

## Research and Discussion on Bilingual Teaching of software project management

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**Abstract.** According to the characteristics of software project management course, combined with the specific situation of students, analyzes the existing problems of the teaching mode, the main purpose of software project management course of bilingual teaching, and then from the bilingual textbooks, class distribution and teaching methods so as to improve the quality of bilingual teaching research of software project management course, and finally put forward thinking about the teaching practice of software project management course.

### Introduction

With the globalization of the world economy and the arrival of the knowledge economy, educations have become an important factor in economic growth. With the China Belt and Road Initiative economic development strategy, China further economic integration with the international community, people paid more attention to the internationalization of education is significantly improved, to further enhance the bilingual teaching is more urgent. To promote the development of bilingual teaching is the inevitable choice of China higher education in the new period, and after education entered a new stage of development, cultivate talents has become an important task for China higher education in the new period, to promote the bilingual teaching to become major issues of national education strategy[1][2].

The course of software project management is an important specialized course and core course of software engineering, computer science and technology specialty. It will be the theory of computer science and modern project management methodology combining focuses on software process model and design method of project management, development tools and technology, is to guide the software production and management of a new and comprehensive application of science [3].

With the development of software industry, the increasing communication with the international software industry, and the development of our software outsourcing industry, we must have a certain international vision.

### The Necessity of Bilingual Teaching in Software Project Management Course

Software project management is a rapidly developing and practical discipline, at the same time, it is also an introduction discipline, most of the latest ideas and achievements in this field are from Europe and other developed countries, many academic papers and new knowledge new technology document only English version. In view of the current college students' English reading ability is generally not high, the status quo is no English literature reading habits, cultivate students' professional knowledge began to read professional English papers is an effective method.

In order to adapt to the development of the software industry and to cultivate software talents with international business, many colleges and universities have set up bilingual teaching in the course of software project management. Effective bilingual teaching can greatly improve students' professional ability and narrow the gap with the international advanced level in professional teaching. At the same time, bilingual teaching can build a good learning platform for students, through bilingual teaching can not only enable students to master the latest software development theory and technology, but also

can cultivate students' foreign language application ability and strong professional software engineering ability.

The bilingual teaching can cultivate students with ability that adapted to international environment. It can train high level complex software project management personnel, and also can help to improve students' teamwork and innovation ability.

The most mainstream software development project management tools at home and abroad are mostly English version, such as IBM Rational series CASE tools, automated testing tools such as WinRunner and so on[4]. Through the bilingual teaching, the students can better grasp the English software.

Bilingual teaching refers to the process in which teachers make use of two kinds of language (such as Chinese and English) to complete the teaching process [5]. Bilingual teaching can cultivate students' reading habits English papers, in the learning of professional knowledge, but also enhance the professional English literature reading ability, and it can enhance students' ability to obtain the latest professional knowledge. In order to use the new project management theory and software development technology for the teaching, improve the accuracy and timeliness of the students understanding of professional knowledge, so that students can have the ability to read the latest documents and documents, the implementation of bilingual teaching in the teaching of software project management is very necessary [6].

## **The Content and Method of Bilingual Teaching in Software Project Management Course**

**Purpose and Requirement.** The software project management course contains all kinds of principles and practices of software development project management, including two aspects of technology and management. It is the discipline of project management formed by the close integration of technology and management.

In this course, the basic concepts, principles, methods and applications of software project management are mainly explained. The classroom teaching will be mainly method, and the necessary computer experiments will be carried out in combination with answering questions and correcting homework. The English class teaching materials, bilingual teaching, classroom teaching with multimedia courseware, focuses on object-oriented software development technology, combining with the characteristics of bilingual teaching, strengthen students' reading ability to software project management in the foreign literature. Through the teaching of this course, students can achieve the following teaching objectives and requirements:

(1) Improve students' understanding of software project management. Software quality assurance is the result of standardized management throughout the entire process of software development.

(2) To improve the ability of students to read foreign language documents and to understand the latest developments of software project management and methodology at home and abroad.

