

# Research on Electrical Professional Courses based on Online Teaching and Offline Practice<sup>1</sup>

Hongya Gou

Chengdu Agricultural College Chengdu, Sichuan 611130

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**Abstract:** With the continuous development and application of information technology, it has realized the deep integration with China's education cause. The emergence of network technology has promoted the continuous development and progress of online teaching, realized the online development and comprehensive sharing of teaching resources, and provided a steady stream of development vitality for the reform and innovation of China's education cause. Therefore, based on the online teaching and the offline practical operation, the application of the information resources in the practical course teaching process of the electrical majors, can further stimulate the students' subjective initiative in the classroom, and improve the effectiveness of the classroom teaching.

**Keywords:** Online teaching; Offline practice; Electrical major; Teaching strategy

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## Introduction

The hybrid online and offline teaching mode mainly integrates the network information resources and the traditional education methods, which has been widely concerned and valued by Chinese and foreign educators. In this teaching mode, our country continues to explore and research, each university began to promote the construction of online quality courses, strengthen the open resources network sharing, let students can reference when after-study, more can be the icing on the cake for offline teaching activities, has become the process of contemporary education career development, and offline curriculum integration, guarantee and education resources. How to further show the core value of the qualified teaching resources, give full play to the value and advantages of their teaching activities, to ensure that the two learn from each other, comprehensive integration, for the contemporary electrical professional teachers need to explore when the use of hybrid teaching mode.

## 1. Problems encountered in electrical major course teaching

In the practical teaching process of electrical major, taking the course teaching of "Electronic Technology Foundation" as an example, its professional content involves more and less in the class hour setting. Compared with the mechanical and electrical major in the electronic technology foundation, electrical professional "electronic technology foundation" involving semiconductor devices, rectifier circuit, amplification circuit, logic circuit, and many other knowledge, but because of the current in the process of electrical professional personnel training, talent training target is insufficient, training scheme is limited, the electronic technology foundation of the course class allocation is relatively few, in general, the course is 56 hours, nearly half of the class for students' practical practice. As a result, the teaching content of "Electronic Technology Foundation" involves more, but the proportion of curriculum setting is insufficient, and the serious differentiation of experimental teaching resources and curriculum teaching needs occurs.

As an important basic course with both theory and practice, the core of "Electronic Technology Foundation" is to cultivate students' hands-on operation ability, and at the same time, to integrate the electrical professional knowledge learned in the past, to solve the practical training and operation problems in the electrical major, and to optimize the problem-solving ability. The teaching objectives of this course also determine that in the process of practical teaching, we need to use a lot of practical ac-

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<sup>1</sup> **Subject name:** Based on ideological and political teaching research based on "Foundation of Electronic Technology"

tivities to help students consolidate the theoretical knowledge learned.

## **2. Electrical professional course design strategy based on online teaching and offline practice**

### **2.1 Online teaching**

Online teaching mainly includes the following links:

The first thing is the pre-class preview. First, teachers need to make the key contents and difficult contents into independent learning task lists, and at the same time, record the key knowledge as MOOCs video or micro-course video, so as to help students quickly find learning materials through the video and publish them on the learning Pass platform. Second, students need to watch the textbook courseware and micro-class videos in advance to complete the whole independent learning process. And through the communication, communication and mutual help with students, to solve some of the difficult problems. Relying on the online learning platform, we will complete the whole autonomous learning task, and conduct online testing for the preview process. Three is the teachers need to timely grasp the students' online preview process, by understanding the data information, its comprehensive records, as the course assessment performance in the future, combining the specific data, such as login platform time, specific learning time, the final result of the online test, comment area interaction level. Fourth, it is necessary to master the difficult problems and puzzles in the process of online learning according to the results and independent learning level of students' online preview list, and adjust the follow-up teaching methods to ensure the effectiveness of classroom teaching.

