Research and Discussion on the Course Design of Database Principle

Huilin Qin

Beijing Wuzi University, Beijing, China

qhlin9309@163.com

Keywords: Database, Course Design, practice.

Abstract: This paper analyzes the problems between the theory and practice in the teaching process of "Database Principles", the lack of attention to practical teaching links, the engineering principles of teaching practice, and the lack of diversity in teaching methods and means. From the aspects of optimizing teaching content, teaching methods, practice links, organization and management of curriculum design, this paper puts forward a set of corresponding teaching reform measures.

1. Introduction

Database technology has been rapidly developed since the mid-1960s and has been developing rapidly for decades. It is an important and fast-growing branch of computer science. Like the operating system, database management systems have become the basis for the development of various application systems. platform. The importance of the "Database Principles" course has become more and more prominent. It is not only the main course of computer and information management in colleges and universities, but also has become a compulsory or elective course for many non-computer majors.

"Database Principles" is a professional backbone course combining theory and practice. It is the basis for students to write management information systems. Because colleges and universities emphasize the completeness of database theory knowledge in the traditional course teaching process, lack of application and pertinence of learning, theoretical and practical teaching have different degrees of disjoint, and can not meet the needs of enterprises. Therefore, it is of great significance to analyze the main problems existing in the curriculum design process, especially the curriculum design.

2. Limitations in traditional teaching

Combined with my teaching experience, I analyzed the teaching status of the principles and application courses of computer and related professional databases, and thought that there are several problems in the curriculum design.

2.1. Disconnect between theory and practice

The database principle and application course generally includes three parts: database principle, design and application. The principle is its foundation, design and application are improved, they complement each other and promote each other. However, the basic situation of teaching in some colleges and universities is that teachers focus on theoretical teaching and rarely introduce students to specific database usage techniques, so that students can not integrate the knowledge they have learned and cannot adapt to the needs of enterprises for database application talents. In addition, teachers focus on the use of popular database development tools, ignoring the principle of teaching, resulting in students' ability to operate specific developers, but lack a complete knowledge structure. The educational goal of the database principle and application course of colleges and universities is to cultivate database application talents of social needs. This requires students to understand the principles, have a solid foundation, be flexible and use innovation.

2.2. The design of the comprehensive experiment is lacking

At present, the design of the experimental content of each course is arranged in combination with the teaching content of each chapter of the course. This method is suitable for the teaching mode of a single course, lacking the coherence of relevant modules and knowledge points between the courses, and the lack of students in each course. The ability to connect and penetrate relevant content makes it difficult to clearly grasp the context of the overall knowledge system. Through the investigation of previous graduates, it is found that the teaching content can not keep up with the new progress of science and technology. There is a big gap between the current teaching and industrial application practice. It is impossible to construct the database technical knowledge system of students well, and it is difficult to meet the industrial practice to the advanced database. Requirements for applying technical talent. Therefore, how to effectively integrate the related database courses with content connection and effectively solve the above problems has become the key to the research.

2.3. Teaching and practice are contrary to engineering principles

The application of modern enterprise database is basically the collaborative development of engineering. Its basic characteristics are organized according to the principle of software engineering. The basic method of software engineering is integrated into the practice of database principle and application course, so that students can establish engineering as soon as possible. The concept is in line with the principle of talent market demand, but it can be seen from the current teaching process that in addition to graduation design, from after-school homework, on-machine practice to curriculum design, almost all of the students' personal behavior, large Most students are passively engaged in these tasks with the courage to deal with errands, lacking innovative thinking. In the graduation design, many students do not know how to cooperate to develop a practical database application system, which seriously affects the quality of graduation design. After graduation, students can not quickly adapt to the work requirements of their units.

3. Measures to be taken during teaching

The guiding ideology of the teaching reform of this course is to train students to apply their professional knowledge comprehensively, to analyze and solve problems independently, so that students are well trained in scientific research and innovation. Therefore, the main measures taken in the course teaching reform are reflected in the following aspect.

3.1. Optimize teaching content and complete knowledge system

The teaching goal of the database principle is to strengthen the basic training through course learning, so that students can understand the basic principles of the database; apply software engineering principles, master the design method of the database, understand the current research and development status of the database, and master the application technology of the database.

When implementing the database principle and application course teaching, it should cover the basic principles, design methods and application development, covering basic principles, design methods and application development.

3.2. Reasonable teaching methods and teaching methods

In the actual teaching process, a reasonable combination of teaching methods and teaching methods, student-centered, multi-case, task-driven and other teaching methods to increase students' practical opportunities, self-learning opportunities and innovation opportunities, greatly Mobilize the initiative and enthusiasm of students' learning, stimulate students to explore the interest of creation, encourage students to explore independently, and promote the deepening and migration of knowledge.

Adopt case teaching methods to accelerate students' learning pace, Accelerate students' understanding and mastery of abstract theories and methods through the gradual development of

cases. Task-driven teaching methods can also be adopted. Under the drive of tasks, students are encouraged to think independently and explore ways to solve problems through independent learning and collaborative learning.

Group students reasonably to cooperate and motivate each other, actively participate in learning, and cultivate students' spirit of exploring innovation and unity and cooperation.

