



The Fusion of Hybrid Teaching and Multi-level Cognitive Network Construction Application in the Physical Education and Health Education Curriculum

— Take the Course "Motor Anatomy" as an Example

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Abstract. In order to strengthen the teaching effect of physical health education course, improve the students' autonomous learning ability, this paper, for example, starting from the cognitive science and constructivism learning theory, analyzes the law of sports health education learning cognitive network construction, establish knowledge, ability, thinking, values four level cognitive network model. To achieve the purpose of mobilizing students' learning initiative and enthusiasm, stimulating students' interest and creativity, forming personalized logical thinking, so that students can have a more profound framework for the knowledge of motor anatomy course. Moreover, the integrated online and offline mixed teaching is used to play a positive role in the construction of the network model, and put forward the corresponding theoretical and experimental learning strategies, so as to achieve positive results in the teaching practice of the motor anatomy course.

Keywords: mixed teaching, multi-level cognitive network, physical education and health education, motor anatomy

1 INTRODUCTION

Most of the traditional physical education courses are teacher-centered and lack the personalized teaching mode of students' active participation, which is often difficult to stimulate students' interest and enthusiasm in learning. How to improve the students' active participation and learning effect in the course teaching through the innovative teaching mode is a major problem facing the current physical education and health education. study^[1]It is pointed out that the mixed learning method of combining individual courses and online courses is the general trend, which fully proves that the effect of mixed teaching is better than the traditional curriculum method. The multi-level cognitive network pays attention to the structure of subject knowledge and the interconnection between itself, so as to improve students' memory and understanding

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ability, and constantly expand the knowledge grid. After applying the theory of mixed teaching and multi-level cognitive network to the physical health education course, the transformation of teaching mode can be realized, information technology can be integrated to promote students' independent learning, establish the knowledge system related to sports, improve students' professional quality, and stimulate students' interest in sports health.

2 RELATED STUDIES

2.1 Wave of Online Courses

As an important part of online education, online curriculum has significantly changed the pattern of higher education and become a common learning and teaching method for students and teachers. This change is thanks to the progress of network technology and smart devices, the popularity of the Internet and the wide application of mobile smart devices, which makes online learning more convenient. Students can participate in courses through the Internet anytime and anywhere, which greatly expands the time and space dimension of education and improves the flexibility and autonomy of learning. Online courses have the advantages of learning at any time, saving time and resource costs, and covering more knowledge points. However, compared with traditional face-to-face courses, online courses have limitations in meeting students' physical, verbal and emotional needs as well as combining theory with practice. Nevertheless, the continued development and widespread application of online courses predicts that these issues will be further explored and addressed.

2.2 Cognitive Science and Physical Education and Health Education

Physical education course takes physical education and health knowledge, skills and methods as the main learning content, and takes the core quality of physical education and improve students' physical and mental health as the main objectives^[2], Which integrates the knowledge of sports anatomy, physiology, injury rehabilitation and sports psychology and other disciplines, aims to cultivate students' core sports literacy and improve their physical and mental health. This course combines theory and practice, showing the characteristics of integration, promoting students to transform knowledge into action, and deeply realizes the importance of health knowledge. At the same time, although cognitive science and physical education science have different research fields, they complement each other in physical health education. By mastering cognitive science, teachers can design teaching strategies more effectively, such as adjusting teaching content, forms and resources, and increasing classroom interaction, so as to improve students' learning effect.

3 STUDENTS STUDY, TRAPPED IN WHERE

3.1 The Distraction in Class may not be "Intentional"

Sports anatomy is a basic compulsory course for physical education major students, which is divided into two parts: theoretical teaching and experimental teaching, abstract concept, complex content, and scattered knowledge. Students sound complicated and confusing, very difficult to remember, and the effect is not ideal in the actual teaching process. It can be seen that in the systematic and strong motor anatomy course, students' mind wandering is not completely their own subjective reasons, and it is likely that they do not keep up with the teacher's ideas at the beginning, and appear "free" in a certain link^[3]. When trying to understand what the teacher taught, he was left behind. According to the survey, more than half of the students, or 57.3 percent, did not understand from the beginning of the class. Other reasons for wandering in class, class attention inattention, because of extracurricular matters or playing mobile phone games, because the course is boring are less than 1 / 3.

3.2 Break the Theory from the Empirical World

Sports health education series courses for the theory practice comprehensive course, the survey found that in most of the sports professional students theory course and practice class grades, simple theory or practice part is very good, but the content of the teaching are general, not effective theory with practical experience, only limited to one aspect. This separation between theoretical knowledge and practical experience is particularly evident in motor anatomy courses. Students learn the structure, function and movement mechanism of the human body in class, and have an in-depth understanding of the principle of the human movement mechanism through anatomical structure, muscle strength and neural control. However, in the actual exercise, the human body function is affected by individual differences, environmental factors, technical level and many other factors, producing a variety of results. I am very confused about the "results" outside the classroom, and obviously I do not know how to combine theoretical knowledge with practical experience.

