Teaching Reform of Computer Introduction Experiment Course based on Innovative Thinking

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Abstract: In view of the current situation of talent demand, this paper puts forward a method of cultivating students' innovative thinking by using computer introduction experiment teaching, which breaks through the traditional experiment teaching mode. Combining with many years of teaching practice, this paper puts forward the teaching reform idea of computer introduction experiment course based on innovative thinking. After several years of teaching application, it has played a role in cultivating students' interest in learning, improving the speed of knowledge acquisition, enhancing practical ability and guiding innovative thinking ability.

1. Introduction

Introduction to Computer is the first guiding course for computer related majors. It pays attention to cultivating students'innovative thinking, stimulating students' enthusiasm for computer professional knowledge and mastering the learning methods of computer specialized courses, so as to improve their ability to analyze and solve practical problems. As mentioned in document [1], "Introduction to Computer" course teaching should play a "five-guide" role: guiding knowledge, guiding methods, guiding thinking, guiding consciousness, guiding profession, it can be seen that computer introduction to computer students is very important to guide the role. Usually this course consists of two parts, one is theoretical teaching, the other is experimental teaching, each school according to the computer professional training program given in the "Introduction to Computer" course total hours and classes are different. For example, in our school's pre-2015 training program, the total class hour of "Introduction to Computer" course is 64 hours, of which the theoretical class hour is 48 hours, the experimental class hour is 16 hours, and the total class hour of "Introduction to Computer" course is 48 hours, of which the theoretical class hour is 40 hours and the experimental class hour is 8 hours. At the time. Then facing the changing total class hours and the increasingly compressed experimental class hours, how to ensure that students learn the basic theory well, while making full use of the efficiency of the experimental class, students' experimental ability to improve hands-on, really placed in front of each teacher.

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2. Problems in curriculum experiment

In 2002, the China Computing Curricula 2002 (CCC2002) was proposed by the China Computer Science and Technology Course Research Group. The "Introduction to Computer" course should be geared to the cultivation of the thinking ability of computer science. [2] Computational thinking refers to a series of thinking activities covering the breadth of computer science, such as problem solving, system design, and human behavior understanding, using the basic concepts of computer science. [3] therefore, it is very necessary to carry out the necessary basic knowledge of Computer Science in theoretical courses. From the initial history of computer development and application to the representation, storage and processing of data in computers, the composition and structure of common operating systems, common software, office software, computer hardware, algorithms and programming, to the basic concepts of database, data model, SQL language, data management system Ace Ss, hackers and data security, computer network applications, information retrieval, and so on, such a rich content in the freshman year to let students learn is impossible, but to teach them how to learn this knowledge, how to learn well, what the future use, and so on, then the experimental class according to this theoretical content to arrange. Students can not achieve at all, can not eat, not only can not achieve the desired experimental teaching results, but also will cause students to future learning embarrassment. For this reason, some colleges and universities set up the experimental teaching content as "six modules: familiar with the computer, operating system, office automation suite software use, e-mail settings, network information retrieval, common tools and software use, program design and database management system Access operation." [4] This is no different from the "computer foundation" that non-computer majors learn, and it can not reach the point where the introduction of computer science should play a role; some colleges and universities divide the experiment into five items: "microcomputer structure and configuration, establishing files and folders, WINDOWS task manager application, program integration development environment, and establishing students" Information table and simple operation. [5] This method is indeed complementary to its theoretical teaching, but it is not easy to achieve the goal of guiding computer learning and thinking. After years of teaching of computer introduction and the investigation and feedback of students and graduates, we have studied and reformed the teaching mode and content of computer introduction experiment from the freshmen of grade 2016. After more than two years of practice, we have achieved good results.

3. Reform of experimental teaching content

Creative thinking refers to the creative activities of the subject in the creative activities of the problem as a starting point, creative personality as a guide, the comprehensive use of a variety of thinking forms, intuition, inspiration, epiphany and other sudden thinking as a significant sign, with the whole brain, selectivity, analogy, full-featured, aesthetic and other characteristics, can be produced. Thinking activity with new achievements in social value. In order to achieve this goal, we have carried out a series of reforms from experiment and teaching content to teaching methods.

In the process of completing this experiment, we have made some reforms in the ways and methods of completing these experiments. For example, the basic contents (such as experiment 1 and experiment 2) should be completed by students after class. For the basic content of classroom teaching, such as office software applications, network information retrieval, database applications, etc. require students to complete in extra-curricular time. Because this part of the experiment can be completed through students' autonomous learning or mutual assistance between students, generally no problem. For the comprehensive experimental content (such as experiment 3 and Experiment 4), students are required to complete their studies in extracurricular self-study courses. For this part of

the comprehensive experimental content, students are required to complete their study in extra-curricular time through the teacher's experimental teaching video. When arriving at the laboratory, students and teachers use the flipped classroom teaching method to discuss and analyze the teaching content and develop innovative application ability. The purpose is to arouse students' interest in learning, improve the utilization of the classroom, enrich students' experimental content, and further cultivate students' Computational Thinking ability.

