

Research on the integration strategy of information technology and high school chemistry teaching

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Abstract: With the advancement of the new round of curriculum reform in China, schools at all levels pay more and more attention to the organic integration of information technology and classroom teaching. Now, education informatization has become an inevitable development trend of China's education and teaching reform. Under this background, chemistry teachers in high school should conform to the development of the social times, strengthen the reform of their own teaching methods, pay attention to the use of information technology to promote the teaching reform, in order to better serve the cultivation and all-round development of students' discipline literacy. Based on this, this paper briefly expounds the advantages and practical strategies of the integration of information technology and senior high school chemistry teaching, aiming at further promoting the deep integration of information technology and senior high school chemistry.

Key words: Information technology, high school chemistry, teaching integration

In order to promote the social construction and development better, the education policy of our country has been constantly changing with the development and progress of the social era. At the present stage, the development of information technology is very rapid, all walks of life are beginning to enjoy the "dividend advantage" brought by information technology, of course, China's education field is no exception. Under the social background of the rapid development of information technology, it has almost reached a consensus in the educational circle to promote the reform of school education with information technology as the lead. As for the teaching of chemistry in senior high school, its own characteristics of practicality and richness can be well demonstrated with the support of information technology, which is conducive to enhancing students' learning experience and improving teachers' teaching effect. Therefore, it is particularly important to strengthen the integrated practical teaching of information technology and chemistry in high school, and it has great research value.

I. The superiority value of the integration of information technology and high school chemistry teaching

1. The abstract knowledge points can be concretized to facilitate students' understanding

Chemistry knowledge points in high school are more abstract and theoretical. For high school students with imperfect thinking development, it is difficult for them to understand the knowledge points thoroughly just by reading the chemistry concepts in textbooks. Most of them need more detailed explanation and experimental operation by teachers to gradually understand them. However, if only through language description, the teaching effect is very small. In this regard, teachers may wish to use information technology to assist teaching, so that the original abstract knowledge points can be concretized, so as to facilitate students' learning and understanding. For example, when teaching the chemical concept of "Dundar effect", teachers can use information technology to present the Dundar effect in life, which can be pictures or videos, and help students distinguish between colloid and solution on this basis, so that they will have a deep understanding of it under the rich sensory learning experience.

2. It can transform the classroom mode and bring new learning experience to students

In the traditional high school chemistry teaching, teachers have a strong dependence on blackboard, textbooks and so on, and once a certain teaching element is missing, the whole class may be difficult to continue. With the support of information technology, teachers can use projectors, electronic courseware and other ways to present knowledge points to students, even if the lack of a certain teaching element, the teaching process can still be smoothly promoted, so as to build a more systematic new model of networked teaching. In such a teaching mode, students can get a richer learning experience, which is conducive to the improvement of their learning effect.

3. It can expand the knowledge of chemistry and promote the creativity of students

With the support of information technology, various databases have been established, which provides a lot of convenience for people to collect and integrate the data information they need. Therefore, in actual teaching, teachers can use search engines to collect more extended learning materials and teaching resources related to classroom teaching content, which is conducive to enriching the content in class and broadening students' knowledge horizon. In this way, students can not only learn and understand the knowledge points in the textbooks more deeply, but also know a lot of chemical knowledge outside the textbooks, which is conducive to cultivating students' ability to think from multiple perspectives, but also conducive to promoting them to make better use of the knowledge in the process of chemistry practice.

II. Practical strategies for the integration of information technology and chemistry teaching in senior high school

1. Before class: Guide students to self-study with the help of micro-lessons

"Everything in advance is established, not in advance is lost", and its connotation is extended to the specific teaching, which means that "pre-class preview" plays a very important role in the process of formally carrying out classroom teaching activities. It should be known that effective pre-class preview can not only better mobilize students' enthusiasm for learning, but also help students establish a new

cognitive system for the content of preview, which is conducive to laying a good foundation for students to really participate in classroom learning activities. However, from the current point of view, there are still some problems in pre-class preview of high school chemistry, such as: Preview knowledge mechanical reading materials, teachers and students do not pay enough attention to pre-class preview, which leads to students' preview effect is not ideal, and even may have no effect. As time goes by, students' original interest in chemistry will gradually be exhausted. In view of this situation, teachers may wish to change the way students preview before class and guide students to study independently by using micro-lessons. This is because the content of the micro-lesson is "short and concise" and the form is intuitive. Students can easily focus on the micro-lesson video. By watching the micro-lesson for just a few minutes, they can have a general understanding of the knowledge points to be taught in the class. Therefore, teachers may wish to give full play to the role of micro-lessons in assisting teaching, and integrate the knowledge points into micro-lessons for students to watch. In order to ensure the preview effect of students, teachers can also add some self-learning task lists related to the content of the teaching material in the process of making micro-lessons.