3.3 Individual Differences in Basic Cognitive Systems

The individual basic cognitive system of students is significantly different due to the differences in learning background, subject preference, personality characteristics and self-awareness. These differences are manifested in five levels: feeling, meaning, operation, self-cognition and cross-situation, which make the unified classroom teaching progress and materials may lead to gaps in students' cognition, and affect the understanding and system construction of subsequent courses. Therefore, teachers need to understand the differences of students and give targeted guidance to students with different cognitive systems. According to students' cognitive characteristics and learning needs, corresponding education, guidance and support strategies should be formu-

lated to help them give full play to their personal potential and advantages and improve their teaching effect in learning and practice.

3.4 The Contradiction between Limited Study Time and Academic Challenges

Students need to be in the prescribed learning time (such as a semester or school year) to master and deal with various disciplines and tasks, the difficulty of the difference between disciplines and task quantity will bring students great pressure and challenges, will inevitably appear students in the process of cope with academic pressure or time and poor academic performance, and even learning difficulties. Then it forms the contradiction between the effective learning time and the academic challenges. The nature of this contradiction is the limitation of human time and cognitive resources, people's cognitive resources and time is limited, and academic challenges and difficulty is different, for each student need in the limited time comprehensive and in-depth knowledge, quickly adapt to various disciplines, and get enough academic performance and performance. In the survey of the college, 65% of the students think that the study time is urgent, and the basic courses of freshmen are relatively concentrated, accounting for 71.6%.

4 HYBRID TEACHING AND COGNITIVE NETWORK CONSTRUCTION AND INTEGRATION

4.1 Online Learning and Basic Network Construction

Students themselves have individual differences. In the teaching process, they should first break through the difficulties of personalized learning and fully tap the potential of different students. Online learning can achieve the differentiation between fragmentation and learning progress, but also has the disadvantages of consistent learning content. In the construction of class hours, teachers must make the following considerations: select the knowledge points based on the subject objectives, establish the learning objectives at different stages; complete the learning process on the professional basis; establish the vertical knowledge system with chapters as the fulcrum; connect the horizontal knowledge system as the fulcrum, and establish a comprehensive and extensive knowledge structure.

4.2 Build the Ability Network for Offline Case Teaching

Case teaching is a kind of teaching method to cultivate students' thinking ability, judgment ability and problem-solving ability through real cases, which plays an important role in "connecting the preceding and the following". In the process of case teaching, students constantly acquire, organize and apply knowledge, acquire skills and experience, constantly conduct self-evaluation and feedback, pay attention to the cultivation and accumulation of thinking methods, and combine theoretical

knowledge with practical application, and gradually build their own ability framework, so as to comprehensively improve their relevant abilities^[4]. Each section of the "motor anatomy" course is correlated and systematic. In the related online learning stage, the knowledge points are connected, which not only builds the link between the empirical world and the abstract world, but also constructs the cognitive network to solve problems.

4.3 Offline Discussion to Build a Thinking Network

Teachers before class to students 'autonomous learning check acceptance, the key guide students to learn the difficult knowledge, cannot make full use of offline classroom time to guide students to in-depth discussion and inquiry, guide students to ask questions, and in group discussion, class discussion to promote problem solving, the optimization of students' autonomous learning effect^[5]. In addition, teachers can through the organization, planning, design of different discussion topic (around students focus on real-time sports issues, theory problem, practical application problem), students through independent query, organization report, class discussion for deeper study, to deepen the understanding of movement anatomy, exercise using anatomy knowledge solving, ability to analyze the movement, so as to enrich the students' cognitive network system. In this process, ensure that the discussion theme is related to the theme of the chapter, and the discussion content is innovative, contact real-time sports hot spots, fully mobilize students' interest in knowledge.

4.4 Build a Network of Values in Teamwork

The best carrier to stimulate students' comprehensive quality improvement is group activities. At the same time, it can help students cultivate the spirit of trust, mutual assistance and cooperation, and also enable students to gradually establish their own values through communication and cooperation from different perspectives. Through teamwork, students can gradually develop their own values through the understanding and analysis of others' opinions. This process requires students to master step by step, be honed by time precipitation and thinking, and can finally build a deep and rational value network. It is to find the most suitable role in the division of labor of the team, and have enough courage and responsibility, mission and responsibility.

