Exploration and Practice of the Training Mode for Distinguished Talents of Weapon Majors

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Abstract. The construction of weapon majors is crucial to cultivate innovative students in defense technology. To meet the needs of cultivating distinguished students for weapon majors, the cultivating method for weapons majors was discussed in detail, in view of the promotion of professional attractiveness, enhancement of engineering practice ability for young teachers and students. Therefore, a training mode based on the combination of school teaching and enterprise practical was formed to cultivate the distinguished students for weapon majors.

Introduction

In the 80s of last century, the defense industry was guided by the principle of “combining army and civilian, combining peacetime and wartime, military products priority and raising army by the people”. All military enterprises bore the heavy and suffered the benefits declining which leading to the sudden drop in the demand for the specialty of national defense. In addition, the employment policies in colleges and universities of parallel enrollment and independent career selection resulted in the attractiveness of weapon majors to students and the quality of students decreased in the late 1990s. For that reason, relevant universities had adjusted related majors and integrated many military specialties into "universal" and "wide caliber" majors, weakening the professional characteristics [1]. In recent years, new changes have taken place in the international and domestic situation. The new situation of modern war and military struggle has put forward higher requirements for the performance and development of weapons and equipment. The development of national defense science and technology and the development of advanced weapons and equipment require a large number of outstanding personnel in the field. It brings new opportunities for the development of the national defense related specialties with the background of military industry, which puts forward new requirements for the training of talents in universities, especially in universities with national defense characteristics.

At the same time, the Ministry of education started the "outstanding engineer talents training program" since 2010, aiming at training a large number of high-quality engineering talents with strong innovation ability and adapting to the needs of China's economic and social development[2-4]. It is imminent to develop many talents with strong ability of innovation and engineering practice according to general standard and military industry standard.

Nanjing University of Science and Technology as a comprehensive university with distinctive professional weapon defense characteristics ranks first in the country in this field and is the cradle of the training of military personnel in our country. It is our specialty’s bounden duty to study how to combine closely with the needs of the state, and train excellent talents with solid foundation, outstanding professional ability and strong ability of practice and innovation. In recent years, according to the characteristics, our specialty integrated related professional advantages resources, aiming at improving students' engineering practice ability and innovation ability and we actively explored new mode of training weapons professionals, and got out of a new way to cultivate outstanding talents of weapons.
Professional Content Integration and Professional Talents Cultivation

The original weapon system and engineering specialty set the professional directions based on the product. The professional directions include artillery, light weapons, rocket artillery, ammunition, rocket and fuse, which are too small and too rigid in the product. They have respective systems and have the repetition in the respect of teaching plan, teaching content, course setting and practice.

However, with the rapid development of science and technology of national defense, modern weapons and equipment have become the product of multidisciplinary technology synthesis. Any single discipline and technology cannot support and promote the development of weapons and equipment. The interdisciplinary integration of multidisciplinary knowledge and technology has become an inevitable trend in the development of modern weapons and equipment.

Therefore, we specialized it as an opportunity that the second batch of excellent engineer education and training program was included in the Ministry of education in 2011 and combined with professional features based on the full integration of the existing six professional directions to build two specialties: the launching system and the intelligent ammunition. They are aimed to broadening the students’ knowledge, and cultivating the transmission systems and ammunition system engineer level personnel.

Construct Talents Special Zone and Promote Professional Attractiveness

Due to the particularity of the industry, the location of the general employment units is relatively remote, and there are certain factors such as danger and confidentiality restriction. The attractiveness of weapon specialty has declined in recent years, which objectively has a negative impact on the sustainable development of the profession.

To this end, we specializes in a variety of incentives to improve the professional attraction. Firstly, we invite well-known experts and scholars in the industry and professional famous professors to improve the sense of mission and honor for the students to devote themselves to national defense. Secondly, we will take advantage of discipline advantage resources, high-level research laboratories, student innovation and entrepreneurship studios and other platforms to hold innovative competitions such as new concept weapons innovation competition, aircraft design competition and so on, to stimulate students' enthusiasm for weapons. Thirdly, special tilt policy is formulated for the recommend postgraduate and NETEM of the weapon majors. Fourthly, the industry enterprises are invited to set up scholarships and carry out directional support. Through the implementation of these incentives, the attraction of the specialty to the excellent students and the influence of the students are effectively promoted.

Enterprise Participate to Improve Students' Engineering Practice and Innovation Ability

Because of the teaching cost and the danger of the weapon specialty experiments, the practical trainings are reduced in the teaching of the weapon specialties. Only a few demonstrative experiments left. It causes the original teaching system to focus too much on professional theoretical knowledge imparting, the training of students' practical ability and innovative ability are too few, and the training of engineering practice ability is insufficient. There is a problem of "emphasizing theory and ignoring practice"[5].

In addition, the young teachers, as the main body of teaching, are generally lack of practical experience in engineering. Although most of them have a Ph.D. degree in engineering, and even some teachers have overseas experience, they are basically from universities to universities, and lack of business experience. The quality of the teacher's engineering cannot meet the needs of the teaching of excellent project.

We focused on the young teachers are lack of experience, and taken the opportunity of scientific research as a turning point to send them to frontline of enterprise production to improve their ability of Engineering practice. At the same time, we had been selecting talented people in the enterprise, Carried out the necessary training of teaching qualifications for them. After the examination is
qualified, they were employed as a professional part-time teacher. After that, dynamic tracking management was implemented to them for the benefit of forming a team of part-time teachers, and expanding the knowledge structure of the teachers.

The two teacher teams from university and enterprise separately work together to make up the training plans. Both of the teams participate the all process including development of training plan, the implementation of teaching content and evaluation of teaching effect. We set up practical training courses for process and manufacturing. This kind of courses are taught by enterprise teachers at the production site of the enterprise, aiming at leading the students into the front line of enterprise production. We implement the school tutor, enterprise tutor "two to one" joint tutorial system in graduation design. Without involving the secret red line, the school and enterprise jointly issue a completely non-confidential topic, and cultivate students with their characteristics, according to the training standards and assessment requirements of training programs. Both sides of the school and enterprise jointly assess the students' training content in the learning stage of the enterprise, and evaluate the quality of the students' training. All these measures above are aimed to promote the students' engineering practice ability and innovation ability.

Conclusion

Years of teaching practice has shown that through the implementation of the above measures, the attractiveness of weapon majors has been improved, students' knowledge level has been broadened, and engineering practice ability and innovation ability have been significantly enhanced. It effectively improves the students' quality of engineering and the ability to analyze and solve problems.

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