

Implementing the Strategy of Innovative Education in High School Physics Teaching

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Abstract

With the implementation of the new curriculum reform in full swing for more than ten years, the study of high school physics is still a difficult point in the study and life of many science students, but the innovation and reform of it is always unwilling. Therefore, in the overall environment, strengthening students' innovation consciousness has become the main task and goal of teachers' teaching. In high school physics teaching, experiment is the basic knowledge, mainly study some natural phenomena such as force, thermology, photology, electricity and magnetic field. The purpose of the research is to explore the changing laws of natural phenomena and to serve the human society with the laws contained there-in. In recent years, people from all walks of life pay more and more attention to high school physics, however, some colleges and universities still use a more traditional teaching mode to explain this difficult and obscure subject. In order to effectively change this situation, it is urgent to implement innovative education in high school physics teaching, give play to students' subjective initiative, dig deep into students' inner potential, so as to effectively cultivate students' innovative ability.

Keywords

High School Physics; Innovative Teaching; Education Policy.

1. Foreword

1.1. Background of Implementing Innovative Teaching in High School Physics

The purpose of the high school physics curriculum reform is to make all students develop better actively, actively and actively, so that in addition to growing their knowledge in a relaxed and pleasant atmosphere, students should also grow their ability, and change the abstract physics concept into an intuitive feeling. In fact, this is also what innovation education has been committed to. Innovation education is through the basic academic year stage of learning, so that students have the initial innovation ability and thinking divergence ability. Although it has passed many years since the implementation of the compulsory education curriculum reform, the innovative concept of education has been widely accepted by the public. Physics discipline adopts the teaching method of building an efficient classroom as far as possible. In some areas, schools mainly focus on exam-oriented education, which restricts the development of students' personality and the formation of good moral character. Traditional teaching, teachers pay more attention to play its leading role, ignore the main role of students, make the physics teaching into a single direction transfer activities, study the current problems in high school physics teaching, explore a variety of aspects, multi-level, efficient physics teaching methods, synchronous play the role of teachers and student main body, pay attention to students actively participate in teaching unity.

1.2. Value and Method of Implementing Innovative Teaching in High School Physics

Value: conducive to improve students' creativity and thinking divergence, cultivate students' practical ability; greatly improve the efficiency of innovation, find a good way for high school

students' innovation; timely correct the means of innovative education, and take the classical method into the new era method. Improve the shortcomings of classical innovation education, improve students' ability to solve problems, and further realize the process of quality-oriented education.

Methods: In the basic disk of the theoretical innovation, the practical operation of the physics teaching requires the basic theoretical cognition, and the realization of the value of the innovation strategy ultimately depends on the improvement of the students' ability.

2. Problems and Analysis of High School Physical Innovation Education

2.1. The Training Mode of High School Physics Innovation Teaching at the Present Stage

High school physics teaching implements the training way of teaching students in accordance with their aptitude. Every student has a difference in one's learning ability and cognitive development ability. In the teaching and education work, if teachers want to cultivate students' innovative development ability, the first and most important preparation work is to group teach students at different levels. For example, for class underachieving students, teachers should give students more care and love in life, and peers can not relax the requirements of the underachiever, also find the bright points of the underachiever students, everyone has advantages, increase their confidence and collective sense of honor; although the underachiever students are slightly backward than others, there are no bad students, cultivate and stimulate their learning motivation. In view of the individual education work of secondary students, teachers in the usual daily education and teaching work, the first thing is to must pay attention to the education of secondary students. According to the different characteristics of secondary students, they can conduct purposeful education work, cultivate their interests and hobbies, and let them think that they can also become excellent. The core problem for the individual education work of top students is not to relax their control.

Students' cognitive exploration has a close relationship with their senses, since childhood, we will use vision, hearing, touch, smell and taste to explore the world, physical knowledge exploration, mobilize senses can quickly understand the meaning of physical theory to express, even immediately understand the concept of not understand before [1].

