The Integration of Information Teaching and Traditional Teaching in Junior High School Physics

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Abstract:

The continuous development of information technology has brought vigor and vitality to education and teaching. If the physics teaching in junior high school continues to use the traditional teaching mode, it will not be able to achieve good teaching results. The new curriculum reform requires that information technology should be implanted into traditional teaching, and the organic combination of the two, together with abundant network education resources, can rapidly improve students'learning level and comprehensive quality. This paper briefly analyzes the integration of information technology and junior high school physics teaching, and expounds the innovative teaching strategies of junior high school physics under the influence of information technology, in order to provide valuable reference for the innovation of junior middle school physics teaching.

Keywords:

Information technology; Physics teaching; Integration

Introduction:

With the development of science and technology, the application of information technology in the field of education is becoming more and more common, especially the Internet into the subject education, which provides more sufficient teaching resources for teaching innovation and opens up a broader development prospect for education. However, as far as physics teaching at the present stage is concerned, teachers are deeply influenced by the traditional concept of education, ignoring the introduction of advanced teaching forms according to the diversified needs of students, and still relying mainly on oral and indoctrination teaching modes, which makes it difficult for students to understand abstract physics knowledge and depletes their enthusiasm for learning. Junior high school physics teachers should make use of the convenience brought by information technology to build an efficient junior high school physics classroom, so that students can enjoy the learning process, mobilize the enthusiasm of students, help students establish physical thinking, and use physical thinking to solve problems in real life, so as to promote the development and progress of society.

1. The importance and necessity of information-based teaching for junior high school physics teaching

In the traditional junior middle school physics teaching, in order to effectively fit in with the traditional education, we mainly adopt the traditional teaching mode of "teachers speak, students listen, and the whole class is full of cramming", which is a high-burden and low-efficiency old road of "teachers speak tired, students learn hard". In the classroom, the teacher pursues "what to test and what to teach" and "what to teach by testing". The teacher talks endlessly on the platform, and the students listen in a daze under the stage. Under the guidance of the old educational concept, students passively learn book knowledge, which will reduce their interest in learning over time, and even lead to weariness of learning. Information-based teaching, as a new teaching method, has been implanted into traditional teaching in a planned way, relying on advanced technical means, rich teaching resources and vivid demonstrations, breaking the restrictions and constraints of books, enhancing students'interest in learning, and arousing students' strong curiosity and thirst for knowledge. In addition, teachers'purposeful and targeted guidance can achieve twice the result with half the effort. Therefore, it is of great significance to combine information-based teaching with traditional teaching to improve students' autonomy and enthusiasm in learning, to enhance students' awareness of physical thinking, and to cultivate students' good learning habits and innovative ability. This can not only enhance the autonomy of students in physics learning, but also activate the classroom atmosphere, laying a solid foundation for the smooth transition to high school.

Second, the application of information technology in junior high school physics.

(1) Neglecting the main body of students and deviating from the essence of education

In junior high school physics teaching, teachers should distinguish between primary and secondary, make clear that information technology is a teaching guidance tool, and then build a student-based classroom to optimize physics teaching. First of all, teachers should play a leading role to give full play to students' subjectivity. In integrated teaching, teachers are required to pay full attention to the core influence of students and let students study independently, but this does not mean that teachers completely let go of their hands and let students learn independently. In the process of teaching, teachers should attach importance to students as the main body and give full play to their guiding role, be the planner and organizer of teaching content, activities and scenarios, and guide students how to use information technology correctly to learn physics knowledge, so as to improve the effectiveness of physics teaching. Secondly, teachers should attach importance to the integration of teaching methods, physics teaching should focus on knowledge education, and grasp the teaching goal of shaping students'comprehensive literacy. Information technology gives students sound, light, shadow and other sensory stimuli, and then arouses students' desire for self-study. However, in the teaching process, we should not only pay attention to the integration mode, but also blindly follow the trend of applying information technology in order to pursue the diversification of perfect teaching methods, while ignoring the teaching content and the goal of quality education. As a result, ineffective resources will be flooded and students' attention will be distracted. Affect the actual effect of teaching. Therefore, we should make effective use of information technology, attach great importance to the essence of physical knowledge teaching and quality education, and make information technology truly become an auxiliary tool for students to learn.

(2) Excessive use of information technology out of teaching practice.

The effective integration of information technology and junior high school physics teaching should focus on improving the effectiveness of teaching. If teachers attach too much importance to the efficacy of information technology in teaching, the traditional teaching mode will be completely replaced by information technology, which will lead to the replacement of the teaching process by a single media video demonstration, and even the replacement of the physics experiment that students are most interested in by multimedia video demonstration, which will make the space for students to explore, analyze and think independently. It restricts the formation and development of students' basic ability and logical thinking, and makes physics teaching break away from the core concept of science education. Therefore, in junior high school physics teaching, teachers should establish a scientific concept of application, not exaggerate the efficacy of information technology in assisting teaching, pay special attention to the effective combination of information technology and traditional teaching methods, enrich the teaching content on the basis of ensuring the quality of teaching, innovate teaching methods independently, and shape students'comprehensive basic ability and innovative ability.

