Discussion on the Design and Application of "Flipped Classroom" Teaching Mode Anatomy

Wei Huang, Lili Sun^{*}

Kunming Medical University Haiyuan College, Kunming, Yunnan 650000, China

*Corresponding Author

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Abstract: Flipped classroom, as a new teaching mode, has changed the role of teachers and students and realized the reform of traditional teaching mode by reversing the traditional classroom knowledge transfer and knowledge internalization. Anatomy is an early basic course for medical students to learn the morphology and structure of normal human organs by observing specimens, so experimental teaching plays an important role. Flipped classroom has been successfully used in some medical teaching activities, and it is expected to improve the teaching status of anatomy experiment class from the aspects of role exchange between teachers and students, classroom time re planning, and students' enthusiasm. As a new curriculum concept, the teaching mode of Flipped Classroom has changed the teaching concept, and students have gradually changed from object to subject. This paper analyzes the advantages of implementing Flipped Classroom in anatomy teaching compared with the traditional classroom, and the methods and paths that have been implemented, providing thinking and reference for implementing Flipped Classroom in anatomy teaching.

1. Introduction

Flipped Classroom is a teaching mode that turns over the roles of teachers and students in traditional teaching, and students watch digital teaching resources such as teaching videos at home or after class, and then return to the classroom for face-to-face sharing and exchange of learning results and experiences between teachers and students, so as to achieve teaching objectives [1]. Flipped Classroom, as a brand-new teaching organization form, has completely changed the traditional teaching mode, making students the leading role in classroom learning [2]. Anatomy is a basic course for medical majors that medical students come into contact with earlier. They mainly learn the morphology and structure of normal human organs by observing specimens. Therefore, experimental teaching occupies an important position [3]. In the training plan for medical specialties, anatomy courses are mostly offered in the first semester of freshman enrollment. Anatomy is a basic course for medical majors that medical students must learn first when entering medical colleges and universities. Its purpose is to master the morphological structure, positional adjacency and functional significance of normal human body [4]. At present, most of the anatomy teaching modes are still based on the traditional transmission-reception mode. This teacher-centered teaching mode, which aims at knowledge transfer, requires students to passively accept knowledge, which seriously suppresses students' subjective initiative and is very detrimental to the overall development of students.

As the main component of morphology, when medical students enter medical school, the first contact is human anatomy [5]. Under the traditional teaching mode, due to the long time of teaching and teaching by the experimental class teachers, the time for students to study and observe the specimens is short. In addition, the large amount of specimens and knowledge points in the course, so the students lack of autonomous learning in the experimental class and the learning effect is poor. The biggest feature of the anatomy course is the large number of medical vocabulary. During the learning process, students generally think that there are many noun concepts, complicated content, difficult to understand and remember, and the final assessment of the results is not ideal [6]. As a

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regular course of medicine, human anatomy mainly analyzes the organ distribution, tissue structure, and the correlation of adjacent organs [7]. The appearance of the Flipped Classroom teaching mode has undoubtedly brought a new dawn to the traditional teaching and learning of human anatomy. The Flipped Classroom has been successfully applied to the teaching activities of certain medical courses, and it is expected to improve the teaching status of the anatomy experiment course in terms of teacher-student role exchange, classroom time replanning, and mobilize students' enthusiasm, so as to improve the overall study of anatomy Effect [8]. As a new curriculum concept, the Flipped Classroom teaching mode changes the teaching concept, and students gradually change from object to subject.

2. Advantages of Flipped Classroom in Anatomy Teaching

2.1 Flipped Classroom Changes Traditional Anatomy Teaching Concept

In the traditional teaching process of anatomy, the primary goal of teaching is to require students to master "the morphology, structure and function of organs of normal human body". In the classroom, teachers are the leading role, paying attention to the teaching of professional basic knowledge, basic theories and basic skills, while students passively accept new knowledge. In addition to teaching videos, Flipped Classroom also has face-to-face interaction time to complete meaningful learning activities with classmates and teachers [9]. Students first watch digital teaching resources such as learning and teaching videos on their own according to the teacher's teaching arrangement before class, and then return to class to complete the internalization of knowledge through discussions, exchanges and interactions with teachers and give differentiated assistance to students. Students are the main actors in class and teachers are the behind-the-scenes directors. Flipped Classroom requires students to watch the corresponding digital teaching materials such as anatomy teaching videos according to the teaching arrangement before class, and solve the problems in the learning process by observing anatomical models and specimens, or by asking questions, discussing and communicating between teachers, students and students.

