

Theoretical and practical research on the history of osmosis physics in innovative education

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Abstract

With the continuous change of teaching methods, the people-oriented innovative education and teaching concept is deeply rooted in the hearts of the people. The study of the educational function of physics history began in the 1980s in China. Despite more than 30 years of research and exploration, it has not been improved, especially in the theory and practice research, there are many different aspects in the study of physics history, and it is urgent to seek further answers to solve the questions. The development of physics history and the popularization of quality education for innovative education teaching provides more possibilities, to turn more possibilities into reality need to constantly explore to find ways, make the two effectively combination, this paper in the present results, try to find more feasible methods for the history of innovative education, play a positive role in teaching activities.

Keywords

Innovative education, the history of physics, teaching activities.

1. Foreword

1.1. The meaning of the history of innovative education and physics

Innovation education is the basic value orientation of cultivating people's innovative spirit and innovative ability. Its core is that on the basis of popularizing nine-year compulsory education and in the process of fully implementing quality-oriented education, in order to meet the challenges of the era of knowledge economy, it focuses on studying and solving the problems of how to cultivate the innovation consciousness, innovation spirit and innovation ability of primary and middle school students in the field of basic education. "The history of physics study the history of human understanding of various physical phenomena in nature, study the basic law of the occurrence and development of physics, study the process of physics concept and ideological development and change, study how physics is become an independent discipline, how to constantly explore new fields, how to produce a new leap, how its branches penetrate each other, how to comprehensive and how to differentiate."

1.2. Research background of the history of penetrating physics in innovative education

With the rapid development of society, people's desire for knowledge is becoming more and more intense and more comprehensive. As far as physical knowledge is concerned, we should know what and why. Physical knowledge originated from life and was applied to life. As early as in ancient times, physics was used to life, such as friction and fire, leverage, pressure and pressure. Therefore, the infiltration of physics history in innovative education makes teaching both intuitive and connects theory with practice, and is more scientific, educational and enlightening.

1.2.1. Origin of the history of penetrating physics in 1.2.1 innovation education

The history of physics is a branch of the history of science, which is a process of occurrence and development in the process of history. Physics history of education function in our country began in the 1980s, with the proposal of innovation education, innovation education penetration physics history became possible, the combination of innovation education and physics history is to play the positive role of physics history in innovation education teaching, innovation education penetration physics history make teaching activities more meaningful, teaching can get more and people look forward to the corresponding effect. The development of society, human progress, in order to better development of education, many scholars in The educational function of physics history is constantly studied and discussed, finding ways that can be combined with innovative education, and trying to make physics history can promote human development in education and teaching.

1.2.2. The status of the infiltration history of physics in 1.2.2 innovation education

"Under the new curriculum reform, the implementation of quality education in all over the country is an education for all students. Innovative education is a powerful embodiment of quality education. In the process, infiltrating physics history helps to cultivate and stimulate students 'interest in learning and mobilize students' positive thinking. "The combination of innovative education and the history of physics, students not only learn knowledge, deepen their understanding of physics, but also more actively invest in the learning process, which is both relaxed and happy, and more importantly, students' better physical and mind development. Therefore, many textbooks in primary and secondary schools in China have applied physics examples and pictures to intuitively teaching, science teaching, education and teaching. Primary schools have natural science, middle schools have also specially set up physics courses, and other subjects are also applied to physics knowledge. It can be seen that physics history is very important in the innovative education of the new curriculum reform.

2. Purpose and significance of the history of penetrating physics in innovative education

In order to be more vivid classroom, in order to educate and teaching can be connected with real life, for students to have scientific ideas and innovative ideas in learning. The purpose of the theoretical and practical research of infiltrating the history of physics in innovative education is to form a set of feasible teaching methods. The history of physics is applied to teaching materials. Students learning in teaching activities can improve theoretical knowledge and hands-on ability in teaching activities, which is a systematic and complex project. Test-oriented education only focus on students 'academic performance, to score, ignore students' future development, the new curriculum reform requires quality education, not only the teacher teaching habits and the student learning methods, but also need the school environment and even social environment to create the kind of learning atmosphere and create the kind of learning thinking, need all linkage. Under the guidance of the national education policy, the transformation of the school education and teaching mode, according to the needs of the students and the development of the society, will continue to pour out of creative talents in the near future.

