

# Research and Practice on Project-Driven Teaching Reform for Software Major Group in Higher Vocational Education

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## Abstract

The construction of software major group aims to meet the new needs of social development and enterprise innovation for software skilled talents and high-quality software engineer. It adheres to the school running policy of taking service as the purpose, employment as the guidance and ability as the standard. Facing the talent requirements for industry and enterprise, this major group restructures the curriculum system, updates the teaching content, reforms the teaching methods. It applies the Internet, big data, and other technology such as cloud computing and artificial intelligence technology to build an intelligent learning platform. By the project-driven teaching reform, the path of software major group application-oriented talents project method is explored.

## Keywords

Project-driven teaching; 1+X certification; Software major group Reform of Teachers; Textbooks and Teaching Method; Small Private Online Course.

## 1. Introduction

With the expansion of the scale of software major group, the student group has a trend of diversification, and the differences of students' learning interest, learning ability and learning demand are becoming increasingly prominent. Today, with the popularization of higher vocational education, the construction of software major group must face the needs of enterprises, take students as the starting point, explore the reform and innovation of personalized training mode of application-oriented talents, and realize the talent training goal of multiple talents, outstanding talents and brilliant talents.

Through the project-based teaching reform, the professional theoretical knowledge and professional practical skills are organically combined, so as to cultivate students' practical skills and the ability to analyze and solve problems, and to cultivate students' innovation ability in the process of completing the project. Through the project-based teaching reform, we should form an innovative teaching team with attaching importance to teachers' ethics, good at teaching, strengthening scientific research and service, so as to enhance the team members' motivation, stimulate their vitality, form pressure and cultivate their sustainability.

## 2. Exists Problem for Software Major Group

At present, the urgent problems in the construction of software major group include the outdated talent cultivation goals, outdated teaching content and outdated teaching method.

### 2.1. Outdated Talent Cultivation Goals

In order to ensure the synchronous relationship between the training objectives and the individual development of students, and to construct the knowledge ability system based on

market demand, it is necessary to construct a student-centered project-based teaching talent training mode.

## 2.2. Outdated Teaching Content

The problem of individualized cultivation of engineering practice ability and professional quality. It is necessary to construct a progressive and hierarchical classification system of school enterprise collaborative personalized engineering practice, which is oriented by the training needs of post adaptability, knowledge should be applicable, useful and useful as the standard, and project-based.

## 2.3. Outdated Teaching Method

The adaptability of individualized training and traditional teaching methods. Based on the learning-oriented this paper constructs a hybrid personalized teaching mode and method of learning platform + SPOC + flipped classroom, which changes knowledge learning from the method of teachers peaking and students listening to the method of student self learning and teacher evaluating [4].

The adaptability of personalized training and traditional teaching management evaluation mechanism. In order to solve the problem of adaptability between personalized training and traditional teaching management evaluation mechanism, a student-centered visual big and small closed-loop education and teaching management and evaluation mechanism is constructed based on the intelligent learning platform and guided by smart teaching and management.

Management and environmental support in the process of personalized training. Build a smart learning platform guided by autonomous learning and purchase (or cooperate with research and development) to meet the needs of personalized training.

## 3. Construction Ideas

The guiding ideology is to thoroughly study and implement Xi Jinping's new socialist ideology with China's characteristics and the nineteen spirit of the party, fully implement the spirit of the national education conference, take the promotion of teacher's ethics as the precursor, take the improvement of the core competence of teachers as the foundation, take the project teaching reform as the core, and take the talent training mode and the teaching mode innovation as the breakthrough point, and further promote the Reform of Teachers, Textbooks and Teaching Method [1-2]. The reform, with the guarantee of system and mechanism innovation, implements dynamic and multiple evaluation mechanism, and builds a teaching, research and teaching reform team of software professional group with noble morality, refined skills, full-time and part-time, full of vitality.

The Project-driven education and teaching of each teacher in the teaching team cultivates human resources, sharpens classroom teaching, enhances the design, organization and control of the teaching classroom, purifies the technical depth and breadth of the team teachers, helps the reform of SPOC teaching mode of different courses, and accumulates strength for teachers to participate in the teaching competition in the province Teaching mode innovation, team members concentrate, explore new technical methods. Classroom teaching reform affects the development of teaching ability of all teachers. Team building takes the development of each teacher as the focus, introduces and trains leading talents, trains team members, and wins the titles of excellent teacher and famous teacher of the school.

(3) Relying on two centers and one team, the two centers are Nanjing Engineering Center maritime big data teaching and research center and school level collaborative innovation center. The first team is the excellent scientific and technological innovation team of Jiangsu Province, leading the teachers team and excellent students to carry out research on the key technology of

big data and its application in smart shipping, smart campus and manufacturing industries, and serve the research results At the same time with the society, it will feed back the reform of professional personnel training mode and the research and development of teaching cases, which will benefit all the students of information major and produce the landmark achievements of talent cultivation; the scientific research service ability of all members of the team will drive the achievements of software research and development of students, and build an ecological chain of entrepreneurship cultivation for college students from entrepreneurship education to entrepreneurship practice training to entrepreneurship incubation To improve the ability of entrepreneurship and innovation of vocational students, the expected goal and feasible path are given.

