themselves.

3.2 Build Student Learning Teams and Interact Online

Students' learning is not simply concentrated in the classroom learning, students can be divided into several study groups, about 10 students form a collaborative team, collected information analysis, students discuss the relevant topics, to complete research tasks. Online discussion, network interactive platform in anytime or anywhere, timely explain some questions. Teachers can give students some new questions, guide students to analysis questions. Online classroom each group role-playing, PPT or video report the results of the study, student learning teams discuss each other, critical reflection, propose and solve problems, mutual exchange viewpoint, so that the research results perfectly, summarized thematic reports rigorously and correctly.

3.3 The Classroom Face-to-Face Teaching Was Generalized and Integrated

In the face-to-face classroom, groups are brought together for inter-group discussions, and group representatives report their findings in PPT form, exchange supplements, and share research results. Teachers report comments on each group of students, summarize and integrate learning points, and analyse the different answers and vague concepts between students. In the classroom, students use mobile phones, enter the online evaluation system, complete the network test, make knowledge self-transformation, and at the same time assess teaching links, content, methods, effects of the process indicators objective. Teachers analyze test scores and feedback, push personalized guidance online, and adjust teaching in time base on the survey result.

4. The Evaluation Method of Teaching Effect

4.1. Evaluation of the Teaching Process

Online anonymous questionnaire to understand students' satisfaction with the teaching process, learning experience and advice. Offline student thinking ability assessment scale to test students' innovative quality ability, independent thinking ability, analytical judgment ability, ability to cope with uncertainty, ability to collect information, ability to acquire and develop new knowledge, interpersonal communication ability and teamwork ability.

4.2. Evaluation of Students' Academic Score

The method of online and offline formation examination assessment is adopted. Online students submit research reports and papers (10 percent of the total), offline teachers and student team leader

according to the student explanation, the number of answers and the correct rate score (10 percent of the total). The stage results after the four thematic case examinations (10 percent of the total), the sum of the operational scores of the experimental course (10 percent of the total), and the final examination is the result of the final theoretical examination papers (60 percent of the total). Using the same test papers and scoring criteria, the results of the two groups of students in the experimental class and the control class were compared.

5. Conclusion

Based on the online and offline teaching of transformative learning, it develops on the basis of the theory of transformative learning, and conducts research on theoretical teaching, experimental teaching and the construction of network platform courses by combining online and offline methods^[4]. The teaching of biochemistry in the basic course of medicine, focus on case design, the theoretical basis and clinical case closely combined, using online video, practice, testing, offline explanation, discussion, thematic analysis, critical thinking questioning, generalization summary and other forms of combination. Students satisfied with this teaching model which improved independent learning ability of transformation, professional knowledge of transformation, problem-solving ability in the clinical real case process, judgmental learning ability and so on. The transformation from memory knowledge to critical thinking has improved the ability of innovative quality, independent thinking, analytical judgment, response to uncertainty, collecting and processing information, acquiring and developing new knowledge, interpersonal communication and teamwork, improved the modern teaching technique and the teaching effects.

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