



Reform and Practice of Talent Cultivation Mode for Bilingual Classes of Software Engineering Majors

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Abstract. Software engineering majors are facing unprecedented challenges of globalization and accelerated informationization process. Cultivating compound talents with international vision, cross-cultural communication ability and the ability to solve complex engineering problems has become an important mission for software engineering majors in this era full of changes. Based on the actual cultivation of talents in bilingual classes of software engineering majors, the problems existing in the current cultivation mode are analyzed in depth, and reform initiatives are proposed in a targeted manner. It aims to provide a useful reference for the reform and practice of talent cultivation mode of bilingual classes of software engineering majors, by exploring the implementation effect and future prospects.

Keywords: software engineering major; bilingual class; talent cultivation; teaching reform; internationalization.

1 Introduction

In the context of the informationization era, the software engineering profession, as an important base for training information technology talents, shoulders the important task of providing intellectual support for the national informationization construction and economic development. With the increasing frequency of international exchanges and the emergence of multinational enterprises, there is a growing demand for composite talents who know both technology and foreign languages. This demand is not only reflected in the mastery of professional skills, but also in the comprehensive application of international culture, cross-cultural communication ability and the ability to solve complex engineering problems. Therefore, bilingual classes for software engineering majors have emerged, aiming at cultivating IT talents with international competitiveness through bilingual teaching and internationalized educational resources. However, the implementation of the talent cultivation mode of bilingual classes is not always smooth. In practice, we have encountered many challenges and problems. How to optimize the curriculum system, improve the quality of teaching, strengthen the practical teaching link, stimulate students' interest and autonomy in learning, and how to

cultivate students' cross-cultural communication ability and ability to solve complex engineering problems have become the problems we need to solve.^[1]

2 Analysis of the Current Situation

2.1 Development History of the Program

Since 2016, the software engineering program has begun to actively explore the talent cultivation mode of bilingual classes. After several years of development, the scale of students enrolled in bilingual classes has been expanding, the number of students in international programs has increased significantly, and the strength of foreign and faculty with overseas educational background has been improved year by year. These changes not only reflect the college's attention and investment in the talent cultivation mode of bilingual classes, but also the market's recognition and demand for this talent cultivation mode. In the process of the development of bilingual classes, we actively learn from international advanced education concepts and teaching methods, and constantly optimize the curriculum system and teaching content. At the same time, we strengthen cooperation and communication with enterprises to jointly explore new modes and paths of talent cultivation. These efforts not only enhance the teaching quality of bilingual classes, but also provide students with more practice opportunities and employment channels.

2.2 Program Characteristics and Problems

The "Bilingual Class" program has formed distinctive features in terms of international resources, improvement of students' language level, and service channels for further studies abroad and at home. The "Bilingual Class" has distinctive features in that students are introduced to foreign faculty and international educational resources, which broaden their learning horizons and enrich their learning experiences. At the same time, we actively provide students with all-round guidance and services for further study abroad and in China, and provide students with service channels for studying abroad and further study in China. However, there are some problems exposed in the training. Firstly, the problem of students' lack of independent learning ability and low classroom participation is more prominent. This may have something to do with our teaching style and curriculum, and also with students' study habits and motivation. Secondly, some students have a poor foundation in math and English, and their learning effect and subsequent development are affected to some extent. In addition, the problems of teaching cases of complex engineering problems failing to meet the requirements, the lack of experience and practical experience of students in system engineering projects, and the limited cross-disciplinary ability also need to be solved. These problems not only affect the teaching quality of bilingual classes, but also restrict the overall development and future competitiveness of students. Therefore, we need to deeply analyze the reasons for the problems and put forward targeted reform measures to promote the continuous improvement and optimization of the talent cultivation mode of bilingual classes ^[4].

