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Exploration on the Construction and Teaching Reform of Introduction Course of Applied Chemistry

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Abstract: "Introduction to Applied Chemistry" is a theoretical core course for freshmen majoring in applied chemistry. The teaching of introduction to applied chemistry is helpful for freshmen to make clear their learning direction, guide the follow-up theoretical and practical teaching activities, and help students cultivate professional interest, so as to establish professional thinking, and realize comprehensive development. In this paper, the advantages of various new teaching modes are discussed.

Keywords: Applied Chemistry Specialty; Introductory Courses of Applied Chemistry; Teaching Reform

Applied chemistry is a discipline that cultivates basic knowledge, basic theory, basic skills and related engineering technology knowledge and experimental skills. With the further development of industrial society, chemical related technology plays an important role in promoting social progress and development. As an important training base for high-quality talents, colleges and universities cultivate talents with scientific thinking and scientific experiment literacy, so as to ensure that talents can play a role in scientific research institutions, teaching activities, enterprises and institutions. The introduction of applied chemistry, as the basic core course of applied chemistry, is a firm foundation for the cultivation of applied chemistry talents by creating high-quality classroom teaching activities of professional introduction, which is worthy of teachers' attention [1].

1. Significance of teaching reform of introduction to applied chemistry

1.1 The teaching of introduction course of applied chemistry major restricts the comprehensive development of college students

The introduction course of applied chemistry is mainly to teach the basic theoretical knowledge of applied chemistry, which is a theoretical subject. Under the influence of the traditional teaching concept, the teaching method of the course usually adopts the indoctrination teaching activity with the teacher as the leading factor and the teaching material as the auxiliary, which leads to the students' lack of independent thinking on the application situation and application trend of the major in various industries. For a long time, students have lost the initiative of professional learning and the enthusiasm of exploration, and cannot cultivate the quality ability of applied chemistry from it [2]. Based on the teaching practice of the introduction of applied chemistry, it can be seen that the students' learning initiative is not high and the talent training effect is not good. Therefore, it is very important to carry out the teaching reform of introduction to applied chemistry.

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1.2 The traditional teaching of introduction to applied chemistry cannot meet the requirements of contemporary education

In the new era, in order to achieve the fundamental task of moral cultivation for education and teaching activities, it requires the cultivation of innovative and creative, practical and exploratory ability, market-oriented high-quality talent team. However, under the traditional teaching mode of "teacher centered, courseware assisted", the application of chemical theory knowledge and practical cases are isolated from each other, and the whole teaching activity lacks the cultivation of students' innovative ability, so the students memorize by rote and do not carry out practical exploration activities. Therefore, the existing teaching practice of introduction to applied chemistry has been unable to meet the needs of contemporary education personnel training, and improving the teaching quality of introduction to applied chemistry has become the research focus of applied chemistry teachers [3].

2. Teaching reform of introduction to applied chemistry

Based on the above analysis, it can be seen that the teaching of introduction to applied chemistry is faced with the shortcomings of traditional teaching concept, single teaching form, low efficiency of classroom teaching, lack of students' subjectivity, and lack of students' comprehensive quality and ability. Therefore, we can realize the comprehensive reform of the course with the help of educational informatization, various new teaching concepts and new methods [4]. The author takes "Introduction to Chemistry" edited by Ma Zichuan and Yu Haitao as teaching material, and carries out the following reform and exploration in the course teaching accumulation of their school.

2.1 With the help of rain classroom teaching platform to achieve comprehensive tracking of students' teaching

With the development of education informatization, various new teaching modes have been applied to teaching practice to reform the teaching status quo. As a kind of intelligent teaching tool, rain classroom builds a teaching form of combination of online and offline for teachers and students, and carries out theoretical knowledge into students' learning activities. At the same time, with the help of rain classroom information technology, the whole process of teachers' teaching plan and students' learning activities is tracked. Through the rain classroom platform, teachers can fully grasp students' learning attention in the whole theoretical module. With the help of data analysis on the platform, students' interest in different teaching modules such as chemistry and industry, chemistry and life, chemistry and health can be found, so as to improve the teaching effect by teaching students in accordance with their aptitude. The application of rain classroom in the course of professional introduction not only attaches importance to the subjectivity of students in classroom learning, but also promotes the formulation of personalized teaching plan.

