

# Teaching Practice and Exploration of Basic Computer Education for Non Major in University

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**Abstract:** With the rapid development of computer information, Computer technology and products have been fully integrated into people's daily life. This requires people to have basic computer operation skills. As an agricultural and forestry university, it is necessary to pay attention to the cultivation of basic computer skills of college students in various majors in the process of training talents. As a professional teacher in universities, the author has worked hard in teaching for nearly 17 years. On the one hand, the author undertakes the professional teaching of Internet of Things Engineering, on the other hand, she undertakes the teaching of College Students' Computer Foundation. The author pays attention to the renewal of the teaching content of the course, and actively carries out the reform and practice in teaching. Our teaching team has accumulated rich teaching experience and methods after years of practical teaching. This paper mainly comes from the author's many years teaching experience in basic computer education. Firstly, the author systematically analyzes the problems and causes in the teaching process of computer basic courses. Members of the teaching team actively carry out curriculum teaching reform and practice, carrying out online and offline hybrid teaching. The ultimate goal of teaching is to constantly improve the teaching quality and effect, improve the students' practical ability and office automation level. Students from different majors increase their core competitiveness of employment through systematic learning.

**Keywords:** Basic Computer Education, Mixed Teaching, Teaching Practice and Reform

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## 1. Introduction

In recent years, the computer technology has developed rapidly. It has greatly promoted the development and progress of society. The office automation level of the working environment was further improved. Under the guidance of the national strategic thought of "promoting industrialization with informatization", the process of national informatization has involved all walks of life throughout the country. The future development trend of public institutions is the construction and operation of office automation systems. The staff shall be high-quality and efficient office management personnel, operators and technicians [1].

## 2. Problems in Basic Computer Education

The Computer science is a dynamic subject during constant change and renewal. In order to better match the rapid development of computer knowledge, the basic computer education in universities needs to constantly update the teaching content and adjust the teaching methods and means [2]. There are also some problems and deficiencies in the teaching process of computer basic education courses in colleges or universities.

### **2.1. Uneven Student Foundation**

At present, there is an imbalance in the level of economic and technological development among China's regions. In the developed eastern coastal areas, the majority of primary and secondary schools have achieved the popularization of computer education and application. Students have certain basic computer knowledge and practical ability before entering the university. However, for some remote western areas, the junior and senior high schools have not achieved basic computer education. Due to the limitations of teaching conditions and resources, students did not begin to contact computers until they entered the university. For example, our school recruits students from Tibet every year [3]. They are already excellent, who can come to Guangzhou to study in the university. At the same time, their ability to understand and express Chinese is limited. As a result, the learning progress and quality of this part of students are seriously affected during the course.

### **2.2. Some Outdated Teaching Contents**

China's modernization drive urgently needs a batch of people with rich knowledge of modern science and technology, innovation awareness and vitality. They should be compound and application-oriented talents who can independently solve practical problems. Informatization can drive the modernization of education.

With the development and in-depth application of computer technology, the Internet of Things technology, Artificial Intelligence technology and Big Data technology, great changes have taken place in people's lives. People's life has become more and more intelligent. Contemporary university students live in the information age, informatization has a profound impact on the social and educational environment for the development of university students [12]. This has changed the ways and means for students to obtain information and knowledge. This greatly broadens students' knowledge and improves students' autonomous learning ability.

On the current market, some textbooks for basic computer courses are slightly outdated. If the teaching content is not updated in time, it can not meet the needs of today's social development. In the teaching process, teachers teach some basic computer theoretical knowledge, but its application in practice is not strong. Among contemporary university students, the use of smart devices has been normalized, which such as smart phones, laptops, tablets, etc [4]. Computer network applications have become popular. Students obtain information and knowledge through diversified and multi-channel channels. Many basic computer knowledge in textbooks has become common sense of university students. The textbook lacks some of the latest computer technology and related applications. This kind of such teaching content leads some students to simply repeat learning, losing interest and passion in learning. This teaching method has a negative impact on university students' learning, thinking, behavior, etc [11].

## **3. Course Teaching Reform and Exploration**

### **3.1. Construction of Teaching Team**

Teachers are the profession that requires constant learning. They need to constantly update and supplement new knowledge and technology throughout their career. Some universities have set up a team of teachers specializing in basic computer teaching. The team members are mainly engaged in computer related basic teaching of the whole school. The theory and practice of college computer basic education are relatively simple. Individual teachers have not participated in relevant teacher technical training and further education for many years. The teaching methods and contents of the course are relatively old. The teaching method is traditional and single. There are no highlights and features in the classroom teaching process. The teaching effect and quality of the classroom are relatively poor, and students' evaluation of the teaching process is not ideal [5].

Combined with the existing problems, the university regularly arranges front-line teachers to participate in relevant teacher technical training, and establishes the concept of lifelong learning. Teachers constantly improve their professional comprehensive quality and broaden their professional knowledge reserves. The teaching team accumulates typical application cases of the latest computer technology, improving their professional teaching ability and doing a good job of situational teaching in theory and practice classes [5].

