Practical Exploration of Inquiry Teaching Method in Chemistry Teaching of Higher Vocational Colleges

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Abstract

Since the concept of quality education is put forward, all colleges and universities has done a lot of exploration on teaching methods, as it is on higher vocational chemistry teaching, inquiry teaching method is one of the many methods of chemistry teaching in higher vocational colleges, its characteristic is to set up the scene and the question in the teaching, induce students to think, determine the way of inquiry finally. After this it also need to experience multiple links, such as hypotheses, tests, results discussion, and so on, through flexible teaching methods, arouse students' interest in chemistry and study enthusiasm to the maximum extent, promote students to learn actively, cultivate the core quality of students, promote the comprehensive development of students' theory and practice, train more comprehensive talents with high quality for the society.

Key words: teaching; higher vocational colleges; chemistry

1. INTRODUCTION

Since entering the information era, the development of social economy puts forward new requirements for the standard of talents, in the era of knowledge economy, compared with the traditional theoretical talents, comprehensive talents with high quality and strong practical ability, are more in line with the needs of society for talents. Under such social demand, the concept of quality education is put forward, and in the junior high school, high school, colleges and universities, a quality education reform is carried out.

Higher vocational education is an important form of higher education in China, the goal of higher vocational education is not only to let students master the theoretical knowledge, but also to cultivate students' learning ability, make them can achieve the goal of lifelong learning. In order to better achieve this goal of education, higher vocational chemistry teaching have carried out the exploration on reforming teaching methods to better develop students' learning ability, in the course of exploration, we find that the inquiry teaching method has a great effect on the cultivation of students' lifelong learning ability, it not only makes the teaching method more flexible and rich, but also can cultivate students' autonomy and innovation spirit, and also has a significant improvement in students' practical ability and the ability to solve practical problems independently.

2. The Concept of Inquiry Teaching

Campus teaching is an important channel for students to acquire knowledge and accept system capability training, therefore, the quality of school teaching directly affects the students' comprehensive

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ability. The traditional way of teaching is that teachers actively teach, students learn passively, in teaching activities, students are always in a passive position, this reduces the learning enthusiasm of students. And this "spoon feeding" teaching method, is likely to cause students learn knowledge theory only by rote, without understanding, digesting and absorbing knowledge, even lead to problems of weak practical ability, etc.. Therefore, for the reform of traditional teaching methods, we can use new teaching methods to make up for the shortage of traditional teaching, it is necessary to enrich teaching methods.

Inquiry teaching is produced under this background, inquiry refers to the exploration and research. Inquiry teaching mainly through the guidance to achieve teaching objectives, changes the passive position of students in teaching activities, and changes students from passive learning to active learning. For example, in inquiry teaching, teachers will not take the initiative to tell students where the problem, but to guide students to observe the environment, then let the students take the initiative to find the problem, and collect data to solve the problem finally, this series of activities are done independently by students, teachers are only responsible for guidance, this greatly enhances the practical ability of students, stimulates the students' spirit of inquiry, make them from passively learning knowledge into actively exploring the profound meaning of knowledge.

3. The Development Status of Higher Vocational Chemistry Teaching

At present, most of the chemical teaching in higher vocational colleges is still using the traditional teaching methods, teaching content is based on theory, only a small part of teaching content connects with fact, and the education content is not updated timely, a lot of teaching content is too old, and not suitable for the demand of modern society to knowledge. On the teaching method, "spoon feed" teaching is still being used, teachers just explain the theoretical knowledge, tell about various abstract concepts, lack of training students' practical ability, even the chemistry experiment course, which should be practical operation, most of the time is carried out by theoretical description.

The traditional teaching method is not only boring in the form, but also a blow to the enthusiasm of the students, the most important thing is that this kind of teaching method kills the students' practical ability and creative thinking, which makes it difficult for the students to improve their comprehensive ability, unable to meet the requirements of society for talents. Without a strong practical ability, it will lack the core competitiveness in today's society, thus causes difficulty for students to stand in the society, also makes the higher vocational chemistry teaching lose the significance of higher education to the cultivation of talents.

