

# *Effective Teaching of College Physics in Agronomy Majors*

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**Abstract:** This paper aims to explore the effective teaching methods of college physics courses for agronomy majors. First of all, it introduces the understanding and attitude of students majoring in agriculture to physics curriculum, and points out the misunderstanding and confusion of students to physics. Then, it expounds the importance and application value of physics course for students majoring in agriculture, as well as the basic principles of physics course teaching. Then, it puts forward the teaching strategies of physics courses for students majoring in agriculture, including stimulating students' interest in learning, paying attention to practical application, using specific cases for teaching, and strengthening experimental teaching. Finally, it summarizes the importance of effective teaching methods, and emphasizes that teachers should pay attention to students' personalized needs and learning characteristics in the teaching process to improve the teaching effect.

## 1. Introduction

As an applied discipline, agronomy is of great significance to students' professional development and practical ability. However, students often face various difficulties when learning physics, such as high abstraction and difficulty, which brings certain difficulties to the teaching of physics courses. In order to better improve the teaching quality of physics courses, some teachers have explored effective teaching methods in teaching practice in order to better meet the learning needs of students [1]. This paper will discuss the effective teaching of college physics courses in agronomy specialty from the aspects of teaching objectives, teaching methods, teaching means, etc., in order to provide some beneficial enlightenment and reference for teachers.

## 2. Current Situation of College Physics Teaching in Agronomy

Current situation of college physics teaching of agronomy specialty College physics of agronomy specialty is a basic course. For students of agronomy specialty, understanding and mastering the basic principles of physics and physical experimental skills is of great significance for their future professional development. However, there are some problems in the teaching of college physics for agronomy majors at present.

(1) The teaching content is single. The teaching content of college physics courses for agronomy majors mostly focuses on basic physical knowledge, such as kinematics, mechanics, heat, etc., while for some physical knowledge related to agricultural practice, such as photosynthesis, soil physical properties, etc., the teaching content is relatively small. This makes it difficult for students to deal with practical problems due to lack of necessary physical knowledge support in practical work [2].

(2) The teaching method is single. At present, the teaching methods of college physics courses for agronomy majors are mainly lecture and experimental teaching, lacking interactive communication and practical links. This makes it difficult for students to understand and master physical knowledge in the learning process, and it is difficult to apply the knowledge to practice [3].

(3) The professional background of teachers is insufficient. Most of the teachers of college physics courses in agronomy major are from physics major, lack of understanding and understanding of agricultural practice, and it is difficult to combine physical knowledge with agricultural practice, making the teaching content difficult to meet the actual needs of students [4].

In response to the above problems, we should take the following measures. First, to enrich the teaching content, we should strengthen the teaching of physical knowledge related to agricultural practice, such as photosynthesis, soil physical properties, plant growth and development, so that students can master more comprehensive physical knowledge and better deal with practical problems. Second, diversified teaching methods. In addition to traditional teaching and experimental teaching, interactive communication and practical links should be introduced, such as group discussion, case analysis and practical operation, so that students can better understand and master the knowledge learned and apply it to practice. Third, strengthen teacher training. We should strengthen the training of college physics teachers of agronomy specialty, so that teachers can understand the needs of agricultural practice, better combine physical knowledge with agricultural practice, and improve teaching quality [5].

### 3. Effective Teaching Strategies for College Physics Courses of Agronomy

Agronomy students may face some challenges in college physics courses, such as understanding physical concepts and mathematical formulas, and also need to apply them to agriculture. Therefore, in order to achieve effective teaching, teachers need to make full preparation. This includes understanding students' background and previous learning experience to better understand their needs and difficulties. In addition, teachers also need to prepare course materials, including textbooks, slides, case studies, etc., and design appropriate experiments and projects to help students practice and apply what they have learned. Finally, teachers also need to choose teaching strategies suitable for agricultural students, such as discussion, group cooperative learning, personal research, etc., to improve students' participation and learning effect [6].

