

Case Teaching Research Based on College Computer Foundation

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Abstract

With the development of emerging technologies such as big data and artificial intelligence, the goal of cultivating high-quality, information-based and professional new talents is particularly important. Through the analysis of the current situation of college computer basic course, this paper compares the traditional education mode with the case guided teaching mode, points out their respective advantages, disadvantages and development prospects, highlights the urgency of educational reform and the specific programs that can be implemented, and cultivates high-quality new-type talents with the characteristics of the new era.

Keywords

Promotion of information technology; Case teaching method; New talents.

1. Introduction

With the advent of the Internet era, information technology has become the benchmark of the 21st century. A variety of cutting-edge technologies, such as machine learning, artificial intelligence, big data technology, scientific computing, graphics and image processing, have penetrated into all aspects of our lives. In recent years, by comparing the development trends of various programming languages, the popularity of Python language continues to rise, and the demand for talents is also rising year by year, which is highly sought after by programmers. Why is Python so hot? In fact, Python is an interpretive, interactive, object-oriented and cross platform language, which is most suitable for college students to learn and widely promoted. Python is easy to learn, object-oriented, portable, interpretable, open source, high-level language, extensibility, rich library and standardized code. It runs through the whole course of college computer foundation, and uses information platform and teaching methods to create an innovative development model of education and teaching. As an instructor of college computer foundation, I am well aware of my responsibility to not only teach students basic computer knowledge and relevant grammar of Python language, but also integrate with the new era and cultivate students of the new era with independent thinking ability and skilled operation ability. By introducing the case teaching method, this paper aims to illustrate that, compared with the traditional teaching method, the case teaching method can better and faster guide students to independently learn computer related knowledge and skills, improve their practical operation skills, and cultivate their computing thinking ability.

According to the daily teaching situation, this paper lists the advantages and disadvantages of the traditional teaching method and the case teaching method from the following four aspects.

2. Traditional Teaching Methods Mainly Have the Following Characteristics

2.1. The Classroom Content Is Too Messy

There are many contents in the basic computer course, mainly including: basic knowledge of Python grammar, control structure, object-oriented, algorithm logic, information coding, computer hardware system, operating system, computer network, database technology, etc. it

is impossible to complete the task if you want to cover all aspects of the course in detail within the specified class hours. The traditional teaching method only pays attention to the teaching of content. Each section and chapter wants to teach students in a complete and detailed way, but ignores the teaching method. As a result, the students just memorize the knowledge points by rote. They are not interested in the classroom, feel bored, lack confidence, and the teachers are relatively tired. Obviously, this is contrary to the basic requirements for the teaching of college computer basic courses in the new era. At the same time, it can not adapt to the rapid development of the information society, which can not promote the cultivation of students with high ability and strong quality.

2.2. Less Teaching Hours

In modern society, college students need to master a lot of knowledge and skills. We should not only learn a series of basic courses such as Chinese, advanced mathematics and English, but also learn programming practice courses such as python/c/java/c++. At the same time, we should also master cutting-edge technologies such as data mining, artificial intelligence and machine learning, which have high requirements for students themselves. According to the class hour arrangement of the overall curriculum, in addition to learning basic Chinese, mathematics, English and other basic courses as well as related professional courses, the problem of less computer courses is particularly prominent. Therefore, teachers can only give students make-up lessons in their spare time to complete the rest of the courses. However, the knowledge that students can accept in a certain period of time is limited, and their interest in learning is gradually exhausted, It is difficult to guarantee the overall teaching quality.

2.3. The Level of Students Is Uneven

At present, the teaching objects of basic computer courses in universities are freshmen, and students' level and ability vary. Some students have learned information technology courses in high school, have a certain foundation, and have a positive learning attitude; Some students have not been exposed to similar courses before, and their computer skills are low; Some students have strong practical ability and weak theory. When the teacher is in class, the knowledge taught according to the syllabus and curriculum teaching plan may be relatively simple and not challenging for some students; However, for other students, it may be a little difficult to master, which makes it difficult to set the difficulty of classroom teaching content, fail to achieve hierarchical teaching, and fail to achieve the expected goal for the development of quality education.

2.4. Results Are Only Used As Assessment Criteria

The traditional teaching mode only relies on the results as a way to assess the level of students, and quantifies the degree of students' knowledge through the mid-term and final examinations. For a long time, students have formed the learning characteristics of emphasizing theory over practice, which has also achieved the so-called "high score but low ability" students. But virtually, this also exposes some problems. Some students don't work hard at ordinary times, cramming for exams temporarily and getting high scores. Can this explain their high computer level or high computing quality? I'm going to put a big question mark here. In fact, this exam oriented education is contrary to the original intention of quality education we currently advocate. At the same time, it can not screen out truly high-quality and capable students and can not reach the people-oriented concept.

