Curriculum System Reform Based on Industry-university-research Project

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Abstract

The development of education is related to all walks of life. It transports a large number of talents for the country, which will support the future of the motherland. Development is inseparable from reform. As the power source of national development, every step of its reform and innovation has attracted much attention. Under the background of "new engineering", the concept of "big project" is introduced into the discipline construction of computer science and technology. Enterprises deeply participate in the talent training plan and cooperate with colleges and universities to carry out professional curriculum construction, which also greatly improves the comprehensive ability of enterprise talents. Moreover, while completing the cultivation of students' practical and innovative ability, colleges and universities have also strengthened and optimized teachers. Therefore, it is an inevitable trend for colleges and universities to cultivate innovative talents through industry university research cooperation, and the curriculum reform will also become a new research field.

Keywords

Industry-University-Research; curriculum system reform; Project oriented.

1. Introduction

As an important part of higher education, engineering education is mainly to cultivate senior engineering professionals, which is closely related to practice and has a strong application type. The curriculum organization structure generally includes: public basic courses, professional basic courses, professional courses, etc. among them, the theoretical links of professional courses account for a high proportion, the application range is wide and abstract, students are easy to fall into misunderstandings in the learning process, and the effect of knowledge mastery is not good. Without practical practical links, it is easy to fall into the misunderstanding of theoretical transformation. Due to the limitation of traditional teaching mode and experimental conditions, the practice link often adopts the way of course experiment. Although one lesson and one practice consolidate the knowledge points, the basic knowledge is too loose to achieve systematic application effect. In this way, it is difficult for students to meet the actual needs of enterprises in employment, resulting in the social disconnection of talent training. The key to solve the above problems lies in the curriculum reform. From the simple separation of theory and practice, to the task-based fragmented teaching, and then to the project-based curriculum, the connotation is greatly improved.

2. Current Situation and Analysis of Project-based Curriculum Teaching

At present, the setting of project-based curriculum reflects the people-oriented idea, closely focuses on the main body of students, emphasizes the applicability of the project, and reflects the situational of the curriculum, so as to cultivate students' professional quality. Its advantages are obvious, but there are also some problems, as follows:

2.1.   Lack of Practicability of the Project

The resources of traditional curriculum practice often come from the Internet or books, and have less contact with enterprises, resulting in the disconnection between curriculum and reality, task driving and lack of connotation of teaching situation. The key point of project-based curriculum lies in authenticity, that is, whether the implementation content comes from the enterprise and whether it can reflect the professional quality of the executor. The implementation of the course shall comply with the production links of the enterprise, and the evaluation and assessment of the course shall refer to the assessment standards of the enterprise.

2.2.   Lack of Experience in Teaching Staff

The computer industry is a rapidly developing industry, with fast technology renewal and high requirements for the learning ability of practitioners, which is the same for teachers engaged in computer education. Although the school organizes teacher training every year, the audience group is still very small due to funding, management, organization and other reasons. The project team teachers lack practical experience in enterprises, resulting in problems such as the selection focus of projects is not prominent, the types are divorced from reality, and the curriculum organization can not fully respond to the actual production.

2.3.   Poor Enterprise Participation Initiative

At this stage, China's industry education integration generally has a single cooperation mode and insufficient depth and breadth. In most projects, there are problems of high school enthusiasm and low enterprise cooperation, and finally did not achieve a real win-win situation. The main reason for this problem is that the ideas of both schools and enterprises, the teaching pressure of the school and the profit power of the enterprise have not found a point of coincidence. Enterprises are more willing to find schools suitable for their own development for cooperation. They will consider whether the school has strong scientific research ability and talent training characteristics, so as to be able to deliver high-quality talents.