In college physics teaching, teachers can adopt a variety of teaching strategies to improve students' learning interest and enthusiasm. Among them, heuristic teaching method is an effective teaching strategy, which can stimulate students' learning interest and enthusiasm by asking questions and letting students find problems themselves. The case teaching method enables students to understand physics knowledge more deeply through examples and cases. The experimental teaching principle allows students to experience physical phenomena and better understand physical knowledge through experiments. On the premise of ensuring that students understand the prerequisite knowledge, the explanation teaching method is used to help students better grasp the knowledge. Therefore, when teaching physics, teachers can choose appropriate teaching strategies according to students' needs and teaching objectives to improve students' learning effect and participation [7].

When teaching, teachers need to pay attention to students' learning situation at all times, guide and correct students' learning methods and mistakes in time, so as to improve students' learning

effects and achievements. At the same time, teachers should also encourage students to express their views and ideas, and increase students' participation and self-confidence. This can promote the development of students' thinking ability and creativity, and improve students' learning interest and enthusiasm. In addition, teachers should also pay attention to classroom discipline management to ensure good classroom order. This can create a good learning environment, which is conducive to students' learning and growth. Therefore, teachers need to pay full attention to students' learning and classroom management in order to improve teaching effect and students' comprehensive quality [8].

There are three main ways to evaluate physics teaching: examination evaluation, homework evaluation and experiment evaluation. Examination evaluation is to test students' mastery of physical knowledge through examination to reflect students' mastery of theoretical knowledge. Homework evaluation is to consolidate students' understanding and application ability of physical knowledge through homework, so as to test students' mastery and application ability of knowledge. Experimental evaluation is to evaluate students' experimental ability and mastery of physical knowledge through experiments to test students' practical operation ability and analysis ability of experimental results. Therefore, the combination of these three evaluation methods can comprehensively evaluate students' physics learning and provide teachers with better teaching feedback and improvement direction [9].

## **4. Practice of Effective Teaching of College Physics Courses in Agronomy**

### **4.1. How to Formulate Teaching Objectives**

Teaching objectives are the core of teaching activities, and also an important basis for teachers to make teaching plans and evaluate students' learning achievements. For college physics courses of agronomy, teachers need to formulate clear teaching objectives to better guide students to learn. Specifically, teaching objectives should include several aspects. First, understand the basic concepts and principles of physics. Physics is a basic discipline, and its basic concepts and principles are the basis for students majoring in agriculture to carry out experiments and technical operations. Therefore, teachers need to let students clearly grasp the basic concepts and principles of physics in order to better apply them to practice. Second, master physics experiment skills. Students majoring in agriculture need to master various measurement and analysis skills in the experiment [10].

Therefore, teachers need to design appropriate experiments, cultivate students' experimental skills, and let students understand physics knowledge in the experiment. Third, cultivate the ability to think in physics and solve problems. Physics involves various physical phenomena and experimental data. Students need to analyze and explain these phenomena and data through physical thinking and problem-solving ability. Therefore, teachers need to cultivate students' physics thinking and problem-solving ability through case analysis and discussion. Fourth, cultivate practical ability and teamwork spirit. Students majoring in agriculture need to have certain practical ability and team spirit. Therefore, teachers need to cultivate students' practical ability and teamwork spirit through teaching methods such as experiments and group discussions.

In short, by clarifying the teaching objectives, teachers can better guide students to learn, improve the teaching effect, and also better evaluate students' learning achievements.

### **4.2. Thoughts on Effective Teaching of College Physics Courses for Agronomy Majors**

The effective teaching of college physics courses for agronomy majors needs to pay attention to two aspects: one is to provide targeted teaching contents and methods according to the characteristics of agronomy majors; The second is to focus on cultivating students' practical ability and innovative thinking ability. In terms of teaching content, we should pay attention to the combination of physics and agronomy, let students understand the application of physics in

agronomy, such as agricultural machinery, biophysics and other fields, so as to enhance students' interest and learning motivation. In terms of teaching methods, a variety of teaching methods should be adopted, such as classroom teaching, experimental teaching, problem solving, etc., so that students can master physical knowledge and skills in practice, and pay attention to heuristic teaching and inquiry teaching, so as to cultivate students' innovative thinking ability and problem-solving ability. Through such effective teaching, students can improve their academic performance and innovation ability, and make contributions to their future development of agricultural science and technology. In short, the effective teaching of college physics courses for agronomy majors requires teachers to comprehensively think and design the teaching objectives, teaching contents, teaching methods and other aspects, improve the teaching effect and let students better grasp the physical knowledge and application ability by creating situations, guiding students to learn actively, and multiple evaluation.

