An Analysis of the Strategies of Cultivating Students' Creative Thinking in College Physics Education

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Abstract: At present, the orientation of cultivating students' creative thinking in college physics education is too vague, and the importance of the course is not highlighted further, which makes physics education in an awkward position. With the development of the times, it is an inevitable trend to improve students' creative thinking in college physics education. This paper mainly explores the process of college physics education, analyzes the necessity of innovating teaching mode in college physics education that pays attention to the cultivation of students' creative thinking.

1. Introduction

With the continuous reform and development of the new curriculum, the development of physical education in colleges and universities is also facing great challenges. That how to improve the quality of education and talent training has become the most concerned topic in colleges and universities. At present, with the development of information and network, to cultivate students' creative thinking in physics education is not only to explore a kind of reform and change, but also to explore a value of mutual connection of material civilization and spiritual civilization.

2. Importance of Cultivating Students' Creative Thinking in College Physics Education

Physics is a science and engineering subject, which has good requirements for students' creative thinking and logical thinking. With the continuous advancement of the new curriculum reform, it has become an inevitable trend of the times to fully integrate the creative thinking mode into the physical education, which can establish the conceptual, value and creative system in the physical education. Under the implementation of the new curriculum reform, not only the teaching method has been changed, but more importantly, the concept of cultivating students' creative thinking has been integrated into the actual teaching, which poses a new challenge to college physics education [1]. It requires that the college physics education should not only keep its innovation, but also fully reflect the sense of the times. Therefore, it is in line with the new needs of education and the trend of social development to cultivate students' creative thinking in physics education. In the long-term training and summary of thinking mode, it is actually a new ideal way of expression for the development of physics education. Therefore, it is necessary to cultivate students' creative thinking in college physics education.

3. Principles for Cultivate Students' Creative Thinking in College Physics Education

3.1 Principle of Depth

Students' creative thinking should be cultivated under the premise that students have sufficient ability to understand and grasp the knowledge. Only in this way can we have a deep understanding of students' learning situation and needs, and teachers can also guide students to continue to think at a deeper level of knowledge based on their own teaching experience in order to further sublimate

students' own ideas. In addition, it is necessary to train students to understand the humanistic spirit and ideological meaning in physics education from multiple angles and levels to effectively improve the character quality and humanistic feelings of students.

3.2 Principle of Systematization

A complete and systematic knowledge system should be established in college physics teaching. Only in this way can students' creative thinking be effectively cultivated [2]. For example, in physics classroom teaching, students' creative thinking should be taken as the starting point to select the content of textbooks or topics, and use the content of the textbooks to cultivate students' creative thinking in the form of topics. At the same time, in the process of cultivating students' creative thinking, their training system should be consistent with the textbook itself, that is, they need to be systematic. Therefore, teachers need to form a complete system when designing special topics, including the conception of teaching sections and the expansion of curriculum content, to ensure the cultivation of students' creative thinking in physics teaching.

3.3 Principle of Theorizing

In college education, the cultivation of students' creative thinking through physics teaching has increased the difficulty of teaching, so that teachers need to strengthen the guidance of students' theoretical knowledge to enable students to further sublimate their theoretical knowledge system. It is no longer a simple process of imparting knowledge and skills, but a process to acquire ideological insights or life experience from the study of physical knowledge, that is, to sublimate theoretical knowledge to obtain a certain practical theory, so that students can change their perception of knowledge from textbooks to practical and effective theoretical cognition [3].

4. Strategies to Cultivate Students' Creative Thinking in College Physics Education

4.1 To Develop Students' Creative Thinking in a Scientific and Effective Way

Youth students are in a wonderful year. At this stage, values, world outlook, and outlook of students on life do not develop in a stable state, so that students are extremely susceptible to the influence of external thinking and the challenge of social thinking. In this way, the turbulence of students' values, world outlook and outlook on life is aroused, and their three outlooks cannot be cultivated well. The creative thinking of students is actually a spirit of the times, and it is also an in-depth excavation of positive energy promotion. Therefore, when cultivating students' creative thinking through physics teaching, colleges and universities should deeply analyze their reflected thought perceptions to further motivate students, so that students can combine the realized thoughts with life experience and cultivate their good creative thinking.