The second is the exploration in the class. First, the teachers need to take the students to review the core knowledge points, key contents and difficult contents in the short video of the micro-course, and to explain the relatively representative independent learning task list centrally. Second, it is necessary to ensure the effectiveness of knowledge learning through in-depth exploration and the consolidation and promotion of theoretical knowledge. Students can be divided into different groups, with an interactive communication way, to complete the key tasks and projects, communication, communication, communication, and the display of learning results. Analyze the messages and barrage of students in the process of the online learning platform, adjust the key knowledge and difficult knowledge of the teaching plan, form classroom interaction, and conduct face-to-face communication on the problems, so that students can further internalize the knowledge and absorb the core of the knowledge points. Third, in the design of the experimental part, through the use of classic cases, with the theoretical knowledge in the article to explain, to ensure that the integration between the theory and the experiment is more closely. Fourth, teachers need to put their goal on improving students' cognitive ability and practical operation ability of electrical engineering knowledge, and they can find some practical operation videos in the network. Fifth, students need to integrate the videos provided by teachers to complete the verification process of theoretical knowledge. Sixth, teachers and students communicate with students, analyze the experiment experience and the problems and deficiencies in the experiment.

### **2.2 Offline practical operation**

Take the course "Foundation of Electronic Technology" as an example, in the online learning process, teachers have initially understood the mastery of students' theoretical knowledge. Therefore, in the subsequent offline practical operation, they can prepare for the practical operation process with targeted points and emphasis. When necessary, we can also guarantee the scientific and reasonable organization of the offline practical operation activities through the way of group defense and flipped classroom, and strengthen the understanding level of the group defense and knowledge points.

In order to improve the practical training efficiency, Multisim simulation software is often used for practical training operation. The reason for using Multisim simulation software to replace the actual components for practical operation has three reasons: 1, the existing laboratory electrical components are aging, inaccurate measurement; 2, students' operation method is not appropriate and easy to lead to equipment damage and safety accidents; 3, Multisim simulation software is accurate measurement, simple to start. In addition, if the laboratory managers leave after work after class, the door is closed, it is impossible for students to continue the experiment, using Multisim simulation software for practical training operation, students can install the software on their own computers, after class can at any time imitation real training operation, to help students consolidate knowledge points.

### **2.3 Assessment system**

In the construction process of building the evaluation system, it is necessary to cover the experimental process of online

learning, the classroom interaction and the students' operation level of offline practical operation, and integrate the phased assessment and the final assessment. In the daily results, it includes the students' online learning progress, online tests, students' interaction and message feedback, as well as the offline practical operation process of attendance rate, practical operation learning report and experimental defense and other assessment indicators. In the examination results, mainly to the final examination, phased assessment as an auxiliary. Online evaluation, learning through can conduct a comprehensive record of students' online learning process, directly provide teachers with assessment report, through the students' experimental report, experimental learning and interactive communication document summary, form an online evaluation form, to facilitate teachers to consult, provide a strong basis for subsequent evaluation. The evaluation of offline activities requires teachers to observe and make good records and analysis in daily life.

### **3. Analysis of the effect of electrical professional curriculum teaching reform based on online teaching and offline practical operation**

First, through the mixed online and offline teaching mode, students can use the online resources to watch them for many times. For the knowledge points that are relatively vague and difficult to understand, we can learn them repeatedly until we understand the knowledge, improve students' subjective initiative in learning, and extend teachers' guiding role to students.

Second, this more comprehensive evaluation mechanism, can help students to timely understand the students' learning situation, and to adjust the follow-up teaching methods. At the same time, students' attention and attention to the learning process has been deepened, which changes the traditional teaching mode of students' review before the exam, and brings the evaluation effect is more real and effective.

Third, the interaction mode between teachers and students has become more rich and diversified. In addition to the traditional offline classroom q & A interaction, we can also provide students with more opportunities through the online platform research and message board communication to interact with teachers.

### **4. Conclusion**

To sum up, in the practice of electrical teaching process, can through the online effective use of hybrid teaching mode, improve teaching level, especially for its basic course class less, insufficient laboratory resources, can through network learning resources and Multisim electronic simulation software to provide security, optimize students' practical ability, strengthen the communication between teachers, and relying on the process assessment, to help students check 20, both to improve students' learning enthusiasm and subjective initiative has very important practical significance.

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