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Research on Practical Teaching Reform of Software Engineering Specialty

Jiangping Liu, Gaojing, Junjie Chen, Dongshi Zuo

College of Computer and Information Engineering of the Inner Mongolia Agricultural University, Hohhot, Inner Mongolia Autonomous Region, 010018, China

ABSTRACT. *With the continuous expansion of the field of computer application and the continuous development of China's economic construction. Software engineering major has become a new hot major to promote economic development. Based on the new engineering background and the concept of comprehensive engineering education. However, the traditional practical teaching has no ability to meet the needs of students' comprehensive practical ability. This paper analyzes the characteristics of software engineering specialty and the problems existing in traditional teaching methods, and puts forward some new practical teaching reform measures, which will provide some teaching ideas for software engineering teachers.*

KEYWORDS: *Software engineering, New engineering, Comprehensive engineering education, Practical teaching*

1. Introduction

The concept of “engineering education” has become a threat to the quality of engineering education because of its lack of influence, lack of research strength and too single educational model, so the theory of “comprehensive engineering education” has been constantly put forward in the educational circles at home and abroad. With the advance of the research, the influence of comprehensive engineering education on the reform of contemporary education is becoming more and more obvious. From the macro background of global educational reform, comprehensive engineering education, which emphasizes the whole process, inclusiveness and the whole people, is being valued as a new educational philosophy needed by the times. In order to actively respond to the new round of scientific and technological revolution and industrial change, China has put forward the concept of “new engineering” under the background of new economy and new starting point. With the rapid development and wide application of Internet technology, the trend of integration of “Internet +” and traditional industries is increasing day by day. The social demand for software talents is increasing, and the requirements are getting higher and higher, which forces the training of software engineering professionals in schools to pay attention to the training of students' practical ability

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and innovative ability in order to enable students to adapt to the requirements of the society for talents. [1] However, at present, there are still many problems in the practical teaching of software engineering majors in many colleges and universities, which need to be reformed.

2. Problems Existing in Practical Teaching of Software Engineering Specialty

2.1 Pay Too Much Attention to Theoretical Study, and the Contents of Practical Training Are All the Same

With the increasing trend of cross-discipline integration and the application of software technology in various industries, the cultivation of compound talents has become one of the standards of talent training in colleges and universities. However, at present, many colleges and universities still pay too much attention to the teaching of theoretical knowledge in the teaching of software engineering, and there is a problem of insufficient training time. The practical training courses in many colleges and universities are mainly divided into two stages: knowledge reinforcement and project application. [2]In the two stages of teaching, the differences in students' individual knowledge and ability levels are not taken into account, but all students are required to participate, which makes some students with strong abilities find the courses boring and waste of time, while students with weak abilities fail to keep up with the teaching progress and lose their self-confidence.

2.2 The Arrangement of Practical Teaching in Class is Not Systematic

The traditional in-class practice teaching generally adopts the teaching mode of large class, and teachers can not take into account the actual situation of each student, and it is difficult to put forward specific guidance for each student's problems, so the effect of practical teaching is not satisfactory. Although many schools improve the teaching effect by increasing the introduction of teachers and speeding up the construction of training classrooms. However, because the students do not have a good programming foundation in the early class practice, as a result, a large number of students with weak foundation fail to improve their professional ability. This conflicts with the training goal of software engineering professionals and the generally high requirements of the job market for talents.

3. Improvement Measures

3.1 Implement Project Course Teaching

Project teaching method exercises students' practical ability through actual engineering projects, and it is a popular practical teaching method at present. [3] The project curriculum emphasizes “learning by doing” and deepens the understanding

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of principle knowledge in the process of practice. As for the evaluation of the project curriculum, from the feedback of students and teachers, scholars generally believe that the development and implementation of the project curriculum has greatly stimulated students' interest in learning. The need to really make students change from “want me to learn” to “I want to learn”, not only effectively cultivate students' practical ability and innovative consciousness, but also greatly improve students' ability to think, communicate, analyze and solve problems independently. This kind of teaching mode plays an important role in software engineering, which is a highly practical and applied discipline. Teachers can set up Java+ database comprehensive practice among senior students as a subject project, and let students organize groups for training. This makes an all-round assessment of students' practical ability, comprehensive application ability, document writing ability, teamwork and innovation ability.

3.2 Competition to Promote Teaching, Competition to Promote Learning

“Promoting teaching by competition and promoting learning by competition” is an indispensable teaching mode for software engineering majors, which can effectively cultivate students' practical ability. [4] By combining the actual situation of the specialty, we should carry out various discipline competitions and set up discipline competition associations. And carry out game development, embedded systems, network security, big data processing and other rich competition content. Let students have a more in-depth understanding of professional knowledge in the competition, and they can also know more exactly where their professional knowledge is deficient. Teachers provide timely guidance to students in this process, so that students can learn better in the future. At the same time, colleges and universities may set up special funds according to the actual situation. Students who perform well in the school competition community can be given certain material rewards, and regardless of grade selection to participate in provincial and national competitions to stimulate students' interest in learning.

3.3 Carry out the Cooperation between Schools and Enterprises

The implementation of school-enterprise cooperation can understand the specific requirements of the front end of the IT industry for high-quality software engineering and technical professionals. The practical teaching mode of school-enterprise cooperation can be carried out among juniors and seniors majoring in software engineering. Divided into professional training and graduation practice two stages, respectively arranged for school instructors and enterprise-related technical personnel to guide students to design some practical applications, so that students can complete the transition from student identity to enterprise identity. At the same time, through certain selection measures, students with excellent internship performance can be given the opportunity to become regular employees and stimulate students' enthusiasm for practice.

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4. Conclusion

The technological change in the era of big data is changing with each passing day. How to grasp the main theme of market demand and constantly improve the practical ability and innovative spirit of teachers and students majoring in software engineering is a serious subject. Therefore, the practical teaching of software engineering major must keep up with the technology tide of the times in order to improve students' employment competitiveness and social recognition.

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