3.   Curriculum System Model and Practice of Industry University Research Project

Based on the current situation of Applied Undergraduate Education in University Engineering, consider establishing the mode of industry university collaborative education, fully strengthen the resource sharing between schools and enterprises, explore new ideas of curriculum reform, break the limitations of conventional practical teaching through industry university collaboration, and combine tutors inside and outside the school to jointly analyze problems. At the same time, in the process of practice, the two have benign interaction with students, form a learning community, cooperate with each other to solve problems, integrate the school teaching with the production of enterprises, so as to realize the production of works, truly achieve the experimental scene and meet the real needs of enterprises. So as to build an interactive and enlightening practical teaching platform, so that students can obtain more school and enterprise resources, optimize the traditional teaching mode, stimulate students' learning autonomy, and achieve the purpose of learning and employment. In addition, the teaching reform will also give great help to the construction of teachers. Teachers go out and experts are invited to build a bridge of mutual benefit among schools, enterprises and society, so as to form a smooth channel for the cultivation of innovative talents. Establish a learning community, complete the project-based curriculum reform by using the teaching platform of industry university integration, and establish a new mode of school enterprise collaborative education.

3.1. School Enterprise Joint Education Mode

Through the industry university research school enterprise cooperation platform, breaking the traditional practical teaching mode, according to the training goal of collaborative education, teachers and enterprise engineers in the school are gathered together for joint analysis and exchange, so as to realize the exchange of works and products. The specific operations are as follows:

(1) The enterprise provides unclassified original project data, including project planning, project implementation documents, acceptance data, etc.

(2) School teachers and enterprise engineers work together to revise the original data of the project. Among them, with teachers as the main part and engineers as the assistant, the project module that can not only meet the teaching and training plan but also reflect the actual needs of the enterprise is selected as the project to be implemented.

(3) Professional teachers set the project development schedule according to the teaching plan and project content, determine the organization mode, form the development plan, and finally pass the review of the enterprise.

3.2. Teaching Process Control

The project-based curriculum lies in the cultivation of students' comprehensive ability, so the curriculum should be distinguished from the traditional teaching mode. The traditional teaching is weekly class hours, which is mainly to set the amount of class hours every week and disperse it to the whole semester. Such an even distribution helps students to integrate and make the abstract knowledge easier to understand. However, in the implementation of project-based curriculum, priority should be given to the practical production of enterprises, which should be close to the reality. The decentralized curriculum is not conducive to the participation of enterprise personnel, but also contrary to the project development process. Based on this, the project-based curriculum adopts the mode of decentralized teaching + centralized extracurricular training. In a certain time cycle, in addition to the basic curriculum, the after-school practice is used for centralized training. During the project promotion, professional teachers and enterprise engineers respectively guide in different cycles of project development and establish a learning community with students. In the learning community, the interaction between learners will promote their cognitive activities. In this way, the project can proceed smoothly and steadily, save time to the greatest extent, and achieve the expected results.

3.3. Establish Evaluation and Supervision Mechanism

The joint establishment of assessment and evaluation system between schools and enterprises can make the collaborative education project more scientific and reasonable and improve the preciseness of supervision. The project-based curriculum aims at the high and low positions of post competence and professional ability. The detailed rules are as follows:

(1) According to the job responsibility details provided by the enterprise engineer, the teacher sets the ability training objectives and integrates them into the project, and formulates the curriculum evaluation system in combination with the actual situation and training plan of students.

(2) Map the contents of the curriculum chapters to each sub item of the evaluation system, and refine the curriculum chapters to achieve comprehensive coverage of knowledge points. At the same time, the assessment of comprehensive application ability is emphasized, the training objectives are confirmed by practical links, and the final evaluation is completed through process assessment and project acceptance.

4. Conclusion

To sum up, establish a learning community and design project-based courses. By establishing a community of students, teachers and engineers, this project designs an industry university research project-based curriculum model around the determined teaching contents and objectives, takes the completion of common learning tasks as the carrier, and aims to promote students to fully master the professional training objectives. Through cooperation with enterprises, establish project-based courses and introduce practical projects to implement teaching reform and optimize curriculum. Establish a learning community among teachers, engineers and students and carry out interactive activities with students. This communication and cooperation can not only enrich students' understanding, but also trigger their critical evaluation of various understandings and further reflection on their original ideas. In this way, each student separates his own opinions from other learners, accepts the influence of others, enriches and expands his knowledge, and improves his sense of self-efficacy in learning and problem-solving activities.

Acknowledgments

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