2.1. Teaching realization of penetrating physics history in innovation education

The history of penetration physics is not impossible. The important thing is the lack of operational methods. The history of penetration physics in teaching activities has been realized in teaching, but there is still a lack of combined methods. The teaching process is completed together by teachers 'teaching and students' learning, which not only requires teachers to use

teaching methods flexibly in teaching, but also requires students to have good learning methods to actively cooperate. Teaching is always just how teachers to guide students, the key is to guide. Knowing the nature of knowledge from Piagje's constructivist psychology, the knowledge obtained by students' learning needs to be constructed with their own empirical background to be better used. Knowledge is change, teaching activities teachers will flexible teaching, keep pace with The Times, students learn to understand in learning activities and accurately grasp, so in the innovation education into the history of physics learners also need to actively construct, from the history of physics to physics knowledge and will apply, is not only the transformation of students' learning mode, but also requires teachers in teaching and comprehensive teaching methods, teaching methods to do the combination of comprehensive, flexibility and creativity.

2.2. The educational value of infiltrating the history of physics in innovation education

Educational value is the meaning or role of education to people and society. The value of education is reflected in people and society, the popularization of quality education, its educational value is constantly improving. How much students gain and progress in the learning process is the realization of education, which plays a role in promoting personal growth. Although it is students' individual initiative to determine how students how to grow up, but the school teaching activities have the role of educating people and teaching, change the attitude of students, and cultivate correct ideological activities. Education is not only the knowledge teaching, but also the truth of being a man. We say "education and teaching", and why not to say "teaching and education", is because education should go in front of teaching. The same is true of the history of physics in innovation education. The history of physics first plays a role in education. It is a historical phenomenon of physics, which can infect students 'thoughts and feelings, and then to increase students' knowledge, know the development process of human beings, and learn knowledge.

In innovative education and teaching, combining the history of physics can change students' understanding of science, have respect for science, and then explore science and recognize the world, which can form a correct world view and have a correct methodology to deal with things. For their own strong foundation on the pad, can change their outlook on life, have a positive attitude towards themselves, have a positive contribution to the society. In looking at the problem, can use dialectical materialism to analyze the problems, so that the specific analysis of specific problems. In this way, the student union will get good learning methods, superb hands-on ability, lofty ideals, life is full at the same time not confused, not impetuous, broad vision and calm, whether it is a positive role in promoting themselves or others or the society.

3. Innovate the teaching methods and principles of infiltrating the physics history in education

3.1. Discussion of teaching methods

How to use teaching methods in teaching activities is very important. The use of appropriate teaching methods in teaching activities can drive the atmosphere, the atmosphere of students learning, is to guide students to take the initiative to learn, devote body and mind to thinking, so as to obtain knowledge. Textbooks and students are objective existence, is unchanged, flexible use of teaching methods can make students learn in the dynamic, with the teacher design of the teaching plans to swim in the ocean of knowledge. Good teaching methods can make teachers save time and effort to complete tasks, and students can easily gain more knowledge and achieve a sense of learning. Therefore, the choice and flexible application of teaching methods in teaching activities is crucial. With inappropriate application, students

'academic performance decreases, while it should erase students' interest in learning and affect the students' future. Here are the teaching methods often used in teaching activities.

