Software Engineering Professional Applied Talent Cultivation Mode Innovation Experimental Area Construction and Exploration

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ABSTRACT

The paper is based on the theoretical research and practical experience of the reform and innovation of the applied talents training model of the software engineering major in our college. First, it introduced the related research work of our college in the construction of an innovative experimental area for the application-oriented personnel training model for software engineering. Then, introduced some of the practices of our college in the construction of an innovative experimental area for the application-oriented personnel training model of software engineering, including the enhancement of students' software design capabilities under the guidance of the theory through the tightly coupled curriculum of knowledge and ability, and the use of case teaching to make the curriculum teaching has realized the transition to application-oriented, through the innovative practice and practical training teaching system to enhance students' software development capabilities. The preliminary teaching practice shows that our school has a series of practices in the construction of innovative pilot areas for the application of software engineering professionals, which is in line with the ability of software engineering professionals to apply talents. It is expected that the practice of our school will provide inspiration for the construction of innovative experimental areas for application-oriented personnel training of other relevant majors.¹

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INTRODUCTION

Talent cultivation model Innovation experiment area is an important factor for the integration of school resources, the reform of curriculum system, teaching content, practice education, and collaborative innovation. It is important to further explore educational and educational concept innovation and form a diversified training system conducive to the growth of innovative talents. The measures are also an important aspect of the construction of quality projects for undergraduate universities in Guangdong Province in recent years. With the continuous development of China’s software industry and the acceleration of the construction of the Guangdong, Hong Kong and Macau Bay Area, higher requirements have been placed on the ability of software professionals to serve regional economic and social and innovation-driven capabilities. To this end, the school's research and practice centered around the “Innovation Experimental Zone for Applied Talent Cultivation Models in Software Engineering” program, and the construction of application-oriented personnel training models for software engineering students and the development of students’ knowledge in the curriculum group that builds a tightly-coupled knowledge and ability. The software design capability under the guidance of the theory, the transformation of curriculum teaching to application-type through case teaching, and the improvement of students' comprehensive software development capabilities through practical training systems have made beneficial attempts, achieved good teaching results, and improved software Engineering and other computer professional personnel training quality. The following describes some of the practices of our school in the construction and exploration of innovative experimental areas for the application-oriented personnel training mode of software engineering.

RESEARCH ON INNOVATION OF APPLIED TALENT STRAINING MODE IN SOFTWARE ENGINEERING

In the research project of innovative experimental areas of applied talents training mode of software engineering, the project team conducted a systematic study on the social cognition of applied talents in software engineering and the knowledge structure and capability requirements of applied talents. Established the knowledge and ability framework for applied talents of software engineering specialty, built a comprehensive training mechanism for knowledge-to-capacity transformation of software engineering professionals, and built a knowledgeable, capable, and high-quality culture that meets “applied talents”. The talent cultivation system framework further highlights the application-oriented and practical characteristics of software professionals, highlights the role of practical teaching systems and practical training conditions in the construction of innovative experimental areas for the application-oriented personnel training model, and clarifies the application of software engineering Talents "can better adapt to the
needs of economic development and social science and technology development in the region" training objectives. It has laid a good foundation for the construction of innovative experimental areas and the training of applied talents for software engineering.

BUILDING A CURRICULUM GROUP TO IMPROVE STUDENTS' SOFTWARE DESIGN ABILITY UNDER THE GUIDANCE OF THEORY

Years of teaching practice have deeply deepened our understanding that students of this type of college that have been transformed into applications by the Ministry of Education can only achieve “basic understanding” of those courses that combine theory and practice. And "basic grasp", most of them are difficult to achieve the application-oriented transition requirements. Therefore, during the construction of the application-type talent training program, the project team analyzed the intrinsic relationship between the original professional basic courses and professional courses, the intrinsic relationship between the theoretical courses and the ability-based training courses [4, 5]. From the two perspectives of knowledge and ability to develop, a group of four professional basic knowledge (theoretical) courses and comprehensive practice and design ability (practical design) courses are closely coupled:

(1) The program design and development technology curriculum group consisting of two courses, "Program Design Fundamentals" and "Program Design Comprehensive Design and Practice", realizes the tight coupling of programming knowledge learning and programming skills training.

(2) Database-based information systems research and design curriculum group consisting of two courses, "Database Principles and Applications" and "Database Application System Comprehensive Design and Practice", which implements database technology learning and database-based information systems Tight coupling between integrated design and development capabilities.

(3) The software engineering and technology curriculum group consists of two courses, "Software Engineering" and "Software Engineering Integrated Practice". This course group realizes the tight coupling of the training of engineering software development methods and the development of the comprehensive ability of software development.

(4) Mobile software development technology curriculum group consisting of three courses: "WEB application development", "mobile application development technology" and "mobile platform comprehensive development practice". This course group is used to develop and improve students' mobile application software design ability and development capabilities.

