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Research on the Reform Method of "Production Internship" Course in Sino foreign Cooperative Education Major

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Abstract: The joint education program aims to cultivate international perspectives and strong practical abilities among college students. Production internships serve as a crucial practical component in the student training process, yet existing internship frameworks fail to address the distinctive features of Sino-foreign cooperative education. A phased implementation method for production internship reform is proposed in this article. And corresponding strategies for the construction of internship bases is proposed based on this reform method. Successful implementation of the plan will significantly enhance students' practical competencies, greatly contribute to improving the quality of cooperative education, and highlight its practical characteristics.

Keywords: Production Internship; Internship Base; Sino Foreign Cooperative Education Majors

1. Introduction

The course of "Production Internship" is a compulsory course for mechanical design, manufacturing, and automation majors, and is an important practical teaching link in student training. Through the study of this course, students will be able to better understand and master the production process of mechanical products, verify, consolidate, and enrich the professional knowledge they have learned, further cultivate the ability and methods of integrating theory with practice, observing, analyzing, and solving problems, and acquire necessary practical production knowledge and professional intuitive understanding and practical knowledge. the engineering experience gained by students through this course is more abundant than other practical courses, and can provide direct reference and inspiration for subsequent graduation projects, as well as guide students in making preliminary career plans. Therefore, we should attach great importance to the innovation of teaching methods for production internships, so that students can acquire certain professional qualities and work abilities through production internships.

At present, traditional teaching methods are mainly used for production internships. the guiding teacher leads students to visit the construction site and listen to project introductions from the design or construction department. Students write internship logs and reports based on this. During the internship, students mainly focus on visiting and are unable to gain a deep understanding and digestion of specific technical issues [1]. the superficial phenomenon of student internship practice is widespread. the second issue is that students' internship experience is significantly lacking. Due to factors such as safety, funding, and workload, there are common phenomena in student internships such as "watching without moving", "watching fancy internships", "point to point internships", and "performance internships". Students are unable to get hands-on experience, lack emotional understanding, and cannot achieve the expected practical effects of internships [2]. Enterprises are unwilling to accept interns due to production arrangements and safety factors, and young teachers lack practical experience in enterprises, making it difficult to effectively guide students in solving real engineering problems. This phenomenon of industry academia disconnect directly leads to insufficient practical ability of students, making it difficult to meet the demand for talent in the high-end, intelligent, and green development of the manufacturing industry.

2. Professional Features

The Mechanical Design, Manufacturing and

Automation (Sino foreign Cooperation) major leverages the educational and research advantages of our university and foreign universities, aiming to cultivate high-quality applied talents with strong foreign language advantages and international education background who can adapt to the social development and economic construction needs of China and Germany, possess good humanistic literacy and professional ethics, strong scientific spirit, lifelong learning ability and practical ability, have good foreign language communication ability, engineering basic knowledge and professional knowledge, and can work in the field of technical development and service, scientific research and application, production organization and management in the mechanical equipment and automation system industry after graduation. the main employment direction is to enter large and medium-sized enterprises such as machine tool manufacturing, automobile manufacturing, and engineering machinery, engaging in high-tech jobs such as product research and development, process design, and quality inspection.

For the Mechanical Design, Manufacturing and Automation (Chinese and Foreign) major in our school, in addition to some of the above-mentioned problems, there is also a lack of internship bases suitable for the professional characteristics. the internship base is mainly built in conjunction with regular undergraduate majors, and the integration of foreign enterprise elements is not sufficient, which cannot provide assistance for students to work in foreign-funded enterprises. There is still a lack of policy guarantees and funding systems to promote sustainable construction of the base, and the alignment between target positioning and enterprise demands is insufficient. the relevant institutional construction is incomplete, and some systems violate the laws of enterprise operation and production, are detached from the actual development and upgrading of the industry, and cannot take into account the "feelings" of the enterprise in terms of internship time and cooperation. Student internships to some extent interfere with the normal production and operation of enterprises. Enterprises need to transfer some technical backbones to guide internships, while also taking into account relatively hidden risks such as internship production coordination, internship security, and technology leakage. This conflicts with the pursuit of efficiency and profit by enterprises.