(3) Master the software project cost estimation of software project cost management, project management, software configuration management, software project management, software project plan of software project risk management, software project resource allocation method, software project monitoring and control, software project contract management, software project management and software project team construction personnel etc..

**Teaching method from Point to Line.** In the course of bilingual teaching of software project management, we adopt a step-by-step approach from point to line, using English original teaching materials and English electronic courseware.

First explain the various points of the software project management content, such as starting from the bidding management, feasibility analysis, software requirement management, schedule management, quality management, cost management, configuration management, risk management, human resources management until the project closing stage management. The content of each chapter is as a point, but the content between each other is not isolated, is coherent. Through the

introduction of content and the case based teaching, students will achieve mastery through a comprehensive study of the subject.

In the teaching stage, classroom teaching in Chinese mainly supplemented by English, slow down the progress of the main teaching in order to familiarize students with professional vocabulary, in order to help students overcome the difficulties in early bilingual learning. In the course of teaching, the proportion of Chinese and English teaching increases gradually. Gradually increase the proportion of English teaching, students gradually adapt, with the progress of the course to increase the proportion of English classroom teaching, as shown in figure 1.

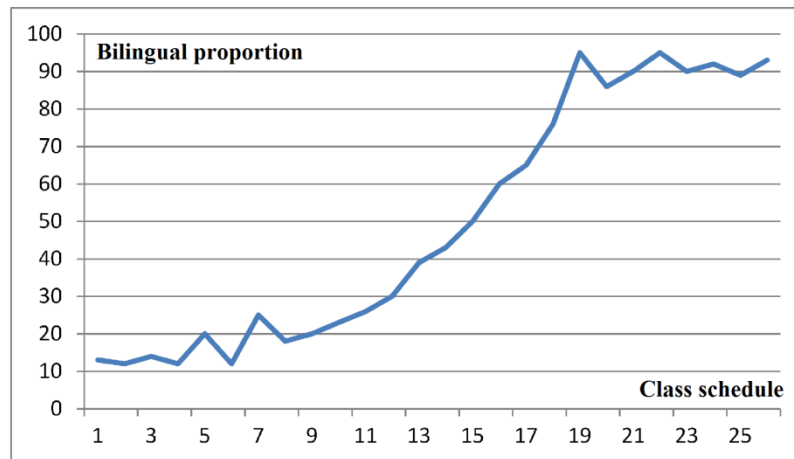


Figure 1. Bilingual rate with class schedule

In the different stages of teaching, timely summary of professional vocabulary, increase students' memory, and cultivate students' ability to read materials independently. In the beginning, the English vocabulary was emphasized. When the students remember the English vocabulary, we use both Chinese and English to teaching the emphasis points and difficulties, while the rest were taught in English. When students adapt to English teaching, the proportion of English is improved. In the middle of the course, the proportion of English and Chinese has reached 50%. Let students gradually accumulate specialized vocabulary and understand professional knowledge, encourage students to answer questions in English and finish their homework in English.

In the later stage of teaching, the students gradually overcome the bilingual teaching of shyness, familiar with the basic vocabulary and professional technical English grammar and sentence narrative habits, English listening and reading ability has been significantly strengthened, can gradually increase the proportion of English teaching content. The students answered questions in English. The proportion of English taught at this stage accounted for 85% to 90%. According to the content of the teaching, the proportion of English teaching has fluctuated. From the survey results of students, most students say they can accept and learn useful knowledge. From the point to the line step by step teaching method can effectively cultivate students' professional English level, the students gradually learn important knowledge of software project management, and achieved good teaching effect.

**Teaching Method.** The teaching method is the key of the whole teaching process, and the teaching method is directly related to the teaching goal and the teaching task whether it can be completed or not, [7]. There are different teaching methods in the teaching process of the curriculum. The teaching methods that we used in the bilingual teaching and the teaching practice process of software project management course is divided into two parts: the first is to explain the basic theory and method of software project management, and then the case teaching theory and practice. The theory part is carried out according to the teaching plan, and the practice part sums up the following several methods:

(1) Simulate the actual development of project and divide the students into several project groups. In the course of the course, students are divided into several project groups according to the organization of software development, and each project team is composed of 5~10 members. Each

group selected 1 people as the project leader, and the project leader is responsible for the coordination and learning activities of the project team members, and is responsible for submitting documents at all stages. We provide different reference topics for each project team, to work the way throughout the software project management process, to let the students to the project team as a unit consisting of a development team, the students through the completion of a specific task of software development, to learn various stages knowledge of software project management course, such as the analysis, design, encoding and test.