The above-mentioned combination of professional knowledge, comprehensive practice, and comprehensive design capabilities creates a curriculum that enables the curriculum design in the talent development program to further reflect the characteristics of applied talent cultivation, and protects students’ knowledge from
the curriculum system and practical teaching system. The transformation of the ability conforms to the basic qualities and application capabilities of software engineering professionals.

**USING CASE TEACHING TO REALIZE THE TRANSITION FROM CURRICULUM TEACHING TO APPLICATION**

The basic idea of software engineering is to develop software using the concepts, principles, technologies and methods of engineering [6]. Only using engineering methods, project development issues with engineering characteristics are introduced into the curriculum teaching, and students are guided to have different development. Background projects and related design issues are analyzed, designed and integrated, and they are taught how to analyze and design them so that students can have ideas, understanding methods, analysis, and synthesis when they are engaged in the development of related software projects in the future. Therefore, in teaching, we have highlighted the process of analysis, design, and synthesis (design process summary and document writing training) through typical software design cases to train and improve students' problem solving, problem analysis, and software analysis using engineering methods. Ability. For example, in the teaching of database theory and application courses, we analyze and design the “University Teaching Information Management Database Application System” throughout the content of the course, and explain the system requirements analysis, database conceptual structure design, and database in conjunction with the case. Logical structure design, database physical structure design, database application system overall architecture and module design, design methods, design steps, and design process based on SQL Server database software and VB.NET language application design enable students to apply to database-based applications. The whole process of analysis and design of software system design has a more comprehensive understanding and understanding. On this basis, we further provided a model for the course design of the "University Teaching Information Management Database Application System" and explained it appropriately to enable students to have a preliminary understanding and study of the compilation of database application system software documents. Furthermore, we also arrange for students to select practical information management cases (for example, hotel management systems, logistics business management systems, etc.) and self-selected programming languages, and use SQL Server database software as a platform to complete the design of optional database application systems and write courses. Design report. In this way, how to analyze, design, synthesize and pass the student's own practical database application software analysis, design, and comprehensive practice, to better grasp the methods and capabilities of software analysis and design using engineering methods. In the same way, we have also adopted case teaching methods in software engineering and other courses. It has achieved a good transition from curriculum...
teaching to application and has achieved good teaching results in cultivating students' application-type capabilities.

**IMPROVING STUDENTS' SOFTWARE COMPREHENSIVE DEVELOPMENT ABILITY THROUGH INNOVATIVE PRACTICAL TEACHING SYSTEM**

Training practice base construction and school-enterprise joint education is an important measure to implement the application-oriented personnel training strategy. It is also an important part of the innovation experimental area for software engineering professionals in our school. Combining the construction of other computer-related majors in our school, our institute has signed agreements with more than a dozen companies and science and technology companies to build internships and practical training bases; in cooperation with Guangzhou Zhongxing Information Technology Service Co. "Red Hat Linux Academy" and "Oracle Academy" jointly cultivates "customized" top software technology talents. Our specific approach is that each semester will be based on the curriculum characteristics of students of different grades, and through practical training weeks, we will carry out concentrated and practical teaching of practical and design courses. In particular, for third-grade and fourth-grade students facing graduate recruitment and job hunting, technical staffs of related companies are invited to perform one-week project development training for them. For example, the engineers of Guangzhou Jingkai Network Technology Co., Ltd. performed comprehensive training on Html5 technology and software engineering practice for students of our college, and China-Soft International ETC conducted Java EE development technology training for students of our college. This practice teaching has the following characteristics:

1. Teaching content is a development example that uses a typical software platform or programming language for an application, and is targeted and practical.
2. The organization of teaching content and practical training of students are carried out according to project development norms and processes, and the application features are significant.
3. The development experience of enterprise technical personnel is rich, and the guidance of students' practice and design process is accurate, which is conducive to improving the students' comprehensive software development quality.
4. Focusing on practical and design teaching throughout the entire week can enable students to devote themselves wholeheartedly to practical teaching.

Through this combination of school-enterprise practice teaching and project development and training, students feel that their knowledge and applications have become more entrenched. This has increased the students' enthusiasm and interest in the learning of professional courses; it has given students a preliminary understanding of actual project development. The basic process has confidence in further enhancing its own application-type capabilities.
CONCLUSIONS

Talent training model the construction of an innovative experimental area is a major educational exploration project. How to improve the quality of talent training and how to improve the innovation and entrepreneurial ability and overall quality of college students are the eternal themes of higher education. In the construction of an innovative experimental zone for the application-oriented talents training mode of software engineering, the preliminary teaching practice of the theoretical knowledge training system, practical ability training system, and innovation and entrepreneurship training system constructed for software engineering shows that we are tightly coupled through knowledge and ability. The curriculum group improves the students' practice and design abilities, enhances students' analysis and application skills through case teaching, and strengthens students' ability to combine applications with intensive training through practical training weeks. It is in line with the capabilities of applied talents in software engineering. Training needs. Through further theoretical research and practical exploration, we will further improve the personnel training model and its training system, and make unremitting efforts to cultivate high-level innovative application talents adapted to local regional economic development.

REFERENCES