## 4. Implementation Path

### 4.1. Integrating Project-Driven Teaching And Curriculum System

Integrating the project teaching reform, this major group reconstructs the curriculum system of software major talents engineering practice ability with school enterprise cooperation, and implementing the 1 + X certificate system.

According to the different needs of different positions and students in the software talent market for engineering ability practice, this paper constructs a four in one engineering practice training system of technology, project, enterprise and innovation and entrepreneurship with hierarchical and classified training as the main line. Through the practice two-way access, school enterprise two-way choice, students can choose the engineering ability practical ability training approach suitable for their future work according to their own development plan, which effectively solves the problem of personalized engineering ability training matching the engineering ability of application-oriented talents and different professional abilities of the industry.

Improve the organization and management structure of software professional group 1 + X certificate system, standardize the work process and work standards, establish a cooperative mechanism with relevant industry associations, and build a sound 1 + X certificate operation mechanism and quality assurance mechanism. Encourage students to actively take the software vocational skills certificate, broaden the field of employment and expand entrepreneurial ability.

### 4.2. SPOC Teaching Method based on Skill Competition Task

According to the cognitive needs of different students, the hybrid personalized teaching mode is adopted, and the skills competition projects are integrated. The traditional teaching and flipped teaching are combined, and the dynamic combination of teaching content with student-centered can make students learn according to their own needs and rhythm, realize the combination of overall guidance and individual guidance, and turn to the learning-oriented teaching mode change.

Because different courses contain different knowledge ability modules, different knowledge ability modules correspond to different teaching modes. All relevant professional platform courses, professional courses and professional direction courses of software professional group are analyzed and disassembled into different knowledge ability modules, and corresponding teaching mode is adopted according to the classification situation. Since most courses involve multiple knowledge ability modules, most courses Cheng adopts the mixed learning mode. Four kinds of teaching modes are constructed, namely, completely autonomous learning mode, autonomous learning + teaching mode, autonomous learning + teaching mode + project mode and complete project teaching mode.

### 4.3. Craftsman Workshop

This major group introduces real projects to build a craftsman workshop under the modern apprenticeship mode. Through the introduction of enterprise technical backbone, project-based curriculum resources construction, real business project introduction, school enterprise scientific research cooperation and other ways, the company engineers, teachers and students form a craftsman station team to jointly complete enterprise technical service innovation, participate in foreign industry horizontal project research and development, accumulate project experience, and improve teachers' professional skills Scientific research ability and social service ability, improve students' professional skills.

It adopts the mode of school enterprise cooperation and collaborative training, adheres to the educational concept of internal training and external introduction, and maximizes the advantages of Higher Vocational Colleges and excellent first-line enterprises. The school and enterprise both establish workshop base mode and introduce technical backbone from enterprises as part-time teachers to undertake professional practical training courses, At the same time, the in-service teachers in higher vocational colleges should be trained to realize the continuous development of their professional skills and promote the development of teacher training mode.

### 4.4. Double-qualified Teaching Team

This major group introduces technical engineers of enterprises to carry out double qualification training, and let teachers participate in real projects. It adopts the mode of school enterprise cooperation and collaborative training, adheres to the educational concept of internal training and external introduction, and maximizes the advantages of Higher Vocational Colleges and excellent first-line enterprises. The school and enterprise both establish workshop base mode and introduce technical backbone from enterprises as part-time teachers to undertake professional practical training courses, At the same time, we should carry out double qualification training for key teachers to realize the continuous development of professional skills of double qualified teachers and promote the development of teacher training mode.

### 4.5. Project-driven Teaching Resources

It collects software industry experts, professional teachers in higher vocational education field and senior enterprise engineers to jointly develop standardized project-based curriculum resources, including video, electronic courseware, training manual, presentation, exercise test paper, software toolkit and other complete teaching resources. The resources are complete, involving professional technology and good application effect, which can help to improve students' interest in learning Improve the teaching effect. Curriculum resources are designed and developed according to the way of gradual growth of ability. The design and construction of resource database platform is planned by the secondary college as a whole. The construction and continuous updating of curriculum resources and the compilation of teaching materials are the responsibility of teachers.

### 4.6. Teaching Big Data

Using education big data to carry out research on the innovation and development of education informatization of software major group, comprehensively promote the development of education towards personalized, scientific and intelligent, and help education modernization.

By using big data technology, the post analysis and recommendation method is constructed. Through the system, the skills required by the post can be obtained in real time, the talent training scheme can be adjusted scientifically and reasonably, and the teaching content can be updated in time, so that the talent training can meet the rapid development of information technology.

By using big data technology, it constructs the analysis and mining method of students' behavior, analyzes students' learning and consumption behavior, provides the basis for objective and comprehensive evaluation of students, and improves the quality of school education and teaching.

## 5. Conclusion

Project-driven teaching reform is an important starting point of the comprehensive reform of students' training, and is the core to realize the transformation of students' knowledge system to ability system. The project-based teaching reform is the *nervous system* of professional skills training. 1 + X certificate is the *trunk* of modern vocational education system framework, and the Reform of Teachers, Textbooks and Teaching Method is the *muscles and bones* of delicacy and strength. The combination of the three will stimulate the infinite potential of Vocational Education Innovation and generate new energy.

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