Reform and Practice of Experimental Teaching of Laboratory Animal Science

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Abstract. Laboratory animal science is a subject with strong application, and the position of experimental teaching is very important. According to the teaching practice in recent years, we analyzed the present experiment teaching situation of laboratory animal science, summarized experiment teaching reform and practice of laboratory animal science, and put forward corresponding countermeasures to the existing problems, in order to improve the teaching quality.

Introduction

Laboratory animal science is one of the basic courses in medical colleges, taking laboratory animals as the main research object, and fostering the laboratory animals used in medicine, pharmacy and life science study [1]. Experimental teaching is an important part of the teaching, complement with the theory of teaching. In addition, compared with the theory teaching, experimental teaching is more intuitive and operational, and plays an important role in cultivating the students' interest, training students' ability of operation and improving students' abilities of innovation [2]. In recent years, with the development of China's high education and the expansion of education scale, there are many new problems in the course of the experiment teaching of laboratory animals. How to solve these problems through teaching reform and improving the quality of experiment teaching is a task that is placed in front of every educator. The author made a preliminary discussion on the reform and practice of experimental teaching of laboratory animal science in this paper.

Present Situation of Experimental Teaching of Laboratory Animal Science

Old Content

With the development of science and technology, the theory and technology of laboratory animal science change very fast. The traditional experimental contents are classic but relatively old, which lag on the development of disciplines and can not meet the requirements of the teaching. Moreover, the contradiction is more prominent with the development of the teaching form, which hinders the improvement of the teaching quality.

Monotone Method

The teaching process mainly took the teacher as the leading, ignored the students as the active participation of the individual. The students operated step by step according to the teacher's explanation, which could get the correct result, however, inhibited the creative thinking of the students.

Not Comprehensive Assessment

The teacher gave the score to students mainly according to the experiment report and the normal performance, which was difficult to evaluate the true experiment operation level of students. In addition, it was also difficult to objectively and fairly reflect the experiment teaching effect, deviated from the teaching aim that stimulated the student to master experimental skills and cultivated the creative spirit through experimental teaching.
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Reforming Experimental Program

Comprehensive and designing experiment is a novel experimental teaching mode, which is conducive to cultivate of students' comprehensive quality, train students' operated ability and improve students' ability to analyze and solve problems. Therefore, we set up the experimental program, reducing the verification experiment initatively, increasing the comprehensive and designing experiments, so that the students mastered the experimental skills of laboratory animal science.

Optimizing the Experimental Content

We reset the original experiment content of laboratory animal science. There are six original basic experimental content of laboratory animal science, namely the: experiment 1: grouping and marking of laboratory animal, experiment 2: grabbing and fixing of laboratory animal, experiment 3: removing hair and giving medicine of laboratory animal, experiment 4: taking blood of laboratory animal, experiment 5: anesthesia of laboratory animal, experiment 6: executing of laboratory animal. In practice, we combined these six experiments into two experiments, not only made the experiment more system, but also improved the utilization efficiency of experimental animal. In addition, we increased the additional content of experiment according to different majors of students.

Adjusting Experimental Program

There are a large number of different majors in medical college. Therefore, we adjusted the experimental program and content with different professional students. For example, we increased disease animal model experiment in clinical medicine major, deepening the understanding of the disease through the model. We increased acute and sub acute toxicity experiment in pharmacy major, evaluating the drug safety effect through animal experiment. Furthermore, we increased animal cells culture in biology major, improving the students' operation skills of experiment.

Reforming Teaching Method

Applying modern technological methods to experimental teaching is one of the important contents of the teaching reform of laboratory animal science [3]. On the one hand, we utilized advanced multimedia teaching equipment comprehensively, such as the audio, video and digital microscope, displaying the specific experimental procedure. On the other hand, we made full use of the network to improve the efficiency of the experimental teaching greatly. We realized the real-time interaction between teachers and students through the network, because they could communicate at any time and in any place.

Building a Research Platform

By platform of election each other, we let the outstanding teachers and students selected each other in two-ways, achieving the aim that scientific research promoting teaching and teaching guiding scientific research [4]. Teachers gave sub topic and asked questions. At the same time, students built team independently, studied autonomous with the questions. We exerted an imperceptible influence on the cultivation of students' scientific thinking way, shaping the scientific spirit of innovation, establishing a rigorous style of scientific research, improving the ability of discovery, analysis and solve of problem in the exploring process.

Perfecting Assessment Mechanism

Laboratory animal science is a subject with strong application, especially focusing on the training of students' practical ability and scientific research ability. Therefore, the assessment mechanism must pay attention to the students' experimental skills and the ability of analyzing and solving problems. In practice, we explored a set of evaluation system for experimental teaching of laboratory animal science. Firstly, the experimental report accounted for 20% of the total score. Secondly, we examined the experimental operating skills, so that students randomly selected
questions to complete the experimental operation in a specified time, with a total score of 50%. Thirdly, we put forward the research problem, letting the students check the relevant information, designing the experimental program, and predicting the results, accounting for 30% of the total score.

Existing Problems and Countermeasures

Due to the different theoretical knowledge structure, learning ability and interest of students, some students were difficult to participate in the appropriate topics. Therefore, on the one hand, we mobilized the teachers to provide more research projects; On the other hand, we encouraged students to choose topics independently and participate in projects of other students.

It is necessary for the teachers to have higher level and ability. Therefore, we strengthened the training of teachers. For example, we encouraged teachers to apply for research projects, as well as improving the quality and level of the teachers through the tutorial system, "sandwich" teaching, micro-teaching, pre-experiment, collective preparation for lessons, teaching observation and other methods. At the same time, we carry out effective regulation and supervision to the experimental teaching through the establishment of standard operating procedure (SOP).

The pressure of laboratory is getting bigger, owing to the students increased year by year and the small class teaching. Therefore, we opened more laboratories, strengthen the operation and management of the laboratory, improved the operation efficiency of the laboratory, equipped with adequate experimental equipment, laboratory animals, reagents and consumables to meet the needs of students.

In conclusion, laboratory animal science is a subject with strong application which closely related with practice and the position of experimental teaching is very important. Therefore, we changed the teaching method, inspired the students' innovative thinking, promoted the students to study actively, improved students' analyzing and solving problem ability, achieved better teaching effect by the reform of teaching [5].

Reference