3 Reform Measures

Aiming at the problems existing in the current talent cultivation mode of bilingual classes, we put forward the following reform measures:

3.1 Optimize the Curriculum System and Strengthen Practical Teaching

1. Introduce Enterprise-Level Practical Teaching System.

Introduce enterprise-level practical teaching system to promote students' hands-on ability and complex engineering problem solving ability. Through cooperation with famous enterprises and industrial organizations, we jointly develop modular courses, connect the modular courses with the frontiers of the industry, and promote the practical training courses. These courses focus on practical operation and case analysis while learning theoretical knowledge, so that students can be integrated in practice. Should also keep abreast of industry employer demand, as an example, the software engineering industry employer demand research, as shown in Figure 1, Figure 2.

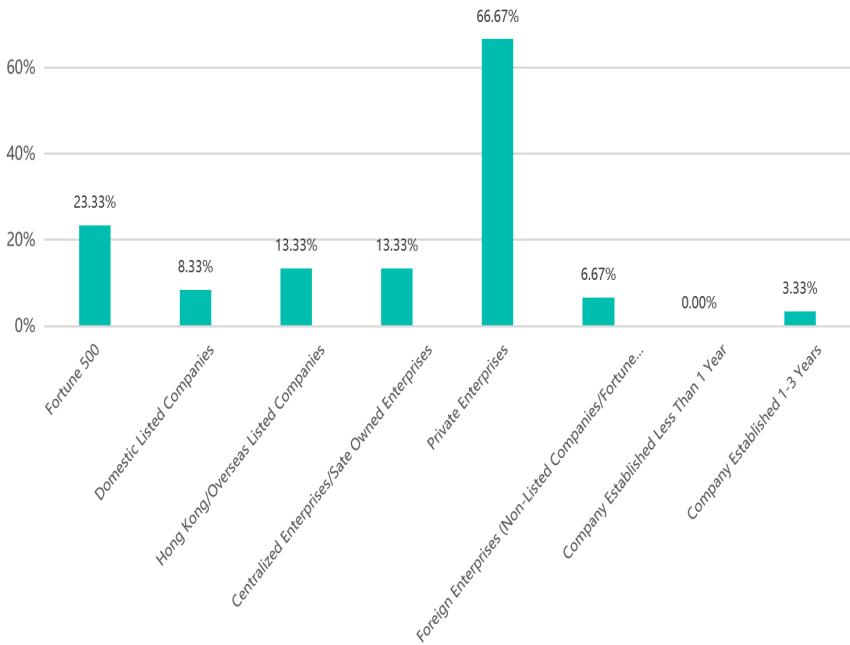


Fig. 1. Situation of researched enterprises

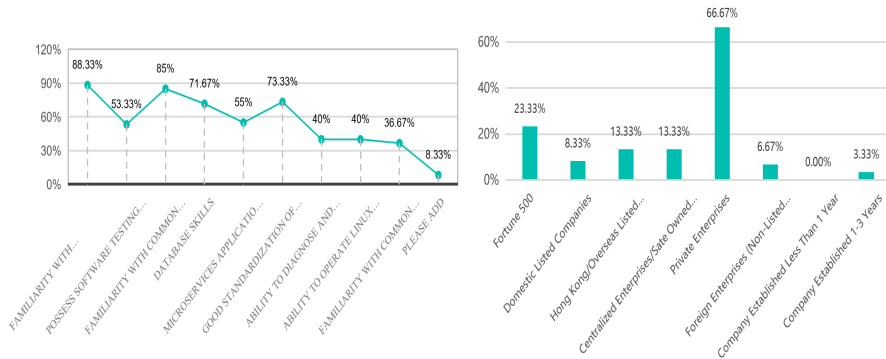


Fig. 2. Requirements for candidates' competencies and qualifications

2.Setting up Engineer Training Camp.

In order to strengthen the students' practical exercise and teamwork ability, it is set up in the engineer training camp. The training camp by one or two teachers to guide the implementation of each project project system teaching mode, by the students need to form a team to complete the project development and implementation. Through the training camp exercise, students in the development of teamwork and project management skills at the same time, but also improve the hands-on ability and problem-solving ability.