2.2 Flipped Classroom Respects Individual Differences of Students

Under normal circumstances, due to the limited time for theoretical lessons, a lot of theoretical knowledge needs to be explained in the experimental lessons, and the amount of specimens in each lesson is large, so the experimental lessons have heavy teaching tasks and tight classroom time, leaving students with short time for autonomous learning. The students cannot understand and digest the knowledge learned in the classroom well, so the effect of observing specimens is poor. The emergence of Flipped Classroom has played a great role in helping students of different learning levels, which embodies the student-centered and respect for individual differences of students. In flipped classroom teaching, students can arrange their learning schedule according to their own learning habits because they are not limited by the class time. For the content with a little difficulty, they can watch the videos, PPT and other learning materials provided by teachers repeatedly for in-depth learning, which greatly enhances the self-management awareness of students' learning. The purpose of anatomy teaching is to make students master the shape, position and adjacent relationship of various organs and structures of normal human body. Flipped classroom is not simply to replace teachers with videos, but more importantly to reflect in pre class learning and class communication, so as to mobilize the initiative of students' learning and increase the interaction between teachers and students in the classroom.

3. Ways to Implement Flipped Classroom in Anatomy Teaching

As one of the basic courses of clinical medicine, anatomy is also the basis of clinical medicine curriculum research. As one of the courses that medical students must master and contact, it is very important to learn the relevant theories of anatomy curriculum. The popularity of electronic devices such as the Internet, computers, tablet computers and smart phones on campus is a prerequisite for

the implementation of Flipped Classroom in anatomy teaching. All aspects of Flipped Classroom teaching require students to devote themselves fully, actively explore and participate, and give full play to their subjective initiative. Their learning efficiency is naturally higher. Anatomy, as the first basic course of medical specialty, requires a lot of medical terms to be memorized, which is a difficult course for students who have just entered medical school [11]. No matter how to obtain digital teaching resources, teachers are required to have strong modern information technology, not only to be able to make teaching electronic courseware, video and audio, but also to have the ability to search teaching resources by using the network.

Under the Flipped Classroom model, teachers change from the leader of the classroom to the designer and guide of teaching activities, which puts forward higher requirements for teachers. The information-based teaching environment provides Flipped Classroom with rich teaching resources and all-round interactive forms, and can fully mobilize the enthusiasm and initiative of students than the traditional teaching environment. The medical scores of the students in the experimental group who received the Flipped Classroom teaching mode and the students in the control group who received the traditional teaching mode were compared, as shown in Table 1.

Group	Number	Medical advanced	Fundamentals of	Medical
		mathematics	medical chemistry	Physics
Experimental	50	79.2±5.8	81.9±9.5	76.3±8.9
group				
Control group	51	73.8±6.2	76.4±10.3	68.2±9.2

Table 1 Analysis of The Scores of the Two Groups of Students

Flipped Classroom in anatomy teaching requires a large number of digital resources such as anatomy teaching videos, so that teachers can provide corresponding teaching videos for students to study by themselves before class according to teaching arrangements. For example, Table 2 shows the comparison of critical thinking scores between the two groups of students.

Group	Before intervention	After intervention
Experimental group	278.43	308.24
Control group	276.59	280.59

Table 2 Comparison of Critical Thinking Scores

The appearance of Flipped Classroom changes the original teaching mode, breaks through the limitation of traditional teaching time and space, and enables students to use fragmentary time to learn flexibly [12]. In the process of making teaching strategies, anatomy teaching and information technology should be closely integrated, the selection of teaching equipment should be appropriate, and the teaching design should fully consider the requirements of teaching objectives. Flipped Classroom allows absent students to freely arrange their study time and study place to make up missed lessons, thus enhancing students' initiative and flexibility in study time. On Flipped Classroom, the traditional anatomy teaching mode has been completely subverted. The teaching of knowledge is completed before class through information technology, and the internalization of knowledge is completed in class with the help of teachers and the communication with classmates.

4. Conclusion

Flipped Classroom mode is a student-oriented teaching mode, which conforms to the educational concept of the new curriculum reform. While improving learning efficiency, it pays more attention to the cultivation of students' critical thinking. Anatomy, as the first basic course of medical specialty, requires a lot of medical terms to be memorized. For students who have just entered medical school, it is a difficult course to learn. Network learning of human anatomy has become a trend. At present, the development of some new network learning and examination software is more helpful to the implementation of the Flipped Classroom teaching mode. The extensive implementation of flipped classroom model needs the support of information technology, the

improvement of school hardware facilities, the improvement of teachers' vocational education ability, and the establishment of social evaluation system. In the process of rapid development of modern educational information technology in China, flipped classroom's teaching mode will have a positive impact on the reform of anatomy teaching mode. Flipped classroom allows students who are absent to arrange their study time and place freely to make up lessons by themselves, which enhances the initiative and flexibility of students' study time. Applying flipped classroom teaching mode to human anatomy teaching, its clinical education and learning effect is significant, and students' learning performance is effectively improved.

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