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Research on the Application of Interesting Chemical Experiments in Junior High School Chemistry Teaching

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Abstract: Based on the deepening reform of quality education in China, educators at all stages are required to actively innovate education and teaching methods in the process of daily teaching, change the role of teaching, respect students' subjective consciousness and subjective initiative, and promote the overall development of students comprehensive quality. Junior high school chemistry is an applied discipline that links theory with practice. Therefore, in practical teaching, guiding students to put the theoretical knowledge they have learned into practice in chemical experiments can not only stimulate students' interest in learning and create an efficient classroom for teaching but also cultivate students' core literacy in chemistry. This paper analyzes and discusses the application of interesting chemistry experiments in junior high school chemistry teaching.

Keywords: middle school chemistry; classroom; fun; experiment; application

1. Introduction

For students in junior high school, they belong to the critical period of physical and mental development, which is often referred to as the "rebellious period", in which students' thinking is reversible and their psychological characteristics and tendencies are beginning to take shape. They want to show themselves and prove themselves, so in the experimental teaching of junior high school chemistry, they should take interest as a brick in the door, respect the main position of students, form a two-way interaction between the teacher "teaching" and students "learning", and give students more opportunities to show themselves in order to To meet the students' inner needs and motivation. However, as of now, chemistry experimental teaching still has the problems of teachers' backward thinking and stereotyped methods, which need to be solved urgently.

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2. Problems of applying interesting chemistry experiments in junior high school chemistry teaching

2.1 Teachers need to update their thinking

At this stage, many teachers believe that chemistry is a rigorous "science", so some "entertainment" teaching activities will lead students to the nature of the subject of chemistry bias. Many teachers do not smile and are too serious in their teaching practice (Liu, 2021). In fact, for the science of chemistry, there is no doubt that the rigorous and systematic attitude is correct but too serious will lead to a "stagnant" atmosphere in chemistry teaching. The second is that some teachers are obsessed with the accuracy of experiments and results, thus ignoring students' subjective experiences and subjective feelings. From a philosophical point of view, it is necessary to keep trying mistakes between truth and falsehood in order to calculate the correct theory we have now. A dominant focus on teaching and learning is too focused on the results of chemical experiments, which is difficult to mobilize students'

enthusiasm and active participation, thus leading to a major loss of the nurturing nature of the subject of chemistry (Yan, 2021).

2.2 Interesting chemistry experiment teaching methods lack diversity

The subject of chemistry, itself is a relatively old practical subject. In the long-term education and teaching process, many teachers focus on the rigour of the experiment but ignore the development of the times and the students are developing people this characteristic. Based on the new curriculum reform, many teachers in a short period of time can not accept that the chemistry experiment to fun, which leads to all kinds of teaching methods can not be applied flexibly in the chemistry experiment, its theory and practice of the interface are too rigid. In addition, some teachers ignore the innovation of interesting experimental teaching methods, resulting in interesting experiments and difficulty to combine the knowledge learned. It also leads to the current stage of chemistry experiments "awkward" scenario, but not conducive to the positive role of chemical experiments.

2.3 The subjective participation of students in chemistry experiments is not high

Since before the new curriculum reform, students are mostly influenced by the teaching of the test, focusing on mastering the basic knowledge and basic skills of chemistry. This kind of teaching idea of "one lesson" has become a kind of thinking stereotype. Students think that as long as they follow the teacher's ideas and complete the established teaching tasks, they can get good grades, especially in the experimental sessions, many students just recite the teaching steps shown by the teacher and put their experimental theories against the experimental activities, which lacks good interaction between teachers and students and neglects the interesting guidance and inspiration of students. Based on the requirements after the new curriculum reform, it is necessary to respect the main position of students and guide them to the activity practice classroom, so as to change students' passive acceptance of learning into active participation in learning (Cheng, 2021).

