

Exploring the Practice of Cultivating Engineering Talents in the Direction of Unmanned Aircraft under the Background of New Engineering Discipline

Chen Zhao, Chao Fu, Tong Wang, Jian Zhang, Huatao Zhang

Shandong Vocational College of Information Technology, Weifang City, Shandong 261041

Abstract: In order to adapt to the new round of scientific and technological revolution and industrial change, and to support the innovation-driven development of the service industry, the Ministry of Education has vigorously promoted the construction of new engineering disciplines since 2017. At present, new engineering disciplines are gradually penetrating into various industries to meet the new needs of social and economic development. Under the new situation, the development of new engineering industries to adapt to new industries and technologies is an inevitable requirement for development in the new era. UAV is a new type of specialty emerging in recent years, and there are still many uncertainties in its development and construction. At present, there are still many problems in the curriculum, school-enterprise cooperation, etc., and it needs to accumulate experience in its own development, therefore, the school should constantly optimize the talent training program, improve the quality of teaching, and cultivate new talents for the development of China's UAV industry.

Keywords: New engineering disciplines; UAV engineering; Talent cultivation; Practice

Introduction

The demand for talent in the drone industry has risen dramatically in recent years, and the rapid growth of the drone industry is in dire need of exceptional technicians to serve it. UAV career is a multidisciplinary cross-discipline profession, which needs to master the knowledge of aircraft structure design, vehicle control, data processing, sensors, communication and so on. How to cultivate professionals who are adapted to the development needs of the industry and have multidisciplinary cross-competence is the urgent problem to be solved for the construction and development of the current UAV industry.

1. Difficulties faced by the training of UAV talents under the background of new engineering disciplines

1.1 unscientific curriculum system setting and lack of curriculum resources

On the one hand, since drone technology involves the intersection of multiple disciplines, it is difficult for schools to take into account various fields and specialties in the teaching process. At present, some schools in China are more inclined to specialties with wide application and more mature theoretical knowledge due to insufficient science in setting the curriculum system. On the other hand, at present, the construction of China's drone technology specialization is still in the process of groping, and most schools are copying the teaching mode of similar specialties, which leads to unclear positioning of the curriculum in this field and insufficiently prominent professional characteristics.

In addition, due to the limitation of teaching places and the lack of realistic conditions, online teaching materials are also difficult to meet the needs of students, so there is a lack of flight-related practical courses, which seriously restricts the improvement of the quality of professional talents.

1.2 School-enterprise cooperation is superficial, and there is a shortage of off-campus cooperative practical training platforms

UAV is a highly practical specialty, and practice is an important part of improving its professional ability. At present, it is common for schools in China to focus on teaching theoretical knowledge, while there are fewer aspects of practical teaching and innovative ideas. Some schools in China do not have formal UAV training bases or platforms to provide students with innovative and entrepreneurial services, so some of the students do not have enough practical experience. At present, the professionalism and vocational skills of some students have been difficult to meet the needs of enterprises for talent empowerment. Issues such as school-enterprise cooperation and industry-teaching in-

tegration have become key factors restricting the efficient development of high-quality talent cultivation in the UAV industry.

2. Practice of cultivating engineering talents in the direction of unmanned aircraft under the background of new engineering disciplines

2.1 Integration of course ideology and politics in pursuit of effectiveness

Firstly, the elements of ideology and politics should be explored through various ways. In the specific teaching process, it is necessary to effectively combine "internal and external training" to constantly enrich the political thinking elements of the drone specialty. On the one hand, professional teachers are selected to participate in the national curriculum and exchange ideas with neighboring schools; On the other hand, by organizing study groups to discuss the teaching content and independently explore the content of ideological and political education, we continue to enrich the educational resources of the Civic and political elements available in the curriculum. Second, the integration of Civics and politics content without traces. Insisting on a natural and fresh method of combining ideology and politics, combining the elements of ideology and politics with the content of the course, and making effective application in the power of exemplary role models, the power of the spirit of science, and the social responsibility to infect the students to make it more acceptable and the students to have an impact. Thirdly, it is necessary to distinguish different ways and make them standardized. The curriculum of ideological and political theory courses in schools should be set up according to the differences in courses, teaching contents and teachers, focusing on giving full play to collective wisdom and individual characteristics. Under the guidance of the unified idea of teaching ideology and politics, ideological and political education should be incorporated into the curriculum in different ways according to different courses, different levels and different teachers.

