

Exploration on the Reform of Practical Teaching Content and Teaching Method Based on Biology in Middle School

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ABSTRACT. With the development of the times and the progress of society, everything needs to follow the trend of the times. On this basis, the teaching content and teaching methods of modern middle school biology must be reformed and innovated. Its reform and innovation of teaching mode, content and method is an important event for the cultivation of middle school students' learning ability in the new era. Therefore, we must pay attention to the reform of practical teaching content and teaching method of middle school biology. We must fully guarantee and improve the quality of teaching in terms of the effect of class and the quality of teaching. We should formulate a set of practical teaching content and teaching methods that can meet the needs of middle school students in the new era. We should always respond to the needs of students for teaching content and teaching methods, and adopt different teaching methods for students with different needs in order to achieve the best teaching effect. It is found that by optimizing the middle school biology practice teaching, students' interest in learning biology can be effectively cultivated, and students' operating skills in biological experiments can be improved.

KEYWORDS: Middle school biology, Practice teaching, Teaching methods, Teaching environment

1. Introduction

Biology [1-2] it is mainly a subject field based on experiments. The experimental teaching method has a very important influence in most teaching fields of biology in middle school. However, at present, there are some big problems in the teaching content and methods of biology in middle school. These problems lead to the students can only obtain the knowledge of biological experiment through the content of textbooks. Experiment is a very important link in biology learning, because of many reasons, students can not carry out the practice of biological experiment, which leads to the lack of experimental knowledge of many students, can only imagine, can not carry out practical operation. Therefore, in order to improve the learning ability of contemporary middle school students for biological experimental knowledge, we have carried out some reforms in the practical teaching content and methods [3-5].

In schools, students can participate in experiments and design experiments [6-8] in order to better learn some practical knowledge of biology, learn corresponding biological experimental practice and theoretical knowledge, and improve their operational skills. Through the experimental operation, students can also improve their insight ability, as well as the first-hand ability, which can better cultivate students' biological literacy. But in some remote areas, there are a lot of lack of experimental opportunities in secondary schools, there is no ability to cultivate students' experimental operation and experimental design ability. Therefore, the primary task at present is to popularize biology experiment teaching in middle school to every middle school, so as to cultivate students' knowledge of biological experiment [9-10] and improve their biological learning literacy.

This paper mainly studies the reform and exploration of practical teaching content and teaching method based on middle school biology. With the development of the times, the practical teaching content and teaching method of middle school biology also need to follow the trend of development. In the reform and exploration of the practical content and teaching method of middle school biology, it is found that by optimizing the practice teaching of middle school biology, the practical teaching of middle school biology should be improved, Students' interest in learning biology can be effectively cultivated, and students' operating skills in biological experiments can be improved. Through the analysis, it is found that the main content of this paper can effectively improve students' learning ability.

2. Reform of Practical Teaching Content and Teaching Method Based on Biology in Middle School

2.1 Optimizing Experimental Teaching Content

The specific content of optimizing experiment teaching is to simplify the content and quantity of useless biological experiments done by middle school students, and to strengthen students' ability to study biological experiments in depth. Most students can greatly improve their practical operation ability and learning interest when doing these in-depth research biological experiments. They can improve their ability to solve difficult problems in biological experiments and improve their biological science literacy. They can quickly solve the problems encountered in biological practice by applying the biological theoretical knowledge they have learned. This shows that in-depth research-based experiments are very important in biology learning and need to be widely promoted and applied in school biology learning. Although such an in-depth study of experiments can quickly improve students' ability, some students who lack theoretical knowledge and weak operational ability can not quickly enter the experimental research state, so it needs the guidance of subject teachers. Middle school biology teachers should study first, master the experimental method of deep research, and then be responsible for imparting this ability to students. Through this in-depth analysis of the experimental way, students learn a lot of independent analysis of the ability of problems, can better solve the problems in biological practice, and can effectively enhance students' interest in learning biology, so that biological learning becomes a kind of enjoyment.

2.2 Improving Practice Teaching Method

Using "heuristic" and "task driven" teaching to consolidate the theoretical knowledge learned in the classroom. These new practical teaching methods have been widely used in deep research experiments. The most basic practical teaching feature is that students are the main part and the teacher is the auxiliary. When students encounter difficulties in autonomous learning, teachers will help them. This new teaching method can effectively improve students' learning ability and learning progress. Students can adjust their learning progress through their own learning ability, and teachers can teach students according to their aptitude according to their learning conditions. Through many years of practical research, it is found that the application of "task driven" teaching method can effectively stimulate and cultivate students' interest in creative learning activities, cultivate students' awareness and ability of analyzing and researching and solving practical problems, and improve students' ability of self-organized learning and collective activities of communication and cooperation with others.

