

Analysis on Scientific Education and Cultivation of Students' Creative Thinking

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Abstract: Under the new curriculum reform situation, current school education pays more and more attention to the cultivation of students' creative thinking, which is not only helpful to improve students' imagination, practice and innovation capability, but also an important means to implement the concept of quality-oriented education and promote students' all-round development. This paper explains and discusses about how to cultivate students' creativity in the process of science teaching, so as to promote long-term practice and innovation, and finally form creative thinking.

1. Introduction

Innovation is the driving force for the advancement and development of the nation, and it is also an important guarantee to ensure its long-term standing in the forest of the nations of the world. Today, with the rapid development of science and technology, the strong innovation ability will enhance one's market competitiveness. In order to cultivate students' creativity, the most important thing is to pay attention to cultivate students' creative thinking, which is the basis of launching a series of creative activities. Therefore, in the new era, it is necessary to promote students to gradually form creative thinking through science education, constantly improve their scientific knowledge and innovative consciousness, and enable them to give full play to their creative spirit to promote their sustainable and effective development.

2. Strengthen innovation and encourage students to question

In science teaching, teachers should constantly strengthen the cultivation of students' innovative consciousness, encourage them to have the courage to question, and thus promote students to gradually form creative thinking. After detailed observation, students can further stimulate their consciousness of solving problems by discovering the problems. Moreover, students have greater curiosity and thirst for knowledge, which is also conducive to promoting their independent exploration and thinking. Therefore, in the process of carrying out science teaching, teachers should treat students' doubts correctly and encourage them to actively question. When the students put forward their own questions about a problem, teachers should not laugh at them, but should patiently explain to them through his own teaching experience, and give full play to students' imagination, let them understand the general information of the question after independent inquiry, and then carry out experimental operation with students, and finally get the exact answer. This not only cultivates students' practical ability, but also helps stimulate students to develop creative thinking. For example, when explaining the "secret of friction" related knowledge in scientific education, in order to deepen students' understanding of friction, teachers can take out a balloon and rub it with the hair, and then contact the balloon with the wall or glass, then the balloon will be adsorbed on the wall or glass. When you see this, the students will ask: "Why can't the balloon fall?" At this point, the teacher can let the students do it themselves, thus verifying the phenomenon they are seeing and understanding the friction principle. Then, let the students think about it: are there things that will be charged by friction? Let students explore and discuss the questions themselves, which will greatly stimulate their enthusiasm for learning, encourage them to actively participate in the discussion activities, and find out the correct answers to the questions so that they can feel the learning pleasure. Every student has unlimited possibilities and has great creative ability. Therefore, in the process of science teaching, teachers should pay attention to cultivating students'

sense of innovation, mobilize their enthusiasm for learning, and continuously improve their ability to explore scientific knowledge. .

3. Create a teaching atmosphere and cultivate students' sense of innovation

Science education is a very complicated and abstract subject. In order to stimulate students' interest in learning and cultivate students' creative thinking, teachers should pay attention to creating a lively and good teaching atmosphere for students. And in this teaching atmosphere, advocate democracy, harmony, freedom, teachers need to use more motivating and praise language to evaluate students' learning activities. By making full use of teaching opportunities and scientific teaching methods, students' creativity will be constantly stimulated. Firstly, teachers need to establish a good relationship with students and get along with them as friends. When carrying out teaching activities, teachers should pay attention to the cultivation of students' creative consciousness and stimulate them to learn new knowledge through innovation. Secondly, in the process of exploration of scientific knowledge, teachers should often evaluate students' learning activities with praise and encouraging language, so as to increase students' inner satisfaction and pride, strengthen their desire for scientific knowledge, and let them feel the pleasure brought by creation. In science teaching, for example, to explore the problem of "how to make paper fall fast to the ground", the teacher first take out two identical sheets of paper, roll one piece of paper into a ball and leave the other piece unchanged. After observing their trajectory and landing time after throwing them up at the same time, students can conclude the rolled paper reaches the ground first. At this point, students can take out a piece of paper for experiment, and then compare and observe the paper's movement by folding it into different shapes. Students actively participate in the practical teaching, and take out paper to explore the experiment. Their creativity has been greatly developed and fully utilized, and each of them is actively involved in the teaching process.