For example, before teaching the content of "classification of matter", teachers should not only make the knowledge points related to the teaching content into micro-lessons, but also integrate scientific classification methods such as cross classification and tree classification into the production of micro-lessons, and combine these knowledge contents to assign the following self-learning task list for students:

First, the learning objective. Being able to understand classification is a scientific way to learn and study chemicals and their variations; Master and be able to skillfully use different methods such as cross classification and tree classification to classify chemical substances. Second, learn the task. There are two main aspects: one is thinking and communicating, such as classifying the chemicals and chemical reactions that you have learned; Use other ways, such as newspapers, networks, etc., to collect examples of application of classification methods, and analyze them, and make clear the basis and significance of their classification. The second is to summarize and sort out, such as classifying different things, analyzing the results of classifying things by different standards; Use appropriate methods to classify similar things. Thirdly, learn the confusion. Ask the students to record the problems or puzzles they meet in the preview process.

In this way, the autonomy of students in the preview process can be better played, and they can gradually develop a preliminary perceptual cognitive system of new knowledge under the guidance of micro-lesson videos, self-learning task lists and textbooks, which is conducive to providing security and laying the foundation for their subsequent participation in class learning.

2. In class: Relying on information technology to optimize the teaching arrangement

(1) Create efficient teaching situation with the help of information technology

In teaching, teachers can use information technology to create an efficient and reasonable teaching environment related to teaching content for students, so as to attract students' attention, and then raise questions to trigger students' positive thinking, which can often help students learn new knowledge more effectively.

For example, when explaining the content of "ethylene and organic polymer materials", if the teacher directly explains the theoretical knowledge in the textbook, it will certainly make the students feel bored. In this regard, the teacher may first use multimedia courseware to show them a variety of different fruit photos. Let them in the process of observation to think about the problem "if we buy back in the mall fruit is not fully mature, is there a way to make the fruit quickly mature it?" In this way, students can focus their learning attention on the classroom by making them move their eyes to observe and think. After students' thinking and group discussion, the teacher can continue to ask them "If you put a ripe apple and an unripe banana together and seal them in a Ziploc bag, can you improve the ripening speed and maturity of the banana?" In this way, students can have a strong desire to explore under the guidance of these questions. At this time, the teacher will naturally lead out the teaching content of this lesson and complete the related teaching.

(2) Guide students to learn independently with the help of information technology

According to the requirements of the new curriculum reform, teachers need to play the role of classroom teaching organizer, promoter and knowledge processor to fully highlight students' learning subject status. In this regard, teachers can carry out interactive teaching with the help of information technology to enhance students' learning autonomy.

For example, when teaching the content of "Environmental Protection and Green Chemistry", teachers can divide students into several study groups and let them explore the whole process and methods of sewage treatment in small groups. In order to improve the interaction between students and the learning process, teachers can also encourage them to make flash animation videos using information technology and design a relatively reasonable sewage treatment device on their own, so as to help students further deepen and consolidate what they have learned. In this process, students can also fully appreciate the fun of group cooperation and inquiry-based learning. For another example, when teaching knowledge points related to organic matter, teachers can also lead students to draw corresponding scale models with drawing tools in information technology, which is conducive to deepening students' memory of knowledge points and promoting the tripartite interaction between teachers, students and the teaching process.

(3) Optimize the demonstration of the experiment process with the help of information technology

In high school chemistry teaching, experiment teaching is also very important, but due to the influence of various subjective and objective factors, the traditional experiment teaching effect is not very ideal, either there are security risks, or students can not clearly observe the experiment phenomenon. In this regard, teachers may wish to use information technology to solve these problems. For example, when teaching the content of Sodium and Its Compounds, teachers can use multimedia courseware to present the experimental process of sodium and water reaction, or they can use projectors to carry out on-site experimental operations under the projector and enlarge the display. In this way, all students in the class can clearly see the chemical experiment phenomenon and experimental results. It is also more

conducive to helping students master metal sodium and its related chemical properties.

3. After class: Use software to help students summarize knowledge

Learning after class is the key for students to review and consolidate what they have learned in class. Based on the traditional mode of chemistry teaching in high school, teachers basically ask students to complete a lot of exercises after class to deepen their understanding of what they have learned in class. However, they have never thought that even if they want to do exercises, students also need to have a certain understanding of the knowledge taught by the teacher, and exercises are to help students learn to use what they have learned comprehensively. In this regard, teachers may wish to encourage students to use mind mapping auxiliary software to independently summarize the knowledge learned in class after class, and summarize it into the original knowledge framework system, promote the connection of new and old knowledge, so as to help them build a relatively complete chemical knowledge structure system.

In addition, if students encounter problems in the process of completing the exercises after class, they can also use wechat, QQ or the school's online teaching platform to communicate with teachers or other students, so as to solve the problems in time, so as to avoid the emergence of problems affecting students' learning emotions due to failure to solve the problems.

III. Concluding remarks

In short, the continuous popularization and application of information technology in the field of education in China has brought new opportunities and challenges for the reform of chemistry teaching in senior high school. Senior high school chemistry teachers must actively respond to this change, deeply understand the essential connotation of educational informatization, and actively explore new ideas to promote the organic integration of information technology and chemistry teaching. In this regard, high school chemistry teachers can through the following links: before class: with the help of micro-lessons to guide students to self-study; In class: relying on information technology to optimize the teaching arrangement; After class: the use of software to help students summarize knowledge, to achieve the deep integration of information technology and high school chemistry teaching.

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