

Improvement and Test of Computer Teaching Mode Based on Question-based Teaching Method

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ABSTRACT

The traditional teaching mode pays attention to the teaching of knowledge and ignores the main position of students. Therefore, this paper puts forward the strategy research of college computer teaching problem-solving based on the question-based teaching method. Through the determination of teaching objectives, guiding students to think actively and scientifically quoting the guidance scheme, this paper realizes the research in three aspects. Through the experimental comparison, it can be seen that the problem-solving strategy proposed in this paper is more feasible.

Keywords: Computational problem, question-based teaching method, teaching mode, logical thinking

1. INTRODUCTION

The question-based teaching method is a new teaching method, which means that in the process of teaching, teachers can put forward corresponding problems according to the teaching content, and students can think independently according to the problems raised by teachers. Compared with the traditional teaching method, this method has more advantages. To a certain extent, it has changed the disadvantages brought by unilateral teaching, and can also excavate students to the greatest extent to enhance the students' ability of independent thinking and improve the ability of mathematics learning. However, it is found that some teachers do not understand the advantages of the problem-based learning plan method in teaching, and cannot master the connotation of the guidance plan, which makes it impossible to popularize the guidance plan. In addition, in the research of the guidance plan, there is a certain deviation in the focus, resulting in the lack of interaction between teachers and students, ignoring the guidance of the case to students and teachers. In order to deeply implement the new curriculum concept and solve the contradiction of pedagogy, this paper puts

forward the college computer teaching problem-solving strategy based on the question-based teaching method [1-2].

2. PROBLEM SOLVING STRATEGIES OF COLLEGE COMPUTER TEACHING BASED ON QUESTION-BASED TEACHING METHOD

2.1. To Determine Teaching Objectives

Specific objectives are always associated with specific objects, and specific computer teaching objectives in college also need to be discussed with specific knowledge points in the curriculum. In order to deeply understand the requirements of various computer problems and knowledge points in each dimension, Table 1 is arranged according to the relevant contents and specific ability objectives, as shown below.

Table 1 Requirements for different types of knowledge points in college computer mathematics based on question-based teaching method

Level	Knowledge and skills	Objectives	Class hour
Public Elementary Courses	Further math	Advanced mathematics is the foundation for computer majors to study corresponding professional courses. It plays a foundational role in the training of computer majors. It cultivates students' rational thinking ability for abstract thinking and logical reasoning, and comprehensively uses the knowledge they have learned to analyze problems and solve problems. The ability of problem and	64

		mathematical modeling will gradually cultivate students' innovative spirit and ability, and lay the necessary mathematical foundation for future learning of various subsequent courses and further expansion of mathematical knowledge.	
	Linear algebra	"Linear Algebra" is a public basic mathematics course for university computer majors. In today's rapid development of science and technology, especially with the rapid development of computer science and its applications, artificial intelligence, cloud computing, cryptography and other technologies all use linear algebra as a part of the theory and algorithm foundation. It is also a branch of algebra, mainly dealing with linear relationship problems.	48
Professional basic course	Basics of computer applications	The basic course of computer application is a compulsory professional basic course for computer majors. It is an introductory course for computer-related knowledge. It is also a follow-up course for computer courses and other related professional courses with computer technology as the core. Cultivate students' computer literacy, so that students have the necessary computer application ability and the ability to use computers to handle office affairs, and make them professional services to meet the needs of actual jobs.	48
	Python programming	"Cloud computing and big data belong to me; crawling, precise computing, everything is good", this is the best interpretation of the python language. With its concise, elegant and efficient features, python language is widely used in artificial intelligence, cloud computing, big data analysis, WEB development, automated operation and maintenance, testing, etc. It has become the most popular language in the world.	64
Professional Core Course	Machine learning	Machine learning is one of the core research areas of artificial intelligence, and its research motivation is to make computer systems have human learning capabilities in order to realize artificial intelligence.	128
	Deep learning	Deep learning is one of the key technologies in the era of artificial intelligence. Deep learning is not only transforming computing, it is also a powerful new tool for other disciplines. It can be said that deep learning is changing, or will change, every area of science and human endeavor.	128
	Natural language processing	Natural language processing is an important direction in the field of artificial intelligence. It studies various theories and methods that can realize effective communication between human and computer in natural language. Natural language processing is a science integrating linguistics, computer science and mathematics.	64

After analyzing the objective requirements of relevant knowledge points in college computer teaching curriculum, it needs to refine the requirements of computer teaching objectives twice. There is a logical relationship between the two. It is worth noting that in the course of computer in China, all the computer knowledge points are divided into three categories, and in the problem guide method, they are divided into four categories, namely the number,

change, relationships, uncertainty. The biggest difference between the two is that the problem guide combines the quantity and change in computer. In this way, it changes the pure logic reasoning process, which can make the content of computer more specific and more flexible [3].

2.2. Guide Students to Think Actively

With the question-based Teaching Method in computer teaching, teachers need to make sure the learning objectives of this section, the reasonable arrangement of logical relationship, this section knowledge to default and communication of teaching program, to the students' cognitive activities give timely guidance and advice, in order to make students get the exact cognition, in the right direction, have the right to explore ideas to help students overcome obstacles in the process of cognitive. In terms of the way to pay attention to problems, students' interest in learning should be induced, their learning drive should be fully mobilized, and the efficiency of learning should be improved [4].

Teaching should focus on the development of students' wisdom and potential, in order to promote the development of students' wisdom and talent. In addition, teachers should create a good learning atmosphere, let students think freely and study actively, so that students are willing to challenge themselves and tap the potential of life. Computer requires students to have a solid foundation and ability to distinguish. In the problem-based learning mode, the teacher's guidance has achieved a certain effect on students' ability to collect mathematical information and understand problems, which will make it easier for students to learn and solve problems in class, instead of using indoctrination teaching and problem sea tactics to improve students' problem-solving ability [5].