2.2 Curriculum system construction emphasizes science

First, the curriculum covers a wide range of subjects, which reflects the multidisciplinary cross-disciplinary character of UAV, and also enriches the curriculum system of various disciplines, broadens the knowledge scope of students, and creates more opportunities for their development. During the basic research period, the training of basic mathematical and physical knowledge and engineering ideas is emphasized, and corresponding public courses and professional introduction courses are set up as appropriate; in the major phase, the contents of machinery, electronics, sensors, control, navigation and other aspects will be added into the major subjects in order to comprehensively expand the knowledge of the students. Secondly, the teaching requirements are emphasized. In expanding the content of the course, its specific teaching needs and curriculum are based on the school's solid electronic information foundation, and the number of hours for electronic information and control majors has been increased, and the depth of teaching in the course has also been improved. The implementation of the course enables students to have deeper attainments in the field of information and control, and has strong practical application value, which can cultivate the development direction of "multi-specialization and multi-functionality" of the students; Third, the teaching content is buttressed by practice. The specialty is practice-oriented, increasing the proportion of experiments and practical training. It maintains long-term cooperation with enterprises in the drone industry, regularly invites senior experts from enterprises to give technical lectures to students, allows engineers from enterprises to participate in the teaching work as well, and guides students to carry out internship training, so as to enhance the matching of school practice with the actual needs of enterprises.

2.3 Theory teaching focuses on strengthening the foundation

First, we should fundamentally change the pointing of the basic mathematics and science courses. Organize the teaching and research department to carry out research on the combination of theory and practice, and each teaching team has its own teaching plan, such as mathematics, physics and so on. Under the summary and organization of the teaching and research office, exchange with the teachers of public courses of mathematics and science to make it suitable for the teaching content of mathematics and science foundation, improve the accuracy of the key points in the basic teaching of unmanned aerial vehicle professional curriculum standards and course alignment, and ensure that the basic mathematics and science foundation course meets the needs of professional development.

Secondly, it is necessary to strengthen the systematic specialized basic courses. UAV is a systematic project, therefore, the organization of teaching, especially for the theoretical teaching of the professional basic courses, has a larger number of students participating. Based on the professional system, it adopts the combination of entrance training and professional introduction to subdivide the specialty of aircraft control and information technology and form a professional system; with the curriculum as a system, it divides the curriculum into several connected knowledge modules, guides the students to engineering practice, and lets the students learn while solving the actual problems. In the teaching process, students should be made to form the concept of systematic thinking and develop the habit of systematic thinking.

3. Conclusion

To summarize, under the background of new engineering discipline, in order to adapt to the market demand and social development needs, corresponding requirements have been put forward for the training mode of unmanned aircraft talents. For the newly established Air-

craft Control and Information Engineering major, the talent cultivation mode of "Civic and Political Kernel, Science and Practice Integration" is proposed in combination with the demand for the construction of new engineering disciplines and the characteristics of the UAV industry. The article discusses the curriculum design and curriculum integration from the perspective of the ideological and political elements, and the results show that the students' vocational ideals have been consolidated, the engineering skills have been improved, and the students' overall satisfaction with the curriculum is high, which indicates that the cultivation mode of "ideological and political kernel, science and practical integration" has been effective, and it can offer a reference to the cultivation of unmanned aerial vehicles related professionals. It shows that the training model of "Civic and Political Core, Science and Practice Integration" has been effective and can provide reference for the training of UAV-related professionals.

References

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