4. Reform of experimental teaching methods

Usually in general colleges and universities, in the experimental teaching link, teachers are often busy guiding students' experimental operation, rarely guiding students to explore and innovate, students are often more concerned about the correctness of the experimental results, less reflection on experimental methods and results, so it is difficult to improve students' ability to analyze and solve problems. Realization. In the experimental teaching process of this course, we have adopted two teaching methods.

4.1 Project based teaching method

Project teaching method refers to a relatively independent project handled by the students themselves under the guidance of the teacher. The collection of information, the design of the scheme, the implementation of the project and the final evaluation are all under the responsibility of the students themselves. Through the project, the students understand and grasp the basic requirements of the whole process and each link. The most remarkable feature of the project teaching method is "taking the project as the main line, the teacher as the guide, the student as the main body". For the first, second experiment, we adopted this method. Students through the classroom theory teaching, combined with the experimental tasks given by teachers, such as completing the graduation thesis document editing, typesetting; using Excel, PowerPoint to complete the financial multi-statement perspective audit analysis and job report PPT design and production, variable VCN [6] use. Compared with the traditional teaching method, the project-based teaching method has changed a lot in the aspects of educational concept, teaching objectives, teaching environment, teaching process and teaching methods. It no longer centers on teachers and emphasizes the cultivation of students' autonomous learning ability. This method has the typical characteristics of strong practicality and good experience. Students acquire knowledge, skills and problem-solving methods by implementing specific projects. In the process of completing the project, students' sense of responsibility and teamwork ability are cultivated, students' ability of completing complex work is trained, and students' ability of completing complex work is trained. The ability of knowledge to deepen and expand itself.

4.2 Innovative thinking classroom teaching method

Innovative thinking teaching method refers to a series of innovative ability training for students in the laboratory in order to achieve knowledge broadening, challenging, Surrounding and Capturing. This creative thinking ability is a set of skills that can be widely applied. It not only provides the preparation for the creative application of existing knowledge and skills, but also lays the foundation for students to participate in lifelong learning and enhance their ability to deal with increasingly complex problems in an interdisciplinary context. In this mode of teaching, students can devote more time to active project-based learning, work together to address the challenges of localization or globalization and other real-world problems, thus gaining deeper understanding and skills. Teachers no longer occupy the classroom time to teach information, which requires students to complete

autonomous learning after class by watching the teacher's video teaching video. For the third, fourth experiment, we adopted this method. The students completed the whole experiment by combining the experiment with the teacher's teaching and experimental video. In the application of visualization software, students are required to use any one of the visualization software, multimedia software (such as VS.NET, 3Dmax, Photoshop, Flash, etc.) for instance making and application; in the database design, students are required to use simple Access database design, database operation, data table operation, query, etc. Database application development. It not only increases students'interest in learning, but also brings them challenges and stimulates their enthusiasm for computer learning. This combination of lecturing and collaboration is of great help in meeting students'needs and facilitating their individualized learning.

5. Reform of experimental teaching environment

Due to the limited hours of computer introductory experiment, it is impossible to complete all the experiments within the prescribed time. More experimental preparation and knowledge accumulation should be completed in the spare time. In addition to having computers in their dormitories to complete the introduction of computer experiments, our school also opens laboratories to students, and equipped with tutors, students can enter laboratory experiments at any time with student certificates; and interested in laboratories, innovative laboratories, network teaching platform and other practical links. Students can break the space-time restriction through the network platform, share and discuss the results of their understanding and exploration with teachers and other students, effectively realize the interactive cooperative learning between students and students, between students and teachers, so as to make the learning process become students'acquisition of knowledge, cultivate self-management, and improve hands-on ability, The important link of force.

6. Teaching effectiveness

The students majoring in computer science and technology of our college have participated in the international certification of IEET of China Institute of Engineering Education. The IEET is the first professional appraisal organization approved by the Ministry of Education in China. Our students finally passed the certification with excellent results. Table 1 is in this certification, the performance of college students in the implementation of innovation and entrepreneurship questionnaire, from the questionnaire summary can be seen that the overall performance of students' innovation ability is very good.

Table 1 Questionnaire summary of university students' innovation and entrepreneurship ability

Serial number	Questionnaire items	Total score	Average
1	The division of labor among the students is reasonable	247	4. 66
2	The student's communication ability in the research group	236	4. 45
3	The spirit of cooperation among the students in the research group	235	4. 43

7. Conclusion

The practical ability of students has a direct impact on their ability to work after graduation. The purpose of teaching is to apply what they have learned. Through the reform of computer introduction experiment teaching, students' practical ability and the way of thinking and methods of solving

problems have been greatly improved. They have got rid of the habit of asking the teacher before they meet the problems and learned to be self-centered. The main goal of learning, self-improvement and continuous improvement. Flip classroom teaching method should cooperate with the theory teaching process, will play a better teaching effect, so that students have more time to exchange information with teachers in the theory class, in the experimental class, a better idea of innovation was born, which is very important for training practical talents.

Acknowledgments

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