3.Strengthening International Exchange and Cooperation.

We strengthen international exchanges and cooperation to expand students' international vision and cross-cultural communication skills. We jointly carry out academic research and talent cultivation programs and establish cooperative relationships with internationally renowned universities and research institutions. At the same time, we encourage students to participate in international academic conferences and competition activities to promote the improvement of students' academic level in the international arena and enhance their international competitiveness.^[2]

4.Conducting Activities such as Foreign teachers' English corner and Salon Lectures.

Foreign teachers' English corner, salon lectures and other activities are carried out to enhance students' English proficiency and cross-cultural communication skills. These activities not only provide students with the opportunity to communicate with foreign teachers, but also help them to understand the cultures and customs of different countries. Students' oral expression ability and cross-cultural communication ability have been significantly improved through these activities^[3].

3.2 Teach Students According to Their Aptitude and Implement Classified Training

1. English Class Teaching.

Our English split-class teaching is carried out in response to the problem of large differences in students' English levels. We divide students into different classes and teach them according to their English proficiency test scores. This way of teaching can meet students' individualized needs, so that students will learn better in a learning environment that suits them [5].

2. Provide Targeted Career Planning Services.

Help students have a better plan for their future career development path. According to the career development planning and interests of students, we provide students with lectures on career planning, practical training classes, employment guidance and other services. These services not only help students to clarify their career goals and the direction of career development they are engaged in, but also enable students to improve their employment competitiveness and give good play to their comprehensive qualities. At the same time, timely investigation of students' future development intentions, such as students' initial planning for future career development and students' personal development intentions, as shown in Figure 3 and Figure 4:

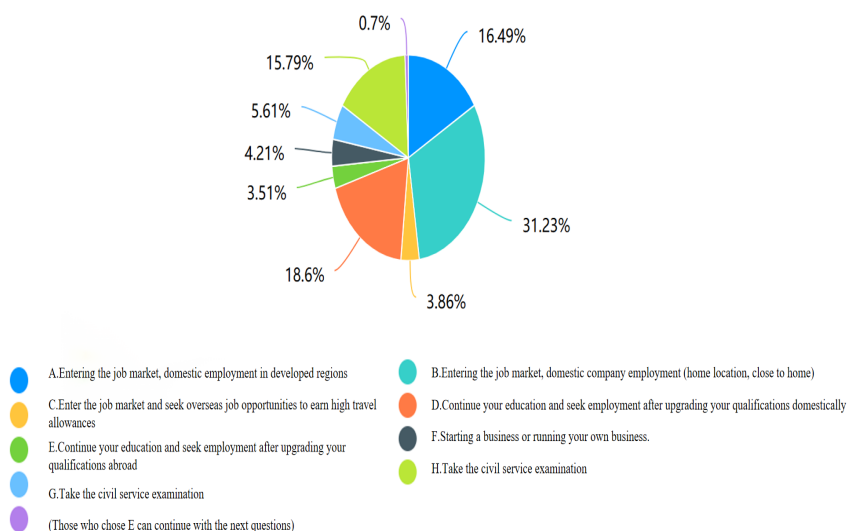


Fig. 3. Initial planning questionnaire for students' future career development

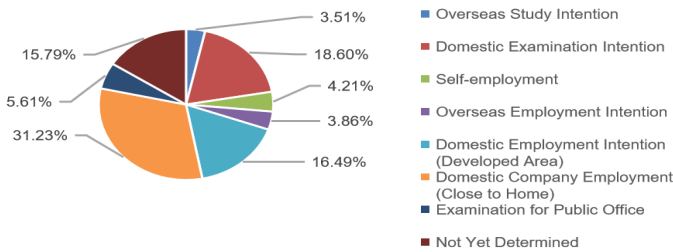


Fig. 4. Student Personal Development Intentions Questionnaire

3. Expanding Cooperation Channels to Help Students Find Employment.

Cooperate with enterprises to carry out talent cultivation projects in order to expand students' employment channels and promote the improvement of college students' competitive ability in employment. Give students more practice positions and employment channels: sign cooperation agreements with enterprises and build practice bases. At the same time in the training of talents to strengthen cooperation and communication with our domestic well-known enterprises, and jointly explore a new road road.