The process of hybrid teaching and multi-layer cognitive network construction is shown in Figure 1:

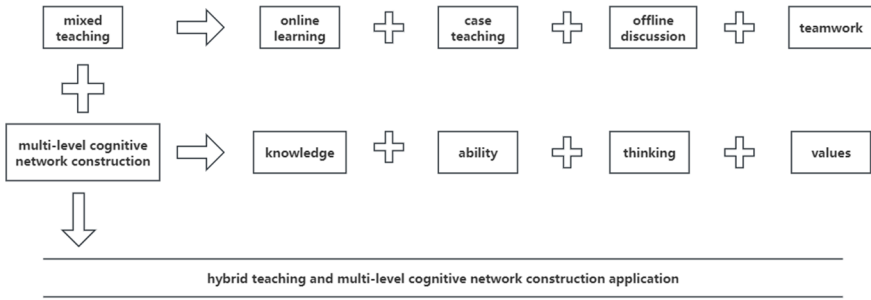


Fig. 1. Hybrid teaching and multi-layer cognitive network structure diagram

5 TEACHING IMPLEMENTATION

5.1 Teaching Objectives and Methods

Based on the construction of the four-level cognitive network, considering the advantages and disadvantages of various learning methods and platforms, the four-level teaching strategy is proposed, and the hybrid learning architecture with multi-methods is adopted to reduce students' doubts in learning, improve the learning effectiveness and enhance the sense of achievement in learning. Teaching is completed through online learning, case teaching, offline discussion and teamwork. The specific applications of motor anatomy courses are as follows: (1) the teachers upload the learning content according to the chapters, Set the specified deadline; (2) Offline classroom teaching teachers will enumerate the corresponding cases for discussion and analysis, Split the problems, Leading out to the core point, Students can connect the classroom core knowledge system horizontally through cases; (3) With each chapter as the core theme, Contact the real-time hotspots to conduct the seminar, To analyze and analyze the problems in online learning and the problems in case teaching, Sharing and giving feedback on the experiences in practice, In the discussion, gradually reflect the overall thinking, logical thinking and innovative thinking; (4) Arrange group assignments, Team members work together to complete literature sorting, project report, operation demonstration video and other tasks.

5.2 Adjust the Teaching Based on the Learning Situation Research

In the form of "Tencent Questionnaire", the learning situation survey is conducted regularly from the four dimensions of cognition, behavior, emotion and social interaction, and the students' interests, needs, learning habits, questions and ideas are collected. Analyze and sort out relevant questions, for the questions raised by most students, explain in class, expand the knowledge points to answer questions. For the questions raised by a few students, through the form of group and group discussion. Answer individual questions face to face.

5.3 Teaching Evaluation Design

As an important part in the teaching process, the teaching evaluation mainly includes four parts: the predictive evaluation, the process evaluation, the practice assessment and the final synthesis^[6]. (1) Before the start of the course, testing questionnaires are issued to students to understand the students' learning level and their understanding of the subject; (2) the online learning process, classroom performance, homework, group evaluation are process evaluation indicators; (3) the students' practical ability evaluation is completed through practice, PPT production and oral report; (4) the final results include the closed-book examination score (50%), practical (15%) completion of online learning (10%), classroom performance (10%), and group work (15%).

5.4 Teaching Effect

The application of mixed teaching and multi-layer cognitive network construction in physical education curriculum has achieved remarkable teaching effect and application ability. Students learn knowledge and cultivate their thinking ability in the traditional teaching and online teaching scenarios. Through traditional teaching to obtain more vivid knowledge presentation and communication opportunities; online learning to achieve learning time and space freedom, students' autonomy and flexibility to improve, the combination of the two greatly improve students' learning effect. Through the construction of multi-level cognitive network, students can summarize and sort out the knowledge they have learned, and form their own knowledge system, step by step, and progressive. Each layer is the expansion and extension of the knowledge of the previous layer. The research results indicate that hybrid teaching and multi-layer cognitive network building fusion in the movement of anatomy course application effect is remarkable, not only can help students to establish a comprehensive knowledge system and way of thinking, also can let students better understand the development of information technology and the change of society, so as to better adapt to the challenges in the future work and life^[7].

6 PROSPECT

OBE (Outcome-Based Education) education, called output-oriented education, emphasizes the students' learning results as the driving force, and then reverse the design of teaching activities and evaluation criteria to facilitate students' learning^[8]. The teaching of Motor Anatomy based on OBE concept can improve students' ability to apply the content they have learned, enable students to think actively in the learning process, deepen their understanding of the knowledge they have learned, and fully integrate knowledge analysis and solve problems when encountering practical problems. Targeted teaching content is more closely combined with practice, and is linked to employment skills^[9]. With a clear teaching purpose, the course teaching can improve the students' subjective initiative, and let the students change from passive acceptance to active learning.

Teachers can through professional goal orientation, employment goal orientation as the foundation, meet the development of students in the teaching goal, guide students in the process of learning to determine their own "goal" in life, combing learning life diagram, enrich its direction constantly improve themselves, at the end of the university life get a beautiful picture, draw a satisfactory end.

7 CONCLUSION

Students are the main body of cognition, and students' subjective initiative is fully mobilized, so that students can independently study and achieve the true meaning of knowledge construction through collaborative discussion. It is conducive to the improvement of teaching quality, and it is beneficial for students to better master the course, and to put anatomy into practice to lay a solid foundation for the subsequent subjects. This mode has made some achievements in the process of teaching practice and is deeply loved by students. From this teaching mode, it can be seen that the teaching of motor anatomy is based on the teaching content. Teachers use media, design scenarios and cooperative participants to organize teaching around the characteristics of students' independent learning process. The roles of teachers and students have changed fundamentally.

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