

# Exploring the Teaching Reform of “Student Centered” College Chemistry Curriculum

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**Abstract:** The concept of “student-centered” education is an important content of current education reform, and also the main direction of college education and teaching reform. It is of great significance for cultivating students’ innovative consciousness, practical ability and humanistic quality. However, in college chemistry teaching, due to the differences in students’ professional background, learning ability, teaching concept and other factors, the “student-centered” education concept is difficult to be implemented in practice. Meanwhile, teachers often overlook students’ mastery of knowledge during the teaching process, which can easily lead to poor teaching effectiveness of chemistry courses. Starting from the background of college chemistry curriculum reform, this paper will analyze the relationship between “student-centered” teaching concept and college chemistry curriculum reform, and explore the application strategy of “student-centered” teaching concept in college chemistry curriculum reform based on the actual situation, and hopes to provide certain references for college chemistry curriculum reform.

**Keywords:** “Student-centered”; College chemistry; Exploration of curriculum teaching reform

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## 1. Clarify Teaching Objectives and Optimize Teaching Content

In the traditional college chemistry teaching, teachers often put emphasis on the teaching of theoretical knowledge, but ignore the students’ grasp of chemical knowledge. At the same time, teachers often only pay attention to the explanation of chemical theoretical knowledge in the teaching process, and ignore students’ understanding of knowledge, which results in low interest in learning and low learning efficiency of students. Therefore, in the teaching reform of “student-centered” college chemistry course, teachers should first clarify the teaching objective and optimize the teaching content. The teaching reform of college chemistry curriculum needs to optimize the teaching content on the basis of accurately grasping the teaching objectives. To be specific, teachers need to define the training objectives and teaching contents of chemistry courses before the beginning of the course, and design corresponding teaching plans according to the teaching objectives. At the same time, teachers also need to pay attention to the cultivation of students’ learning ability and thinking ability. For example, when teaching the knowledge of organic chemistry, teachers can introduce the application of organic compounds and their chemical reaction products in medicine, agriculture, food and other fields to students, then introduce the basic principles and reaction process involved in organic chemical reaction to the students through case analysis; Finally, the students are asked through practical questions: How should we consider factors such as chemical reaction speed and reaction selectivity in the synthesis of organic compounds? In this way, teachers can guide students to think from multiple perspectives and further deepen their understanding of organic chemistry knowledge. It can effectively stimulate the interest and motivation of students to learn chemistry, and help students better grasp the knowledge. At the same time, teachers can also create a good learning environment for students by designing the teaching content to promote the all-round development of students.

## 2. Change Teaching Methods to Improve Teaching Quality

In college chemistry teaching, teachers can give full play to students’ subjectivity, actively guide students to self-study, and realize the overall optimization of classroom teaching. Specifically, teachers can design the curriculum with the help of question guidance method and project teaching method to promote students’ independent learning.

Question guidance is a common teaching method, that is, in the teaching process, teachers take students as the center, design

corresponding questions according to students' existing problems, and guide students to think independently. For example, when teaching the concept of "electronic", the teacher can frame the relevant questions around the content of electronic: "How to understand electronic?" "What is the relationship between electronic and energy?" and so on, to help students grasp the concept and related knowledge content, to pave the way for subsequent teaching. Project teaching method is an effective teaching method, teachers can guide students to learn in practice. For example, teachers can set up "inquiry" project teaching method, so that students can learn relevant knowledge content through experimental operation. Firstly, teachers can use multimedia to display experimental equipment, drugs and other materials; Secondly, teachers can ask students questions: "How to explore the results of the experiment?" For example, when exploring "What changes will happen to a mixed solution of ethanol and water at room temperature?", teachers can show students some experimental instruments and experimental processes that produce gas when ethanol and water are mixed. Finally, teachers guide students to learn through inquiry-based project teaching method. Under the guidance of the teacher, the students draw conclusions through the operation of the experimental equipment and the analysis and induction of the experimental results.

### **3. Strengthen Course Interaction and Strengthen Students' Main Body Position**

Traditional college chemistry teaching often emphasizes the imparting of knowledge, but neglects students' main body position, which greatly affects students' learning enthusiasm and initiative. Therefore, in the teaching reform of college chemistry courses, teachers should actively change the teaching concept, strengthen students' main body position in chemistry courses, and improve students' participation in chemistry classroom.