3.3 Strengthening Teaching Staff and Enhancing Teaching Quality

1. Introducing Foreign Teachers and Teachers with International Backgrounds.

Actively introduce foreign teachers and foreign teachers with international background to strengthen the construction of the teaching staff. These teachers not only have rich teaching experience and strong business knowledge, but also enable students to broaden their learning horizons and teaching experience. Their joining promotes the overall level of the faculty while promoting the teaching reform and internationalization development of the college [6].

2.Strengthening the Introduction and Cultivation of Teachers with Industry Backgrounds.

Actively establish cooperative relationships with enterprises and organizations in the same industry to strengthen the introduction and cultivation of teachers with industry background. By cooperating with enterprises to carry out scientific research projects and talent cultivation projects, a group of teachers with rich practical experience and industry background have been attracted to join the college. These teachers can provide students with teaching contents and practical opportunities closer to the reality while promoting in-depth cooperation and communication between the college and enterprises.

3. Creating a Favorable Environment for Nurturing People.

We have stepped up our efforts in building campus culture and academic culture, contributing to the creation of a good nurturing environment. Through the organization of activities such as academic lectures and scientific and technological innovation competitions, students' interest in learning and creativity have been well stimulated. At the same time, the construction of teachers' morality has been strengthened in terms of teachers' business quality and teaching quality. These initiatives not only provide better environmental conditions for student learning, but also play a good role in promoting the overall development and progress of the college.

4 Implementation Effect and Future Prospect

4.1 Implementation Effect Bilingual

The class talent training model has been implemented through a series of reform measures with remarkable achievements. Performance in:

1. Students' English Proficiency has Been Significantly Improved.

Students' English proficiency has been significantly improved through English split-class teaching and foreign teachers' English corner activities. They can better adapt to the needs of international communication and cooperation, and their oral expression ability and cross-cultural communication ability have been significantly enhanced ^[7].

2. Significant Enhancement of Practical Ability.

Students' practical ability is significantly enhanced, including the implementation of measures such as introducing enterprise-level practical teaching system and setting up engineer training camps. There is a greater mastery of business knowledge and skills as well as a stronger ability to work in teams to solve complex engineering problems. The enhancement of these abilities has laid a solid foundation for their future career development.

3. Obviously Improve the Comprehensive Quality.

The implementation of targeted career planning services and expanding student employment and other measures, so that the overall quality of students has improved significantly. They have both solid professional knowledge and good business and teamwork skills. The improvement of these qualities makes them more and more competitive in the job market.

4. Influence Gradually Enhanced.

With the continuous improvement and optimization of the bilingual classroom talent cultivation mode, the bilingual classroom program gradually generates more and more influence in the industry. The bilingual classroom program is chosen by more and more

excellent students to join in, injecting new vitality and power for the development of the college. At the same time, the bilingual class project has also received extensive attention and affirmation from all walks of life.

4.2 Future Prospects

In the coming period, we will continue to deepen the teaching reform and optimize the curriculum system and all aspects of practical teaching. The following explanations are given:

1. Continue to Strengthen the Practical Teaching Link.

Continuously strengthen the construction of practical teaching links, and introduce more enterprise-level practical projects and cases into the actual teaching work. So that students can get a better understanding of themselves in practical ability and innovation through practical teaching activities in cooperation with enterprises, thus promoting the improvement of their industry cutting-edge technology and market demand.

2.Strengthen International Exchange and Cooperation.

Continue to strengthen international exchanges and cooperation to expand students' international vision and cross-cultural communication skills. Jointly carry out academic research and talent cultivation projects, through the establishment of cooperative relationships with internationally renowned universities and research institutions. At the same time, encourage students to participate in international academic conferences and competitions to promote the improvement of students' academic level and enhance students' competitiveness in the international arena^[8].

