

Analysis of Innovation Ability of Students in Physics Teaching

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Abstract

In the context of the new era of educational philosophy, the cramming teaching mode of "catch up with the progress of the times and the development of the society", which means that it is far from enough for students to learn the knowledge in textbooks. The education of the new era requires schools to carry out more comprehensive education for students. Among them, the quality education for all students can promote the development of students in all aspects and make students form a unique and rich comprehensive quality to keep up with the trend of the times. Innovative quality is just an important aspect of comprehensive quality, and the cultivation of students' innovative thinking and innovative ability is the key point and emphasis of innovative quality. For physics, the thinking of logical thinking and the formation of good scientific literacy are inseparable from innovative consciousness, thinking and ability. This paper is to junior high school physics students as the research object, respectively, from several aspects.

Keywords

Junior High School Students; Physics Teaching; Innovative Ability; Ability Training.

1. Introduction

In order to practice the reform of China's education system, the country has reformed the talent training mode, including exploring ways of innovative talent training. Whether the government or the relevant departments of the school have innovative teaching concepts is the key point of the reform of education institutionalization. The government and schools should vigorously encourage teachers to innovate in teaching concepts, teaching methods and teaching processes, etc. Only when teachers innovate in teaching can they guide students to spread their innovation consciousness, thinking and ability.

First of all, teachers should change utilitarian teaching ideas, do not take grades as the only standard of judging students, also do not determine the admission rate as the only standard of student education, each student is an independent individual, have individual personality and thinking, the road is not only one, and modern education is to cultivate the all-round development of students. However, in terms of the current teaching situation, many teachers have distorted the essence of education, only pay attention to students' academic performance, and cultivate students who are too utilitarian.

Secondly, the reform of education institutionalization also needs to reform the current single teaching curriculum mode. Most courses in China are offered for exams, which largely drown out students' hands-on brain movement ability, social communication ability, independent thinking ability and innovative thinking ability. Therefore, our country should open a variety of comprehensive teaching courses, not only for achievements, but for the comprehensive development of students, to cultivate students' comprehensive quality, so that students will have divergent thinking in a free environment, cultivate and improve their innovation ability, and will have the ability to meet the social test of young people in the new era.

2. Reasons for the Cultivation of Innovation Ability in Junior High School Physics Teaching

2.1. Deepen Students' Cognition of Physical System and Physical Knowledge

Junior high school students just contact with physics this subject, the subject includes a lot of scattered knowledge, not by rote can understand, so students are not easy to understand complex physical knowledge system is very normal, students is inevitable in understanding relatively abstract physical knowledge, and this requires the teacher to transform their role, teachers is the student in the learning process of learning and guide, need teachers to deepen the learning and understanding of various physical knowledge and physical concepts, scientific elaboration of various laws about the physical world. For junior high school students, their body and thinking are in the stage of rapid growth, and at the same time, the abstract physical knowledge is weak, and some students think that learning physics is more boring, so they are not very interested in physics knowledge. This is the focus of teachers: 1, how to stimulate students love physics, explore physical curiosity, help students find interesting learning physics, let students fall in love with physics, and take the initiative to think, analyze all kinds of physical knowledge, help students to build a complete physical knowledge system, let them fly freely in the world of physics. 2. How to design a new mode of innovative education in line with the background of education reform, and promote the divergence of innovative thinking and innovative ability of junior high school students[1].

2.2. Help Students to Build a Complete Map of Physical Knowledge

Start contact physics junior high school students will have a kind of junior high school physics knowledge is very scattered feeling, students are not easy to summarize it into their own things, it requires teachers to help students integrate all kinds of scattered knowledge, help students build personal physical knowledge system and physical knowledge map. Many students encountered a variety of subjects in the process of learning physics obstacles, and then will slowly lose interest in the physics courses, this phenomenon is not accidental, it is a lot of many students will encounter difficulties, which not only shows the current physics teaching concept lag, but also shows the one-sided nature of physics teaching methods. Through a variety of interesting classroom activities, teachers can stimulate and improve students' innovative awareness, thinking and ability, which can not only stimulate students' interest in learning physics learning, but also enrich the knowledge points of teachers' lectures.

2.3. Promote the Consolidation of Students' Main Status and Promote the Healthy Growth of Students

Under the background of carrying out the teaching system reform in China, for junior high school teaching, in order to promote the healthy growth of students, junior high school students need to develop an innovative training mode more. The new curriculum standard puts forward a concept called the core literacy. How to apply the core literacy to the teaching process has become the key point of teachers' teaching. The stimulation and cultivation of innovation consciousness, thinking and ability in junior high school physics is an important part of the core literacy, and the students' consciousness of innovation.

The stimulation and cultivation of thinking and ability are directly related to their personalized growth. This requires teachers to carry out various exercises and training of students' innovative thinking and abilities in the teaching classroom, fully implement the core literacy objectives put forward by the new curriculum standard, and help students with comprehensive and personalized development[2].