2.2. The Actual Effect of Innovation and Training

For innovative training, we should start with the classroom, and currently our teaching time is usually 45 minutes. To do a good job in quality-oriented education, we must start from 45 minutes, strive for quality and innovation, and stimulate students' interest in learning answers has become one of my teaching methods. In the physics class, I prepared 4 to 5 questions in advance. Then in class, I had the students think while watching the new class. I in the form of group competition, require each group of students through the relay way, and then according to the speed and accuracy, so that, students should conduct psychological learning, win glory for their own group, not just encourage them to do classroom practice, improve their interest in learning, this is more important, encourage them to think more, and can reflect a variety of ways to solve the same problem. This can activate the classroom atmosphere, improve the quality of teaching, and consolidate the students' memory of the knowledge they have learned.

2.3. Problems Existing in Innovation Training

In today's era, although high school physics education has carried out innovative classroom concepts, cultivated students' future education and life, and improved their ability to solve practical problems, there are obvious problems in urgent need to be solved.

Students are the main body of learning, teachers are the "sender", so students are the "receiver" of innovation, but there are many problems, such as: thinking, psychology and ability and other aspects.

At the psychological level of innovation, students lack the consciousness of innovation and innovation spirit, do not explore the motivation to discover things around them, and have no desire to improve things [2]. Since most students have great pressure in study, and the teaching mode is mostly cramming teaching, the stimulation of students' innovation potential is more or less inhibitory, which will lead to a great decline in students' interest in in-depth research.

At the level of innovative thinking, students lack an effective innovative thinking mode. China's education system generally put the test results in the first position, to test results as the main index of teaching mode let high school students prematurely by exam-oriented education, affected by this kind of education mode, a lot of high school educators --teachers will seriously receive the influence of classical teaching mode, the students' academic performance is too important, and ignore the process. Classroom teaching methods are stale, ignoring the cultivation of students' innovative thinking consciousness. In the stage of middle school education, entering the classroom often acts as the main body of teaching, and the teacher is the disseminator of knowledge, and the student is the receiver of knowledge. The teachers' usual class content mainly comes from the textbooks used in class, and the students learn the relevant knowledge in the textbook according to the requirements of the teacher. The methods and carrying tools of basic education in China all need to be improved urgently, and the backward hardware conditions will also affect the cultivation of innovative thinking of middle school students. At present, both government functional departments and schools are facing the choice of education goals and methods of repositioning.

In terms of innovation ability, high school students learn knowledge, a drop in the ocean, knowledge accumulation, innovation ability is relatively weak, meet the actual problems processing ability to improve, even if a flash, will give up because of restrictions, thought of but it is difficult to achieve.

3. The Significance of Innovative Teaching in High School Physics Teaching

3.1. The Significance of Classroom Teaching Innovation

The rise and popularization of the Internet has accelerated the process of education and teaching reform, and the flipped classroom is a successful practice of the application in the field of education after the continuous development of information technology [3]. By flipping classroom education, teachers can not only use the cloud to control students' learning space at any time, but also get "self-reliance", "mutual assistance" and "creativity".

First of all, flipping the classroom can induce students to learn actively in their own time and make up for the lack of traditional teaching. In order to improve the interaction between teachers and students in the classroom, teachers will have more time and opportunities to think about what can transform students from passive learning to knowledge.

Secondly, it is conducive to teachers to update their teaching ideas and expand the channels for students to obtain information. The reserved classroom can change the concept of teachers and change the role of teachers from "actor" to "manager". Understanding this translation space can expand the channels and sources of information for teachers and students, and promote the timely update of information.

Finally, encourage the establishment of a new relationship between teacher and students, teachers and organizers present, students from recipient to positive researchers, "gardeners" should be thinking into professional knowledge, industrial appreciation and practical

experience, students are prepared, so, in the classroom to establish a new teacher-student relationship between teachers and students, is conducive to improve the teaching quality and teaching results.

