Practice and Exploration of Full Time Engineering Master Training Based on School Enterprise Cooperation

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Abstract. Master of engineering is the application of the master, mainly for state-owned small and medium-sized enterprises to develop high-level application of technical personnel. Combining with the practical experience of cultivating the master of Engineering in Xijing University, this paper probes into the concrete practice of the process management practice from three aspects of theoretical teaching, practical teaching and dissertation, this paper puts forward the development thought of the enterprise’s deep participation and the training of full-time graduate students.

Introduction

With the deepening of the reform of graduate education in China and the continuous improvement of the system, In 2009, the Ministry of education increased the enrollment of full-time professional degree graduate students in the sequence of graduate education, its purpose is to develop more suitable for the needs of the development of the national economy, the application of master's degree. Full time professional degree compared with master of engineering and master of engineering, there are significant differences in the source of students, training focus, learning time and so on, it is obvious that we cannot use the traditional method of cultivating academic master to master the full-time engineering master. Xijing University in 2012 to apply for the Ministry of Education Master of engineering reform, and approved. After 5 years of research and practice, Xijing University has done a lot of work in the training of full-time Master of engineering, combined with their own actual situation, based on local, utilizing the advantage of Xi'an industry, a set of school enterprise cooperation system which is suitable for full-time engineering master training is initially constructed, hope to provide reference for other private colleges and universities related practice.

The Theoretical Teaching Mode Based on the Combination of School and Enterprise

1) Set up a scientific and reasonable master of engineering course content system of full-time Master of engineering training objectives to meet the needs of the development of the national economy and the application of high-level personnel, in addition to have a solid foundation of theory, but also requires a strong ability of engineering practice. According to the characteristics of Engineering master, curriculum structure adopts double module, a class based module, basic modules include general education courses and professional courses, the basic module is to strengthen the basic theory and professional foundation of the students, this kind of course is closely related to industrial engineering, be able to supplement and develop the professional knowledge of the subject, technology and reflects the interdisciplinary cross, penetration, integration curriculum, while emphasizing the basic and broad knowledge of professional knowledge, pay attention to the comprehensiveness of knowledge, strengthen the consciousness of innovation in all aspects of training, Lay a solid theoretical foundation for the future research work. The other is composite module, the composite module is composed of elective courses, this is an important means to cultivate applied talents, especially the cultivation of engineering application ability, fully reflect the relevance of the project, on the one hand, through the depth of
communication with local manufacturing enterprises, according to the actual needs of enterprises, the creation or addition of some practical, forward-looking professional elective courses, "order form" training for engineering master, so that the master of engineering to become the enterprise needs of complex, application-oriented personnel. On the other hand, we have carefully designed a course of "development of control industry", employ a wealth of practical work experience, knowledge of manufacturing development needs, industry experts who are familiar with the development of the industry regularly offer cutting-edge seminars, so that the lack of social and practical work experience full-time Master of engineering graduate students as soon as possible to contact the industry, close to the industry, give students a chance to contact and communicate with industry experts, help them broaden their horizons, and stimulate their interest in the forefront of the industry's major research issues. Exploring the project teaching method based on Students.

2) Combined with the actual situation of enterprises, the use of diversified and advanced teaching mode full-time Master of engineering, lack of practical work experience, most of the knowledge in the process of learning is based on abstract thinking, the traditional "spoon feeding" one-way knowledge teaching methods have great limitations. In order to change this phenomenon, improve teaching efficiency, improve teaching effect, need to use flexible and diverse, rich and colorful teaching mode and method. First, let the classroom move, move the classroom into the laboratory, engineering site, in order to ensure the systematization of discipline knowledge system, combine theory with practice, help inspire, active thinking, open up students' horizons. Secondly, in teaching methods and innovative ideas, some of the basic courses we use classroom lectures, case studies, team learning, seminars, on-site teaching, experimental simulation and lectures on the combination of a variety of teaching methods, we should focus on cultivating students' ability to analyze and solve engineering problems with advanced technology and modern technology, as well as the ability of innovation and research practice. There are a number of professional courses, we use the project teaching method, the curriculum into a project, the project as the center to carry out teaching work. For example, the "power technology" course, we chose the contract unit in the world of science and Technology Co., ltd. By communicating with their previous, the practical problem of the signal interference in the development of the company's power supply is determined, divide the students into two project groups, the teaching organization adheres to the principle of "taking the project as the main line, the teacher as the leading factor, and the students as the main body”, by the teacher and the vice president in charge of research and testing of the project to promote the overall quality and progress control, the students of the stage guidance, communication work, solve all kinds of problems in time, guide the students to "learn by doing". The whole teaching process, has also become a practical process of a project, the students are doing high school and doing their homework in school, Combine theoretical knowledge with practical application, the theoretical knowledge is fully used in practice, at the same time found the problem in practice, Re study at the theoretical level, and then research on the theoretical level, finally, we apply the theory to practice, the course through the implementation of a semester of teaching, not only for students to fully understand and master the design process of the importance of line planning and layout of the detection process of the specific application of the organization, in fact, it has put forward some effective suggestions for the development of the power supply of China Science and Technology Co., Ltd.

