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Exploration of Experimental Reform in Computer Specialized Laboratory

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Abstract

Strengthening and improving practical teaching, focusing on improving students' ability to use their hands and the ability to use theories learned to analyze and solve practical problems is very important for the cultivation of socialist modernization and construction of talents. In order to adapt to the needs of the development of the new situation and improve the teaching effect, we have carried out some reforms and explorations on the teaching of computer courses and experiments, and have received better results.

Keywords

Experimental Reform; Practical Teaching; Computer Courses; Computer Laboratory.

1. Integration of Experimental Teaching Activities with Theoretical Teaching

Computer courses are characterized by abstract content, language, commands, no formulas can be set, not easy to understand, difficult to remember and strong practical. In view of these characteristics, we study with the teachers, the past classroom lectures and experiments separated from the practice of improving the operating system and some of the common error cases, changed to the laboratory lectures, while lecturing and let students hands-on verification. In this way, students can understand more easily, deepen their memory in the process of understanding and operation, and the learning effect is greatly improved. Lecture language classes, we implement the principle of "less but more precise", more practice, aggravate the role of the laboratory guidebook, guidebook to a typical program as the main line, to edit and modify the program skills as a means to the theoretical coursework as a guide to increase the number of students on the machine time, through the practice of digestion and absorption. Due to the organic combination of theoretical knowledge and experimental verification, students learn both solid and flexible knowledge, thus improving the quality of teaching.

2. Reform the Experimental Content and Guidance Methods, Strengthen the Ability to Cultivate

To adapt to the social development of high-quality talent needs, the laboratory work should also be constantly reformed, so we have made some attempts in the experimental content and guidance methods, in strengthening the students' ability to cultivate, and achieved certain results.

(1) Dividing the levels in experimental content. We divide the experiments of each course into basic experiments, design experiments and comprehensive experiments (also known as the big work). For each level of experiments, there are clear requirements in the guidebook, and mandatory and optional questions are arranged. Experimental materials on the purpose of the basic experiments, content, operation methods and steps are detailed and specific, so that students learning microcomputer can be on the machine before the pre-study experiment guide

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book in mind on the operation of the road, to solve the problem of students on the machine do not know what to do. Through the basic experiments, not only verify the theory, eliminate the mystery, deepen the understanding and memory, but also trained students to master the operation of the machine, debugging the program method, but also cultivate the scientific attitude of the students to seek truth from facts. The purpose of the design of experiments is to combine theoretical learning, in order to deepen the experimental content and broaden the scope of application of the knowledge acquired. The students are only given the experimental tasks and requirements to be achieved, let them think for themselves, according to the requirements of independent thinking, self-programming debugging run on the machine. At the same time, students are encouraged to complete the required tasks, according to their own interest in the first topic, in order to stimulate students' enthusiasm for learning, as well as further combined with the practical needs of the development of the ability to solve the problem of interproblems, programming and hands-on ability. Comprehensive experiments are characterized by the comprehensive application of knowledge and the exploration and simulation of actual work in the field. Each subject is a simulation of the actual application system, such as "students into a management system", "accounting computerization application system", etc., the purpose is to train students to comprehensively use the knowledge gained to carry out the actual work method of programming training, inspire and cultivate the students to engage in The purpose of the program is to train students to utilize their knowledge in a comprehensive way and to develop their ability to engage in scientific research.

(2) to overcome the dependence of students, both comprehensive guidance and individual help. In the process of student experiments on the computer, some students, on the computer when encountering problems do not think seriously, open their mouths to ask the teacher, the instructor on call, the result is that teachers are busy, students encountered the problem is only a temporary solution to the problem, and then encountered the same interproblems, or I do not know how to do, the more the students learn to be more timid and produce a dependence on the teacher's mind. In order to overcome the dependence of students, we require students to study the guidebook before going on the computer, and to write an outline of the operation. The instructor changes the instruction mode to only move the mouth, not hands, to help students solve the problem by inspiration and induction, and focuses on the common problems. In this way, students with good foundation and strong ability can develop to a deeper level, and students with weak foundation and ability can feel less difficult to learn through writing operation outlines and solving problems by themselves with their own hands, and their confidence is enhanced. Teachers' guidance workload is also reduced, not only to overcome the students' dependence on the idea of strengthening the hands-on ability, but also to improve the efficiency of teachers.

3. Reform of Assessment Methods and Comprehensive Evaluation of Students

In the past, students' performance in microcomputer courses was assessed only on the basis of examination papers, resulting in students memorizing concepts and theories and not paying attention to experiments. In the past two years, we have adopted a combination of oral examination, written examination and programming operation as the assessment method for students to make a comprehensive evaluation. Oral part of the assessment of the basic concepts and common terminology, written part of the assessment of the analysis, graphing and programming capabilities. On the basis of the written test, students are required to input, debug, run and print out the program list and run the results of the program as the basis for assessing the results. After the reform of the comprehensive assessment, so that students learn more solid,

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both comprehensive assessment of the learning situation, but also to test the students' practical ability.

4. Open Laboratories to Better Serve Students

Over the past few years, we have adhered to the principle that laboratories should serve for teaching and scientific research for teachers and students, and have done some work in opening up laboratories and mobilizing the enthusiasm of laboratory personnel, such as.

(1) under the premise of completing the teaching task, make time to open. Due to the heavy task of teaching experiments in the computer room of our hospital, each semester the provisions of the teaching experiments are lined up all over the place. And students want to learn more computer knowledge, especially the third and fourth year students, recognizing the importance of strengthening the training of computer application skills for future work, the urgent need for more on the machine. In order to meet the wishes of students, we first mobilize the enthusiasm of the laboratory staff, unified ideological understanding, to meet the learning requirements of students. According to the principle of paid service, service-oriented to the students to charge appropriate service fees, laboratory staff according to overtime hours and work to give appropriate remuneration. On the basis of not affecting the experimental teaching task, we make every morning, Saturday night and Sunday free time, open the laboratory to the whole school. For teachers' scientific research projects, we adopt a fixed machine, all-weather open mode, also to meet the needs of teachers.