(3) Weak scientific and technological literacy and unclear teaching priorities

The development of information technology has promoted the reform of all walks of life, and its integration with junior high school physics teaching has effectively promoted teaching innovation. But there are still some problems in the integration of information technology and physics teaching at this stage. Teachers'comprehensive quality of science and technology is relatively weak. In teaching, some teachers have a biased understanding of the practical significance of the integration of information technology and physics teaching, and feel that the application of multimedia teaching is integrated teaching. In the classroom, they only pay attention to the intuitive deduction of teaching courseware, ignoring the in-depth analysis of teaching content, which leads to teachers ignoring the guidance of teaching and relying too much on courseware to transmit physical knowledge. As a result, information technology teaching breaks away from the content of physics course and becomes the dominant factor in the classroom. In the long run, the primary and secondary of physics teaching are not clear, and the teaching effect is unsatisfactory. In addition, some teachers have insufficient understanding of the importance of integrated teaching, and only apply the traditional teaching method of teachers speaking and students listening in classroom teaching, which hinders students'self-learning ability and also affects the actual teaching effect. It can be seen that the scientific application of information technology in junior high school physics teaching still needs to be improved by teachers in combination with teaching practice.

2. The Integration Strategy of Informationization Teaching and Traditional Teaching in Junior High School Physics

(1) Use multimedia technology to create corresponding classroom situations

Situational teaching method is a common teaching mode adopted by many junior middle school physics teachers. Teachers can make use of the convenience brought by multimedia technology, combine with the teaching content, and introduce videos or pictures related to the teaching content, so that students can further understand the physics knowledge of junior high school by watching videos or pictures. This form of teaching can attract students' attention and help students quickly integrate into the classroom. For example, when explaining the unit "Understanding the Circuit", teachers can first introduce the process of Edison's invention of the light bulb, let students watch videos related to Edison's invention of the light bulb, and then let students think about what electricity is and what makes the lamp shine. Through this form of teaching, teachers can let

students actively discover and explore problems, and let students understand that when they encounter difficulties, they should not give up easily. Teachers should further explain "what is electricity" and "let the lamp shine" according to the students'answers to the questions. Teachers should play a guiding and helping role in the process of students' learning, so that students can truly become the masters of junior high school physics classroom, and gradually find their own learning methods, develop good learning habits, and stimulate their thirst for knowledge in the process of gradual learning. In the traditional junior high school physics classroom, teachers have been in a dominant position, not regarding students as the main body of the classroom, ignoring the ability of students to think independently. In the new era, we need to cultivate all-round high-quality comprehensive talents, which requires junior high school physics teachers to take into account students'learning situation and let students think actively when they use multimedia technology to create classroom situations. The use of multimedia technology to create classroom situations can get rid of the shackles of traditional teaching mode, mobilize the enthusiasm of students, create a good classroom atmosphere, shorten the distance between teachers and students, so that teachers can timely understand the learning situation and psychological dynamics of students. Teachers should make different teaching plans according to the students' learning situation, carry out differentiated teaching, make the classroom situation play its due role, and build a lively and interesting junior high school physics classroom for students.

(2) Use information technology to broaden students' learning channels.

On the premise of completing the basic teaching content, junior high school physics teachers can properly expand students'learning content and enrich students' knowledge reserve. For students with relatively strong acceptance ability, teachers can let students use information technology to find information related to physical knowledge, so that students'learning is not limited to the knowledge in books. If teachers want to achieve the ideal teaching effect, they must change the traditional teaching methods. The information technology can display the huge superiority in the teaching, provides more teaching resources for the junior middle school physics teaching. Therefore, when teachers explain the course, they can expand the relevant teaching content through information technology, guide students to expand learning, stimulate students'interest in learning, and enable students to exert their imagination and creativity in the classroom. At the same time, teachers' application of information technology-assisted teaching methods can make up for the shortcomings of traditional teaching mode, let students get rid of dependence on teachers, broaden students' horizons by using information technology, and mobilize students' enthusiasm. For example, in the lesson of "Global Warming and Water Resources Crisis", junior high school physics teachers can let students use the Internet to find information about global warming and water resources crisis, understand the causes of global warming, let students pay attention to global warming, and understand the truth that water resources should be protected. Protecting the environment and developing correct living habits are the key topics that people pay attention to at present. Teachers can focus on this topic, let students use the Internet and other information technology to find relevant information, help students set the right direction of life, establish correct values, and integrate environmental awareness into students'life concept. From this, we can see that the application of information technology can expand students' learning content, so that students can use the convenience brought by the Internet to find information related to learning content. But in this process, teachers should give students the correct guidance, because the Internet platform not only brings convenience to students, but also makes a lot of information that is not suitable for students to browse into students'vision. Teachers should play a guiding role so that students can better integrate into physics learning. In the process of learning, students can integrate their emotions with the learning process, and use emotions as a carrier to promote communication with teachers and other students. In the process of emotional transformation, students will form unique physical ideas, which will help to improve the efficiency of students' physical learning. At the same time, teachers can also use the Internet platform to expand students' learning space, so that students can learn junior high school physics from multiple angles and directions.