The Practice Teaching System Based on the Combination of School and Enterprise

Professional practice and practice is a full-time Industrial Engineering Master of practical work experience, get thesis topics and materials, the important stage of cultivating practical research and innovation ability, it is also an important link to achieve the training objectives. In the training objectives, training programs clearly define the status and role of the practice and the goals should be achieved, and make full use of social resources, Constructing the teaching system of practice and
practice based on school enterprise cooperation, it can not only improve the quality of Engineering Master Training and discipline construction, but also make up for the lack of full-time engineering master training from the actual project, the lack of practical innovation ability training and so on.

1) The establishment of a joint training base and practice base for graduate student training base and practice base, it is the experimental base for the reform of postgraduate training mode, and it is also the demonstration base of high-level applied talents training.

The construction of the base should take the enterprise as the leading factor, let the students carry out the practical training in the enterprise directly to the practical work, cultivate students' practical ability. Establish feedback mechanism, schools adjust teaching according to feedback, thus, the teaching mechanism and the innovation practice mechanism are connected, and form a benign interaction. Although the master of Engineering enrollment and development of our school is only five years, but five years, we signed a joint strategic cooperation framework agreement with a dozen companies in Xi'an, in Xi'an bridge vehicle factory, Xi'an Huo Wei power limited liability company established innovation base for graduate training. The professional practice of teachers and senior experts in the industry to guide the engineering master, arrange the master of engineering to enter the base for internship, the senior staff who have rich experience in engineering practice in the cooperative enterprise as a graduate tutor, guide graduate students to carry out engineering practice, to ensure the quality of graduate practice teaching links. Five years of training practice, full time master of industrial engineering in the practice and practice of the process to further strengthen the theory and practice of the concept, improve the ability to analyze and solve problems, get a high degree of recognition of corporate mentors, employment rate of graduates and cooperative enterprises reached 80%.

2) Establish the practice direction of the whole track management system graduate students joint training base set up in the enterprise, graduate students feel that they have been out of school, so there is a certain degree of self-consciousness and autonomy, at the same time, how to manage non-graduate students in enterprises, enterprises also lack of effective institutional mechanisms. Therefore, the school must strengthen the connection with the enterprise, improve the management level of full-time engineering master in the practice stage, in order to ensure the efficiency of the internship process, to achieve the desired training objectives.

On the one hand, our school has developed a special "professional practice manual", clear the content of professional practice and the goals should be achieved, detailed professional practice plan and practical assessment methods, and in a timely manner to the professional practice of the whole process of tracking management, regular inspection, evaluation of professional practice. After the completion of all practical phases. Students must complete the summary report of professional practice study, including practical purpose, meaning, content and personal gain, covers all the contents of practical teaching. Teachers and institutions need to evaluate each student, according to the usual practice of the monitoring process and summary of the contents of the report given the final results of professional practice. Only the successful practice of teaching credits, to enter the stage of the thesis, otherwise, we must complete the practice teaching. On the other hand, in order to grasp the situation of students' practice in enterprises, strengthen the communication and exchange with practice teaching base, the tutor and the graduate management departments should regularly visit the school practice teaching base, in particular, the school tutor, to enter the training base and practice base to understand the practice of teaching, cooperate with enterprises to strengthen the daily management of graduate students, negotiate with the enterprise to solve the problems in time. Students in the form of summary, report in practice base, school management departments in a timely manner to grasp the contents of the work of student internships, results and problems, Deal with the problems in time.
3) Relying on the training base to build a new platform for cooperation of production, learning and research, not only for the full-time Master of engineering provides a good internship environment, also provides the conditions for the deep integration of school enterprise cooperation, to provide technical support to our company with the abundant human resources, professional advantages and scientific research achievements, it plays an important role in promoting technological progress and improving market competitiveness. The enterprise to complete the production of the implementation of a sound sales channels can also provide scientific and technological achievements of the university to achieve economic benefits to provide material resources, financial support. Therefore, the practice base provides an innovative platform for the cooperation between universities and enterprises, so that the two sides in product development, production practice, personnel training and the use of a comprehensive, rapid and in-depth docking

