

## **Analysis of the advantages of the full-time engineering master's cultivation mode**

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**Abstract.** With the development of society, the demand for high level applied talents is increasing day by day. Therefore the Ministry of Education of the People's Republic of China has increased the proportion of full-time engineering masters to encourage the implementation of the education mode of combined classroom learning with base practice. However, compared to the academic master, social recognition of the engineering master's degree is not high, and a lot of students who would like to pursue a master's degree in engineering also have some concerns. This paper analyzes the advantages of the cultivation mode of the combination of industry-university-research from four aspects: the cultivation of students, school education, enterprise development and complementation of work and learning, to boost recognition of the full-time engineering master.

### **Introduction**

The cultivation content of the engineering master known as the professional master, focuses on the engineering application and cultivation of high level engineering technique and management personnel for enterprises and departments. On March 11, 2009, the Ministry of Education issued a notice that the enrollment of the full-time professional master will increase by 50 thousand, mainly for the undergraduate fresh graduates on the basis of the current graduate enrollment plan<sup>[1]</sup>.

However, according to statistics of Z University, about 64.6% of the students who graduate as full-time engineering masters are not familiar with their cultivation direction of postgraduates of the types, even admitted with reluctance. Only 27.6% students who are based on improving their practice ability or the good development prospects of the full-time engineering master, take the initiative to apply for or choose to adjust to the type of postgraduates. What's more, 76.2% teachers do not accredit the full-time engineering master's degree, the new type of personnel cultivation<sup>[2]</sup>. Based on this situation, college teachers and students must recognize the advantages of the cultivation mode for the full-time engineering master: the cultivation quality of the engineering master can be improved and provide talents for the society and enterprises through the combination of industry-university-research cultivation mode.

In the paper, the author puts forward four advantages of the cultivation mode of combination of industry-university-research for the full-time engineering master by analyzing the cultivation direction of postgraduates in colleges and universities and the enterprise's demand for talents.

### **Increase students' advantages and enhance practice effect**

The characteristics of student candidates of full-time engineering masters are different from those of on-job engineering masters, but the same as those of full-time academic masters who are fresh graduates or recent college graduates almost without practice experience. After 15 years of school education, many students feel numb for pure academic education, and a lot of knowledge in the learning process focuses on the abstract thinking. Therefore the traditional teaching method which is one-way knowledge teaching has many limitations.

The full-time engineering master's cultivation mode combines practice with classroom education closely, which makes students focus on enterprises' demand from the school's academic atmosphere facing actual needs in practice, exerting subjective initiative and applying theories, methods and

techniques to solve practical engineering problems actively.

Compared with full-time academic masters, engineering masters have a more comprehensive and solid grasp of basic theoretical knowledge in the baptism of a large number of practical courses. Engineering masters can not only learn the professional knowledge, but also accumulate the production experience through company internship. Influenced by corporate culture, their employment ability can get promoted, laying a foundation for adapting to jobs quickly in the future.

The cultivation system of full-time engineering masters adopts "dual-tutor system" that one is a school teacher and the other is an enterprise tutor who has rich practice experience and academic level accordingly. Educated by school teachers and guided by from enterprise tutors in practice, students can give full play to their advantages of agile thinking, accepting new things fast and so on, which maximizes the efficiency of cultivation students' personal ability.

### **Perfect teaching content and improve teaching level**

Under the influence of the traditional concept, the majority of college teaching modes follow the previous pure theoretical education only paying attention to the improvement of students' academic level, of which teaching content is out of line with actual production situation[3].

The engineering master's cultivation mode combined with the enterprise, makes the students participate in practical production process. In the process of participation, students can learn content that has practical value but not mentioned in school classroom through hands-on practice, summary of process and other ways. At the same time, students can communicate about their own new content gained in the practice with teachers and students in school providing new content for the school teaching through some forms, such as laboratory group meeting, graduation reply and so on,.

According to the requirements of the engineering master's cultivation, it needs to have a practical cultivation base and a huge financial support [4]. The engineering master's cultivation that mainly adopts the combination of industry-university-research cultivation mode reduces the education cost to a great extent, broadens the students' practice base, and expands school space.

The implementation of "dual-tutor system" provides a bridge between school teachers and enterprises' advanced technical personnel, which combines the school teaching and the actual situation of enterprises, and lets school cultivate high-quality talents for enterprises. At the same time, "dual-tutor system" also plays an important role in the teaching and scientific research, which promotes the cooperation between schools and enterprises and enhances the overall strength of the school.

### **Promote enterprise's development and stimulate enterprise's vitality**

The academic master's cultivation mode attaches great importance to theories and weakens practice, which cannot fully adapt to the development trend of today's society. However, the full-time engineering master who is cultivated by schools and enterprises has both theoretical and practical experience, which meets the needs of enterprises for the compound and applied talents[5].

The engineering master's cultivation mode cooperated between colleges and enterprises promotes students to become talented and enhances the strength of the school education. At the same time, through the establishment of industry-university-research base, selecting employees as student enterprise tutors, recruiting engineering masters to the enterprise to carry out the research, the core competitiveness of enterprises is enhanced, and the culture of the enterprise is enriched, and a good social image of the enterprise is established. The establishment of industry-university-research base is beneficial to enterprises with the technological innovation, adjusting the industrial structure, updating and development of enterprise production technology, so as to enhance the enterprises' core market competitive power. Enterprise's staff as engineering masters' out-of-school tutors, are conducive to promoting exchanges between schools and enterprises, enhancing employees' accomplishment and enriching enterprise culture. As the cooperative units of the colleges, enterprises receive engineering masters to carry out the research, which is the social recognition of the strength of the enterprises and conducive to expansion of

enterprises' influence, promotion of the enterprise campus recruitment as well as establishment of the good social image of enterprises.

### **Contribute to complementation of working and learning and promote society development**

The admission targets of engineering masters used to be on-job staff with certain work experience. They go into school without walking off the job, which is called the in-service cultivation mode. As a result, studying and working are the most prominent conflict in their studies. The staff are sent to attend school by enterprises hoping them to choose part of the curriculum combined with work experience to have an immediate effect on work. Therefore, their learning time is short causing the unsolid theoretical knowledge, limited study content, the low value of engineering master's degree and so on, which can only meet some needs of enterprises in the current development, not the need for a large number of comprehensive talents with both solid theoretical knowledge and rich practice experience.

The cultivation of graduate students aims to reserve high-level talents for the society, which should ensure their sufficient study time and put emphasis on theoretical basis education[6]. The enrollment objects of full-time engineering masters are almost fresh graduates from universities, which decides that the cultivation is under the premise of ensuring the learning time of the theoretical knowledge to carry on the practice education, so the cultivation mode completely avoids the conflict of work and study time. At the same time, the cultivation mode combined enterprise practice with universities learning promotes the complementation of work practice and theoretical study and realizes win-win cooperation between enterprises and universities. During attending school, students can not only gain practical work experience, but also expand theoretical knowledge, which can meet the requirement of the social development for the high-level comprehensive talents and promote the development of social productivity and the national industrialization.

### **Conclusions**

The cooperative cultivation of the full-time engineering master between colleges and enterprises and the establishment of the industry-university-research cooperation base, not only fulfill enterprises' requirements for the comprehensive application talents, but also expand professional practice sites of full-time engineering masters, which enhances the school running capacity, realizes win-win cooperation between enterprises and universities and promotes the social development.

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