Leaders actively mobilize professional teachers to undertake the teaching task of computer basic courses in the whole school. Such teachers have different academic backgrounds and expertises. They are familiar with the latest professional technology development and application in computer related fields. Therefore, teachers are required to actively carry out the application of modern information technology during the actual teaching process. Teachers carry out in-depth interdisciplinary integration. Teachers closely connect with students' professional background and expertise, carrying out personalized learning. The teaching method will adopt project case driven teaching. Mobilize students to actively carry out situational, autonomous and exploratory learning, and constantly improve students' learning and understanding ability [6].

### **3.2. Online Learning Platform Resources**

In order to better implement the "innovation and entrepreneurship education" [14], universities call for revising the talent training program. The experts suggested adding "innovation and entrepreneurship" education hours to the training program of professional talents, and actively setting up school enterprise cooperation courses. Universities actively invite enterprise engineers to "enter colleges of universities" to participate in curriculum construction and specialty construction. Improving students' practical ability by increasing their experimental practice hours [7].

Fundamentals of Information Technology for universities Students is a basic computer education course for universities, which is mainly for non computer majors. This course is mainly offered in the first year of universities. It contains 48 classes, 3 credit hours. There are only 16 classes for theory teaching. The teacher needs to scientifically and reasonably plan the teaching content. The task of teachers is to teach students the basic theories and principles of computer basic courses through theoretical teaching. At the same time, teachers need to stimulate students' interests, popularize the typical application of modern information technology, and improve students' professional quality and vision.

Since 2020, the novel coronavirus epidemic has broken out on a large scale worldwide. Due to the impact of the epidemic, universities can not start school on schedule. The Ministry of Education of the People's Republic of China issued a notice on the work of "suspension of classes without suspension of schools". It calls on universities to actively carry out online teaching to realize resource sharing, complementary advantages and comprehensive coverage. Teachers use the information education platform to make up for the shortage of traditional courses. So the teacher led teaching mode is transformed into the student-centered autonomous learning mode. Teachers make full use of modern information technology and professional education to carry out in-depth integration, which can improve the teaching effect of the course and improve students' understanding ability [8].

The curriculum team teachers actively upload all the curriculum teaching resources to the online learning platform. The teaching resources mainly include course syllabus, course teaching plan, course multimedia courseware, micro lesson teaching resources, chapter tests, examination question bank, etc., which are mainly for students to preview and review before and after class. In the teaching plan, teachers require students to complete autonomous learning before class according to the relatively simple teaching content in the early stage. Teachers can place teaching videos such as teaching courseware or relevant micro course resources on relevant online learning platforms, such as Wisdom Tree, Learning Connect, Scholar Network, etc [9].

### 3.3. Reform of Teaching Methods and Means

The traditional teaching method mainly adopts the face-to-face teaching method. The model emphasizes that teachers are the main body of teaching activities. Teachers lead and control the whole teaching activity, who are the "leading role" in the teaching process. This teaching mode is mainly based on teachers' classroom theory teaching, the classroom has become a "one-man player" platform for teachers. In this model, students are the object opposed to the subject. Students passively participate in teaching activities and lack enthusiasm and initiative in learning, which limits the development of students' ability to explore and innovate [9].

In order to continuously improve the enthusiasm and initiative of students, the teaching task enables students to have the necessary skills such as basic computer knowledge and principles, office automation, etc. The teacher changes the

traditional teaching methods, actively uses modern information technology and professional education to effectively integrate, using text, graphics, static images, sound, animation, video clips and other basic elements. When teachers are designing multimedia courseware, they should start from the role and characteristics of the elements, and under the guidance of pedagogy, psychology and other principles. They should fully conceive and organize multimedia elements, and give full play to the characteristics and advantages of various media elements. The teaching process should provide different learning media information for learners of different learning types. Ensure that education and teaching information can be transmitted to learners through multiple media channels.

Teachers should actively use computer network technology to carefully observe students' real life. The teaching method is suggested to adopt case teaching method and task-driven method. Multimedia elements such as pictures or videos can be integrated into the whole teaching process. We actively introduce the online learning platform into the teaching of professional courses. Teachers actively carry out teaching reform [13], achieve online and offline mixed teaching, which can break the time and space constraints of learning. This model allows students to participate more in the whole teaching process, experience all aspects of teaching, and truly become the main body of learning. his teaching mode can greatly stimulate and cultivate students' interest and passion in learning, change the focus of teaching knowledge to that of cultivating ability, and thus accelerate the cultivation of professional talents [9].

## 4. Teaching Assessment and Evaluation

College Information Technology Foundation is an important general compulsory course for all freshmen of non-computer majors. It is also an important part of the training of computer science knowledge and application ability in the teaching plan of various majors in universities. The specific teaching contents of the course include: cognition and understanding of computer systems and methods, ability to analyze and solve problems with computer technology, the quality of correctly obtaining, evaluating and using information, communication and continuous learning ability based on information technology [10].

