

Reform and Research on Teaching Methods of Computer Operating System Course in Colleges and Universities

Hongjiang Liu

Aba Teachers University, Abei, 623002, China

Abstract: *With the continuous development of information technology, computer operating system has become an important discipline in colleges and universities. In the face of the rapid development of science and technology, the teaching method of computer operating system should also be reformed accordingly, so that students can better master and use it. This paper discusses the necessity of teaching reform of computer operating system course, discusses its existing problems, and puts forward some suggestions for improvement.*

Keywords: *Computer, Operating System, Teaching Method*

1. Introduction

Computer operating system is a compulsory subject of computer major. Because its operating system is presented in the form of coding, the algorithm and principle involved are very complex, which brings many problems and difficulties to students' learning. Therefore, we should make the teaching methods and teaching contents of computer operating system adapt to the needs of social development according to the actual learning situation and current development situation of students.

2. Current problems in computer operating system teaching

2.1. *The textbook is too theoretical*

The teaching content of computer operating system includes computer theoretical knowledge and application methods. Through the study of this course, students can learn how to use computers and how to use computer software. [1]Most computer operating system textbooks are about the theories of algorithms, storage management, process management and so on, and these theoretical knowledge often focuses on the characteristics and theories of the system, rather than the real operation. Theoretical things often make students feel bored, so they lose interest in learning. Therefore, we should appropriately delete the relevant theories of computer operating system in textbooks, and add more practical operations in practical teaching.

2.2. *A patterned way of education*

With the rapid development of information technology, the application of multimedia is becoming more and more common. Traditional teaching methods use blackboard to teach computers, but because of long-term teaching, students' classroom teaching method is a fixed and repeated teaching method. These are not conducive to the development of computer homework in the new era, so that the knowledge obtained by students from traditional education methods does not meet the needs of today's society, and it is difficult to match the technology required for future work, and to adapt after looking for a job. Therefore, we should change the traditional teaching method of computer operating system, and constantly reform and innovate it.

2.3. *Students in the classroom do not occupy a dominant position*

At present, most computer operating system classrooms in China are "cramming", which ignores the dominance of students in the classroom. Teachers do not take students as the main body, and only blindly

instill knowledge into students in class. Therefore, in the classroom, students' reception of information is negative, while ignoring the importance of computer operating system, which reduces the level of students' learning computer operating system. In teaching, students cannot clearly understand the relevant knowledge of computer operating system and lack hands-on and creative skills, making it difficult to meet the needs of social development.

3. Measures of teaching method reform of computer operating system course

3.1. Innovating in teaching methods

According to the thinking characteristics of college students and the development trend of computer technology in China, this paper puts forward an innovative teaching method, that is, taking students as the main body and teachers as the carrier. First of all, teachers should break through the conventional thinking and not dominate the class. [2]Contemporary college students have active thoughts and stronger self-identification ability than ever before, so their thoughts have changed from "teacher oriented" to "student-oriented". It is impossible for teachers to teach students comprehensively in teaching, but to stimulate students' enthusiasm and initiative. Teachers only guide students' learning activities. Secondly, they should create a relaxed and happy learning atmosphere, stimulate students' enthusiasm and enthusiasm through teaching activities, and arrange questions related to computer operating system in class, in order to let students consult materials by themselves, discuss and answer in class. We should combine theoretical knowledge with real life, and in class, give everyone as much time as possible to express their views, so that students with strong strength can drive some students with poor foundation to learn from each other and help each other. Finally, starting from reality, we can make use of the good network environment provided by the school to make students understand the basic functions of various operating systems. At the same time, guiding students to participate in various competitions at the national, provincial and school levels provides an effective way for the cultivation of students' practical ability.

The traditional classroom teaching method is that teachers use notes on the blackboard to explain the knowledge in the textbook. This teaching mode is not suitable for the computer operating system applied in practical applications, because most of its experiments cannot be written on the blackboard, such as at the same time. The operation of CPU is not seen by students, and students cannot understand the multiple concurrent execution of CPU from the language and words of teachers. In order to effectively reform the teaching methods of computer operating system, we must improve the existing teaching methods. In the era of big data, teachers can use multimedia courseware instead of blackboard writing, and demonstrate the specific experiments in the computer operating system through animation simulation, so that students can clearly see the whole process of the experiment, but also improve students' learning enthusiasm, so that students have a more solid understanding of the computer operating system.

