



Thought and Measures of Reforming About Database Courses in Universities

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Abstract. Along with the wide application and the rapid development of the database technology, the teaching of the database principle will focus on developing the students' innovative abilities and their application skills. On the basis of a comprehensive grasp of the concepts and principles, combined with the actual applications, the students will understand the development trend, and unceasingly enhance the level of the database knowledge, which has great benefits for training the comprehensive talents. In this paper, by analyzing the problems existing in the database courses, the author of this paper put forward the ideas and measures for the reform of the relevant curriculums.

Keywords: Database course · Teaching reform · Curriculum structure

1 System and Structure of Database Course

The database principle, as the basic subject, undertakes the theoretical education of the students, and is the teaching of the basic concepts, technologies and methods, which can lay the foundation for the specific application of the students. The theoretical teaching is also the top priority, and therefore, it should be arranged as the compulsory course. The application of the database system can let the students know the more specific implementations of the abstract concepts through the use of tools, and the students' practical abilities can also be improved [1]. The curriculum design of the database principles is to improve the abilities of the students to solve the practical problems through the basic knowledge and tools and is also the key of the structure of the curriculum system. Based on the mastering of the basic knowledge, the students can integrate the contents of other disciplines to solve the specific problems, to achieve the teaching purpose of the practical application.

Through the introduction of the above systems and structures of the course and the arrangement of the curriculum, it can be seen that the teaching contents of the database course need further optimization, and the contents of the optimization mainly include: the clarification of the teaching important points, the structure of the contents, merging with other courses but no repeat, and the maximization of the teaching goals. In the teaching arrangement of the database principle, the priority is the learning of the principles, so the teaching of the abstract contents also becomes one of the focuses of the optimization of the course. Through the studies, we found that the curriculum arrangement with the combination of the practice and the theory is a kind of the

courses. Through the studies, we found that the curriculum arrangement with the combination of the practice and the theory is a kind of the mode with the better acceptance effect of the students. For example, on the basis of the introduced basic principles of the database, combined with the SQL language and the programming languages, with the concrete cases, carry on the design and ideas. In the introduction of the database security, we combine with the current forefront technologies and the successful cases, so that the students can integrate the abstract concepts into the specific cases. The structures of the curriculum systems should also be improved.

2 Reform of Teaching Contents of Database Course

According to the needs of the development of the IT industries and enterprises and the requirements of the knowledge, abilities and qualities needed to complete the actual work and tasks of the professional posts, choose the teaching contents [2]. This is the process of the selection of the teaching contents. First, carry out the investigations of the industries and enterprises, the analysis of the jobs, and the classification of the duties, and clarify the abilities and structures of the posts. By analyzing the abilities and the teaching contents, eventually establish the curriculum goals, and clarify the selection of the contents of the curriculum.

The learning contents of this course are divided into three stages, to realize the teaching goals using the progressive learning tasks: first, the stage of the basic knowledge of the database systems; second, the phase of the project learning; third, the stage of the project practice [7].

The main teaching contents in the stage of the basic knowledge of the database system include the basic concepts of the database system, the basic concepts of the database mode, the relational mode, and the theory of the normalization of the database. Through the study of this stage, the students can master the basic contents of the database system and the connotation of the field, to lay a theoretical basis for the later learning of the actual operational skills.

In the learning phase of the project, run the real project “The Company Management System” as the instance through the whole process. According to the structure of “The Company Management System” and the development process, the curriculum contents can be divided into the four learning situations: the project preparation, the creation of the database, the data sheets, the application and development, the database security management and maintenance [4]. The stage of the project practice is the practice of the entire development process from the analysis of the requirements to the final integration of the system with the “system of the selection of the students’ courses” as an example. The students through the development of the full project can get familiar with the basic principles of the design and construction of the database, master the methods of the analysis and design of the database system, and improve the students’ actual programming abilities, to provide the necessary skills for the future engagement in the development of the information system.

3 Analysis of Problems Existing in Reforming of Database Course

3.1 Teaching Mode is Single and Teaching Ideas Lag Behind

The college teachers often adopt the three-step teaching mode of the principle introduction, the problem illustration, and the curriculum practice. In the process, due to a lack of the contact and practice with the actual situations, the students cannot combine the knowledge of the database principle with the design of the actual system, but just passively accept the contents of the course. The teaching ideas and patterns of the database principle are similar, and we also carry out the teaching by using the concept introduction, and the serial practice. The basic concepts of the database principles, such as the database models, the concept of the database principle, and the logical mode, are relatively abstract for the students, with the strong theoretical nature, so that the students feel difficult to understand them in the learning process, and their learning enthusiasm will reduce gradually. From the long time observation, we found that the effect of the practice of the students in the practice phase after the explanation of the theoretical concepts is not good, which is also caused by the not solid mastering of the theoretical learning, which directly led to the serious disconnection between the theory and the practice, so that the teaching qualities and effects gradually decline.

3.2 Teaching Management is Lack and Updating of Teaching Materials Lags Behind

Because of the continuous introduction of the young teachers, to exercise their teaching abilities, every year arrange the young teachers into such professional foundation courses as the database principles. The constant changes of the professional teachers led to the constant changes of the teaching cases and the teaching methods. In this process, the ire is not a unified and scientific management mode, which leads to the decline of the quality of the teaching. For the textbook used in colleges and universities, generally there will be no changes for a long time, and the publishing cycle of the same set of textbooks is long, and the updating of the teaching materials is slugging behind seriously, which will not be able to combine with the constantly changing new technologies in reality.

