

Micro Class Design of “Surfactant Washing” Course in “Surfactant Chemistry”

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Abstract

This paper takes the teaching content of "Surfactant Washing" in the course of Surfactant Chemistry as an example, and according to the characteristics of the course, it designs the lecture and arranges the teaching process from four aspects: micro class topic analysis, design idea of micro class, design idea of micro class and application Effect and Reflection of Microcourse Teaching. Through micro lesson, it provides reference for the implementation of specific teaching, and deepens the teachers' understanding of the importance of the microclass, and improves the teaching effect.

Keywords

Micro-class; Surfactant Chemistry; Teaching method.

1. Introduction

Micro-class usually including supporting teaching plans, courseware, exercises and other supporting and extensible resources, with short and intrepid content to achieve strong knowledge expression and flexible teaching effect, with Educational, purposeful, interesting and shared characteristics [1] which regards a micro-teaching video as the core. More and more micro-class resources have emerged in modern media, but some resources lack good organizational structure and systematic knowledge system make students spend a lot of time in the process of learning to screen knowledge and learn knowledge system with low degree of aggregation and dispersion.

It is found that micro class in the application of the surfactant chemical practice teaching research is few by comparison and analysis of the domestic similar project. On the one hand, the current local undergraduate colleges and universities of the surfactant chemical practice teaching task time is tight, the original teaching mode is difficult to meet the learning needs of students. according to the needs of our students individualized and autonomous learning, The teach team decided to flip the classroom teaching mode based on micro class in the application of the surfactant chemical practice teaching to explore the research subject.

2. Micro class topic analysis

The specific teaching of "Surfactant properties" in 4 aspect to demonstrate the process of micro-class, to provide a reference for the implementation of specific teaching.

This section mainly describes how surfactants can reduce the surface tension of water, and then have washing effect, which plays a very important role in the whole teaching material system. In addition, learning this lesson well plays an important role in the selection of drugs, device design and experimental methods to verify the surface characteristics of surfactants in the students' self-designed laboratory.

3. Design idea of micro class

This lesson relies on the students' cognitive foundation and existing knowledge.

By allowing students to experience the process of chemical activities such as intuition, experiment, observation and imagination, we try to solve practical problems in various ways, experience the transformed chemical ideas, explore and seek, and cultivate students' spirit of active exploration and innovation. By means of activities aimed at solving problems, students are trained to use chemical method.

The overall structure design of this micro-class is divided into the following five parts:

The first part: review the introduction. Review the structural characteristics of surfactant molecules and the properties of surfactants then the teacher put forward the relationship between the structure and properties of surfactants at the beginning of this lesson.

The second part: ask questions. How we clean our daily lives and why surfactant molecules can cause them to have properties that reduce the surface tension of water

The third part: solve the problem. According to the general rule that animation video makes students feel the structure directly to determine the properties, and the parent structure which summarizes the structural characteristics of surfactant molecules is the fundamental reason for the surface activity of surfactant molecules

The fourth part: chemical culture infiltration. Through the story recorded in the Chinese ritual, the infiltration of chemical culture.

The fifth part: summary. Summarize the knowledge of this lesson: they have the properties of reducing the surface tension of water. Using this property, you can design and develop various kinds of washing products for different applications.

4. Microcourse design process

This lesson chooses to seek the surfactant washing function this knowledge point. This part of knowledge is more abstract, for most students is difficult to understand. Through the way of animation demonstration, we hope to enhancing students' interest in learning, make abstract problems become visual and intuitive, easy for students to understand and accept.

Teaching design

In line with the principle of problem-oriented, the overall structure of micro-class is designed as review introduction-problem-solving-chemical culture penetration-summary.

Writing scripts

According to the teaching design of micro-class, the literary script of micro-class is designed in detail, including the design of text, the conception of picture and so on. The examples are shown as Fig. 1 and Fig 2

In the implementation stage, we realize that there are several important problems that have not been solved :1 how to guide students to learn more effectively? How to realize learning anytime and anywhere? How to monitor whether students have studied and how well they have mastered it?

For more effective guidance to students, we need to design pre-class learning task sheets, however to a certain extent, the use of pre-class learning task sheets will affect students to study anytime and anywhere. For this reason, we abandoned the paper pre-class learning task sheets and used the CamtasiaStudio added a learning guide to guide students to study at the beginning of the video, and added test questions in the key section. Finally, we only need to put the micro-class in the web format in the school server, so that students do not need to carry paper and pen with them, watch the video online and complete the test. The test results will be fed back to learning. It is convenient for teachers to master students' learning situation.



Fig 1. The examples of students use surfactant to wash in daily life

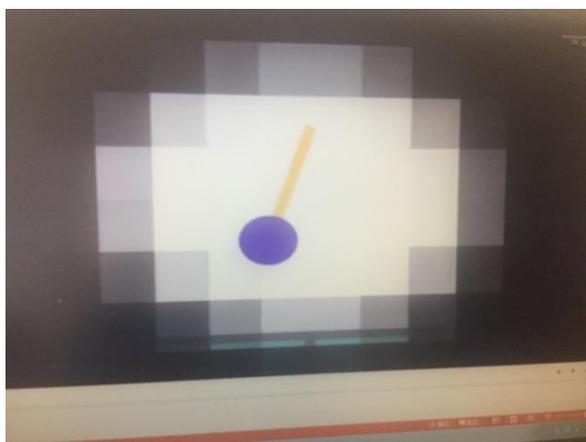


Fig.2 Animation screenshot of surfactant molecular structure

5. Application Effect and Reflection of Microcourse Teaching

5.1 Teaching

Watch the micro class before class to learn explicit knowledge. By watching the micro-class before class and testing the students' autonomous learning in class, it is found that the students have basically mastered the method of finding the volume of irregular objects.

Exchange internalized knowledge with group members in class and further tap tacit knowledge under the guidance of teachers.

This micro-class improves the students' ability of autonomous learning and cooperative inquiry, and realizes the flipping of the classroom.

5.2 Reflection

The setting of animation scene in this micro-class is loved by students and greatly improves their interest in learning. In the teaching content, the introduction of experimental video makes the abstract principle of surfactant washing more visual. For students, micro-class is a new mode of autonomous learning, and for teachers, micro-class provides teachers with an opportunity to improve themselves. In the process of making micro-class, we come into contact with more information technology, the application of technology enriches classroom teaching, and finally achieves the goal of efficient classroom and teaching.

Acknowledgements

The project was provided by 2018 Jilin Province education science planning issues (GH180455)

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