

Scenario-based Teaching Design for "Software Project Risk Management"

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Abstract

In order to address the shortcomings in the traditional teaching activities of "Software Project Management" course, we adopt the "Case-Question-Seminar" mode to improve the learning effect of students by taking the content of "Software Project Risk Management" as an example. During the teaching activities, first of all, students' attention and interest are attracted by introducing the cases that matches the teaching content. Then the students are asked to think through a series of questions. Finally, the students' ability to apply their knowledge is enhanced through group discussion activities. According to the feedback from the teaching practice, the introduced scenario-based teaching mode can prompt students to be skilled in learning and applying knowledge.

Keywords

Scenario-based, Software project, Risk management.

1. Introduction

"Software Project Management" is an important professional course for software engineering majors, the above course objective is to let students master the whole process of software project management from the project plan, project execution control to the end of the project, combining theory and practice, so as to cultivate and improve the students' ability of software development, teamwork and management of software projects, and make the students have the ability of solving the complex engineering problems step by step. In this way, students can gradually have the ability to solve complex engineering problems and provide practical and innovative talents to enterprises. However, the traditional teaching method of "Software Project Management" course has the following problems:

Firstly, Students themselves have some misunderstandings that learning good programming courses in the future will directly contribute to the employment of written tests and interviews, and software engineering courses to learn good or bad for the future employment of written tests and interviews do not have much impact.

Secondly, the value of software engineering courses is to improve the success rate and quality of software development projects, especially the implementation of large or medium-sized software projects. Since the majority of students generally have no experience in the implementation of software development projects when they study the above courses, they are unable to realise the application value of software engineering courses [1,2,3].

Lastly, the content of software engineering courses and the current teaching methods pay more attention to teaching theoretical knowledge, and don't pay much attention to the close relationship between these courses and their comprehensive application in software development projects [4,5], which makes students unable to realise the value of comprehensive application of knowledge in this kind of courses through the whole implementation process of software development projects, and fails to arouse interest in active learning.

For the purpose of cultivating and improving the ability of independent study, active thinking and applying knowledge, a scenario-based teaching mode has been introduced, and this paper introduces the teaching design of "Software Project Management" course by taking the section of "Software Project Risk Management" as an example.

2. Teaching Goals

The teaching goals include the following six aspects:

- (1) To understand the concepts of project risk management: software project risk, impact of software project risk, and software project risk management.
- (2) To understand the project risk management process.
- (3) To master project risk identification methods.
- (4) To master the investigation methods of the latest technology development status in the field relevant to this course.

3. Teaching Strategies

Software project risk management theory includes the following aspects: project risk management concepts, project risk management process and project risk identification. According to the traditional teaching strategy, the theoretical content is firstly introduced, and then the points of knowledge that are difficult to understand are explained. The above teaching method is dull and boring, and thus, it is difficult to attract students' interest in learning, and not favorable to the mastery of the knowledge.

In our lesson, we take the method of "Introducing Project Risk Management Failure Case, and Creating Discussion Topics" to create a relaxing and pleasant teaching atmosphere, so that students can learn by combining theory and practice, and the above method can motivate students to learn this lesson.

When explaining the new concepts in this section as well as the significance of learning, we utilize the case of project risk management failure and ask some questions so that students can understand these new concepts as well as the significance of the learning of the knowledge points in this section based on project scenarios. In this way, the significance of the project manager's responsibility and continuous improvement of his professionalism can be understood.

When teaching the project risk management process, on the basis of a project risk example, we introduce the four phases of tasks involved in the risk management process, so that students have a very specific and deep understanding of this aspect of knowledge.

When explaining project risk identification, we first introduce the content of risk identification, including risk classification, risk identification methods and risk identification results. Then, by discussing the problems in the case of project risk identification in groups, students can use their knowledge actively. The above teaching strategy not only gives play to the initiative of students in the teaching process, but also facilitates the sublimation of students from the absorption of knowledge to application.

Finally, we set up a knowledge expansion section for students to investigate some risk identification techniques or methods employed by IT companies, so that they can improve their abilities to investigate and collect information outside the classroom, which will be conducive to more in-depth research in the future.

4. Teaching Procedure Design

Step 1:

- Goal: To understand the concept of software project risk management
- Teacher Activities:
 - ✓ Showing a case of project risk management failure;
 - ✓ Asking students to answer the case questions;
 - ✓ Introducing the new concepts in this section and the learning effects based on the students' answers;
 - ✓ Illustrating the significance of project managers' responsibilities and continuous improvement of their professionalism based on the case.
- Student activities:
 - ✓ Listening to the case description;
 - ✓ Thinking or discussing about the raised questions;
 - ✓ Answering questions;
 - ✓ Inspiring understanding of new concepts and the significance of study based on the case.

Step 2:

- Goal: To understand the process of software project risk management;
- Teacher Activities:
 - ✓ Introducing the four phases of the project risk management process;
 - ✓ Illustrating the four phases of the process with examples.
- Student Activity:
 - ✓ Listening to the explanation of teacher.

Step 3:

- Goal: To master software project risk identification methods.
- Teacher Activities:
 - ✓ Introducing the classification of project risks;
 - ✓ Describing the methods of risk identification;
 - ✓ Presenting the results of risk identification.
- Student Activity:
 - ✓ Listening to the knowledge of project risk identification.

Step 4:

- Goal: Application of software project risk identification methods.
- Teacher Activities:
 - ✓ Showing examples of project risk identification and raising questions;
 - ✓ Listening to the results of the student discussion;
 - ✓ Summarizing the case discussion.
- Student Activities:
 - ✓ Discussion on the case and questions in small groups;
 - ✓ Each group representative answers the case questions.

Step 5:

- Goal: To enable students to master technical investigation
- Teacher Activity:
 - ✓ Investigate the risk identification techniques or methods employed by mainstream IT companies.
- Student Activity:
 - ✓ Students record, complete and submit the assignment.

5. Conclusion

This paper firstly proposes a scenario-based teaching model based on the major problems that exist in the traditional teaching activities of "Software Project Management" course. Then, we introduce the teaching goals, teaching strategies and teaching procedure design of the above course by taking the teaching content of "Software Project Risk Management" as an example. Based on the results of teaching practice, this teaching mode can effectively improve students' learning interest and enhance their abilities to absorb and apply knowledge.

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