Teaching method, it is different from the "cramming" teaching method, it is not to take the knowledge of the blunt "move" to the students, so that the students passively accept. Teaching is the common composition of teachers 'teaching and students' learning. Teaching method is also teachers 'flexible lecture and students' meaningful memory. In the process of speaking, try to coruscate the student attention and interest, clearly explain the key points of the classroom content, throw bricks to uncover the essence of the content, and assist students to learn, can we fully analyze the nature of physics and broaden the learning thinking. The selection of teaching methods in teaching activities should pay attention to the following aspects: First, the content must be combined with the teaching objectives; views can not be wrong, the concept can not be blurred, to promote the students' physical and mental development. The second is to be logical, organized; from shallow to deep, clear level; prominent content focus, reflect the key words. Third, we should pay attention to the language to be concise, accurate and vivid, all aspects should be simple, easy to understand, the language speed is appropriate. Fourth, the teaching should pay attention to arouse the interest of the students, attract the attention of the students, let the students actively participate in it, and try every means to let the students take the initiative to learn. Fifth, the teaching should be used to the summary, so that the content of the teaching is more hierarchical, convenient for students to understand and grasp the key knowledge, break through the difficulties, grasp the key points. Teaching method does not take a long time to teach a lot of knowledge, and the teaching knowledge content is very systematic, but also can guide students to think actively, improve students' enthusiasm for learning. But this teaching method also has its limitations, and it requires other means to better play its role.

Experimental method, experimental teaching method is one of the characteristics of physics teaching, experimental method is also a common method of physics teaching. The selection of experimental method in teaching activities can not only promote students 'understanding of the knowledge of physical concepts, principles, rules and phenomena, but also conducive to cultivate students' scientific exploration spirit, as well as serious learning attitude, and students can give full play to their main position in teaching activities. In the innovation of education teaching experiment teaching general requirements: (1) students before the experiment to carefully see the experimental operation requirements and experimental purpose, the actual experimental process is completed under the guidance of the teacher, the teacher must practice the experiment before the experiment, do a thorough teaching plan, clear experimental direction, avoid blindness, make students consciously and actively participate in the experimental classroom. Formative evaluation and experimental summary were performed after the completion of the test.(2) Promote students' enthusiasm for practical activities, and improve the experimental operation ability of brain movement, mouth movement and hands-on operation.(3) Pay attention to the summary and evaluation of the actual operation results, so that students can form a good habit of self-examination and correction. In order to enable students to quickly and effectively get the feedback from the experimental results, teachers should take the various details of the experiment seriously, carefully observe the whole process of the experiment, and clearly understand the problems that will appear in the student experiment.

3.2. Teaching principles

Whether the smooth completion of teaching activities is needs to be supported by teaching principles. Teaching principles are crucial in teaching activities, just like the base of tall buildings, like the roots and trunks of big trees. Teaching activities must adhere to the selection of the corresponding teaching principles to teaching.

3.2.1. The principle of combining scientific, educational and artistic

1. Scientific teaching is to scientific teaching, teachers have scientific methods and scientific attitude is the key, the students are the key, the teachers' thinking and students' thinking separate analysis, accurate grasp of the students, from the perspective of the students to see the problem, from the students' cognitive degree to solve the problem. Make full preparation before teaching, and pay attention to students' dynamics at any time in teaching. Even if there is full preparation before class, students' thinking is uncertain, which may occur at any time, unprepared, so as to deal with problems intelligently. [Case] "Specific heat capacity of matter" cannot be called "specific heat capacity of objects"; not replacing "mass" with oral "weight"; involving "volume" of containers cannot be replaced with the concept of "volume".

2. The educational nature of physics teaching. physics Teaching. Education teaching, the key in education, and the key in education. "The ultimate purpose of imparting knowledge is to cultivate people, and then it can promote the positive development of individuals and the society. Teaching and education complement each other, and they are always inseparable. If teaching can not reach the role of education, it also lost its essence, physics teaching is no exception, all promote social progress knowledge has education, which determines the physics knowledge content must emphasize and pay attention to the teaching of education, the knowledge education into every link of physics teaching process and every corner."