4. The Application of Inquiry Teaching Method in Higher Vocational Chemistry Teaching

Inquiry teaching method is a new teaching method produced by exploration, which is aim at changing the shortcomings of traditional teaching methods, making up for its deficiencies. The characteristics of inquiry teaching method is autonomy, inquiry and cooperation, different from traditional teaching methods, inquiry teaching method pays more attention to the guiding role of teachers in teaching activities, and students really play the role of leading teaching activities, in the inquiry teaching method, students occupy the main position, the learning method of students also has changed from passive learning to active learning. The teaching process of inquiry teaching method is: Firstly, students study the teaching content of higher vocational chemistry by themselves, sort out the knowledge points; Secondly, explore the knowledge points deeply, at the same time, in the form of learning groups to communicate with others, mutual exchange of needed products, through the method of cooperative learning, further strengthen the students' understanding
to higher vocational chemistry knowledge; Finally, discuss and summarize the learning outcome. In this process, students can exert their initiative greatly, think about the problem, so that their own thinking ability and innovation ability have been developed. In the process of collecting relevant information to help students, it also can increase the students' learning experience, the effect of cultivating students' comprehensive quality is more obvious, meets the requirements of social development in the new era to the mode of talent education in colleges and universities.

4.1 Stimulate Students' Learning Interest to Chemistry Through the Innovation Setting to Teaching Situation

The learning interest to chemistry is the greatest motivation for students to learn higher vocational chemistry knowledge actively, and how to stimulate students' learning interest to higher vocational chemistry, is the key work and teaching direction the chemistry teachers in higher vocational colleges need to work hard. In the classroom, according to the teaching content, teachers carry out situation setting, this is an important way to arouse students' interest in learning, especially the development of modern multimedia technology, provides more support and help for teachers to set up teaching situation in class teaching activities.

Teaching situation setting can stimulate students' thinking, make students' thinking ability more activated, can also attract the attention of students, make students' spirit is more concentrated in the learning process, then improve learning efficiency, but its main purpose is to stimulate students' interest in learning higher vocational chemistry. Therefore, when setting the teaching situation, teachers cannot blindly conservative, also need to constantly innovate, make students keep freshness and curiosity to teaching situation, thus give birth to the desire for exploration and learning on knowledge in the heart, make students more willing to learn, then initiative to learn chemistry knowledge.

4.2 Set Questions in The Teaching Process to Induce Students to Think and Explore

Although the inquiry teaching method has changed the status of the students in the classroom teaching activities, makes them from passiveness to initiative, but this does not mean that teachers are not important. Students' knowledge reserves are limited, therefore in higher vocational chemistry classroom teaching activities, it needs teachers to give some guidance but the most important role of teachers is still to stimulate students' desire for knowledge, guide students to explore chemical knowledge. Therefore, in the higher vocational chemistry classroom teaching activities, the teacher can arrange induced learning tasks, set question, and then let students find answers by themselves. In this process, students can form cognition to problems and phenomena, and produce personal view, however, the difference between the individual's ideas and views can also let students produce knowledge conflict, and then discuss and explore, finally, or learn independently, or cooperate with others, complete learning tasks, acquire more knowledge and practice from it.