3. The importance of applying interesting experiments in junior high school chemistry teaching

The teaching of chemistry in junior high school has always focused on the basic knowledge and skills of chemistry. When it comes to chemistry experiments, most teachers show them directly or use the teaching method of "filling the classroom", which causes students to lose the enthusiasm and initiative of chemistry experiments. This does not combine the theoretical knowledge learned with practice. The help of interesting experiments, on the one hand, can fully mobilize students' enthusiasm and initiative, guiding students from the passive acceptance of knowledge to actively discover the fun of chemistry experiments, and actively participate in education and teaching activities, which has an important role in creating an efficient classroom of chemistry experiments. Secondly, for students in junior high school, they belong to the period of "role homogeneity confusion" mentioned by Erikson, and students at this stage want to prove themselves and show themselves, so interesting chemistry experiments can give students sufficient opportunities to show themselves to meet the internal drive of students, which is also one of the ways to achieve student learning efficiency This is one of the ways to achieve twice the efficiency of student learning.

In addition, the subject of chemistry, itself is a research, application, and practical discipline that can also be understood as a science, its subject characteristics to cultivate students thinking skills, imagination, and creativity has a unique advantage, which is also based on the new curriculum reform under the purpose of cultivating students' core literacy in chemistry. Therefore, an interesting experiment means that the teacher, under active guidance, takes students as the main body and fully guides them to give full play to their subjective consciousness and subjective initiative to carry out open learning of thinking, theory, practice and other aspects (Gong, 2021). Students can analyze and

analyze the original theory in all aspects, in this process, students' creative thinking as well as innovative thinking is constantly mobilized, and this mobilization of the thinking curve has a positive effect on the cultivation of students' thinking creativity. Here a point to note is that thinking, memory, imagination, observation, etc. are all mentioned in the psychology of intelligence, therefore, can also be understood as interesting chemistry experiments, to cultivate students' intellectual development has important significance and role.

4. Application strategies of interesting chemistry experiments in junior high school chemistry teaching

4.1 Change the concept of teaching, improve the quality of teaching

Einstein once said that interest is the best teacher. According to the physical and mental development characteristics of students in junior high school, to stimulate students' interest and motivation, in order to improve their learning efficiency, but also to create the basis and guarantee of teaching efficient classroom. Then, in the process of chemistry teaching, the goal-oriented, combined with the physical and mental development characteristics of students, optimize innovative education and teaching methods, with students' interest as a knocker, to create a chemistry interesting experimental classroom as a landing point. Therefore, in order to achieve this purpose, first of all, educators should actively change their own educational philosophy, focusing on cultivating students' sense of independent initiative and independent learning, in order to strengthen students' subject matter literacy and realize the effective combination of theoretical knowledge and practical skills, which is the most basic. From the perspective of pedagogy, the teacher's cognition, educational philosophy, three views, personality, etc. will influence students implicitly through teaching activities and is a key factor in classroom quality and efficiency.

As a simple example, for example, in the practical activity of "colour change of phenolphthalein reagent", the teacher should make preparations before the experiment, such as acid-base solution, phenolphthalein test paper and white paper and other experimental equipment, and guide students to draw their favourite shapes or patterns on the white paper (Lin, 2021). After dropping the sodium hydroxide solution on the white paper and waiting for it to dry naturally, the phenolphthalein reagent is sprayed on, and just like magic, the originally monotonous lines will turn into bright red patterns. This change not only can give students a fresh feeling but also can stimulate their interest in learning. On the basis of enhancing students' perceptual experience, teachers can effectively combine theory and practice, consolidate theoretical knowledge, and hand over the classroom to students to guide them to practice. Then, in this process, the teacher can guide students in the deficiencies that exist in a timely manner, which is not only to improve the effectiveness of experimental teaching but also to cultivate students' emotions towards chemical experiments, in order to achieve the purpose of cultivating students' core literacy in the subject.