(3) strengthen the cooperation and communication of students and carry out "cooperative teaching" in groups.

When teachers carry out physics teaching, they encourage students to learn physics knowledge through cooperative inquiry and group cooperation. In physics teaching activities, teachers can divide students into several groups and lead them to explore and summarize on the basis of group cooperation. In teaching, teachers can use the information technology of micro-lessons to guide students to understand the physical knowledge they have learned, and encourage students to discuss their own problems in groups, so as to solve the different puzzles of each member of the group. Therefore, teachers should design the time of group cooperation in advance in the preparation stage to promote the effective implementation of group cooperation. The experiment runs through the physics teaching all the time, and the way of group cooperation is helpful for students to complete the experiment better. Through group cooperation, members can divide and cooperate with each other in experimental operation, data recording and report analysis, so as to exercise students'practical ability and sense of cooperation. In group cooperation, teachers should give timely guidance to students'experiments and discuss with students. This teaching method not only helps to create a relaxed and positive atmosphere of group cooperation, guide

students to have a deeper understanding of the experiment, but also helps teachers to optimize their own teaching strategies from the actual situation. Therefore, the friendly and harmonious interaction between teachers and students is helpful for teachers to understand students' confusion and weak knowledge points, so as to carry out targeted and accurate analysis and summary in the subsequent explanation, and further promote the overall improvement of the efficiency and quality of physics classroom teaching. In the process of group discussion, teachers should cultivate students'independent inquiry ability, expression ability and cooperation ability, and cultivate students' core literacy. For example, when learning the content of "Force" in the second volume of the eighth grade of the People's Education Press, the teaching goal is to guide students to clarify the concept and unit of force, and to be familiar with the schematic diagram of force to express force. At this time, teachers can combine the information technology of micro-lessons to show students the examples of mechanics in real life, and at the same time, combine the schematic diagram of force to explain in detail, and guide students to cooperate and discuss in groups. During the period of group cooperation, students can concentrate on discussing the knowledge of object force, which is conducive to improving their knowledge structure.

(4) Increase the proportion of experimental teaching and enhance students'practical ability

By participating in the experimental operation, students can better understand the physical phenomena and physical knowledge. Teachers should reserve enough experimental time to guide students to operate, and the knowledge and insights that students acquire in the process of independent experiments greatly exceed the oral teaching of teachers. When carrying out experimental teaching, teachers can play the experimental notes and main processes to students in combination with the multimedia of the laboratory, which can influence students imperceptibly under the guidance of standardization and intuition of video content. After students get effective guidance, it is conducive to promoting their better and more correct experimental operation. In the process of practice, experimental teaching is also a kind of exercise for students' practical ability and operational ability, whether in the current study or later work and life, hands-on practical ability is indispensable, the use of experimental teaching is helpful to exercise students' comprehensive ability and cultivate their core literacy. For example, when learning the content of Buoyancy in the second volume of the eighth grade published by the People's Education Press, teachers can guide students to fully understand Archimedes'principle through experiments. Teachers can prepare experimental instruments such as spring dynamometers, metal blocks and water in advance, and play the specific operation process of the experiment for students in combination with micro-lessons, and then practice with students to further summarize and prove the Archimedes principle (the buoyancy of an object is equal to the weight of the liquid discharged by the object). It can not only effectively exercise students'operational and analytical abilities, but also help to improve students' physical knowledge system.

3 . Conclusion

Physics is an experimental subject based on theory, and its rigorous scientific concept and realistic experimental attitude are the necessary abilities for students to form scientific literacy. With the continuous development of the times, the application of information technology has also moved from basic penetration to comprehensive assistance, while information technology has always been only an assistant in the classroom, not a leader in the classroom, that is to say, teachers should still start from the needs of students'learning subjects when applying information technology, combine with the needs of students' growth, and give full play to the auxiliary role of information technology. The application of information technology can not be regarded as the main force of classroom teaching, changing the main mode of the classroom, which is tantamount to putting the cart before the horse, so the combination of physics classroom and information technology needs teachers to implement with a more meticulous and rigorous attitude, so as to guide students to innovate constantly and achieve the improvement of scientific literacy.

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