

# **Research on Online and Offline Mixed Teaching Mode**

## **-- Taking "Introduction to Computer Science " as an Example**

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### **Abstract**

With the development of information technology, online and offline mixed teaching mode has become a new education mode and is widely used. Taking the course of "Introduction to Computer science" as an example, this paper studies and analyzes the construction foundation and construction scheme of online and offline hybrid teaching mode. This paper expounds in detail the reform of teaching concept, deepening of teaching content, improvement of teaching methods and reform of examination methods in the process of online and offline hybrid teaching design and implementation. Finally, it summarizes the good application prospect and areas to be improved of this hybrid teaching mode in teaching practice.

### **Keywords**

**Online; Offline; Mixed; Teaching Mode.**

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### **1. Intrduction**

With the development of information technology, online and offline mixed teaching mode has become one of the basic modes of modern teaching. "Introduction to computer science" is a compulsory course for computer majors. In view of the main problems existing in the current teaching process of "Introduction to Computer Science", it is of great significance to study and practice the online and offline mixed teaching mode[1]. This mixed teaching mode can achieve practical results and will be popularized. We selflessly contribute our research results and teaching ideas to the cause of education and realize the sharing of high-quality resources.

### **2. Course Objectives**

"Introduction to computer science" is a professional basic course for computer majors. Adhering to the school running strategy of "building a university with technology and based on application", the course is oriented to the intelligent manufacturing and modern service industry in the Yangtze River Delta, and focuses on cultivating outstanding higher technology application-oriented talents with a sense of historical mission and social responsibility, rich in international vision, innovative spirit and practical ability, so as to provide strong talent support for national and regional economic and social development.

The course covers the basic introduction knowledge of computer science and technology, software engineering, Internet of things engineering, big data science and technology and network engineering. Through learning this course, students can master the basic knowledge of computer disciplines, have a preliminary understanding of software programming, Internet of things technology application, network technology and artificial intelligence, and have a clear understanding of the knowledge

architecture of the above majors, It provides an important basis and basis for the selection of specialty classification in the future[2].

### **3. Foundation of Curriculum Construction**

Introduction to computer science is a compulsory course for freshmen majoring in computer science. It has a large number of students and heavy teaching tasks. The main teaching objectives of the course are to enable students to preliminarily master the basic knowledge of computer operation, computer components and program design, operating system and database management system, human-computer interaction and artificial intelligence, computer communication, computer network and security, Internet of things and big data technology, occupation and professional ethics, and understand the specific content and curriculum system of training computer professionals

#### **3.1 Building a Teaching Team**

The construction of teaching staff has played a very important role in the curriculum construction. In order to ensure the teaching quality, we have always put the construction of teaching staff in an important position and preliminarily built a teaching team with excellent quality and reasonable structure.

#### **3.2 Build a Complete Set of Teaching Materials**

Change the curriculum concept, student-centered, student-centered and teacher led. Optimize the teaching content and adhere to the integration of industry and education; Build a complete set of teaching materials, including curriculum syllabus, lesson plans, problem sets, test papers and other teaching elements.

#### **3.3 Build a Course Website and Organically Combine Online and Offline Learning**

Guided by engineering certification and guided by output, this paper makes a preliminary exploration on new teaching methods such as micro class video, flipped classroom and split classroom, and forms its own teaching characteristics in combination with practice.

Modern teaching methods have been adopted to build an all English online teaching platform, so that students can study independently online. Integrate online course teaching videos and supporting digital learning resources into the knowledge system of this course organically and selectively. Accurately grasp the key and difficult contents of the course, orderly organize the teaching contents of online and offline courses, make full use of online course resources and information-based teaching means, promote students' learning, understanding and mastery of the key and difficult contents, and improve the teaching effect[3].

### **4. Curriculum Construction Plan**

#### **4.1 Course Ideological Politics.**

We should carry out ideological and political education throughout the whole process of professional curriculum construction, adhere to curriculum education, and determine the guiding role of the spirit of the Party Central Committee in public opinion among students. To embody the educational function of the curriculum, cultivating morality and cultivating people should run through the curriculum construction, fully tap the ideological and political elements in the curriculum in the arrangement of teaching content, and fully integrate the ideological and political elements with the curriculum in the form of cases[4].

#### **4.2 Output Orientation and Goal Support.**

We should adhere to the teaching concept of "OBE" and the effective teaching method of "OBE" to achieve the teaching goal and improve the teaching ability of "OBE".

### 4.3 Construction of Teaching Resources

The course carries out online and offline teaching activities on the network teaching platform designated by the school, and constructs knowledge point videos, question banks and other supporting teaching resources. Deepen the integration of industry and education, jointly build curriculum teaching teams between schools and enterprises, and form a teaching team with reasonable structure, high teaching level and good teaching effect. Enterprise engineers enter the classroom and actual projects enter the classroom[5]. Combined with the course introduction to computer science, build teaching cases, take the actual enterprise project demand as the guidance, carry out penetrating and step-by-step enterprise project case teaching with computer technology related enterprises, pay attention to cultivating students' innovative thinking and expanding their horizons in the professional field.

### 4.4 Reform Teaching Methods and Pay Attention to Teaching Design.

The mixed teaching mode of video learning before class, classroom discussion learning and reflective learning after class is adopted. It not only gives play to the leading role of teachers in guiding, enlightening and monitoring the teaching process, but also fully reflects the enthusiasm, initiative and creativity of students as the main body of the learning process[6].

Online learning: it mainly relies on students to watch online videos, conduct autonomous learning and complete online homework on time. According to the study groups divided before class, carry out problem discussion and make discussion records. Teachers interact with students online through the course platform and course QQ group, pay attention to students' learning progress and learning difficulties, and guide students to complete online learning.

Offline learning: check the effect of online learning in the previous stage and organize testing; According to the online learning content of the previous stage, summarize the course content in the form of special discussion, talk about the key knowledge points and answer questions; Arrange the content and requirements of online learning in the next stage[7].

Problem oriented: around the basic teaching concept of student-centered, the closed-loop teaching design of "leading out problems - analyzing problems - solving problems" is used to realize the complete problem-oriented closed-loop teaching design through the introduction of teaching links.

Feedback analysis: according to the feedback of online learning, video learning, homework completion and participation in discussion. Check the effect of students' online learning and organize tests. According to the online learning situation in the previous stage, the discussion is organized in the form of special topics, so as to summarize the course content and crosstalk and Q & A of key knowledge points in the form of discussion. Arrange the content and requirements of online learning in the next stage.

### 4.5 Course Assessment and Evaluation Methods

The course assessment is carried out by combining the usual results, course papers and final examination results.

(1) The usual score accounts for 50%, mainly including online homework and video learning (15%), usual test (25%), offline discussion and Q & a counseling (10%).

(2) The final examination accounts for 50%, and the closed book / open book examination is adopted. The examination contents mainly include: the basic knowledge of computer and computer discipline, the calculation basis of computer, the description of the basic knowledge and algorithm of program design, the basic functions and use of common system software, the training requirements and curriculum system of computer professionals, the basic knowledge of computer communication and network Knowledge of new computer technology and artificial intelligence.

## 5. Conclusion

The course team has completed the online open course, in which the video of the project leader is not less than 1 / 3. Complete the construction of a complete set of teaching resources and materials, including: curriculum syllabus, teaching plan, exercises, test papers and other teaching elements; Build a complete course website on the network teaching platform;

Due to the short construction time of "Introduction to computer science", online teaching resources need to be continuously supplemented and improved; At the same time, the construction of teaching materials of "Introduction to computer science" needs to be further carried out.

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