### **4.3. Practice of Effective Teaching of College Physics Courses for Agronomy Majors**

With the continuous progress and development of agricultural science and technology, students majoring in agriculture need to have more physical knowledge and skills to deal with practical problems. Therefore, in college physics courses, it is very important to effectively teach students majoring in agriculture from a practical perspective. The practical methods of effective teaching of college physics courses for agronomy majors can be strengthened and improved in the following aspects.

**Strengthen experimental teaching.** Students majoring in agronomy are interested in practical operation. Therefore, in the teaching of physical experiments, teachers should pay attention to the cultivation of practical operation ability. In the classroom, students can operate instruments, conduct experiments, learn the basic methods of physical experiments, and deepen the understanding of physical concepts. At the same time, it can also guide students to find problems in the experiment and improve their ability to solve problems.

**Close to the actual case.** In teaching, teachers should combine physical knowledge with practical cases to make students feel the practical application value of physical knowledge in agriculture. For example, students can be guided to understand common problems in agriculture, such as soil acidity, light intensity, etc., and then solve these problems through physical knowledge.

**Diversified teaching methods.** In college physics courses, teachers can adopt diversified teaching methods, such as multimedia teaching and interactive teaching, to increase students' interest and participation. At the same time, teachers can use network resources to provide students with more learning materials and extracurricular development resources.

**Pay attention to the cultivation of comprehensive quality.** In addition to the teaching of physical knowledge, teachers should also pay attention to the cultivation of students' comprehensive quality. For example, encourage students to find problems in the experiment and improve their ability to solve problems; at the same time, students' oral expression ability and team cooperation ability can also be cultivated through group discussions, speeches and other ways.

In short, the effective teaching of college physics courses for agronomy majors needs to focus on practical operation, close to practical cases, diversified teaching methods and comprehensive quality cultivation. Only by continuous exploration and innovation in teaching practice can we better meet students' needs, improve teaching quality and promote students' comprehensive ability.

## **5. Summary and Outlook**

With the development of agricultural modernization, students majoring in agriculture have an increasing demand for physical knowledge. Therefore, college physics courses are of great significance to the study and development of students majoring in agriculture. In terms of teaching content, the physical knowledge that agronomy students need to learn mainly includes the basic

knowledge of mechanics, heat, electricity and optics, as well as the physical knowledge related to agriculture, such as agrometeorology, soil physics and plant growth and development. In the teaching process, teachers should select the teaching content reasonably according to the actual needs and interests of students, pay attention to the combination of theoretical knowledge and practical application, and improve students' learning interest and enthusiasm.

In terms of teaching methods, according to the characteristics and actual needs of students majoring in agriculture, teachers should adopt various teaching methods, such as teaching, experiment, case analysis and interactive discussion. In the teaching process, teachers should pay attention to the combination of theory and practical application, and stimulate students' interest in learning through vivid cases and examples. In the experiment, teachers should pay attention to the guidance of experiment design and experiment process, and encourage students to explore and find problems independently. In case analysis and interactive discussion, teachers should guide students to think and explore practical problems, and improve students' ability to analyze and solve problems. In terms of teaching evaluation, teachers should conduct classroom tests and homework evaluation in a timely manner according to students' learning situation and actual performance, find problems and correct them in a timely manner. At the same time, teachers should pay attention to students' self-evaluation and mutual evaluation, encourage students to actively participate in classroom discussion and interaction, and improve students' autonomous learning and cooperative learning ability.

Looking forward to the future, with the continuous development of agricultural modernization and scientific and technological innovation, students majoring in agriculture will have an increasing demand for physical knowledge. Therefore, teachers should constantly update teaching concepts and methods, pay attention to keeping pace with the times, promote the effective teaching of college physics courses, and provide better support and guarantee for the learning and development of agronomy students.

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