3. Iciency in Physics in Junior High School Teaching

3.1. The Teaching Methods of Physics Subjects Have Not been Improved

Under the background of the national implementation of quality-oriented education, China's physics teaching mode is facing great changes. Junior high school is a very important stage, which plays a role in connecting the past and the bottom. This requires junior high school physics teachers to grasp the pulse of national education, and constantly to provide innovative teaching links, teaching methods and teaching methods, to encourage students to innovate in the process of classroom innovation, and to drive students' innovation, so as to improve students' innovative thinking and ability[3]. However, in terms of the current situation of physics teaching in China, there are a large part of teachers keep themselves, still use the same set of teaching methods, this teaching method is not student-centered, but self-centered knowledge in books as all the knowledge in the teaching process, mechanically instilled in the students. These teachers do not enrich their teaching content, or deepen and expand their own teaching classroom, which may lead to students to feel boring about rigid physics knowledge, and thus lose their interest in learning physics. Because of the limitations and backwardness of this teaching mode, junior middle school students can not conduct cooperative physical exploration and independent physical exploration, but also can not cultivate their own innovative consciousness, thinking and ability in self-practice.

3.2. Insufficient Innovative Practice Training for Students

In modern physics teaching, practical education and theoretical education are inseparable, and the two are indispensable, which requires teachers to carry out all kinds of physics experiments, so that students can master the corresponding physical knowledge in the experiment. In the physics teaching of junior high school, the professionalism of the physics discipline is relatively strong, so the teachers should strictly manage all kinds of experimental equipment and experimental equipment, and use it safely and skillfully to ensure the credibility of the experimental results. Teachers should also continue to enrich the book and textbook knowledge, coupled with physical experiments, to achieve the purpose of the close connection between theory and teaching materials. However, although most schools in China have physics laboratories, the effective utilization rate of various inspection equipment and experimental equipment is so low that all kinds of experimental equipment has become decoration and the infrastructure is not complete, which leads to the quality of physics experiments in physics teaching is not very high. Because all kinds of experimental equipment and experimental equipment are not effectively used, students lack of interest in rigid, abstract physics, which makes students' sense of innovation, thinking and ability into a dead end.

3.3. Forget the Cultivation of Students' Innovative Thinking and Ability

Under the background of education reform, the new curriculum standard clearly put forward the innovation ability for students, schools, the importance of the society, as a new era of teachers, teachers should not only to build a new education atmosphere, but also build a new teaching mode, take the initiative to assume the responsibility of teaching and mission, show the core quality of innovation in the process of innovation. In the current teaching environment, there are still a part of the teachers, who insist that the performance is the only standard for the evaluation and judgment of students, so as to ignore the development of students' personality and subjective initiative, and then ignore the importance of the cultivation of innovative thinking and innovation ability to students. These teachers are just one-sided to students instill the theoretical knowledge of the teaching materials, teaching students all kinds of answer methods, answer skills, the students in a learning physics knowledge only for the exam, test good grades learning framework, and not to the physical knowledge to join their own knowledge, also can't learn new innovation. As time passes, the student will form a variety of

thinking potential in the mind. Influenced by all kinds of thinking potential, it will stay on the surface of knowledge for all kinds of physical knowledge laws and do not essentially think and research, which will greatly limit to the divergence of students' innovative thinking[4].

4. Way to Cultivate Innovation Ability

4.1. Teachers Should Refresh the Concept of Physics Teaching

In the new curriculum standards, the stimulation and cultivation of students' innovation consciousness, thinking and ability are an important component of physics teaching. Teachers should refresh their own physics teaching concept, realize the key of stimulating and cultivating innovation consciousness, thinking and ability to students, adhere to the principle of combining practical teaching with theoretical teaching, understand the importance of practical education to students' learning, and constantly provide students with opportunities to learn and practice. Practice teaching and theory teaching is inseparable, the teacher explained the basic physics concept knowledge, need to actively guide students to classroom practice, in continuous practice, and stimulate the enthusiasm of students learning physics knowledge, finally arouse students' curiosity of independent learning[5]. "Teachers for teaching, not fully grant, and induced in the camera," this is the great educator Ye Shengtao, the teacher's teaching responsibility is not pure to instill students teaching material knowledge, on the contrary, teachers to provide students a guide teaching method, let students to find new problems and solve the problems found themselves. In the teaching process of the teacher, the teacher should always remember their role task, the student is the main body of learning, the teacher is the student learning road, the teacher to guide the students, first the classroom to the students, guide students to independent learning, then cultivate students to find, think, solve problems, let the students become the main body of learning, more effectively turn the book knowledge into their own knowledge.

4.2. Let the Students be the Master of the Classroom, and the Students Make Progress in Unity and Cooperation

In the inherent traditional physics teaching, teachers do not have a clear and correct cognition of their own role. Teachers often play the role of "leader" in the classroom. Teachers often operate the experiment on the platform and dictate the experimental principles, steps and conclusions to the students. This teaching method is wrong. On the contrary, innovative education in the new era requires students to be the "leader" of their own learning, which requires students to carry out their own experiments, explore their own brains, and draw experimental conclusions. Students are independent people, students have their own thinking personality, so the students will have unlimited potential, and will have more growth space and opportunities. Teachers should give the classroom to students, so that students can make progress in mutual unity, which will be more effective than the "duck drive" learning effect. Excellent students in the school should consciously cultivate the "dare to be the first" personality, in the face of physical learning problems to bravely put forward their own opinions and ideas, do not be afraid of authority, to be brave to jump out of the inherent circle of knowledge, from the reality of study and life, have the courage to explore the truth.