3.3. Pay attention to practice links and cultivate innovative ability

In order to achieve the expected teaching goals, theoretical teaching and practical teaching must be closely integrated, and students should be encouraged to guide the theoretical knowledge flexibly and apply it to practical projects. Practical teaching is an important part of the teaching of database principles and applied courses. The design of the computer experiment and database course in the course should be reasonable. In the classroom, teachers should assign students a clear experimental topic that is conducive to digesting the theoretical knowledge of the classroom, so that students can achieve a clear purpose when they are on the plane. The computer experiment is aimed at a certain range of knowledge points. Each knowledge point is not closely related to each other and has certain limitations. Therefore, two weeks of curriculum design or comprehensive experimental training should be arranged in the later part of the course. The selected topics should have certain The application background enables students to apply a basic principle of software engineering to design a database application system with practical value, so that the knowledge gained can be integrated.

3.4. Reform assessment methods and attach importance to capacity development

Database principle and application course assessment should be divided into two parts: theoretical knowledge assessment and application ability assessment. The theoretical knowledge assessment focuses on students' familiarity and understanding of key concepts and principles, and focuses on assessing students' ability to use knowledge to solve practical problems and innovative thinking. The application ability assessment method should be flexible. The assessment should be turned into an opportunity to stimulate students' interest in learning. It can be carried out through routine experiments and specific database design and development tasks. In order to avoid the group students' active participation in the experiment and design tasks of the group, they can use random sampling methods to assess the group's achievements, promote mutual supervision, mutual help and mutual learning within the group, which is conducive to cultivating students' enthusiasm for learning. Improve the teaching effect.

3.5. Intensive course organization and management

In order to better carry out the course teaching, a collective lesson preparation system can be established. Before the start of the course, the class teacher will focus on discussing and determining the teaching plan and teaching calendar. Two weeks before the start of the course, everyone discussed the relevant issues that appeared in the lesson preparation and learned from each other. In the process of teaching, teachers are required to listen to each other to learn from each other's strengths. They do not regularly discuss the problems that arise during the teaching process, discuss from the teaching methods, forms and contents, and constantly explore and find out a suitable one. Teaching methods and patterns of the situation.

4. Reflections on course design

In light of the above problems in the design of database courses, combined with teaching and research practices, we have summarized the following points of experience:

4.1. Guide students to establish a rigorous attitude towards learning and research

A rigorous study and research attitude is an important goal for us to develop students. We must first start from the attitude of correcting students' learning, and carry out basic literacy education for

students in the teaching process. This not only promotes the cultivation of students' good habits, but more importantly, they have a scientific research in the invisible. The rigorous and scientific study and research attitude that personnel should have has laid a solid foundation for the completion of their curriculum design and future research and study.

4.2.   Open teaching methods to enhance learning autonomy and creativity

For a long time, in the design of database courses, due to less class time and tight time, most teachers provide fixed topics for students to choose, which makes it easier to guide and manage, but ignores them in another aspect.   Student personality development.   Each student has little control over the content of the teaching, and the understanding of the course is also uneven. Therefore, it is necessary for the students to freely play, choose the topic, and freely choose the development tools, as long as the required design content is completed. For example, in the database selection, you can choose SQL Server, Oracle, Mysql, etc. On the development platform, you can choose Power Buider, Delphi, .NET, J2EE, which needs students to choose, and the teacher can not specify a platform. In this way, students' autonomy and creativity can be better reflected.

In the division of labor, in many cases, all the development tasks of the system are completed by one person. This is not in line with the actual situation. There is almost no software in the company that is developed by one person. We need to develop students' good cooperation and communication skills, and the curriculum design just provides such a platform. In practice, the project can be grouped according to the different characteristics of students. This will not only give full play to the strengths of each classmate, but also avoid the phenomenon that some groups of people are only good at the same thing and the subject cannot be completed very well

4.3.   Reform the assessment method

According to the process of course design, we conduct evaluation and evaluation in four aspects: opening, mid-term inspection, system acceptance, and design reply. Because each team completes the difference in system functions, we only need to complete the same function for each system as long as it meets the established requirements for system functions, technical documents, and design reports. The opening examinations accounted for 15% of the entire course evaluation, the mid-term inspection accounted for 20%, the system acceptance accounted for 45%, and the course response accounted for 20%.

5.   Conclusion

Based on the analysis of the problems existing in the theory and practice of the "Database Principles" course, this paper proposes a number of teaching reform measures, which have been implemented. At present, the teaching work of this course has achieved good teaching results, so that the students' comprehensive quality and innovative ability are continuously trained and improved in the process of gradual progress, and at the same time improve the competitiveness of graduates. We will continue to carry out new work in the teaching reform of the database, make new explorations on the road of combining database technology and network technology, and strive to find new entry points to make the combination of theoretical teaching and practical application better and closer.   To cultivate more complex and applied talents that can adapt to the information society.

References

[1] Wang Shan,Sa Shixuan. Introduction to Database System (Fifth Edition) [M]. Beijing: *Higher education press*. 2014, 07.

[2] Li Juan. Discussion on the teaching reform of database principles and design courses [J]. *HEILONGJIANG SCIENCE,* 2018 (9):42-43.

[3] XUE Kai-qing1, WANG De-song, FANG zhi. Exploration of the Teaching Method of Database Principle and Application in Independent College [J]. *Modern computer.* 2017 (04):33-36.

[4] MA Li,ZHANG Qiong-sheng. Exploration of Database Principle Examination Reform Based on Formative and Summative Evaluation [J]. *Education Teaching Fortum.* 2019 (11): 85-87.