3. Experimental Design

In this paper, a middle school high school students learning biology as the scope of research, the first year of high school is just beginning to study biology in-depth stage, the need for correct practical teaching methods to guide. The purpose of the questionnaire survey on biological practice teaching is to understand the current situation of middle school students in biology learning, improve the existing problems in the current practice teaching of biology, and establish a new assessment standard to adapt to the development trend of the times. The results are shown in Table 1 below.

Table 1 Evaluation Criteria Of Biological Experiment

Assessment items	Assessment content	proportion
Process evaluation	Completion of preview Report	5%
	Answer the teacher's questions	5%
	Experimental attitude	15%
	Experimental operation ability	15%
Summative evaluation	Project examination	60%

4. Discussion

4.1 Analysis of the Present Situation of Biology Experiment Teaching in Middle School

Many investigation results show that the experimental environment in some remote schools is very bad. Due to the restriction of geographical environment, it is impossible to improve the experimental operating environment, so many experimental operations and design can not be carried out normally. Even if some middle schools can conduct experiments in a formal way, teachers and students are perfunctory. This will greatly reduce the experimental knowledge of students, unable to achieve the ability required by biological experiments. Some teachers are also aware of this problem, so they update their own experimental equipment and equipment in order to improve students' experimental ability. Of course, some achievements have been made. However, most of the other biology teachers are lack of knowledge and ability, especially in some remote areas, there are few teachers who have rich experience in

biological experiment teaching, and can not do anything to meet the needs of students' experimental ability in the new era. The results are shown in Figure 1.

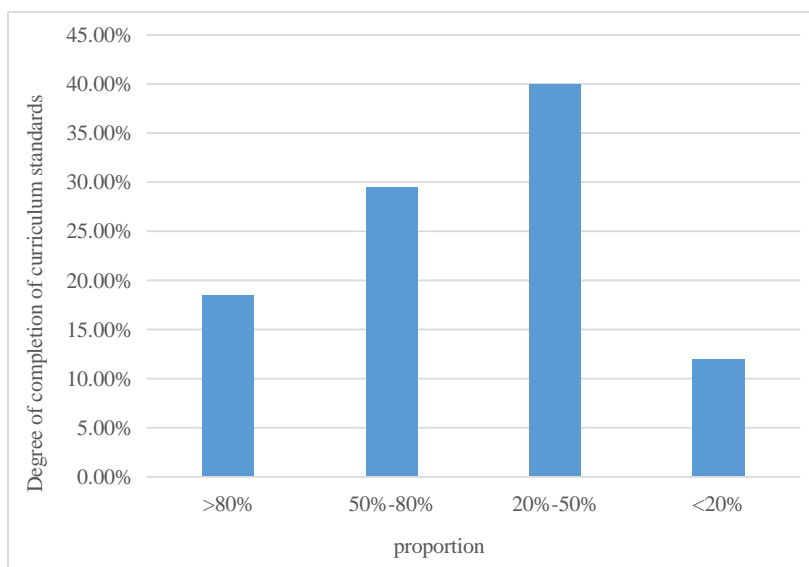


Fig.1 The Experiment of Completing the Course Standard

As shown in Figure 1, 12% of the schools have completed the experiments required by the curriculum standards in secondary schools, 40% of the schools have completed 20% - 50% of the curriculum requirements, and about 48% of the schools have completed the experiments required by the 80% - 100% timetable. It is found that more than half of the schools can not complete the basic experiments required by the curriculum standards. In general, the completion of the situation is not optimistic, in order to understand more reasons, and conducted a relevant survey, the statistical results are shown in Figure 2, Among them, I is lack of experimental materials, II is lack of experimental environment, III is lack of class hours, IV experiment organization is not good, V teacher's own experimental skills are insufficient, VI whether to do experiments does not affect students' test scores, VII means other. Generally speaking, the main reasons why some middle schools do not offer experimental basic education courses are: lack of experimental materials, insufficient class hours, lack of experimental equipment, and poor organization of students. The analysis of the survey results shows that half of the schools are due to these factors, which leads to the low rate of experimental opening, so these conditions are the main factors for the low rate of experimental opening.