(2) Training courses on new knowledge are organized at the request of students.

With the process of opening up, students have higher and higher requirements for the laboratory. In addition to the learning content specified by the teaching and research department, they also need to learn some knowledge that can be used in future work, especially for students who are about to graduate and take double degrees. In view of this situation, laboratory personnel have launched four five stroke learning classes with a clear aim. Some foreign students and students of our college also chose to learn such languages as "FOR-TRAN", "C", "assembly language" and "FOXBASE+relational database management system". Thanks to the active efforts of all laboratory personnel, the equipment is well maintained, the utilization rate of equipment is improved, and the vitality of the laboratory is also greatly enhanced.

5. Implementing Programs to Develop Students' Comprehensive Practical Skills

5.1. Reform of Teaching Content and Experimental Content

According to the requirements of the overall reform program, in order to cultivate students' comprehensive problem-solving ability as the goal, in order to adapt to the individualized teaching of different levels of students, the development of the new situation of the computer public courses of the hierarchy of the syllabus, examination syllabus, experimental syllabus and experimental program [9]. Full consideration of the teaching content, experimental content and examination content of the unity of the three, and to facilitate students to expand their knowledge according to their own learning situation, more suitable for the "student-centered" teaching concept.

5.2. Auxiliary Teaching Tools and Teaching Resources Construction

Produced multimedia teaching courseware and experimental teaching courseware to show the teaching content in a vivid and intuitive way, which can mobilize students' learning enthusiasm, cultivate students' interest in learning and improve the teaching effect. The construction of the province's computer public class website provides a wealth of teaching resources, including

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auxiliary teaching courseware, mock examination system, other learning resources, learning and teaching exchanges, and other information. Based on the network platform, completed the Shandong Province Information Industry Development Special Funds Project "Modern Distance Education Teaching Resources Development and Security Management Platform Research", the appraisal conclusion reached the domestic leading level.

5.3. "Task-driven" Teaching and Specific Implementation Programs

The preparation of the experimental reform plan of computer common course closely focuses on practicality, applicability and comprehensiveness, and emphasizes the cultivation of hands-on and comprehensive practical ability. Therefore, the idea of "task driven" is introduced into the experimental reform of computer public courses, emphasizing the completion of computer operation tasks by students. For example, the experimental content of College Computer Foundation is divided into 10 chapters, which are: ① understanding computers; ② Windows operating system; ③ Word word processing; ④ Excel spreadsheet; ⑤ Common tool software; ⑥ Programming; ⑦ Computer network; ⑧ Multimedia technology; ⑨ Database; ⑩ Comprehensive experiment.

6. Main Contents and Results of Experimental Teaching Reforms

(1) The laboratory syllabus and examination syllabus for public computer courses were formulated, and the relationship between laboratory teaching, course teaching and grade assessment was studied.

(2) Reform of experimental teaching material construction.

(3) Reform of teaching mode and teaching methods.

(4) Reform of examination methods.

(5) Establishing a network teaching platform. We have produced the teaching courseware that matches with the textbook, and introduced the idea of task-driven into the experimental class, which focuses on cultivating students' hands-on ability. A simulation practice system has been developed, laying a good foundation for the implementation of network teaching.

(6) Research on teaching and experimental reforms in public university computer courses, with good results in the construction of teaching materials, production of courseware, examination systems, teaching reforms and experimental reforms.

(7) Through the reform and practice of the teaching of public computer courses, basic computer courses have met the needs of students at different levels of computer knowledge, and with the secondary school "information technology" courses have been well articulated, and the teaching reform has been obviously effective.

7. A Few Points of Experience after Nearly a Few Years of Experimental Reform Attempts, We have the Following Experience.

(1) experimental teaching reform should first mobilize the enthusiasm of the experimental staff, can take the initiative to cooperate with the teachers to reform the experimental teaching content and assessment methods. In the past teaching process, the laboratory staff is the status of teaching aids, binding their initiative, so the reform is more difficult. We have liberated their thinking, take the initiative to cooperate with teachers, the teaching process into a combination of theory and practice of the track, so that teaching and learning have increased the vitality and vigor of students' enthusiasm for learning.

(2) The reform of teaching methods and content should be future-oriented, and the direction of our reform is to cultivate students' ability to analyze, solve problems and work independently. By combining the teaching content with actual management cases and cases that students come

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into contact with in the course of on-site internships into the design and comprehensive experimental content, students analyze, program, debug and run, so that they can become the compiler of the application software. Some students have experiments in the program into their own graduation design, many students to the graduation design of the program to the workplace, some slightly modified has been applied in the work, and achieved good results.

(3) In the process of opening up the laboratory, students have learned a lot of knowledge and skills other than the prescribed teaching content, which plays the role of supplementing the teaching content and broadens students' knowledge and practical skills. As a result of the improvement of teaching methods, some scientific research contents are also integrated into the students' major assignments and graduation design, so that the students can participate in and understand the process of scientific research, which promotes the combination of teaching and scientific research. Laboratory staff used to repeat those monotonous experiments year after year, closed doors and stalls, knowledge is not wide, but in the practice of reform, we have invigorated the spirit, get exercise. Knowledge broadened, business capacity enhanced, participation in scientific research, broadened horizons, growth of talent, not only to improve the quality of the instrumentation and equipment utilization rate has also been improved.

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