3.2. The Significance of Teaching Mode Innovation

Good start is half of the success, in order to ensure that the cooperative learning mode in junior high school physics teaching practice high efficiency, take many effective measures to as soon as possible to establish a comprehensive multi-angle actual implementation mode and method, by establishing a set of standardized control mechanism, for cooperative learning mode in junior high school physics teaching related specific work to create a positive leading key basic conditions, from the source to ensure that there are rules to follow and laws to follow [4]. With the development of times and tradition, society needs to keep pace with The Times. At any time, it cannot be separated without the era of knowledge economy. The quality of life depends on the strength, rules and behavior of people. From the perspective of the simple thinking of middle school students, there is no innovation or imitating the development of personality, and it will not become the central force of social talents. With the elimination of such "talent", the teachers who accompany the future talents must respond in time, adapt to social changes, cultivate framework leaders, and reform the teaching mode has become an important subject of school education. As the next generation of teachers, we, of course, can not relax.

A variety of modern physics teaching will greatly promote the development of the teaching structure, and effectively arrange the content of the class according to the real situation of the physical and mental development rules of the students. New teaching methods replacing classical teaching methods is the inevitable result of historical development. The new teaching methods can promote students' developmental thinking and innovative hands-on ability, and teachers can choose more teaching means. With the emergence of new ideas, the traditional teaching methods is gradually being replaced by new teaching methods, the reform of the current teaching methods in the field of open education has made great progress, in the transition of compulsory education to quality education, we teachers must summarize the past failures, look to the future, change, concept, analyze themselves, looking for opportunities in practice, and continuous innovation and breakthrough.

4. Introduction of High School Physics Innovation Teaching Related Methods

4.1. Problem Teaching Method

The application of problem teaching rules in the process of high school physics teaching can well meet the relevant teaching requirements and improve the teaching quality. Therefore, in order to improve the students' learning effect, the teachers need to carry out the problem teaching method, cultivate the students' physical thinking ability, and improve the teaching effect [5].

Question teaching method through students to answer or solve after class, the teacher turns the book knowledge into the form of question and answer, so that high school students can understand what the teacher said in class, where the teacher's focus is, and "give birth to" the development of innovative thinking. Teachers with innovative ideas take the initiative to bring their students into problem situations, make them immersive, and try to inspire them to solve the problems raised by their teachers. "Problem teaching" mode provides the development of students with a sustainable engine, to solve the problem together, make them obtain new knowledge at the same time, also can solve the difficult problem of achievement, greatly improve the initiative and enthusiasm of students learning, in promoting the development of creative middle school students divergent thinking has played a crucial role.

4.2. Thinking Mapping Method

"Mind Map" was translated by English concept map, with two more English words like concept map, namely concept mapping and concept maps [6]. The thinking mapping has greatly improved the efficiency of students' learning. Human students have a general "skeleton" for the relevant knowledge they learn. Once the "skeleton" is completed, the "blood" and "flesh" are filled, the "giant" of knowledge will be vividly displayed in front of us. Mind maps have been widely used around the world, including a number of top 500 companies. The mind map was created by Donnie Bzan.

4.3. The Law of Network Technology Education

With the birth of the first generation of computer "ENIAC", human has entered the information age, the widespread use of computer technology, changed people's work, life and learning way, at the same time, computer network technology with a complete computer software and hardware basic theoretical knowledge and application ability has a positive impact on the comprehensive development of college students, therefore, the Internet era computer network education and teaching innovation is particularly important [7].

Network technology education method refers to the use of the Internet and a series of media teaching mode, it broke the original teachers and students face to face teaching activities, broke through the boundaries of time and space, students can class anytime and anywhere, teachers can also play class video playback, facilitate students to consolidate review after class, greatly improve the efficiency of students' learning. Today, this method is widely used.

