

# Preliminary Study on the Mixed Teaching Practice Method of Cell Biology Experiment Course

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**Abstract:** Cell biology is a course which is closely related to theory and practice, but with the development of the times, the traditional teaching mode has been unable to meet the needs of personnel training. With the help of mixed teaching, the online and offline organic combination is conducive to better improve the quality and level of teaching. This paper first analyzes the current situation and existing problems of cell biology teaching, and discusses the mixed teaching practice method of cell biology experiment course.

**Keywords:** Cell Biology; Experimental Course; Mixed Teaching; Practical Method

With the rapid development of economy, big data has been widely used, and many high-quality teaching resources have been fully used on the network. Compared with the traditional classroom teaching mode, great changes have taken place in many aspects. With the development of network, there are many kinds of learning platforms and software in media teaching, such as MOOC. The concept of online learning is deeply rooted in the hearts of the people. In this case, with the help of new media, we should reform the traditional teaching mode and promote the construction of “online and offline mixed teaching mode”, so as to better promote the transformation and upgrading of undergraduate colleges and universities, constantly improve the teaching quality and students’ learning effect, and further promote the high-quality and sustainable development of college education.

MOOC, a new teaching software, is the product of the rapid development of big data in the information age, and has a strong sense of the times. In this learning environment, combined with the traditional classroom teaching mode, the combination of the two can make better use of resources to enrich students’ knowledge and improve teaching level. MOOC can make full use of network information technology to share high-quality teaching resources, and provide mixed teaching ideas and methods for relevant teachers. At the same time, it makes learning more convenient without the limitation of time and space. Therefore, the software has been more widely concerned by the society and people.

## 1. The present situation and problems of cell biology experiment teaching

The related theoretical knowledge of cell biology course is complex and abstract, which makes it difficult for students to understand. Through the experiment, the theoretical knowledge can be embodied and students can feel the knowledge content intuitively. Through the way of personal experience, deepen students’ feelings and their understanding of relevant knowledge, so as to better improve their practical ability.

At present, the teaching mode of cell biology experiment course is still relatively backward, which is mainly based on

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teachers' teaching, and students are in a passive position in learning. The experiment is only to complete the tasks assigned by teachers, with single teaching mode, and the evaluation system is only based on the final examination results. This kind of teaching malpractice is big, first of all, the student studies passively, lack the enthusiasm, leading low study efficiency. Secondly, theory teaching is given priority to, lack of perfect equipment, each student cannot fully improve their own practical ability, and the ability to apply theory to practice is also poor. Therefore, this teaching method is relatively backward and cannot meet the needs of the development of the times.

## **2. Design method of mixed teaching mode for cell biology experiment course**

So far, MOOCS has not been widely used in China for a long time. Therefore, in order to better use MOOCS in blended teaching, it is necessary to carry out professional training for teachers, so as to make them clearer about the role and operation process of MOOC, and better apply it to the classroom. In this process, the use of MOOCS makes the mixed teaching in some colleges and universities get a better development. Therefore, the author also used the MOOC platform to reform the experimental teaching mode of cell biology and designed a mixed teaching mode. The design content is mainly divided into three stages: before class, in class and after class.

Before class: According to the teaching plan, the teacher searches for knowledge and information resources with the help of relevant software, transmits the recorded teaching video to MOOC software, and arranges relevant preview tasks and homework for students, so that students can make full preparation for the class. In addition, in MOOCS, it provides a platform for students to communicate and discuss problems, so that teachers can make clear the focus of teaching.

In class: There is a clear time limit in the classroom, so teachers need to have an overall grasp of the teaching progress. According to the situation of students' preview, teachers can find the difficulties and key points of students' learning, and use multimedia to explain them in class with relevant pictures and contents. At the same time, teachers set aside a certain amount of time so that students can carry out relevant experiments independently and improve their practical ability.

After class: Teachers can reserve relevant exercises for students to consolidate their knowledge in time according to the learning situation in class. At the same time, more open discussion topics can be set up to expand students' ideas. In addition, relevant examinations or tests should be set up to test students' learning effect in time, so as to change teaching methods and improve teaching quality.

## **3. Practical methods of mixed teaching mode in cell biology experiment course**

### **3.1 Innovating and enriching the original teaching content**

Cell biology is closely related to practice, but in the traditional teaching mode, the classroom theoretical knowledge is still the main teaching mode, and the establishment of practice content is not perfect, difficult and lack of innovation. At the same time, although MOOC has great innovation in content setting, teachers still need to go to school in time, and relevant learning materials and teaching videos still need to be fully prepared before teaching. Therefore, according to the characteristics of cell biology experiment course, teachers need to find relevant materials for knowledge integration, set up more targeted experimental topics according to its characteristics, and innovate teaching content, so as to better combine theory with practice, stimulate students' learning enthusiasm, and cultivate their innovative consciousness, as well as constantly improve their practical ability. In the design of the project, the requirements are put forward to enable students to take data independently, conduct experiments and analyze the experimental results independently, in order to give full play to students' learning initiative and lay a foundation for subsequent learning.

### **3.2 Promoting the innovation of teaching methods**

The application of MOOC platform can break the limitation of teaching time and space. Teachers can expand the time width of teaching and let students increase the time of knowledge learning. The experimental class hours of cell biology are limited. The application of MOOC platform can improve the experimental efficiency and ensure the experimental effect. According to the main content of teaching, teachers can upload teaching materials or record demonstration experiment video

in the laboratory in advance. In this way, students can preview knowledge before class, deepen their impression of knowledge in class, and watch videos repeatedly after class to consolidate knowledge and improve classroom efficiency. For example, teachers can record basic experimental videos such as microbial cell adsorption test and cell anatomical equation experiment, and inform students of the purpose, principle, steps and precautions of the experiment in the video, and explain abstract concepts with subtitles, pictures and animations, so as to increase the specificity of experimental principles, and facilitate students to master the experimental contents and experimental operation techniques.

### 3.3 Improving scientific and reasonable assessment system

The original assessment method is relatively simple, mainly based on the final examination results, lack of fairness, more one-sided. When MOOC is applied to blended teaching, teachers can observe students' preview, discussion and learning attitude with the help of software, which makes teachers have a more comprehensive understanding of students' performance, and lays a foundation for establishing a scientific and perfect assessment system. The evaluation index can be composed of attendance, preview results, experimental results and MOOC platform, in order to scientifically and systematically reflect students' learning attitude, knowledge mastery and experimental skills, and stimulate students' learning initiative.

## 4. Conclusion

With the advent of the information age, the rapid development of big data and Internet technology provides the era background and technical conditions for the emergence of MOOC. It has many advantages, such as breaking the time and space constraints of students' learning, integrating a large number of learning resources, more reasonable in content setting and personnel allocation, making students' learning is more convenient. At the same time, MOOC is open, and people in different regions can share learning resources, which is conducive to promoting the development of education. The promotion of mixed teaching mode is conducive to the improvement of teachers' professional quality, and can also effectively enhance students' learning enthusiasm and help improve the teaching effect. The application of mixed teaching mode in cell biology experiment teaching is still in the exploratory stage, and the construction in many aspects is not perfect, which needs to be improved, so as to continuously promote the development of cell biology experiment course education.

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