4. To encourage students to explore and create initially

The creative conception is a relative complicated and high-level intelligent activity. According to related researches, creative competence is a kind of ability that people are born with, everyone has the great creative potential , which can be provoked totally after the reasonable development and stimulation .Thus , in order to inspire the creative competence of students completely, it is necessary for teachers to make their every effort to make the innovation of teaching models and to refine the teaching patterns when teachers start to implement subject teaching, in order to develop the subjective initial trait of students and create plenty of study opportunities for students , and teachers should set the spacious study space , in order to drive students to research and explore by themselves.

For instance, when teachers make the lecture of the origin of the sound, they can prepare the following device for students: drums, beans, rubber bands, rulers, horns, table tennis, etc. Then, teachers shall demonstrate the experiment for students by using these equipment. When you hit the big drum, you will hear the sound of the drum surface, then put the beans on the drum surface and beat the drum again. At this time, you can observe that the beans are actively beating on the drum surface. When the student probably knows that the sound is caused by the vibration of the object, the teacher can ask: Which of the tools the teacher brings can make a sound through vibration? The students made active speeches and actively participated in this. Some students said: When the rubber band is tightened and the hand is used to move back and forth, a sound will be produced. Some students also said: When the horn is blown hard, a sound will be produced, and then a table tennis ball will be placed on the horn, and the ping pong will be observed to jump up and down. This also indicates that the horn is vibrating while making a sound. In order to verify their conclusions, teachers can encourage students to select the corresponding teaching tools, conduct independent exploration and research, and continue to cultivate their creative thinking through innovative research. This kind of teaching method takes students as the main body of teaching, and allows students to feel the fun of science in the process of invention and creation. This not only

weakens the complexity of scientific knowledge, but also activates the students' thinking. It helps students to effectively transform the knowledge they have learned into a kind of thinking activity in the subtle and subtle ways, and cultivates students who are not afraid of difficulties and overcome difficulties. Confidence and courage help to improve students' intellectual level and promote their systematic creative thinking.

5. Develop students' intuitive and creative thinking through multimedia and experimentation

Intuitive thinking means that scientific inferences and assumptions can be made about the answers to the questions without in-depth discussion and research. Intuitive thinking is produced when creative thinking is more active. The development of creative activities needs to be based on creative imagination. On the basis of intuitive thinking, creative imagination and exploration can form new imaginations and conclusions. Therefore, when cultivating students' creative thinking in scientific education, it is necessary to pay special attention to the use of some intuitive means to enhance students' intuitive thinking, and then promote students to gradually develop creative thinking. Teachers can use a variety of experiments to cultivate students' intuitive thinking, such as changes in eggs in different brines, boiling water in paper pots, swallowing eggs in bottles. Through practical observation, students can intuitively discover these scientific phenomena and help them to remember and understand relevant scientific knowledge. Some students will ask the following questions after completing the relevant learning content: force can make the object deform, but why can't we see the deformation of the table when we press the table hard? The problem is to stimulate students to think creatively through intuitive thinking. At this time, the teacher can solve the problem, let the students conduct experimental inquiry, and encourage students to use the knowledge they have learned to design experiments for verification. For example, under the condition that the surface of the table is smooth and balanced, put a smooth ball on the table, and the ball stays still. When you press hard on the table on the side of the ball, the ball will roll, which indicates that the table has been deformed.

6. Conclusion

All in all, the scientific system contains a wealth of scientific knowledge and a large amount of teaching resources. By using innovative teaching methods to carry out teaching and rationally expanding the teaching content, it is helpful to give full play to students' creative spirit and exploration ability. And through a large number of scientific practices, it is motivated to gradually form creative thinking, so as to better learn scientific knowledge and promote their comprehensive and healthy development.

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