5. Strategies and Case Analysis of Innovative Teaching of Physics Implementation in High School

5.1. Improve Students' Interest in Learning

As a key subject of high school stage, physics puts forward high requirements for students' comprehensive practical ability, high school physics is comprehensive, practical and application is relatively strong, so in the process of education practice, teachers must take students' learning interest as the starting point, adopt creative teaching strategies and teaching means, encourage students to actively participate, to ensure that students can truly grasp the essence and connotation of physical learning [8].

The object of our education is high school students. In the high school school system stage, some students have poor self-control ability in class, poor attention in class, do not remember the knowledge they learn, and do not have an open-mind attitude. Over time, with more and more knowledge, the students will resist the learning of physics, which leads to a greatly reduced interest in physics learning. To this, teachers should understand this situation is common, do not produce anxiety, usually spare time, more in class with some interesting physics knowledge to introduce new classes, adopt the way of group discussion, actively solve the problems that students encountered in learning, careful care for students in life. In addition, doing more interesting physics experiments can also greatly promote students' interest in learning. Through some interesting small physics experiments, students can not only better understand the content required by students in the outline, but also deepen students' understanding of knowledge and kill two birds with one stone.

[Case column] The course I taught during the internship was the physics course. During the class, I found that many students were listless in the class from the first class. To this end, I specially found several more typical students to understand the situation, it is reported that some because they from the first physics class from the bone that physics is a very difficult course to learn, early retreat. Some students were very interested in physics at the beginning. Later, with the deepening of the knowledge, they gradually became more and more confused

about the knowledge they had learned. As time passed, they would not be more and more, and they gradually lost their interest in physics. In this regard, when moving at a constant speed and at a straight line, I brought the dot timer from the laboratory. The students were very curious about the experimental equipment and slowly did experiments with the students. The response of the class was particularly good, which greatly improved the students' learning initiative.

5.2. Change the Way Teachers Teach

An important component of the educational evaluation is the teacher evaluation. It is the main measure of teachers' education and teaching ability. Scientific and effective teacher evaluation can improve the quality of education and teaching, promote the reform of the school internal management system, and promote the institutionalization and science of school management [9].

In the traditional teaching, the teachers teach the duck to the students' knowledge according to the book knowledge, while the students turn around the teacher, what the teacher teaches and what the students learn. The previous education model allowed students to follow the teacher's teaching model, which greatly inhibited the diversity of students' development. Gradually, students' subjective initiative gradually decreased, and students do not like this passive learning. The new curriculum reform emphasizes compliance with students' subjective will, mobilizes their enthusiasm for learning, and emphasizes the perfect organic combination of students' "learning" and teachers' "teaching". It requires teachers to design new classroom teaching methods starting from the learning situation, so as to ensure that the reform while making great strides.

[Case] When I was in class, I found that students had been tired of cramming teaching and could not raise students' interest in learning. Therefore, so I adopted a more active teaching mode, like I used more question and answer method. In class, I will ask the students to preview the textbook first, and then the students take the confused questions for the new class. I will ask questions to the students, so that they express their opinions and understanding on the preview knowledge. If there are mistakes, let's discuss them together. About ten minutes before class, I will ask the students to discuss what they have learned in the form of group discussion, and then ask me questions about difficult questions. I will help the students solve them.

6. Summary and Outlook

6.1. Sum up

In the process of innovating teaching through high school physics education, I realized the shortcomings of my accumulated experience, and I also need to use a lot of innovative knowledge. Although there are many places that have not done well enough, we, as the specific implementers of classroom teaching, will further update our ideas, change their ideas, and strive to achieve excellent results in teaching innovation.

6.2. Look into the Distance

The problems facing teaching innovation education are embodied in:

1. The obstacles to the innovative education formed under the exam-oriented education
2. A considerable number of teachers have no strong sense of innovation
3. Lack of education system that guarantee the basic links of educational innovation

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