3. SCIENTIFIC APPLICATION GUIDANCE SCHEME

For new teachers, using the question-based teaching method for effective teaching is an effective way to realize

the life classroom. The learning guidance plan is not a simple auxiliary material. It needs a strong logic in the setting of problems. Both in the arrangement of activities, teachers need to have rich experience. Only with a good mentality can we control the classroom atmosphere [6]. American psychologist Posner put forward the teacher growth formula as follows;

$$Z = \frac{\bar{X} - U}{\sigma_x / \sqrt{N}} \tag{1}$$

Among them, the critical value of Z is 1.26, σ_x is unknown, N is the test sample, U is the statistical value, and the formula is used to determine whether the teacher's growth state is in the same normal distribution range. In order to ensure the validity of the test results, it is necessary to set the critical value of the overall standard deviation;

$$\varphi = \frac{\sigma^2(p)}{\sigma^2(p) + (\mu - \lambda)} \tag{2}$$

Where, λ is the critical score, p represents the generalization coefficient, λ represents the dependency index, and represents the relative measurement error. Use formula (2) to judge the state of teachers' growth.

The guidance program emphasizes the attitude of teachers and students. Teachers need to design knowledge points into activities according to the teaching content, and make reasonable arrangements for each activity. The implementation procedure of college Computer classroom based on problem-based learning guidance method is as follows.

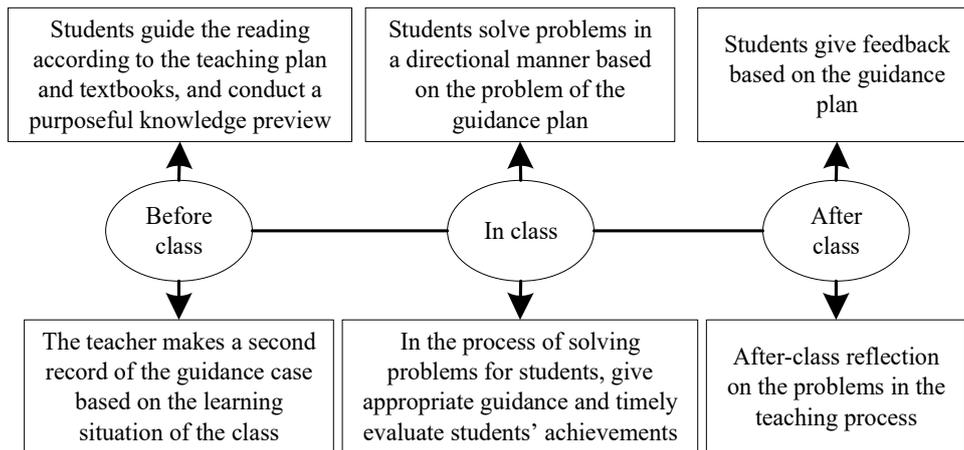


Figure 1 Implementation procedure of college computer teaching classroom based on question-based teaching method

In the course setting, teachers should have an accurate plan about what kind of activities to carry out around each question and the time required for each activity, so as to ensure that students can participate in the activities

effectively, and also complete teaching tasks. Such teaching methods not only require teachers to be familiar with the teaching content, but also have good classroom control ability.

4. EXPERIMENTAL ANALYSIS

In the process of the experiment, the strategy of solving college computer teaching problems based on the problem guidance method should be tested. In the process of the experiment, the students' will should be followed, and the variable factors should be analyzed and tested, and scientific and reasonable experiments should be conducted

under the prescribed conditions. In order to verify the application value of the design strategy in this paper, a comparative feasibility test was conducted between the traditional strategy and the college computer problem solving strategy based on the problem guidance method, and a reasonable test was conducted by means of numerical comparison. The feasibility experiment results of the two strategies are shown as follows.

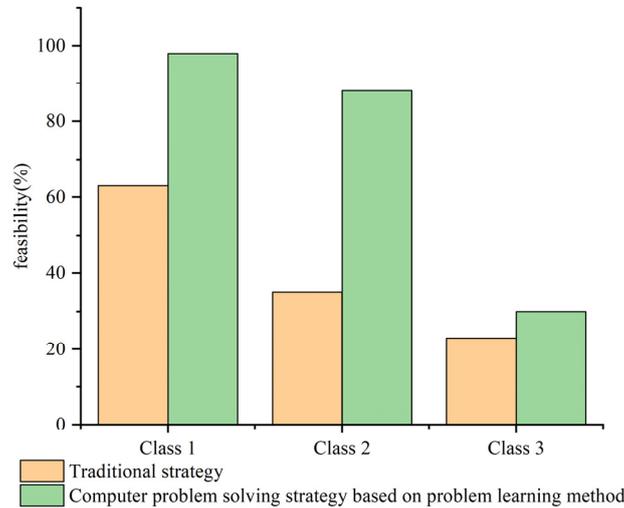


Figure 2 Implementation procedure of college computer teaching classroom based on question-based teaching method

According to the comparison results of the experiment in Figure 2, the class using the problem-based learning strategy of college computer can better grasp the key points in the preview class, urge themselves to read the textbook carefully, and better understand their doubts through the problem-based thinking. However, the students who adopt the traditional strategy think that the knowledge points of the textbook guidance are too complex, which is quite confusing.

To sum up, the feasibility of college computer teaching problem-solving strategy based on question-based Teaching Method is higher.

5. CONCLUSION

The question-based Teaching Method realizes a classroom with students as the main body and teachers as the leading. This teaching mode can stimulate students' interest in learning, show teachers' learning style, and make students show their self-worth in the classroom. At the same time, it can test the learning results in time during, before and after class.

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