(2) adopt the method of actual case teaching. Software project management is a highly practical course, and students do not have practical experience, so the content of software project management is only understood from books, too abstract, and boring. And case teaching can help students integrate theory with practice. It is an effective teaching method to help students understand the idea of software project management, master the method of software project management, and practice the practice of software project management. In the actual teaching, we select a complete case throughout the entire teaching process, from demand management to acceptance management. The selected cases are easy to understand and cover the main knowledge points and have consistency in the software project management curriculum system.

### **Practice Teaching**

The practice teaching of software project management is an essential part of the teaching process, with the emphasis on training students' practical ability. Through the analysis of project development and test case, make students understand and verify consolidate classroom teaching, enhance the perceptual knowledge of the software project management, software analysis, grasp the basic design method, cultivating students' ability to combine theory and practice. The practice course is different from the teaching of theoretical courses. It is based on student operation and simulates the project development process of the entity software development company completely. The role of the teacher is equivalent to the technical supervisor and the general manager of the project.

In the practice teaching of software project management, object-oriented software project management is the main content, and an application system based on embedded software is taken as the project case. Simulate the entire process of analysis, design, coding, and testing.

For example, the writing of requirements specifications, mainly the various methods of obtaining requirements, and the final results are the specifications of requirements. As the content is updated, the requirements specification version is updated. Finally, it is reviewed and incorporated into the baseline management.

In the course of teaching practice, the requirements of students are in full accordance with the company's project development model, morning meeting and day summarize mail reporting. The team leader of each team summarizes the work done by the members and the existing problems and reports to the project leader at the up level. The project leader will be responsible for resolving the issues raised by mail and making adjustments and arrangements for the new day's work plan.

In practice teaching, the use of various tools for software development, coding and so on are not taken as the key points. Try to choose the simple content first, the main understanding of project management theory and methods. Focus on writing software development documents. The main contents are as follows:

- (1) Software requirements specification, requirements change management, requirements versioning and tracking;
- (2) Techniques and methods for schedule planning, schedule planning and schedule control;
- (3) Software quality planning, software quality planning, understanding of software quality assurance, software quality assurance activities;
- (4) Software development cost estimation, software maintenance cost estimation, software cost budget, and software cost control, cost control process, measures and methods;

(5) Configuration management, configuration management plan, main activities of configuration management, configuration management tools and selection criteria;

(6) risk and risk management, risk management planning, risk identification, risk analysis and assessment, risk response and control, risk response strategy, risk monitoring, risk monitoring process, risk monitoring technology;

(7) Organization and division of labor of software project personnel, human resource plan, team construction, software resource management, etc..

At present, the software project management curriculum more emphasis on bilingual teaching theory course, bilingual practice teaching is easy to ignored, think bilingual teaching only for theoretical teaching, this is a misunderstanding. At present, many mainstream software project management tools are foreign software, most of which are English interfaces. There are also English versions of requirements manuals, design documents, and so on. In teaching practice, especially in the software project management this practical course, bilingual teaching, can help students better understand the foreign software, to improve students' ability to master the foreign language through new technology and knowledge, to master the latest technology and method of international project management.

## Summary

Software project management course is an important professional course in computer science and technology specialty, the bilingual teaching to the teaching process of software project management, is to allow students to foreign language as a tool to enhance professional learning, understanding of software project management at home and abroad the latest progress and technology, cultivate the students more practice ability. This paper analyzes and improves the bilingual teaching quality in the course of software project management from several aspects, such as bilingual teaching materials, class allocation, teaching methods and practice teaching.

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