4.2 Realize the "living" of chemistry experiment teaching

The subject of chemistry, itself is an applied subject, although not as instrumental as language, its methods and principles also have a close relationship with life. Therefore, in chemistry laboratory teaching, teachers should combine theoretical knowledge and practice of chemistry. Create a living experimental scenario, so as to realize the life and fun of chemistry laboratory teaching. This innovative teaching method can, on the one hand, stimulate students' interest in learning and, on the other hand, guide students to combine chemical knowledge with real life. It can strengthen the basic knowledge and basic skills that students have mastered and cultivate their chemical emotions. Then, when teachers explain chemistry courses, they can use some interesting practices close to life to guide students' association and imagination, combine the phenomena and problems they see in

life with chemistry, and use their chemical eyes to find problems, analyze them and solve them (Gu, 2021).

As a simple example, for example, how to remove sweat stains from our clothes, many students think that there will be no sweat stains after washing with laundry detergent. Then, the teacher can guide the students to try the experiment together by soaking the clothes with sweat stains in salt water for a few minutes, then washing them with water and waiting for the results of the experiment. This kind of experiment related to real life is not only a way to test the uniqueness of truth, but also to guide students to apply what they have learned to their lives, thus improving their ability to apply their knowledge. Students will gain a certain sense of accomplishment after the application, which will strengthen their subsidiary motivation and internal drive. Students will develop in a better direction, and this is the role of "learning to apply".

4.3 Respect students' subjective initiative and meet their psychological needs

In the past, most of the experimental contents and methods designed by teachers in junior high school chemistry experiment teaching are teacher demonstration and student observation, which does not form two-way interaction between teachers and students, and students cannot participate in the actual practical exercises, and to a certain extent, it also discourages students' enthusiasm and initiative. This seriously affects the purpose of practical education. In response to this situation, practising the requirements of the new curriculum reform, it is necessary to continuously optimize and innovate the ways and means of junior high school chemistry experiments in order to attract students' attention and give them the opportunity to demonstrate. Students' practical work should be actively guided so as to cultivate their disciplinary core literacy.

As a simple example, for example, in the chemistry practice of "making oxygen", the teacher can teach theoretical knowledge and guide students to conduct experiments with their brains. For example, by using chemical reagents such as hydrogen peroxide, potassium permanganate and manganese dioxide, students can give full play to their subjective consciousness and initiative, satisfy their curiosity by combining what they have learned, and obtain the truth through continuous experimentation. This sense of accomplishment is far more profound than the effect obtained by the teacher's direct teaching. This not only strengthens students' creative thinking and innovative consciousness but also plays an important role in developing a more sound chemical knowledge system and the ability to integrate knowledge. Of course, in this teaching process, the teacher should not neglect his or her role as a guide, which is the right way to achieve interesting chemical experiments "two-way interaction" (Xu, 2021).

4.4 Use multimedia to complete teaching and improve the image of chemistry experiments

The development of science and technology has broadened new contents and channels for education and teaching, so in the process of practical chemistry teaching, new technology can also be used to visualize the more abstract knowledge and stimulate students' interest and motivation through a variety of experimental methods such as video, text, pictures, etc., so that students can combine what they have learned for practical exploration. In addition, there are often difficult and dangerous practices in chemistry, so there is no way to organize students to perform hands-on exercises, then the advantages of multimedia can be used to show students the process and results of the experiment (Wang, 2021).

As a simple example, for example, in the chemical practice of "hydrogen combustion", the risk factor of this practice is relatively high, and it is not recommended for students to operate it, so multimedia can be used to show students the vivid experimental process, which is not only can achieve the purpose of teaching but also can be fascinating and motivate students. Then there is also a purpose in the process of watching, guiding students to explore, record, speculate and associate with the theoretical knowledge according to the content shown in the video. In addition, it can also stimulate students'

visual and auditory senses, thus improving their memory.

5. Conclusion

To sum up, there is a long way to go for teaching in all stages of junior high school. Therefore, based on the characteristics of students' physical and mental development, change the concept of teaching, improve the quality of teaching, realize the "living" of chemistry experiment teaching, respect students' subjective initiative, meet students' psychological needs, use multimedia to complete the teaching, improve the chemistry experiment In this way, we can create a highly efficient classroom for chemistry laboratory teaching and cultivate the overall development of students' chemistry quality.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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