In view of the loopholes and drawbacks of the traditional education and teaching methods, we introduce the case teaching method, combine theory with practice in the classroom, and cultivate the "Four Haves" students who really meet the new era through reasonable planning and arrangement of teaching plans, change of assessment methods, adjustment of teaching contents and other measures.

3. The Case Teaching Method Mainly Has the Following Characteristics:

3.1. Introduction of Innovation Platform

Making full use of Internet technology, it has built a practice and innovation platform for students on the Internet, turning the exercises in each chapter and section into advanced practical training, integrating knowledge, practicality and interest. In the process of advanced breakthrough, students not only experience the fun, but also absorb the knowledge, increase their knowledge, accumulate experience, enhance their practical ability and improve their comprehensive quality.

3.2. Combination of Classroom Teaching and Subject Competition

According to the teaching time allocation, we divide the teaching implementation process into three stages: before class, during class and after class. A three-dimensional teaching implementation system of "pre class preview + in class teaching + subject competition" has been formed. We release preview materials for students through platforms such as rain class in the early stage, so that students can preview the contents of this class in advance; Explain the important and difficult knowledge for students in class, learn the basic grammar structure of computer, and master the key knowledge content in class; After class, you can gain awards by participating in computer design competition, software cup, intelligent challenge and other competitions. Through this three-dimensional teaching mode, the students' after-school cultural life has been greatly enriched, the students' interest in learning has been stimulated, and the students' comprehensive quality has been improved. Compared with the traditional classroom teaching mode, it not only improves the learning efficiency and cultivates students' innovative thinking, but also has great benefits for students' future learning and development.

3.3. Change from Knowledge Transfer to Problem Orientation

Combine basic knowledge with practice to realize the transformation from full house irrigation to full house practice. The compulsion greatly reduces the basic knowledge explanation class dominated by teachers. Students can bring computers into the class from the first class and practice while speaking. Realize the transformation from knowledge teaching and explanation to case problem oriented teaching mode. For example, learn python with the goal of solving mathematical problems and connect with advanced mathematics. Explain a practical case, which is problem-solving oriented. It doesn't just explain every basic grammar and semantics of python, what to say, that is, practice and learn knowledge with problem tasks. At the same time, the case teaching and task driven teaching mode are adopted. Each class uses a case to run through the whole process. The goal is to speak about the network through web page data capture and processing, and stimulate learning interest with practical application problems. Through this mode of classroom explanation, the teaching content is designed step by step, so that the students can not only acquire knowledge, but also enrich their hands-on operation ability and improve their thinking ability.

3.4. Adopt Formative Assessment Method

According to the requirements of the new syllabus, the formative assessment score shall not be less than 40%, and the final exam is unqualified. We have set up multiple modules for the assessment of students' online training, unit test, group competition, homework display, final examination and so on. We will assess the students' mastery of basic knowledge and the level of thinking ability according to different proportions, and abandon the traditional way of determining the students' level only by examination results. The learning of the online practice innovation platform has gradually changed the students from "I want to learn" to "I want to learn". Using this information-based teaching mode, teachers release preview questions in the rain class or other platforms before class, urge students to preview, and include the preview

results in the formative assessment; During the class, the teacher will give scores according to the performance of the students and the quality of answering questions; After class, students submit homework and practice exercises through the practice platform. Teachers give scores through correcting homework, which will be included in the final assessment. Through this online and offline hybrid teaching mode, students' learning enthusiasm has been stimulated to varying degrees, and our goal of cultivating high-quality excellent students has been achieved while acquiring knowledge. Moreover, the use of information-based teaching mode can help teachers teach at different levels, maximize the potential of each student, and truly cultivate high-quality students.

4. Summary

Under the background of the rapid development of information technology and educational reform, it is a general trend to respond to the national development strategy and cultivate students with computing thinking ability. At present, information technology has been integrated into all aspects of social life, profoundly changing the way of human life and learning. Ubiquitous computing thinking has become one of the basic abilities for people to understand and solve problems. Mastering and mastering a basic language has also become a required course for contemporary college students. It is also worth considering and exploring how to design a hierarchical education model according to the students' own characteristics. The reform of computer courses in Colleges and universities should follow the principle of teaching students in accordance with their aptitude, and complete the reform of education mode in combination with their own actual situation, students' acceptance, school hardware conditions, and the law of social development.

References

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