

The Application of Participatory Teaching Mode in the Process of Organic Chemistry Experiment Teaching in Colleges and Universities

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Abstract: The participatory teaching mode plays an active role in the current teaching activities, which can achieve the teaching objectives, and enhance students' ability to acquire and apply knowledge. This paper mainly starts from the analysis of the basic situation of the participatory teaching mode, highlights the problems existing in the current organic chemistry experiment teaching in colleges and universities, and puts forward the application strategy of the participatory teaching mode in the current college organic chemistry experiment teaching, which provides some certain reference for improving the teaching level, and cultivating students' scientific experiment and inquiry literacy.

1. Introduction

In the course of organic chemistry course teaching activities, experimental teaching occupies a large proportion. Compared with the traditional teaching methods, it is more necessary to give full play to the participation and enthusiasm of students, so as to promote students to combine experimental teaching content, master teaching content and achieve teaching objectives. The participatory teaching mode plays an important role in the current organic chemistry experiment teaching in colleges and universities. It places students in the main position of classroom teaching, and adopts open teaching content and question-based lecture mode, which can effectively activate the classroom teaching atmosphere, stimulate students' interest in participation, maintain good communication between teachers and students, and simplify the high-level knowledge to improve the overall teaching level.

2. Basic situation of participatory teaching mode

The participatory teaching mode is a new type of teaching method in the current teaching activities. It is a cooperative or collaborative teaching method that all teachers and students work together to establish a democratic, harmonious and warm enthusiastic atmosphere, so that students at different levels have the opportunity to participate and develop effectively. In the process of practical application, participatory teaching mode makes full use of a variety of intuitive images, flexible and diverse teaching strategies to guide students to actively participate in the teaching process, to realize benign information exchange and feedback between teachers and students, and to improve students' ability to understand and apply knowledge.

The participatory teaching mode shows obvious teaching characteristics in the actual application process: First, the teaching content has obvious openness. Integrating the content of the frontiers of science and scientific research into specific teaching links not only teaches basic theoretical knowledge of the curriculum, but also stimulates students' awareness and desire to explore knowledge. Second, use the question-based teaching approach. Many teaching activities are focusing on the full communication between teachers and students. Teachers need to pay attention to appropriate questions in combination with teaching content, and students can also ask teachers when they do not understand the content^[1].

3. Problems in the current organic chemistry experiment teaching in colleges and universities

3.1 Students' lack of self-learning awareness and ability

In the traditional organic chemistry experiment teaching, the teacher is the main body of teaching, designing and preparing the experimental content. The students only need to follow the teacher's rhythm to gradually complete the experimental steps, and the students' self-learning ability is not well cultivated. Students passively accept various experimental knowledge and content, but they are unable to rely on their own knowledge mastery and experimental skills, diverging logical thinking ability and imagination, and accomplishing experimental goals. At the same time, in the long-term model teaching, students do not have a high sense of independent learning^[2].

3.2 Students' experimental operation is not effective

The students have gradually become accustomed to the teachers to explain the key content and steps of the organic chemistry experiment. In the experimental preview, the key content is not well mastered, resulting in some operational errors in the process of specific operation experiments, and not implemented in accordance with laboratory specifications and precautions. It affects the experimental results, and the experimental results obtained are not accurate enough. In the course of the experimental class, the students' enthusiasm and initiative are not high enough, and they do not have strong subjective initiative and awareness of inquiry, which leads to their weak comprehensive practice ability^[3].

4. Participatory teaching mode of organic chemistry experiment teaching in colleges and universities

Organic chemistry experiment teaching is a basic practical course, which focuses on cultivating students' basic knowledge and practical skills. At the same time, students are required to have good practical and innovative ability to fully and effectively use their knowledge and ability to deal with practical problems. It should not be overlooked that there are still some shortcomings in the process of conducting organic chemistry experiment teaching activities in colleges and universities, which affects the realization of teaching effects. In this regard, it is necessary to actively adopt the participatory teaching mode to maximize the students' inner potential and promote the students' input into the experimental activities to cultivate students' scientific research literacy.

4.1 Improve teaching design scientifically

In organic chemistry experiment teaching activities, colleges should combine experiment steps and strengthen the application effect of participatory teaching mode, which needs to design experimental activities scientifically and reasonably in combination with the teaching content, and promote the smooth implementation of experimental steps^[4]. First, prepare for the experiment. Teachers need to compile the experimental evaluation report based on the experimental topic and content, and present the key points and details of the experiment in the form of questions, so as to promote students to form a complete ideological understanding. Teachers should give full play to the dominant position of students, so that students can fully collect and consult literature, carry out team discussions, write experimental evaluation reports according to experimental operation, and finally accurately interpret the experimental contents by student representatives. Second, experiment implementation. In this stage of teaching activities, students need to be able to complete and describe the experimental steps accurately^[5]. Students take the questions in the experimental course as the guidance to explore the final results of various experiments. Teachers should design some difficult experimental contents, such as allowing students to try to choose the appropriate purity of experimental reagents, remove some expired catalysts and solvents containing impurities, which will promote students to apply various experimental knowledge well and understand and grasp the importance of various experimental conditions. Taking the experiment of "the synthesis of diphenyl-Ethanedione" for example, a student in the team needs to produce reasonable thin layer plate in accordance with experiment rules, finds the necessary developer, providing good premise

for the track record of follow-up experiments process, completes the synthesis of diphenyl-Ethanedione combined with their own grasp of the experimental steps, tests the purity of synthetic products, and analyses its overall structure. While other team members should explain the experiment steps and change catalysts in time to realize the comparison of various experimental conditions, so as to present rich experimental contents to students and teachers. Finally, experimental feedback. After the teaching experiments, students need to comprehensively summarize and reflect on their own experimental activities, record and fully discuss some difficult problems in the process, and write a report in the form of research papers as the final research results. At the same time, teachers also need to participate in students' reflection activities and give students good guidance.

4.2 Adopt diversified teaching methods and assessment methods

In participatory teaching mode, there are diversified learning paths and examination methods, and there is no obvious standard. Teachers cannot give students a conclusion, they should cultivate students' questioning ability and critical spirit, and guide students to use a variety of voluntary learning methods to complete teaching tasks and achieve teaching objectives. At the same time in the assessment of students' knowledge level, also need to use a variety of forms of assessment methods, to promote the diversified development of students, so as to effectively avoid rote learning methods. At the same time, teachers also need to pay attention to adopting diversified and flexible teaching methods to guide students to realize experimental objectives by means of group cooperative exploration and simulation of teaching situations. In order to assess the completion of students' experimental activities, teachers need to carry out objective and fair evaluation in combination with students' learning attitude, knowledge acquisition and application, and experimental steps^[6].

5. Conclusion

Currently there exist certain problems in organic chemistry experiment teaching in colleges and universities, which have affected the actual effect of experimental teaching, the active and effective application of participatory teaching mode will fully and effectively stimulate students' learning motivation and internal potential, guide students to have a strong sense of independent learning and ability in specific experimental operation activities, and improve students' experimental operation ability. In order to apply participatory teaching mode to organic chemistry experimental teaching in colleges and universities, it is necessary to combine experimental contents with scientific design of experimental links and adopt diversified teaching methods and assessment methods.

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