3. The art of physics teaching. physics teaching. Teaching is an art, and artistic teaching can more fully integrate knowledge with students, so that knowledge will not be free from students' thinking, but is the activity of people involving teachers and students. Artistic things can attract us, wake us, make us more active attention. People are rich in feelings, because these emotional factors are easily absorbed by the brain, and emotional factors also play a great role in the process of imparting knowledge. Artistic things feel alive, is concrete and abstract combination, can be felt. Therefore, we will use artistic teaching teaching methods, so that students perceive knowledge.

3.2.2. Highlights the characteristics of physics and focuses on the principles of observational experiments

Physics is an experiment-based natural science, which has its unique characteristics. Learning physics should first understand physical phenomena and physical facts, understand the history of physics, and establish relevant perceptual understanding. Learn to observe, learn theory and hands-on practice, diligent in thinking, diligent in hands-on. Experiment is an important means for students to learn physics, pay attention to the observation obtained by experiments, has the following important role in secondary physics teaching: one is to create physical learning environment; second is to stimulate the interest in learning physics; third is conducive to physical method education; four is to cultivate scientific attitude; five is to cultivate physical thinking ability.

3.2.3. Focuses on the principles of physical thought and method education

In the process of physics teaching activities, the dissemination of physics thought is more important than imparting physics knowledge. The dissemination of physics thought can educate students in the long term, and play a guiding role in learning physics in the future. Thought is a person's control center, the correct thinking can guide students to the right road. Often heard that lost will not return, not do not return, but do not know how to return, without the correct thought to do guidance, and then return is also or lost. Education teaching not every student is a good student in our mind, especially adolescence, students have rebellious thinking is inevitable, this requires teachers to learn to correct guidance, big truth students may be tired of listening do don't want to listen to, but the story is different, each story is several positive thoughts in it, and the history of physics is a lot of many real stories. [Case] Edison failed more than 1500 times after invented the electric light, which is undoubtedly the best story of "failure

is the mother of success". Feeling the experience of their predecessors, and then infect themselves, which can let the students absorb the thoughts of their predecessors to shape themselves. Students form a positive attitude towards learning, the correct three views, and then guide themselves forward. Physical thinking and methods can make students better perceive it and play a more important role in playing the educational function of physics teaching.

3.2.4. The principles of close student life and connection with social reality

Physics has extremely close and extensive ties to human production, life, and society. Students can be exposed to physical problems anytime and anywhere in their daily life, some of which can attract students' attention and interest.[Case] Archimedes said, " Give me a fulcrum, and I can pry open the whole earth. "That is," four or two dial a thousand jin ".This is the most typical lever principle story, power multiplied by the power arm equal to resistance times the resistance arm is the most clearly illustrated. In the face of these similar questions, students must want to solve their doubts and get the answers to the questions, so as to produce the desire for knowledge and the motivation to learn.

4. Research conclusion

(1) The history of physics in innovative education can better improve the teaching effect in middle school courses. In education and teaching, students are the main body of teaching activities, and teachers are the guides. inserting physics history in teaching can focus students' attention, avoid students free from the ocean of knowledge alone, cause students to think actively and actively participate in the classroom.

(2) penetration of physics history in innovation education not only broadens students 'knowledge vision, but also cultivates students' thinking ability. "Taking history as a mirror, we can know the rise and fall". Physics history is the science of studying the generation and development of physics. Through learning the physics history, students can understand the development process of physics, know the important impact of these processes on human development, and then create innovation for the future development.

(3) The penetration of physics history in innovative education can better develop a scientific attitude, learn scientific research methods, and form the consciousness and ability to solve practical problems. If the teaching activities are only learning long stories, do not pay attention to historical facts, then the process of learning is only learning theory, which has little role on the growth of people. The penetration of physics history in innovative education will make teaching activities more fulfilling. Speaking a story in teaching is easier to remember and easier to spread than telling a theory. In fact, the truth is the same, but it is easier for students to learn by listening to a story. Therefore, the infiltration of physics history in innovation education will form a correct outlook on life and values for students.

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