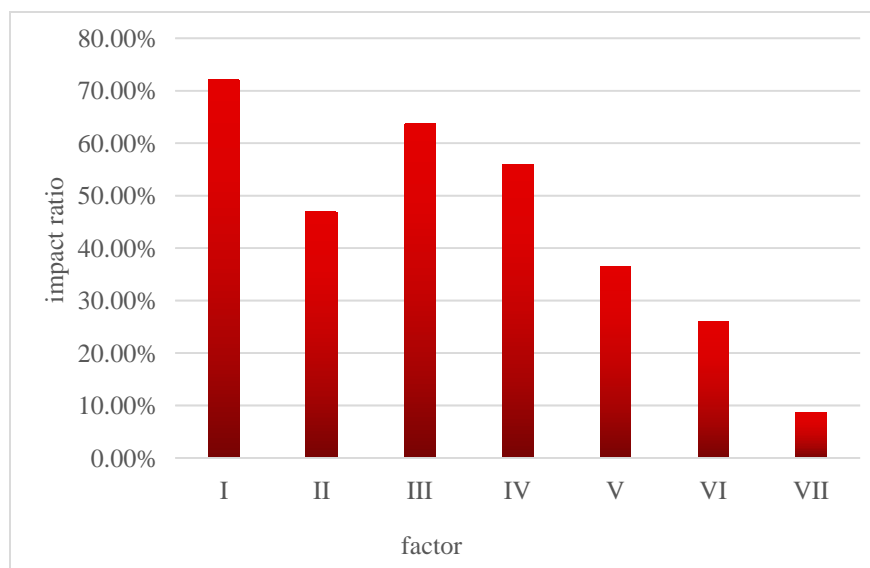


Fig.2 Factors Affecting the Experiment Not Opened

4.2 Suggestions on the Reform of Practical Teaching Content and Teaching Method Based on Biology in Middle School

In the reform of practical teaching content, we should first understand and design the learning subjects. In the design of learning subjects, we need to consider the reform of practical teaching content and teaching methods, and also need to include some teaching evaluation. These contents mentioned above are an important link in the reform of middle school biology teaching content and teaching methods. After thinking and discussing the above contents, some preliminary practice was carried out to increase the innovation of the content and method of biology practice teaching in middle school. The purpose of this is to improve students' practical learning ability of biology. In order to make students keep up with the pace of the development of the times and improve their core learning ability, it is necessary to reform the practical teaching content and teaching methods of biology in middle school.

In the middle school biology practice study method, does not need to rigidly adhere to the previous study mode, the innovation middle school biology practice teaching method first must change the traditional teaching mode, the new teaching mode should give priority to the student, the teacher is auxiliary, appeals the student to study independently, enhances the student's self exploration ability, when the student has the difficulty, the teacher helps the student again It can save educational resources. Secondly, it can help students adjust their learning progress according to their own learning ability. Teachers can also teach students in accordance with their aptitude according to the different situations of each student, which can better help students realize their own problems and improve their learning ability. The efficient teaching course requires all teachers and students to invest less energy and time in the process of teaching, so as to obtain greater practicability and teaching economic benefits. In the current middle school, teachers and students are unable to choose and change freely. It greatly improves the quality and efficiency of teaching, reduces the huge waste of time and physical strength of teachers and students, and only greatly promotes students to change their teaching methods. In the traditional teaching method of biology course in ordinary high school, the teachers teach the content of biology course very hard, the learning process of students seems very boring, the learning situation of students is very poor, and the learning efficiency is also very low. Scientific and reasonable use of teaching resources under the background of today's era can help students learn more efficiently. Combined with some new teaching content and teaching methods, for example, combining theory with practice, through experiments to increase students' interest in learning and autonomous learning ability. Let the student's study no longer be "passive", change the passive into the active, let the student fall in love with the study, enjoy the study.

5. Conclusions

This paper introduces the practical teaching contents and teaching methods based on the middle school biology. Combining the development trend of the times with the practice teaching, through the investigation and analysis of the biology learning situation of the contemporary middle school students, it is found that the practical teaching of middle school biology is of great importance. By optimizing the practical teaching of biology in middle school, students' interest in learning biology can be effectively cultivated, Students' operating skills in biological experiments can be improved. Through the research and analysis, it is found that the innovation and development of middle school biology practice teaching can effectively improve students' learning ability.

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