3.2. Visualizing abstract principles

Abstract thinking is the main and main one of human beings. It is to construct scientific concepts, theories and knowledge systems in the way of abstract thinking, so as to guide people's practical behavior. In the early stage of abstract thinking, its cognitive methods include abstract analysis, synthesis, comparison, classification, abstraction and induction. In order for students to understand these principles, teachers must act in reverse, starting with the specific thinking of sensibility, and synthesize, combine or unify, that is, show all kinds of unity in thinking. When implementing these teaching behaviors, we must follow different teaching methods.

3.3. Using multimedia technology to provide effective support for Education

Through multimedia teaching, teaching activities are more vivid, enlightening and authentic, which can completely change the boring teaching methods in the past, activate students' thoughts and improve students' learning enthusiasm. It can carry out classroom teaching conveniently and quickly, save teachers' teaching time, and greatly increase the learning effect of the classroom. Using multimedia teaching software, it provides a large amount of teaching information for teachers and students, and uses the Internet to provide the latest information in time. Through teaching, multimedia teaching can not only make students present rich audio-visual images more naturally and realistically, but also simulate large and small things, intuitively express some abstract things, and simply copy a complex program. In this way, the originally boring teaching has become vivid. [3]The use of multimedia teaching means has

improved the expression ability, interactivity, teaching content and teaching methods of teaching, optimized them as a whole, and improved the teaching quality of the classroom. It can highlight the key points, weaken the difficulties, and improve the quality of teaching. Whether a course can succeed or not depends on whether it can highlight the teaching priorities and break through the teaching difficulties. In the multimedia education of information technology, it can turn complexity into simplification, difficulty into ease, abstraction into image, making it easier to emphasize problems. Through multimedia teaching, it can help students understand and memorize the computer operating system, and cultivate students' visual thinking, so as to enhance students' problem-solving ability, enable students to master knowledge, judge and reason, and cultivate students' thinking and information technology ability through analysis, synthesis and induction.

3.4. Through animation simulation experiment

In "Computer Operating System", some experiments are difficult to complete. For example, students can't see how the CPU performs parallel processing at all, and its whole workflow can't be seen. At this time, the teacher can design several animations to simulate the multi-channel concurrent execution of the computer in a certain period of time. The designed animation is used to deal with the communication problems in the process. The above is the main content of "Computer Operating System", which is also one of the difficulties. Through animation simulation, students' learning enthusiasm and initiative will increase, and they can better consolidate their knowledge of something they can't understand. Another point is memory management. At the same time, students can't see the internal structure of the memory bar, and they can't see the whole memory when storing the data in memory. In this case, only animation can simulate the internal structure of the memory bar and display the storage of data in an animated way. This method can make students better understand and master these knowledge.

3.5. Attaching importance to the dominant position of students

In the process of teaching computer operating system, teachers should pay full attention to the dominant position of students, adhere to the concept of people-oriented, and carry out teaching with students as the center, so that students' autonomy and creativity can be effectively improved in the process of learning. First of all, teachers should be fully prepared before class to provide students with sufficient curriculum resources, such as multimedia courseware, online test question bank, electronic textbooks, etc. Students can also be taught through APP. Secondly, during teaching, teachers should pay attention to the speed of lectures to ensure that every student can keep up with the progress.

3.6. Effectively reform and innovate the teaching content

Colleges and universities should increase the scope of reform and innovation of computer operating system teaching content, attach great importance to the close combination of basic theory teaching and practical teaching, and that of theory and practice. First, the operating system curriculum theory should focus on the basic elements of teaching, let the students grasp the principle of computer practical operation, example analysis is the most important teaching method. The core of the teaching reform and innovation of basic theory should be to introduce teaching cases. It is recommended to Linux operating system as an example. Because the Linux source coding is publicly released, students can modify the system directly. Linux is widely used, which is the future trend of computer operating systems. The Linux operating system is low cost, no copyright infringement, and suitable for application. Secondly, build a teaching management system combining theory and practical teaching, scientifically arrange class hours, and use experimental means to carry out practical teaching. According to the experiment, students can enhance their understanding of the theory, and master the architecture, source code structure and architecture, so as to grasp their computer operation skills.

