Construction of Practical Teaching System of “Smartphone UI Design” in Higher Vocational Colleges under the Concept of CDIO

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Abstract: With the rapid development of modern society, the integrated practical teaching system of deep cooperation between schools and enterprises is the key link of training high-skilled technical talents and the inevitable trend of industry development. In view of the teaching situation and CDIO concept, plus the requirements of smartphone UI design posts on students' professional skills, this paper explores the construction of practical teaching with the "project mode" as the main line from practical teaching connotation, practice teaching places and practical faculty construction.

1. Introduction

Nowadays, practical teaching has become an indispensable part of the teaching of software technology in higher vocational colleges. The teaching of software technology is a brand-new teaching form with its students as its main participants, teacher as the main leader and industries as the main realistic background. It has also become the most important guarantee and way for students to combine the theory with practice so as to effectively improve their technical level and professional skills. Aiming at the problems existing in the current teaching environment and teaching status, this paper makes summary and proposes solutions. There are three main problems in current professional practice teaching of software technology. First, there is a great gap between the practical teaching content and the actual needs of the current social and industry for high-skilled computer applied talents; second, the "double-position" teachers of practical teaching teachers are not strong enough. Many teachers do not have relevant experience or practical experience in enterprises, so it is difficult to accurately teach and guide students' professional skills in practical teaching; third, the overall practical teaching places is slightly weak that it is impossible for students to carry out long-term, sTable and self-sufficient practice and hands-on exercise, failing to meet the students' demand for practical teaching.

Smartphone UI design is one of the relatively new disciplines in the field of computer, which is especially vital for the development and production of mobile phone APPs. It has been gradually included in the important construction direction and a part of software technology major by various universities. With the software interface design bringing more powerful market competitiveness to enterprises, sharply increase has been in the society's focus on mobile phone UI design as well as the demand for mobile phone UI design talents. Colleges and universities, as the cradle of cultivating deficient skill-oriented and technical-oriented talent with high-caliber and high vocational skills, are far more enough in cultivating smart phone UI design talents. As a matter of fact, the discipline of smart phone UI design is still on the way of exploration, making it of great significance in practical teaching. Besides learning theoretical knowledge, how to maximize the cultivation of students into mobile phone UI designers who are welcomed by enterprises is a challenge in the construction of software technology major. Nowadays, the on-campus training mode in ordinary colleges and universities can no longer meet the ever-growing social needs. Therefore, combining CDIO's advanced engineering teaching concept, promoting school-enterprise in-depth cooperation, establishing a sustainable and win-win platform between schools and enterprises, focusing on the practice of enterprise project mode, and developing practical teaching system are the paths that colleges and universities should take.

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2. Construction of Practical Teaching of “Smartphone UI Design“ in Higher Vocational Colleges under the Concept of CDIO

The first step to conduct research and discussion on the practical teaching system under the concept of CDIO is to understand what CDIO is. The main idea of CDIO is to enable students to better complete the initial conception, design, concrete implementation and operation process of enterprise projects. This system is used to combine the practical teaching of the information department with the practical teaching of mobile phone IU design to achieve "learning by doing, doing by learning" and the "project-based education and learning". Relying on on-campus and off-campus training bases, the enterprises' high-caliber HR management, real resources and projects, will make students achieve rapid improvement in technical level and professionalism. Relying on the teaching objectives and practical content of school-enterprise integration, as the practical learning projects come from real enterprise projects, will allow students to participate in the forefront production, providing a more accurate understanding of the operation mode and the skill needs of enterprise mobile phone UI design. Furthermore, it will make students pay more attention to improve their skills, innovative ideas and professional practice in the complete process, such as the concept of project, realistic design, production process, operation process, which also fully realizes “learning from working , working for learning."

3. Practical teaching content design

The practical teaching content design should have been provided by the mobile phone UI engineer who cooperates with the school, yet, since it is a developing project, it cannot be directly applied to teaching. Thus, considering the difficulty of knowledge, in the direction of step-by-step progress, we can design a finished product which has been completed and put into the market step by step into a teaching project. Then, the smartphone UI engineer who cooperates with schools completes the work together with the school to formulation and rationalization of the teaching content, which can be divided into three categories, namely "Basic Skills Project", "Skills Improvement Project" and "Comprehensive Capability Project". "Basic Skills Project" is to focus on integrating the skills that students have learned at the current stage into the project, so that students can pay attention to the norm of mobile phone UI design while mastering the basic skills. Moreover, in the process of practice, it can also cultivate students' good working habits and how to better teamwork when working in enterprises. "Skills Improvement Project" is to focus on cultivating students to have a good command of the mainstream mobile phone UI design templates and design ideas, so that they can complete the whole project independently according to the requirements of enterprises after entering into the society. "Comprehensive Competence Project" is to focus on cultivating students to grasp the operation skills of their positions, feel their responsibilities in various positions, and better understand the importance of teamwork. Combining the above three stages, students will understand as much as possible the design ideas and overall perfect development and production process of mobile phone UI in enterprises, so that students can improve their comprehensive quality and technical level in practice. What's more, students can better adapt to the employing standards of modern enterprises, and more accurately meet the needs of modern enterprise planning.

