

On the Teaching Reform of University Physics Course

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Abstract

This paper analyzes the present situation of University Physics teaching and puts forward some suggestions on the teaching reform of University Physics contents, teaching methods and multimedia application. This paper provides some references for promoting the reform of University Physics teaching in terms of content, method and means and strengthening the cultivation of students' innovative ability.

Keywords

University Physics, teaching reform, advice.

1. Current Situation of University Physics Teaching

University Physics is a very important basic course for engineering majors. It is the core of natural science. It plays an important role in cultivating students' scientific thinking ability, scientific research innovation ability and scientific world outlook which cannot be replaced by other courses. However, an in-depth examination of the current physical education in universities reveals that the physical education in universities is not well adapted to the requirements of social and economic development in many aspects, and the teaching content is still far from keeping pace with the development of The Times to some extent. At present, University Physics teaching is still in the stage of traditional theoretical knowledge teaching and professional skills training, and insufficient attention has been paid to how to cultivate students' innovative thinking and independent exploration ability. The existing Physics teaching is still in the stage of implantable teaching method of implantable knowledge, the teacher adopts the teaching method of full room filling, the students accept passively, the learning enthusiasm and initiative is not high; The existing experimental teaching has a single method, a single process, a single verification of the results of the experimental stage, can not stimulate the learning interest. The backward teaching concept is seriously disjointed from the requirement of modern quality-oriented education. Therefore, it is urgent to reform the existing Physics teaching methods.

2. Some Suggestions on the Teaching Reform of University Physics

Draw lessons from the successful experience at home and abroad, start from the actual situation, make full use of the existing teaching resources and conditions, explore the appropriate teaching mode, on this basis, summarize, improve and innovate the teaching concept. Based on the author's practice in University Physics teaching, this paper discusses the author's views on the reform of University Physics teaching.

2.1. Update the Content of University Physics Textbooks and Appropriately Add the Content of Modern Physics

In the 21st century, the rapid development of science and technology, new technology, new technology, new material, new technology constantly emerging, product replacement cycles are getting shorter, and the University Physics teaching material contents update not in time, the classical proportion bigger, relatively insufficient part in modern times, with The Times the

disconnect, therefore increase the intensity of University Physics teaching material content updates and frequency is very urgent thing, only the teaching material and modern times, we teach students knowledge is the most advanced, students will be able to access to the latest scientific and technological achievements. In order to improve students' interest in Physics and broaden their horizons, the latest achievements in laser, superconductivity, the origin of matter and semiconductors in recent years are appropriately introduced. It is necessary to break through the tradition and reform the experimental teaching of University Physics, to reform the experimental content and to cultivate students' innovative ability[1].

2.2. Classroom Teaching Should Reflect the Principle of "Students as the Main Body and Teachers as the Leader"

At present, most colleges and universities still adopt the teaching method to carry out teaching in Physics teaching, which leads to one-way transmission of teaching knowledge rather than two-way interaction, making it difficult for teachers and students to communicate effectively. In this way of teaching, students cannot spontaneously explore the deep laws of Physics and can only passively accept the teacher's explanation, which leads to the lack of students' innovation ability. The new teaching mode should take the student as the main body and the teacher as the leading scientific orientation. Students study independently before class, discuss in groups, teachers explain and sort out key knowledge, answer questions and solve doubts, strengthen the communication and interaction between teachers and students, and cultivate students' ways to find problems and solve problems. Before teaching a knowledge point, the teacher first asks questions to the students, guides them to think, and inspires them to ask questions. Then, the teacher expands the knowledge point according to the questions of the students. Teachers should arouse students' learning initiative and enthusiasm, and make students change from "I want to learn" to "I want to learn". To cultivate the ability as the focus, to inspire and develop students thinking as a breakthrough, pay attention to the cultivation of students innovative consciousness and creative ability. Let the students gradually understand and master the content through thinking and asking questions.

2.3. Flexible use of Multimedia and Other Modern Teaching Means to Promote the Reform of Teaching Methods and Teaching Means

The application of multimedia technology can strengthen the demonstration effect of classroom experiment, improve students' interest in learning, and visualize abstract concepts. Under the guidance of teachers, students can observe experimental phenomena with the knowledge they have mastered, and draw conclusions after positive thinking, which can stimulate students' thirst for knowledge and interest in exploring unknown fields and enhance the classroom learning effect[2].

2.4. Build Physics Teaching Website and Develop Physics Simulation Experiment

Combined with the characteristics of Physics and teaching practice, make full use of multimedia, Flash, Maya, 3DS Max and other development of virtual Physics experiment, Physics teaching content, such as teaching plan and electronic textbooks, simulation experiments, exercises and answers, online self-test, scientific progress on the Physics website for students to learn independently. Students log on the Physics website to learn online, and can carry out Physics course experiments in a simple, fast, cheap and efficient way, regardless of time, place and experimental equipment. Through the virtual simulation experiment, the problem of equipment obsolescence and fund shortage is made up.

2.5. Add Design Physics Experiments

Traditional experiment content mostly focus on the verification and demonstration experiments, for the purpose of each experiment, principle, content, instruments and data processing are very specific, as long as the students can be smoothly carried out in accordance with the steps to complete the experiment, leaving room for students' analytical thinking is to choose the optimal experiment scheme (including experimental method, select the necessary instruments and equipment), the measuring conditions were determined, and the experiment. Design experiments for students under the guidance of teachers, for a given physical experiment topic or experimental requirements, consult the relevant materials, and puts forward the experimental principles, methods and steps and then, observe and record the experiment phenomena and data, the research found problems in the process of experiment, and focus on research and analysis of experimental results, until finish the experiment. The biggest advantage of designing experiments is that they can effectively give play to students' initiative and thinking ability, mobilize students' practical ability and creative thinking, and comprehensively improve students' innovation ability and exploration spirit [3].

3. Conclusion

University Physics teaching reform is a systematic project, needs of the physical education and students continued to explore and practice, continuous improvement in the practice and exploration, updating the teaching contents, reform the teaching idea and method, physical teaching will carry out more and more good, the students' learning ability, innovation ability and practice ability can be improved.

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