The assessment method of this course is to adopt the third-party certification examination platform-The computer level examination of Guangdong Provincial Higher Education Teaching and Examination Management Center. The closed-book machine test of this course is the final result of the unified examination, which does not account for the proportion of the usual results.

The experimental course of University Information Technology Foundation mainly uses the 5Y online learning platform developed by Guangdong Provincial Higher Education Teaching and Examination Management Center. The network platform includes online multimedia courseware resources, online micro-class teaching video, basic knowledge

point test, unit knowledge point test, enhanced knowledge point test and system comprehensive test and other resources. For the key and difficult points of some theoretical knowledge, students can use online network teaching resources to learn independently online. Relevant exercise and test questions will be provided for the key and difficult points of each

chapter. The online learning platform can realize the online "pre-change this question" function. Through online scoring, students can know the score situation and give a prompt for operation loss, This system can help students learn while testing, and better translate theory into practice effectively. As shown in the figure below.

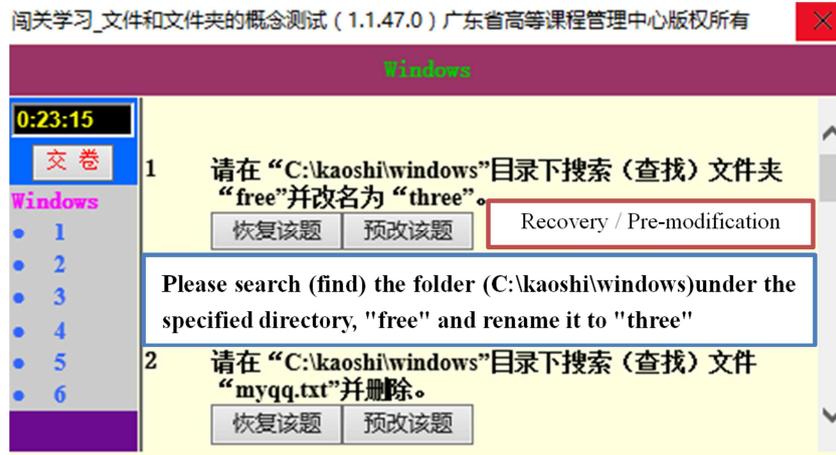


Figure 1. Knowledge point test.

As the course teacher, we need to monitor the length and quality of students' online learning. The teacher makes analysis and comparison according to the situation of students' questions, who can find problem in time. Teachers should take the students' error-prone questions as examples, which are needed to conduct centralized explanation [15].

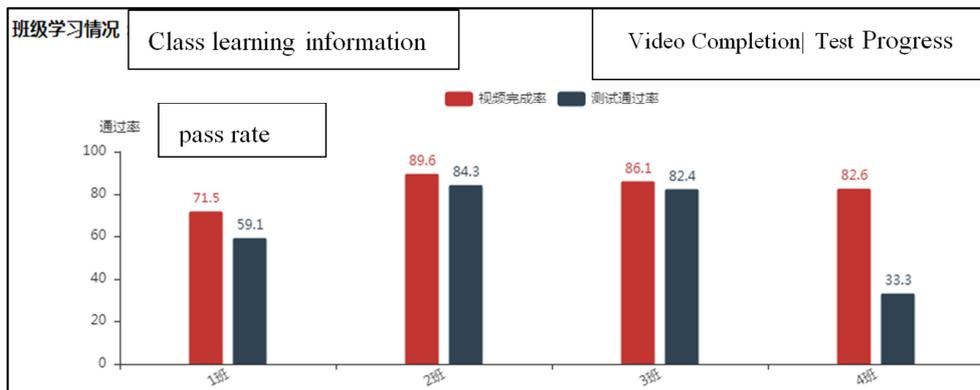


Figure 2. Class test passing rate.



Figure 3. Test of course knowledge points.



Figure 4. Statistics of students' online learning times.

## 5. Teaching Effect and Summary

Universities are the training base for high-level talents. It should train advanced applied computer talents [14] to the society. The ability to operate computers skillfully and solve practical problems with computers should be regarded as the practical skills of non-computer majors. Let the computer become a popular office automation tool [9].

The teaching goal of computer basic education course is "broaden the scope of knowledge-master basic skills-improve application ability-cultivate innovation ability". The main task of the course is to cultivate students' computational thinking ability as the core, and comprehensively cultivate students' information literacy and computing thinking ability. At the same time, the course focuses on improving students' computer application level and computer problem-solving ability to lay the foundation for the subsequent courses [10].

With the rapid development of computer technology, on the one hand, we summarize our years of practical teaching experience, on the other hand, we actively carry out teaching research and reform. This teaching method greatly improves students' learning interest and passion, and improves students' practical ability, office automation and other practical abilities. After many years of teaching practice, the passing rate of

students' computer proficiency test in the teaching examination management center of Guangdong Province's colleges of universities has increased significantly.

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