

# Practical Teaching Reform of Computer Project Driven Mode in Colleges and Universities

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**Abstract:** with the popularization of computer, computer practical ability has become a very important ability in the recruitment of enterprises. However, there is little guidance for students' practical ability in the process of computer teaching in Colleges and universities, which leads to the uneven computer practical ability of students at graduation. In order to improve the students' ability of computer practical operation, this study combines the practical computer course "database theory and application" with the "project driven" practical teaching mode to explore the teaching reform, and puts forward the specific reform plan.

## 1. Introduction

With the promotion of information technology application in China, more and more enterprises are willing to recruit students with professional computer practice ability. The application of computer-aided design and production, simulation and simulation, virtualization and visualization has greatly improved the efficiency of enterprise production, research and development and management. But at the same time, it is an urgent problem that non computer majors in Colleges and universities can not keep up with the needs of enterprises in computer practice. This study combines the problems and characteristics of non computer majors in the computer practice course, combined with the innovative teaching method of project driven, and makes an in-depth discussion on the actual teaching of non computer majors in the computer course.

## 2. Problems in the Teaching of Computer Practice Course

Before making the teaching reform plan for non computer major students in computer related courses, we investigated the students' mastery of computer related skills, and found that the students' practical ability in computer related operations is poor, and many basic operations still need to be carried out through the search engine to search the corresponding courses, let alone using the computer to efficiently understand It's a professional problem. The main reasons for these students' uneven computer operation level are as follows: first of all, computer related courses are still not included in the scope of the college entrance examination. Although computers have gradually entered the common people's home, most of the students in high school can still access to less complex computer operation, and students still have poor foundation and movement in computer operation Second, the combination of some majors and computer courses is not close. Although computers have been widely used in all walks of life, there are still many courses whose teaching contents are not closely connected with computer courses due to the slow progress of teaching material reform in the university stage. Therefore, the students of these majors are not interested enough in computer courses and take the initiative Sex is not high. In addition, the traditional computer teaching mode mainly focuses on students' independent practice, and teachers only explain concepts and related cases, which also makes students lack of motivation in independent practice. Finally, in terms of the assessment method, the practical operation ability of non computer major students in Colleges and universities is not high, even allowing students to read the materials in the practical examination, and the assessment form of formality further reduces the practical ability of

students in computer operation.

Because the traditional computer teaching mode pays more attention to the teacher's classroom teaching for the lack of supervision of students' classroom and after-school practice, although students can understand the relevant computer knowledge, they can't master it systematically and comprehensively, and can't use the computer to solve professional problems. Therefore, how to optimize the teaching of computer practice course and improve the practical operation level of students is the content of this study.

### **3. Project Driven Teaching Mode**

Practice is an important tool to test students' learning achievements. Only through continuous practice can students grasp relevant knowledge quickly and efficiently after acquiring new knowledge. Teachers' teaching is more to help students better understand knowledge, only to let students understand knowledge, but it is difficult for students to master it directly. The practice of knowledge is very important after teaching, but the application of this tool in computer teaching in Colleges and universities is not frequent. In order to change this situation, the new teaching mode of "project teaching method" is adopted in the teaching reform of computer practice in non computer major. The "project teaching method" combines the practical problems with the teaching content of computer course. Students need to master the relevant knowledge content through one practical project after another in the course. Under the mode of "project teaching method", students will be required to watch the teaching video of corresponding knowledge points during the actual project operation, and then complete specific practical projects according to the requirements of practical courses and projects. Students can ask for help from classmates and teachers in the process of practice if they encounter difficulties, and finally help students complete the practical projects. Although the project teaching method can improve the students' computer practical operation ability, due to the uneven computer operation level of students, teachers may spend more time on practical guidance, which is also an important reason that many colleges and universities do not adopt this way of teaching. The traditional teaching method adopted in the computer course in Colleges and universities is "case teaching method". This teaching method is often combined with specific project cases to explain and give students a clearer learning and practice direction starting from the actual problems. Although this method can let students systematically understand various knowledge points, it is unable to learn due to the lack of requirements for students in practice. Students get better practical ability.

The organic combination of "project teaching method" and "case teaching method" is the teaching method adopted in this teaching reform. The case of "case teaching method" is mainly based on some items of "project teaching method", but there will be differences in the details of the items. This teaching mode requires students to watch the relevant case teaching video before class. Students can master the relevant knowledge points and project operation points through the video, and finally master the computer practice skills through the project practice in the classroom. In this way, students can form the habit of extracurricular learning, and learn a variety of computer related practical knowledge independently through various teaching videos on the network. Then, through classroom supervision and students' practical operation and training, students' computer practice level will be promoted in an all-round way.

The advantage of this teaching mode is to liberate teachers from repetitive knowledge explanation, so that professional teachers can spend more time on practical guidance for students. Moreover, because the cases in the network teaching video are similar to the actual practice and operation of students, students have certain psychological expectations for the difficulties that may be encountered in the project, and they encounter problems in practice. It can not only improve the efficiency of practical teaching, but also enhance the students' ability and confidence in practice.