Promoting the reform of the "Production Internship" course is an inevitable choice to respond to industrial changes, implement educational policies, follow educational laws, and utilize technological innovation. It has strategic significance for improving the quality of talent cultivation and serving the construction of a strong manufacturing country. the project proposes to conduct reform research on mechanical design, manufacturing, and automation (domestic and foreign) production internships by constructing an internship base that incorporates elements of foreign enterprises.

3. Reform Ideas

3.1 Improvement of Teachers' Practical Ability

Organizing teachers to practice in enterprises is an important form of in-service training for teachers, and on-site practice in the front line of industries and enterprises is an important way for university teachers to develop practical abilities [3]. Through enterprise practice, the construction of the teaching staff can be strengthened, and the connection between colleges and enterprises can also be strengthened. Teachers should plan to participate in engineering practice by hanging out in enterprises, rather than visiting and learning as interns.

All universities in our country have plans for in-service teacher training. Schools must improve their in-service teacher training programs, organically integrating the cultivation of teachers' practical abilities with their professional development, teaching level improvement, research and innovation, and social services. Implementation can be achieved through the following channels: firstly, teachers must have in-depth work experience in the front line of production and social practice and achieve certain practical results, laying a more solid foundation for further improving internship teaching. Secondly, teachers must regularly update their internship content. On the one hand, this can promote teachers' in-depth understanding of the production front line, and on the other hand, it can enrich teaching and bring updated content to students.

When students are studying courses such as production internships and cognitive internships, the teacher responsible for leading the class can

also accept the engineering practice training plan of the internship base [4]. During production internships and other internship courses, teachers participate in student training synchronously, and form standardized written records based on their own training content and the problems that students encounter. While students' practical abilities are improved, teachers' engineering and practical concepts can also be enhanced. Students also become more serious and upright in their learning attitude due to the synchronous participation of teachers, which plays a role in strengthening the learning effect.

3.2 Content reform

The achievement of internship goals is not achieved overnight and requires multiple stages. the internship content can be divided into three stages. the first stage is to visit and intern at foreign-funded enterprises. By listening to corporate mentors' explanations and factory experiences, we can understand the corporate culture of foreign-funded enterprises. In the second stage, you can go to practical training enterprises to simulate work and experience the working atmosphere of German funded enterprises. During the simulation period, one can engage in mechanical design related work such as work design and processing assembly, design work processing assembly, and present internship results in physical form to enhance the sense of internship achievement. In the third stage, conduct work internships at relevant foreign-funded enterprises.

3.3 Construction of Internship Base

In order to cope with the three stages of production internship, corresponding production internship bases need to be established separately. Based on national policies and school resources, establish production internship bases with phased internship needs. Enterprises are concerned about costs and benefits, resulting in unstable quantity and quality of internship positions. We plan to build a "government school enterprise action" alliance, establish a docking platform through chambers of commerce, and strive for government subsidies and tax incentives to reduce the cost burden on enterprises. And give priority to talent transfer, joint technology research and development, and sharing intellectual property rights to provide intellectual feedback to the base enterprises.

Both the first and third stages of internships can be conducted using existing foreign-funded enterprises. the second stage internship is a new form proposed by us based on existing conditions. This type of internship base can be reformed in two aspects:

1) the foreign investment transformation of existing ordinary internship bases, integrating them into the production mode of foreign enterprises;

2) Develop a professional internship base for foreign enterprise elements and establish a localized project library based on foreign enterprise work tasks.

4. Conclusion

Propose a reform method for multi-level production internship mode, break through the traditional "industrial tourism" production internship mode, design a three-stage advanced training path of "perception → experience → application", and ensure that students' abilities are improved from theory to practice and then to application. And propose targeted construction methods for classified internship bases, establish corresponding production internship bases for different stages of production internships, and break through the current situation of similar functions in existing internship bases. It can meet the characteristics of Sino German cooperative education majors, by integrating German enterprise elements into the internship process, students of Sino German cooperative education majors can more truly experience the production mode of German funded enterprises, and make up for the shortcomings of foreign units in the practical aspects of cooperative education majors. After completing the construction of a multi-level production internship base, it is expected to meet the production internship tasks of 90 students per year; Improve the opportunities for professional students to enter German funded enterprises. By introducing elements of German enterprises, a new production internship model of "standard integration, three-level progression, and deep collaboration" is expected to achieve significant results in talent cultivation, school enterprise cooperation, industrial services, and provide practical examples for the reform of internship courses in Sino foreign cooperative education majors in applied universities.

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