The Dissertation Based On School Enterprise Cooperation

1) First, the topic selection with distinct application features, from the scope of the topic, the title of the master's thesis should be mainly from the production practice. This requires students to find and refine the problems that need to be solved in the process of enterprise practice, it is necessary to pay attention to the intersection of subject knowledge and the advancement of solving problems, Secondly. From the type of title, the title type of Engineering Master degree thesis must emphasize practicality and application, should not be confused with the topic type of academic master's degree thesis, all the problems will eventually be implemented on specific production issues, avoid empty theory stack. Finally, from the source of the problem, the title of the master's thesis is the best, in particular, manufacturing enterprises, to meet the needs of enterprises, to solve the practical problems of enterprises?

2) The scientific and reasonable guiding process of thesis is the important embodiment of the quality of Engineering Master training, has been the focus of attention in Colleges and universities, enterprises and society

To guide students to write high-quality papers, we should give full play to the guiding advantages of the double tutorial system which is closely related to the school enterprise joint training mode, strengthen the cooperation between the internal and external tutors. The tutor and tutor must cooperate with each other, clear responsibilities, in order to avoid the vacuum process. School and enterprise mentors each one has his good points, in the work of this paper, we should work closely to form complementary, the tutor in the school is mainly from the technical difficulty of the selected topic, the advanced nature of the theoretical research and the writing workload, enhance the level of the thesis from the perspective of professional theory, in accordance with the requirements of the master's thesis of industrial engineering. The tutor should instruct the students to solve the practical engineering problems by using scientific methods and technical means, to help and guide the engineering master's degree thesis and the production of enterprises, the actual engineering closely together, and good application. In guiding the process of writing master's thesis, will the school teacher, monthly meeting school instructors and students to meet the work will form a long-term mechanism, communicate with three parties at each monthly meeting, School tutor to help students clarify the writing ideas, on campus and outside tutors to help students clarify the writing ideas, to solve the problem of writing skills and methods to guide students to achieve higher quality thesis

3) High quality paper review and reply process. First, in the paper review stage, the master's degree thesis in the implementation of the "double blind" evaluation system, through the blind evaluation to participate in the respondent. On the basis of the blind expert, in addition to the traditional college accreditation experts, according to the characteristics of the master of engineering, select a number of practical engineering experience in the relevant fields to increase the technical backbone of the enterprise to the ranks of the assessment team, in addition to considering the academic foundation of the paper, but the actual background of the project, the research method is scientific, research results have economic and social benefits, the application of engineering is obvious, whether the demonstrated ability to solve practical engineering problems as
appraisal key, and give impartial and impartial expert opinion. in the evaluation index system, should be established not only with academic masters, the evaluation index system of different degree theses with the master of engineering, in order to guide the full-time engineering master's thesis scientific and objective evaluation. Secondly, in the thesis defense stage, members of the defense committee should not only have a wealth of theoretical knowledge of University Accreditation experts, should also be added to some practical experience, a comprehensive understanding of the actual situation of the production of enterprise experts. It is easier to determine the practical value of the paper, find the inadequacies of the paper, so as to make a scientific, objective and comprehensive evaluation.

Summary
Over the past five years, Xijing University has been exploring full-time Master of engineering innovative training system and quality assurance system. Practice proof, only firmly establish the quality of personnel training as the center, and strengthen the cooperation between universities and enterprises, through the understanding of the actual needs of enterprises, undertaking the work together with the enterprise, in order to cultivate a number of practical application to adapt to the development of enterprises, complex industrial engineering management personnel. With the development of Engineering Master Education, we also need to carry on the thorough exploration and the practice innovation in the enrollment system reform, the tutor troop construction, the quality assurance system and the evaluation standard and so on, in order to continuously improve the quality of Engineering Master training to meet the needs of the community and Industry.

Reference