We should teach the students while they are doing the project so that they can make better practice, and achieve the teaching philosophy that is more in line with CDIO. Combine the simulation production on-campus training base with off-campus training base to achieve the purpose of practice. In addition, a variety of activities can be set up, such as asking students to design the same project in different groups, and then evaluate the project together, so that students will make better use of the school time for production and discussion. Only by allowing students to experience it personally can they better stimulate their enthusiasm for learning and the ability of appreciation. To better complete the evaluation and appreciation of works, teachers can set up projects for students such as "design inspiration discussion", "field investigation" and "role playing". Teachers can also guide students in these projects. For example, in "design inspiration discussion", teachers can ask students to think

about what design enterprises need, then tell them that what enterprises need is a design that reflects corporate culture with a wider number of audience. Under such premise, it is natural to conduct field trips and role-playing in order to understand design ideas and the design for a wider number of audiences. Such a variety of teaching methods allow students to participate in the project practice with more enthusiasm, find answers to the questions they've raised in practical projects, and more independently grasp the focus of the learning process so as to become the active knowledge builder. At the same time, teachers are transformed into the organizers and coordinators in the process of student learning, instead of forcibly implanting knowledge to students. The active knowledge builder will make students further understand their skills as well as increase their proficiency. On this basis, students will be more familiar with the complete operation process of enterprise projects, greatly reducing their unfamiliarity with enterprise projects, and improve their innovation spirit and broader mobile phone UI design concept by communicating with classmates, teachers and colleagues in work and study.

4. A Good Practice Teaching Place is the Basis for Skilled Talents Training

With the vigorous support to higher vocational education in China in recent years, the training and shaping of skilled talents has made considerable progress, and students have participated in enterprise projects in a better way. Under the simulated practice teaching system, the planning, quality and professional skills of higher vocational education have been greatly developed, which plays an increasingly important role in the employment of enterprises across the country. The great achievements made in these years should be attributed to the growth and improvement of practical teaching. However, there are still some regions and colleges in our country, due to the surrounding or its own factor (for example, insufficient government support and insufficient funds), are short of hardware for practical teaching equipment and environment, such as practical places and practical equipment. Such shortage directly leads to the low efficiency of practical teaching, poor teaching results, and even extremely negative effects because of improper operation. Nowadays, with the gradual popularization of smartphone UI design, the conditions and facilities for practical teaching have also improved a lot, and some conditions even have been fundamentally changed. As a result, the environment of practical teaching has made fundamental progress. The construction of campus simulation training room and the establishment of enterprise project practice education have made the most fundamental improvement to the practical teaching of mobile phone UI design. Moreover, many colleges and universities have established a multi-practice teaching platform, which divides the teaching method into several sections. The learning environment for practical internships has made great progress. And a strong backing for school-enterprise cooperation is to implement practical teaching in an all-round way and provide excellent technical talents for the country. The off-campus training base should be more focused on enterprise projects, so that students can better participate in, and strive to solve practical problems, providing students with a more detailed understanding of enterprise culture, enterprise value and enterprise operation process. In terms of specific operation, the task should be docked in real time, so that students can better participate in the enterprise project, and carry out effective practical training for the curriculum, including course design and graduation design of mobile phone UI, focusing on the cultivation of students' excellent professional qualities of independent innovation and independent research. We should take project as the basis of off-campus practical teaching, so as to cultivate students' ability to understand and improve their professional positions. We should also take professional qualification standards and real projects as a bridge to communicate with each other, so that students can optimize the product-oriented project practical teaching content system in a real working environment, and fully integrate project-based teaching. As many people jointly develop and create in the off-campus training base, students can benefit a lot such as practical work experience, teamwork spirit and group communication skills.

5. The Construction of High-caliber Teaching Team Guarantees Skilled Talents Cultivation

The quality of the teaching team determines whether the goal of talent training can be achieved or not. Excellent teachers have the abilities to integrate what they have learned in enterprise projects into the teaching content in a more complete and systematic way. And design a key link in practical teaching more scientifically and perfectly after combining the problems encountered in the enterprise project with what they have learned. In practice teaching, the development, design and operation of projects should be more rely on the "double-position" teaching team, so that students can better understand the production process of each project in the enterprise. Since the real enterprise development projects mentioned above cannot be directly used as the material of practical teaching, it is necessary to refine, systematize and perfect the project process. Therefore, we need the "double-position" teaching team to translate the accumulated experience and thinking into the teaching content of practical teaching in the practical work of the enterprise. It is essential and indispensable for teachers to carry out enterprise practice training and integrate the problems and solutions they encounter in the project into the teaching content. As a result, it is an urgent and important issue to cultivate excellent "double-position" teachers. We should recruit a large number of professionals who have worked in enterprises or institutions for more than two years, give them professional teacher qualification counseling, and provide them with policy support to a certain extent. We can also give counseling after temporarily adopting the pseudo "double-position" teacher mode, i.e., one employee and one teacher.

6. Summary

Maintaining a good, stable, mutually beneficial and sustainable development route of the in-depth school-enterprise cooperation is an indispensable factor in the practice of CDIO teaching concept. Today, with vigorous development of skilled vocational education in China, we should rely on CDIO's mature and innovative teaching concept, focus on the development of school-enterprise cooperation and excellent "double-position" teaching team, so that students can better adapt to society and enterprises. It is our duty to provide all-round talents with high professional quality and cooperation quality for our country and our enterprises. Only when the teaching level of colleges and universities is raised to a new level, can the enrollment of students in schools be revitalized.

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