3. Explore new modes and Paths of Talent Cultivation.

New modes and paths of talent cultivation will be actively explored. Provide students with more practice opportunities and employment channels, cooperate with enterprises to carry out talent training programs and build training bases. It will also strengthen cooperation and communication, and explore new talent training modes and talent paths with domestic famous enterprises^[10].

4.Strengthen the Construction of Teachers.

Teacher team construction will be continuously strengthened, and teachers' business level and teaching ability will be newly improved. Build a high-level, internationalized faculty, through the introduction of foreign teachers with international background, strengthen the introduction and training of industry background teachers and other measures to implement. Composite talents who can make greater contributions to the national informationization construction and economic development will be constantly devoted to cultivating talents with international vision, cross-cultural communication ability and the ability to solve complex engineering problems.

5 Conclusion

The reform and practice of the talent cultivation mode of bilingual classes of software engineering majors is a very heavy task, long and difficult. By optimizing the curriculum system, implementing the measures of teaching according to materials and classified training, and strengthening the construction of faculty, obvious results have been achieved. However, in the increasingly fierce international competition and the changing market demand, the new ideas and methods of talent cultivation mode are still to be explored and innovated. The idea of student-oriented education will continue to be upheld in the future development process, focusing on the cultivation of students' innovative spirit and hands-on ability. At the same time, we will also strengthen cooperation and communication with enterprises, and work together to find out a new, new way in talent cultivation. We believe that the talent cultivation mode of bilingual class for software engineering majors will continue to make new breakthroughs and greater achievements under the joint efforts of all teachers and students, and make greater contributions to the cultivation of more IT talents with international competitiveness, and we will make joint efforts to contribute our own share of strength to the cultivation of more IT talents in China^[9].

References

1. Cheng Jianfeng, Du Lei, Xu Yongjun. Construction and implementation of agricultural science and technology translation talent cultivation mode in colleges and universities under the background of new agricultural science[J]. Shanghai Translation, 2024, 178(5): 43.
2. Yang Zhe, Li Hui, Fu Qiang, et al. Exploration of collaborative cultivation mode of innovative talents in biomedical field under the background of “four new” construction[J]. Research on Higher Pharmacy Education, 2023, 41(4): 101.
3. Yu Yinghui. Exploration and practice of bilingual teaching mode of organic chemistry in engineering[J]. Education Forum, 2024, 6(2).
4. He Liangyin, Chen Meixia. Bilingual Teaching and Learning of Food Quarantine in Local Colleges and Universities under Applied Talent Cultivation Mode[J]. Journal of Ningde Normal College (Natural Science Edition), 2022.
5. HE Yongda, ZHANG Weiguo, CHEN Yali. Research on the application of PBL mode in the reform of bilingual teaching--Taking the teaching of “Econometrics” as an example[J]. Educational Theory and Practice, 2022, 42(12): 49-53.
6. Yalu Wang, Xi Zhang, Weili Li. Practice and exploration of bilingual teaching in software engineering[J]. Teaching Methods Innovation and Practice - Research and Academic Inquiry, 2023, 2(4).
7. DING Shaonan, MA Xiaoyan, PENG Xiaobang. Application of PBL model in bilingual teaching of ecology[J]. Advances in Education, 2023, 13: 4243.
8. Pu Liangyu, Wu Xiaodian, Li Zheng. The practice of bilingual teaching in advanced mathematics courses[J]. Creative Education Studies, 2021, 9: 718.
9. Guo Dongming, Zhao Li. Construction of safety talent cultivation mode in universities with characteristics of energy industry[J]. China Journal of Safety Science, 2021, 31(5): 31.

10. Xie Xin, Wang Xin. Cultivation of Innovative Talents: Environment, Objectives and Teaching Practices[J]. Development Economics of China (Chinese Version), 2022, 4(1): 5-15.

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