Firstly, teachers should make it clear that students are the main body of classroom teaching activities. Teachers should formulate teaching plans and objectives according to the actual situation of students, and understand the learning situation and needs of students through interaction with students. At the same time, teachers should guide students to actively participate in classroom teaching activities. For example, in classroom interaction, some students can be invited to participate in role-playing, scenario simulation, and other activities, enabling them to complete relevant tasks under the guidance of the teacher. Secondly, teachers should guide students to think and explore independently. Under the "student-centered" teaching concept, teachers should not impart knowledge to students, but give full play to students' main body position in learning, and guide students to discover, propose and solve problems independently. For example, when explaining "calculation of ion concentration in aqueous solution", students can be asked to consult relevant materials to understand the concept, calculation formula and application field of ion concentration. Finally, teachers should cultivate students' ability of self-management and self-evaluation. In college chemistry teaching, some students lack interest and motivation due to the influence of the boring learning content and the difficulty in memory.

### **4. Pay Attention to Experiment Teaching and Cultivate Students' Practical Ability**

In college chemistry courses, experimental teaching is an important teaching link, which can effectively cultivate students' practical ability and innovative ability, and improve students' comprehensive quality. In the traditional experimental teaching, teachers often pay attention to the explanation of theoretical knowledge, but neglect the cultivation of students' practical ability. Firstly, teachers should strengthen the preparation before the experiment class. Teachers should prepare the instruments and drugs needed for the experiment in advance, standardize the experiment process, and guide the students to carry out the experiment operation according to the steps. Secondly, teachers should let students understand the experiment principle and operation process. The teacher should introduce the purpose and points for attention of the experiment to the students before the experiment, and let the students understand the possible problems and solutions in the experiment. Finally, teachers should strengthen the assessment and evaluation of students. In the assessment of students, teachers should take the practical ability and innovation consciousness as the assessment content. At the same time, teachers should conduct regular assessment and evaluation of students to stimulate students' enthusiasm for learning chemistry knowledge.

### **5. Adopt Multiple Modes to Stimulate Students' Interest in Learning**

Interest is the intrinsic motivation for students to study, and it is also the premise for students to learn independently. Good interest can improve students' learning efficiency. In the teaching of chemistry courses in colleges and universities, teachers can stimulate students' learning interest and enhance students' learning enthusiasm through various modes. For example, when teaching the chapter "Fundamentals of Organic Chemistry", teachers can use multimedia and other modern teaching means to show students some pictures and videos related to the course content, and ask questions to guide students to think: "What factors affect the reaction rate in the process of organic chemical reaction?" The teacher then presents these questions to the students, and let them to think independently and answer the questions. If students still do not come up with an answer after

thinking, then teachers can guide students to carry out group discussion activities, so that students can exchange and share their ideas with others. At the same time, teachers can also carry out chemical experiments to improve students' mastery of what they have learned.

## Conclusion

The exploration of teaching reform of college chemistry courses with "student-centered" aims to comprehensively improve the teaching effect of chemistry courses by clarifying teaching objectives, optimizing teaching content, changing teaching methods, improving teaching quality, strengthening curriculum interaction, strengthening students' dominant position, emphasizing experimental teaching, cultivating students' practical ability, and adopting various modes to stimulate students' learning interests. The exploration of teaching reform not only helps to improve students' chemical literacy, cultivate their innovative thinking and problem-solving ability, but also helps teachers to better understand students' learning status, optimize teaching methods and improve teaching level. However, this exploration of teaching reform also faces some challenges, such as how to better achieve the individualization of teaching objectives, how to ensure the quality of teaching and so on. Therefore, we need to continuously conduct in-depth research and explore more scientific and reasonable teaching methods and strategies to promote the teaching reform of chemistry courses in universities.

## References:

- [1] Xiaoxia Wang, Dangshe Hou, Xu Jiang et al. Exploration of Teaching Reform of "Student-centered" Higher Vocational Chemistry Course--Taking Markonikov'Rule Teaching as an Example[J]. Shandong Chemical Industry, 2021, 50(04): 231-232+234.
- [2] Haiqiu Fang & Shuhui Cui. Exploration and Practice of Teaching Reform in Chemistry Experiment Course--Taking "Chemical Preparation and Morphological Analysis of Polymer Spherulites" as an Example[J]. Modern Chemical Research, 2023(05): 143-145.
- [3] Huijing Li, Huihao Wu & Yu Sun. Exploration of the Teaching Reform in the Experiments of Biochemistry Based on Opening Experiment Platform[J]. Tianjin Chemical Industry, 2023, 37(01): 147-150.