3.7. Configure computer teaching equipment to ensure the effectiveness of operating system teaching

Government and education bureau to give necessary financial support, applicable to colleges and universities constantly update computer equipment and facilities, to ensure the sufficient number of computer equipment for operating system subject teaching, in the hardware configuration level to specific teaching must, regularly maintain computer equipment, assign professional personnel management computer equipment classroom, to ensure the safety of operating system curriculum content teaching process, student safety and computer operating system course content teaching effectiveness. Colleges and universities should strengthen the construction of on-campus and off-campus practical

training bases, and give students practical opportunities to improve their practical level.

In order to ensure the teaching quality and practical effect of the computer operating system, teachers should choose a variety of teaching methods to carry out practical teaching theme activities. Teachers should establish the overall teaching goal, and choose the appropriate teaching method combined with the specific teaching content. Committed to finding the effectiveness of cultural education. Practice has proved that it is not only a way to acquire students' professional knowledge and shape students' independent innovation ability in education, but also a combination of various educational concepts.

3.8. Create a practical teaching management system, shape students' practice and independent innovation ability

Practice is the only criterion for testing the truth, which shows the necessity of practice. In view of the course content of the computer operating system with strong practical ability, it is urgent to carry out practical teaching and build a practical teaching management system. Change the traditional teaching methods, arouse students' enthusiasm of learning and students' practice and independent innovation ability.

4. The "Operating System" course features

4.1. The operating system itself develops rapidly

Like other computer equipment technologies, the operating system has changed and developed in architecture and completion technology. Because early operating systems were limited by hardware configuration, computer language, and software development technologies, some design principles and completion technologies are already outdated or unscientific when compared to modern operating systems. The development of the operating system design scheme technology gives a new demand to the course content of the curriculum. This requires the course to follow the forefront of the operating system technology development in various countries at the present stage, immediately fix the specific content, find out the rules and innovative ideas from the development, and correctly guide students to carry out further innovative activities.

4.2. The operating system itself develops rapidly

The logic of the "operating system" curriculum is strong, and some knowledge points are abstract and difficult to understand. It is difficult for students to grasp its main content, and it is easy to produce boredom in learning. How to combine the abstract content in the teaching classroom with the objective case in reality is the key of the classroom teaching efficiency.

4.3. The specific content requirement of the operation process is strict

Learning and training the operating system is not only to grasp its basic principle, but also more important to apply the principle in the operating system to test and even design schemes. From basic programs, subsystems to multi-program systems, processes, incoming communication and synchronization, and then from the system files and distributed storage design, to build a truly simple and powerful operating system. This will give the highest rules for students' classroom teaching, but give full play to the leading position, according to the students to "get on the horse" according to the interactive discussion.

5. Conclusion

Computer operating system is a subject with both logic and application value, and it has high difficulty. In order to make students fully master it, we must constantly carry out reform and improvement, select appropriate textbooks, and reform teaching methods, in order to highlight students' subjectivity, constantly enrich the content of practice, and strengthen training evaluation, to comprehensively improve the teaching quality of computer operating system.

Acknowledgement

2021 Educational Information Technology Research Project (Students' Application of Online Learning Space to Carry Out Independent, Cooperative and Inquiry Learning Research, No.:20210701007); 2020 Quality Engineering Project (Operating System, No.:202004060).

References

- [1] Liu S. Reform and research on teaching methods of computer operating system course [J]. *Digital communication world* 2021;(06):248-249.
- [2] Gu X. Research on the construction of computer network security system in colleges and universities [J]. *Fortune today (China's intellectual property)* 2019(05):201.
- [3] Wei S. Discussion on the teaching method reform of "Computer Operating System" [J]. *computer products and circulation* 2019;(03):239+241.