### **4. Application of "Case Guidance, Project Driven" Teaching Mode**

This teaching reform selects "database theory and application" as the course of teaching reform

experiment, in order to improve teachers' guiding ability in computer practice and students' practical ability in computer operation through the exploration of this teaching reform.

#### 4.1 Requirements of Database Theory and Application

Database theory and application is a required course or an elective course for all majors under the College of information engineering. It is one of the most commonly used data management tools, and also a computer course with strong practicality. The course content of this course involves concepts such as relational database and data management system. It guides students to learn practical operations such as database construction and maintenance from the core of relational model, relational database standard query language SQL, relational algebra, etc. the main content is shown in Table 1.

Table 1 Practical Operation of Database

Establish database	Database creation, table creation, field and record establishment valid constraints, index establishment, table establishment relationship
Use forms to manipulate the database	Database creation, table creation, field and record establishment valid constraints, index establishment, table establishment relationship
Designing user views	Create different user views to control the updating of database data

#### 4.2 The Necessity of Implementing “Case Guidance, Project Driven” Mode

The teaching contents and methods of traditional database theory and application are the same as those of general computer basic courses, in which the specific application teaching is less involved, which makes it difficult for students to fully grasp the relevant practical operation when learning database related knowledge, and the strong practicality and practicability of the course itself are not valued by teachers and students, resulting in the unsatisfactory learning effect of students. It can meet the requirements of actual database practice.

#### 4.3 “Case Guidance, Project Driven” Mode Implementation Process

In order to make the course teaching more interesting, we give the theoretical part of the course to the students to complete it in half a semester in the course of Online Autonomous Learning, and take the excellent projects and works in the student competition as the case to carry out comprehensive practical teaching with the construction of project management information system (MIS) as the starting point.

MIS is a human-computer interaction system which uses computer hardware and software resources and has database function. The information it provides mainly serves the operation, management and decision-making of enterprises or organizations. The core of MIS system is database design, and its human-computer interface can be realized by object-oriented programming languages such as visual basic, Visual C + +. Generally, the interface design of MIS system takes communication function as the core, and the interface can not be changed easily, but the operation is simple and has strong fault-tolerant function.

“Project driven” provides some design cases for students to refer to, and allows students to choose topics of interest to complete the database design in the way of project development. Such as enterprise personnel information management system, student information management system, library management information system, material resource management information system, hotel management information system, attendance management information system, teaching management information system, warehouse management information system, maintenance management information system, etc. In the process of completing the project, students can fully play their subjective initiative to meet the needs of the project and carry out exploratory learning combined with other project cases.

The cases in “case guidance” select the projects participated and awarded by previous students as typical cases. These cases are usually enlightening and typical. Project guidance combined with these cases is helpful for students to master database related knowledge and skills. In the course of explanation, the teacher starts from the question, then explains the design and implementation of the database, and finally completes the analysis of the whole case. The analysis focuses on the problems

encountered in the process of system design and implementation, and enlightens students by summarizing common solutions. Because the selected teaching case is the work of the last student, the students' interest in learning database related knowledge has been greatly improved out of the psychology of comparison, and combined with specific database projects, they have created excellent database works such as super MIS system and teacher management information system.

Through the experiment of teaching reform, we find that some students' interest in MIS system design will be transferred to the study of related courses. In the process of practical learning combined with specific projects, students will take the initiative to learn in-depth computer programming languages such as visual basic and Visual C + +, so as to improve their programming level and practical operation level.

#### **4.4 Key Links to Be Solved in the Implementation of “Case Guidance, Project Driven” Mode**

First, choosing a good project topic is a prerequisite for project driven. On the topic selection, students should fully study and communicate with teachers. Teachers should evaluate the feasibility of students' purpose to avoid too much or too little workload, and give guidance to students in practice and learning in time, so that students can select projects with certain difficulty and practical significance for practical learning.

Secondly, guide students to get help through search engine. Encourage students to learn relevant knowledge through Internet search, find cases similar to their own projects, and complete their own programs through imitation and improvement. Students are allowed to make appropriate changes in the content of the project, and the excellent design in other cases is allowed to be transplanted into their own programs, so that the program content is more reasonable and the function is more abundant. Teachers should pay attention to whether students have plagiarism, spot check students' functional descriptions of different program modules designed by themselves at any time, and ask students to correct immediately when finding that the functional descriptions do not match the actual results.

Finally, for some difficult projects, students are allowed to work together in groups. According to students' learning situation, teachers should arrange some excellent students to establish a project development team and complete the project through division of work and cooperation. This way can make these excellent students get more team project cooperation and management, and make team members have more opportunities to communicate, so as to improve these students' autonomous learning ability, team cooperation ability and programming ability, so that they can become a helper to guide other students, so as to improve the practical ability of the whole class in database application.

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