2.2 Using case heuristic teaching to stimulate students' learning independence

The teaching of introduction to applied chemistry is not only to carry out theoretical study, but also to stimulate students' in-depth understanding and interest in applied chemistry with the help of theoretical teaching activities, so as to gradually form the core competence of chemistry in theoretical study. However, in the traditional teaching methods, students' passive learning activities have not been cultivated. In the teaching activities of introduction to applied chemistry, the introduction of case teaching method is an effective way to change the status quo of traditional problems. On the one hand, through life oriented teaching cases, the abstract applied chemistry knowledge can be visualized, the distance between students and applied chemistry can be shortened, and students' interest in learning and exploration can be stimulated. For example, in the teaching of the fourth chapter "chemistry and military" theory, the author explored the chemical knowledge in military weapons with the help of the camouflage of "multi terrain color changing camouflage suit", which is a frontier military research achievement, so as to shorten the distance between students and military chemistry, and perceive the interest and importance of chemistry; on the other hand, through the analysis of the camouflage of "multi terrain color changing camouflage suit", the author found that the chemical knowledge in military weapons is closely related to the students case teaching activities can create a chemical situation, put forward the development status of chemistry in various industries and the bottleneck problems faced, so as to throw the practical problems of applied chemistry to students and stimulate them to think about the relevant knowledge of applied chemistry independently. This case problem oriented teaching activity can better encourage students to think and

guide them to pay attention to chemical application ability rather than chemical knowledge system. Further, combined with the homework form of course grouping course essay, it can effectively create an interactive atmosphere and guide students to carry out interactive exploration.

2.3 Applying project teaching to strengthen the connection between theory and practice of applied chemistry

The project-based teaching mode is an independent project designed by the teacher, and the analysis, processing and evaluation of the project information are completed by the students in groups. At present, in the teaching of introduction to applied chemistry, teachers can set each module as a project, so as to give full play to the subjectivity of students, guide each student to participate in the project analysis and take on a small problem in the project activities. Students can complete the study of applied chemistry knowledge in practice, and carry out the exploration and research of applied chemistry knowledge. For example, in the teaching of "chemistry and materials" in the sixth chapter of the teaching content in my school, the students are divided into various project groups through the rain classroom platform, and the teacher takes the lead to set up the research projects of various chemical materials for the students, and gives the corresponding prompt materials. Combined with the "flipped classroom", the students can absorb and master various chemical materials through the way of project achievement exchange basic knowledge of materials.

2.4 Flipped classroom mode breaks the teaching boundary inside and outside class and improves students' comprehensive quality

Although the introduction course of applied chemistry is mainly based on theoretical teaching, its teaching goal is to stimulate students' creative consciousness and cultivate their comprehensive quality through theoretical knowledge. Generally, the existing introduction to applied chemistry class arrangement is limited, for example, the author's school arranges 16 class hours. The existing problem is that teachers cannot tell all the contents of the textbook in the classroom, especially paying attention to theoretical teaching, which is easy to encroach on the cultivation of students' comprehensive quality and ability. Therefore, by creating the flipped classroom teaching mode and making full use of the online and offline platforms, we can not only complete the teaching of the introduction to chemistry for students, but also develop the exploration and application ability with the help of classroom teaching activities. For example, students can learn micro class videos and teaching materials through the rain classroom platform, put the problems arising from the theoretical study of chemistry and industry, chemistry and agriculture, chemistry and energy, chemistry and environment in the classroom, and explore with classmates and teachers, as well as complete the teaching and talent training plan at the same time.

3. Conclusion

To sum up, based on the talent training objectives of the introduction course of applied chemistry in the new era, it is required to cultivate students' professional interest, establish professional thinking, and form professional quality and determine the direction of professional research and development through course teaching activities. However, in traditional teaching activities, students passively carry out the basic theory of applied chemistry learning, and the learning effect is not good, which hinders the improvement of students' comprehensive quality. Therefore, it is of great significance to carry out the teaching reform of the introduction course of applied chemistry. Course reform needs to start from multiple perspectives, form a grid teaching mode, and realize the innovation of applied chemistry talent training objectives, so as to cultivate a high-quality innovative applied chemistry talent team that can meet the needs of market development.

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