3.3 Theory Disconnects with Practice, Curriculum Assessment is Old

The weak ability to accept the theoretical knowledge led to a serious lack of the practical applications of knowledge of the students, so that the students in the development of the programs cannot well combine the knowledge of the database principle [10]. In the evaluation of the database principle, we have been using the method of the closed-book exams, and the questions tend to give priority to the theoretical questions, with little practice design, which can't check out the student's comprehensive levels and the students' practice ability of the theoretical application.

4 Implementation Methods of Teaching Reform of Database Course

4.1 Choose Quality Teaching Materials and Teaching Cases

Many higher vocational colleges prepare and perfect the syllabus for the curriculum teaching in strict accordance with the requirements of the personal training of the higher vocational colleges by the national Ministry of Education, but there are shortcomings in the selection of the teaching materials, and the selected teaching materials are intermingled. It is suggested that the school with such problems in the selection of the teaching materials should pay attention to: The teaching materials should select the universal textbooks for the higher vocational education, and the database management system of the selection of the teaching materials shall be in line with the markets, and should be the mainstream language, such as the SQL Server database management system. The instance of the database of the teaching materials should best be what the students are very familiar with. In addition, we should also pay attention to the collocation of the chapters in the textbooks and the cohesion of the contents [6].

4.2 Reasonable Arrangement of Leading Courses and Subsequent Courses

The database teaching should be arranged in the second semester of the freshmen's year or the first semester of the sophomore, and there are a few more important prerequisite courses of this curriculum. First, it is "An introduction to computers", and second, the student must master the programming language, such as the C language > At the same time, in view of the importance of the application of the database in the enterprise, we can offer some corresponding courses combined with the database in the subsequent lessons, thereby increasing the practical application of the course.

4.3 Reasonable Arrangement of Weight of Contents of Chapters

The higher vocational college students are facing the difficulties of the tight schedules, the burdensome tasks, and the higher demands and so on. So in the teaching process, we must teach clearly and thoroughly the contents that must be mastered, and reasonably arrange the weight of the knowledge, with the proper time schedule. Combined with my experience, the proportion of the database over vies, the E-R diagram, the relation database theory, the SQL language, the database development technologies and various other parts and the corresponding teaching periods are shown in the following table:

4.4 Let Students Know the Functions of the Course and the Practice

Through the application of the database in the real situations, the students can fully realize the importance of it, straighten the status of the course in their learning, and change the passive learning into the acting learning. Because the database is the course with the close integration of the theory and the practice, the traditional appraisal system

depend rarely on the scores of the practice, so that the students from their psychologies don't attach importance to the practice. Therefore, in the teaching process, we should pay attention to the organic combination of the theory and the practice [3].

5 Application and Practice of Teaching Reform of the Database Course

5.1 Effect of Teaching Reform

In the reform of the teaching, through the improvement and construction of the teaching materials, we can improve the quality of the teaching. The college computer profession requires the teaching mode with the combination of the practice and the theory with the teachers as the main body and the students in the center [8, 9]. Through the reform of the practice courses, we can improve the innovative abilities of the students. We have increased the 10% of the past practice classed to 50% of the practice courses, and divide the unit practice and the group practice and other different methods in the practice course, and the final practice reports and results should be treated as part of the assessment. The ways of the reform directly promoted the students' ability of the autonomous learning and the interests in the studies and exploration.

Through the reform of the examinations, we can cultivate and improve the students' ability of the self-study, and the traditional end-of-term closed-book exams often cannot comprehensive assess the learning results of the students, so we have divided the performances of the database principle into several aspects: the normal classroom tests account for 15%, and the tests of the unit practice account for 20%, and the curriculum design accounts for 20%, and the end-of-term closed-book exams account for 45%. Through this test method, we can more comprehensively understand the accepting effects of the students, and can see the situations of their actual applications. In the peacetime classroom tests, we can carry out the random tests, mainly with the argument and the calculation problems. This way can test the students' learning situations of this period of time, which also can have the effect of checking on the working attendance, and discover the places needing to be improved in the process of teaching the course. The unit practice is mainly the machine operation of the students, and we can rate according to the situations of the experiments and the experimental reports, to promote the students' self-study abilities [5]. The curriculum design should take the teams as the unit, and the teachers give the design topics, and the students carry out the discussion an design in groups, In the process, the students can systematically understand the knowledge systems and contents of the database principle.

5.2 Application of Teaching Practice

The learning of the database principle is mainly aimed at the practical application, and we can carry out the further penetration of the curriculum contents with the tools of the programming language and the database system. SQLServer, as a kind of database management system easy to learn, is extremely convenient in the development of the small information systems. We can choose this kind of tool for the curriculum design to

train the basic ways, skills and abilities of the students to process the data, and cultivate this system development ability of the students. Through the database management system, we can cultivate the thinking of the students to handle the data transference process. For the processing of the large amounts of the data, we need the constant practice, in order to achieve the effect of integrating the theory with the practice. For example, in the development of a system for the library information management, by the SQLServer development database system, the students can make the concepts gradually merged in the specific cases, and this application also makes the understandings of the students of the abstract concepts deep ended and they will no longer feel boring.

6 Conclusion

The teaching of the database principle is an important professional basic curriculum of the computer science. IN the process of the theoretical educations, we should focus on the practice education, which is the place that we should continuously explore and reform. How to let the students understand and learn this course to a great extent is also the most concerned problem of the teachers. Through the reform of the curriculum contents, the reform of the practice teaching, and the form of the learning methods, the students can improve their ability of the autonomous learning, combine the theory with the practice, and constantly improve the students' learning enthusiasms and their innovative abilities. We have achieved certain success in the process of therefrom, and the quality of the teaching has been greatly improved, which also prompted the teaching workers to explore more in the process of the reform, an constantly improve the quality of the teaching.

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