4.2.1 Teaching by Means of Conjecture and Hypothesis

Inquiry teaching is that through the observation to the phenomenon, arising question, then making guess or assuming boldly, and then conducting a rigorous verification, finally drawing a conclusion. The whole learning process is completely dominated by students, autonomous learning can stimulate students' interest in learning. In higher vocational chemistry teaching, taking the teaching of chemical gas chlorine as an example, first of all, through observation students can understand that the nature of chlorine is lively, it can reacts with a variety of chemical substances, such as chlorine can react with metallic copper to generate copper chloride, so the teacher can let the students guess what metals chlorine can also react with, what is
the theory evidence for the conjecture? Then conducting experiment, to verify whether the students guess is correct, finally drawing a conclusion. In this process, through observation students understand the basic properties of chlorine through the conjecture students play the spirit of inquiry and exercise the ability of thinking, when looking for support of theory evidence, they complete the data collection process, consolidate the theoretical knowledge that has been learned, finally, experimental verification strengthens the practical ability of students. In the process of conjecture, because each student is full of curiosity about that whether his guess is correct, therefore, it has greatly mobilized the students' learning interest and enthusiasm, students learn inititatively in the whole process, this not only makes the students master more knowledge but also greatly improves the students' practical ability, especially cultivates students' learning ability, makes them develop the habit of autonomous learning.

4. 2.2 Material Collection is An Essential Teaching Method of Inquiry Teaching

After the conjecture and hypothesis, in order to verify their ideas, students must collect information. Taking the experiment of chlorine as example, after assuming that chlorine can reacts with what metal or non-metallic material, students are bound to collect relevant substances, experimental equipment and the theoretical knowledge of experiments in the process of collection, students sort out the relevant chemical knowledge, consolidate the knowledge of chemistry that has been mastered, and for the chemical knowledge is not mastered, they have learned in the process of data collection, enrich the knowledge reserves of them.

4. 2.3 Take Experiment as Teaching Basis

Unlike other courses, chemistry is a science based on experiment, it can be said that most of the theoretical knowledge of chemistry is accumulated on the basis of experiments, therefore, chemistry teaching in higher vocational education must not neglect the teaching of chemical experiment, and should be based on experimental teaching, on the basis of this develops relevant theoretical teaching.

In the inquiry teaching method, chemistry experiment is an important teaching content, and it is indispensable. Taking chlorine as an example, in teaching the teacher can divide students into multiple groups, taking group as unit, students discuss each other, listtheir own assumptions respectively, and write out the experimental design scheme of verifying hypothesis, then carry out experiment. Only through the actual verification, can students prove whether the hypothesis is correct and whether the hypothesis theory is established.

4. 3 Boldly Assume, Carefully Verify, Discuss Results in Detail

After the experiment, students also need to discuss the results of the experiment. Still taking group as unit, forming discussion group, through careful observation to the experiment and experimental records, discussing the following questions: Whether experimental phenomena, processes, conjecture and experimental results are consistent; If inconsistent, what is the cause of the inconsistency between the conjecture and the experimental results; and so on. It should be noted that in the process of the experiment teachers need to pay attention to that whether the experimental operation of the students is standard and give guidance, to ensure the safety of students in experiment.

4. 4 Carry out Incentive Evaluation to Students, Guide Students to Reflect on The Results of Inquiry Thus Gain Sublimation

After students complete the process of conjecture, verification, discussion and summary, teachers should make up for the students' learning results, make up for the deficiencies of students' autonomous learning, so that enable students to learn more knowledge. In addition, teachers need to encourage and
affirm the students' autonomous learning spirit, support students to continue to play autonomous learning spirit, at the same time, carry out evaluation on the learning outcomes of students, guide students to find deficiencies, so as to further strengthen study and exercise on weak aspects, make students to constantly obtain sublimation in this learning process.

5. Conclusion

The application of inquiry teaching method in higher vocational chemistry education, makes up for the deficiencies of the traditional teaching methods, enables the abilities of students on analyzing and solving problems scientifically have been improved, so as to establish the confidence of learning, and develop a good habit of self-learning, it is very important to cultivate students' ability of lifelong learning, it can be said that autonomous learning is the basis and prerequisite for cultivating students' lifelong learning ability. Under the guidance of inquiry teaching method, through cooperative learning, students can also enhance the sense of teamwork and communication, this extends the width of the students' thinking and innovation ability, it is very important for colleges and universitie to cultivate high quality comprehensive talents, who can meet the needs of society.

Reference