For example, when the teacher explains the physical knowledge of boiling, he can give the classroom to the students, on the basis of understanding and skillfully and safely using alcohol lights, thermometers, let the students group experiments. During the experiment, students thought. Students conduct the experiment according to the experimental steps, and write the obtained data in the form, the teacher beside the guidance, and finally the students get the correct experimental results in the cooperative communication[6]. Through this independent cooperative inquiry learning mode, students can not only promote their feelings of each other,

but, more importantly, improve their hands-on brain movement ability. The most important thing is that students stimulate their innovative consciousness and thinking in the process of their own operation experiments, and cultivate and improve their innovation ability.

4.3. Teachers Should Actively Encourage Students to Create and Innovate

Contemporary society, science and technology development at a very rapid speed, the field of many innovative technology products and innovative research results, research a lot of new technology products, teachers should actively call for corresponding countries, encourage students to rely on the physical knowledge to make innovative technology products, and have the opportunity to apply their innovative technology products to the real society and real life. As we know, using simple and easy teaching methods can not stimulate and cultivate students' innovation consciousness, thinking and ability, which is not only to conduct the integration of basic knowledge and science and technology, but also to continuously develop students' thinking and broaden students' horizons. Therefore, it requires teachers to make full use of students' spare time, in addition to class, to form various innovative technology projects, so that students can participate in the project, and students can also participate in a variety of innovative thinking invention activities.

For example, the "fool camera" in the textbook uses the relevant knowledge of physical optics in junior high school. After learning the relevant optical knowledge, teachers can let students move their brains and use their own intelligence and innovative thinking to make a "fool camera". Another example, charge, friction this section, students learn electrostatic phenomenon, electrostatic has a very important application in industry and life, but sometimes also bring a lot of trouble to people, people need to add more protection. At this time, students can refer to the data to understand people's effective use of static electricity, such as sterilization, at the same time can also diverge innovative thinking, improve their innovation ability to carry out static electricity experiments and small inventions[7].

4.4. Teachers Should Actively Encourage Students to Write Physical Small Papers

The information age is an era of "desperately for our imagination and creativity". Therefore, the innovative achievements of students in the new era are not only reflected in the ordinary teaching activities and teaching experiments, but also in the students' writing of physical small papers. The task of the teachers is to introduce the popular science materials related to the junior high school courses to the students, lead the students to analyze and learn these popular science knowledge, put the students' long-term vision, do not stick to the textbooks, so that the students can understand the first-hand physics materials and the latest development trends in the field of physics[8]. Students will watch TV every day, so the teachers can recommend some suitable popular science programs to the students to help the students broaden their horizons and constantly understand and learn new knowledge. Schools or teachers can carry out small knowledge competition, stimulate students' enthusiasm for learning, improve students' independent learning ability, and more importantly, they can test the true feelings of students to master knowledge. Obviously, when students' independent learning, students will find new problems, think about new problems and solve the found new problems, then teachers can encourage students to find various new problems with their own words, in their own way into physical small papers, teachers through this interesting way to make students independently find problems, then to think to solve problems, which can largely stimulate students' innovation potential and consciousness to achieve the purpose of cultivating students' innovation ability.

4.5. The School Organizes Popular Science Lectures

Deng Xiaoping once said, "Science and technology is the primary productive force.". Science and technology have greatly promoted the progress and development of society. In our daily life,

science and technology are everywhere, and the same science and technology are everywhere, so various innovative ideas are highlighted everywhere. All theory from life, physical knowledge theory is no exception, physical knowledge is also derived from our real life, it requires teachers to lead students down-to-earth based on our real life, learn all kinds of life physical knowledge, the development of life society and the development of the field of physical connection.

In order to broaden the students' learning field, enrich physics teaching classroom, schools can organize science lectures, can also give students play some science lecture video, let students realize that China's aerospace technology, aviation technology, communication technology and military technology are closely related to the physics knowledge, but also can improve students' interest in learning physics. At the same time, teachers can also organize students to go to the library or use the network for a variety of data query, understand the great achievements of Chinese physicists since ancient times, let students deeply understand the correct outlook on life, world outlook, and values, which also cultivate students' innovative thinking and ability of great help. Schools where conditions permit can also organize students to visit various physical modernization facilities.

5. Conclusion

To sum up, junior high school physics teaching in the background of education reform is expected, indomitable. Under the new curriculum standard, not only requires teachers to actively respond to the reform, innovative teaching ideas, change teaching methods, the teaching process, the teaching in the junior high school physics class gradually join the core required literacy training, promote students to think actively, independent thinking, divergent junior high school students' innovation consciousness and innovative thinking, so as to realize the cultivation of students' innovation ability and practice.

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