4.2 To Change the Concept of Physics Teaching

In the traditional physics teaching mode, teachers are mainly responsible for imparting knowledge, and as long as students can understand the knowledge, the teaching has been a success. With the continuous development of information technology and the fierce competition of society, it is particularly important to cultivate students' creative thinking in the process of quality education. Thus in physics teaching, we should change the teaching concept in time, and integrate theory and practice in teaching [4]. In addition, to cultivate students' creative thinking is to cultivate students' skepticism and the ability to ask questions, that is to say, students should not stick to existing theories and book knowledge. Only in this way can they create scientifically. Cultivating students' creative thinking is mainly to cultivate students' cognition of the problem, which is around solving the problem, and the problem is put forward from the doubt phenomenon, things or existing theories. In traditional teaching, we pay more attention to the ability of solving and analyzing problems, instead of the ability of putting forward problems. The cultivation of creative thinking ability is based on the premise of putting forward valuable scientific ability. This process is not only the connection of teaching content, but more importantly, the cultivation of students' independent thinking ability. Only in this way can students' thinking ability of asking questions be further

improved, so that their thoughts can be in curiosity of knowledge and their creative thinking can be stimulated.

4.3 To Strengthen the Physical Experiment Teaching and Improve the Emphasis on the Cultivation of Creative Thinking

Physics is a subject based on experiments. All the conclusions from experiments are true feedbacks to physical phenomena. As a creative skill, experimental ability can not only help students learn physical knowledge in physical experiments, but also effectively improve their practical ability, and it is helpful to cultivate students' good scientific attitude [5]. In addition, teachers should also integrate innovative thinking into physics teaching based on physical experiments to effectively cultivate students' creative thinking and creativity, including practical ability, observation ability, and thinking ability. Through the experiment teaching, students can not only fully grasp the experiment technology and content, but also the way of thinking, which has gone beyond the experiment itself. In addition, teachers should carry out a variety of scientific and technological activities to encourage students to actively participate in social practice, and to enable them to apply the knowledge they have learned in practice to effectively combine theoretical knowledge with practical operation and improve their comprehensive ability and further stimulate their creative thinking. For example, teachers can use some low-cost experiments as a breakthrough to stimulate students' creative ability, and guide students to independently design the process and steps of experiment and select experimental equipment. At the same time, new technologies and materials can be applied to physical experiments.

4.4 To Grasp the Characteristics of Physical Thinking and Strengthen the Training of Thinking Skills

In physics teaching, teachers should train students' thinking skills from the characteristics of physical thinking, and guide students to further improve the learning structure, to effectively improve the depth of creative thinking. And the training of students' divergent thinking can improve students' logical thinking on physical phenomena and stimulate students' thinking inspiration, so that students can pay attention to their intuition [6]. Therefore, in order to improve students' ability of scientific creation, we need to strengthen the training of students' logical thinking to make students' thinking actively developed. In addition, teachers should take real history as teaching materials from the past scientific development, so that students can be trained in illogical and irrational creative thinking to effectively improve their thinking ability and creative ability.

4.5 To Improve the Education of Physical Thoughts and Scientific Methods

In physics teaching, teachers should adopt a systematic principle to standardize and summarize the thinking methods contained in physics knowledge to refine them as teaching content. And in the classroom teaching, teachers may consciously point out the hidden thinking methods in the knowledge, so that students can fully understand the importance of thinking methods, and master the essence of physical thinking mode. In addition, the main task of teaching reform is to cultivate students' scientific creativity. It requires that, while imparting students' theoretical and legal knowledge, teachers also incorporate the process of creating theories and discovering laws formed by scientists in research into teaching, so that students can stimulate their creative thinking [7].

5. Conclusion

In summary, when conducting physics teaching, teachers should promptly innovate concepts of teaching, keep pace with the times, and build a good college teaching system based on improving the quality of personnel training, so that colleges and universities can correctly guide students with innovative thinking in physical teaching. Only by improving the cultivation of creative thinking in college physics teaching can we further improve students' creative thinking and promote their all-round development.

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