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Exploration of UAV Course Teaching in Military Academy under Mixed Teaching Mode

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Abstract: The mixed teaching mode is an important direction of teaching reform in military schools. This paper takes the teaching of UAV course as an example to explore the teaching method suitable for the training needs of first-class military talents in the new era. First of all, based on the analysis of the learning situation, the characteristics and prominent contradictions of the current UAV course teaching are studied, and then combined with the online and offline mixed teaching method, the hierarchical course teaching idea is proposed, and the UAV basic knowledge, principle analysis, practical application classification and grading course content system is designed from the aspects of teaching objects, content, resources, activities, evaluation, etc, Give full play to the role of students and teachers.

Keywords: Mixed teaching; Military academies; UAV; First-class military talents.

1. Introduction

At present, UAV course teaching as a new technology has been widely carried out in military academies. However, due to the high and sophisticated nature of UAV technology, it involves many interdisciplinary disciplines such as electrical, mechanical, computer, automation, and has a certain theoretical depth and breadth, and its technical development and combat form are also changing. Therefore, the traditional curriculum teaching method has been unable to meet the needs of personnel training in the actual battlefield. The mixed teaching mode has been widely used in local colleges and universities. This method improves the traditional teaching mode, combines the traditional single offline course with modern information technology, and gives full play to the mutual advantages of teachers and students, and is more suitable for the actual situation of preparing for war.

2. Analysis of Learning Situation

2.1. The student's ability does not adapt to the needs of the army

For a long time, the contradiction between talent training in colleges and universities and the actual job needs of the army has been very prominent. The front-line forces have responded that many students trained in colleges and universities lack theoretical knowledge, practical operation ability and innovative thinking awareness. In the critical period of reform and building a strong military and in the context of new military reform, the demand for compound and learning military talents is increasing. After graduating students from many colleges and universities work in the army, they have long had problems such as difficulty in changing their thinking and adapting to their posts. For a long time, it has not only delayed the development of their personal prospects, but also restricted the process of preparing the army for war.

2.2. Course hours are not suitable for students' foundation

The composition of cadets in military academies is complex. From the perspective of the source of students, the local youth who have been admitted to the college entrance examination and the army soldiers who have experienced in the army, there are several months of short training courses to four years of undergraduate courses in the educational system, and from high school to graduate students in the educational background, the students have different foundation and different positions, and the contents, hours and methods of the courses they study should also be different. The knowledge involved in the UAV course covers multiple interdisciplinary subjects. The teaching content needs a lot of professional knowledge as support. The course content must be supplemented with relevant basic knowledge. Therefore, teachers are required to complete relevant teaching activities for students with different learning conditions within a limited course hour, and achieve a balance in basic knowledge, principle analysis and practical application. However, in the actual work of the grass-roots units, most of them focus on the application of UAVs, which is in contradiction with the traditional teaching methods of courses.

2.3. Inadaptability between ability training and curriculum design

The post demand for UAV professionals in grass-roots units is mainly the operation and maintenance of UAVs. After students work in actual posts, they also need to apply the theoretical knowledge they have learned to improve their professional level in practice. However, the traditional teaching method is based on theoretical teaching, with insufficient practical operation time and simple form, which cannot fully mobilize the subjective initiative of students, and the filling teaching cannot integrate theoretical knowledge into the actual work position. In traditional teaching methods, students tend to passively accept knowledge. Teachers teach what students learn instead of what the army needs. They teach what the army needs and practice what they need. This is contrary to the purpose of "educating people for war".

3. Design of Mixed Teaching

3.1. Course design orientation

The UAV course is aimed at personnel in military academies and grass-roots units who have professional and technical requirements for UAVs. With the purpose of "educating people for war", it divides different teaching objects according to students' different learning conditions, systematically studies the basic concepts, basic operations and related theories of UAVs, aims at the actual needs of the unit, solves the actual technical problems of UAV equipment in the army, and closely follows the cutting-edge technology and focuses on the future battlefield, Cultivate students' awareness of practical combat and innovation, and cultivate compound and learning talents with solid foundation and excellent skills for the army.

The course design needs to achieve the following three objectives:

(1) Knowledge objective: Through learning the basic concept, principle and operation of UAV, we can establish the knowledge structure of UAV system and solve the problem of "what, why and how" of UAV.

(2) Competency objectives: students have the theoretical analysis and practical operation of UAV, can complete various tasks through UAV, and can complete the operation and maintenance of UAV. Cultivate students' self-learning ability, practical operation ability, team cooperation ability, communication and expression ability.

(3) The ideological and political objectives of the course: students should establish the patriotic enthusiasm of science and technology power, and cultivate the scientific spirit of seeking truth, pragmatism and innovation.

3.2. Course content design

UAV curriculum design includes six aspects: teaching objects, teaching content, teaching resources, teaching activities and teaching evaluation. Divide different teaching objectives according to different students, and design teaching content according to post requirements, with accuracy teaching according to post, demand and aptitude. Combined with online tools such as military vocational education platform, rain class, SPOC platform, etc., carry out online and offline mixed teaching, integrate multiple teaching methods, use progressive and hierarchical teaching activities to guide students to learn independently, and carry out participatory in-depth thinking. After class, carry out online evaluation in a timely manner, and carry out process assessment and final assessment, and adjust teaching strategies in a timely manner in combination with the feedback of the army, so that teachers and students can summarize and reflect. The specific design idea is shown in Figure 1.

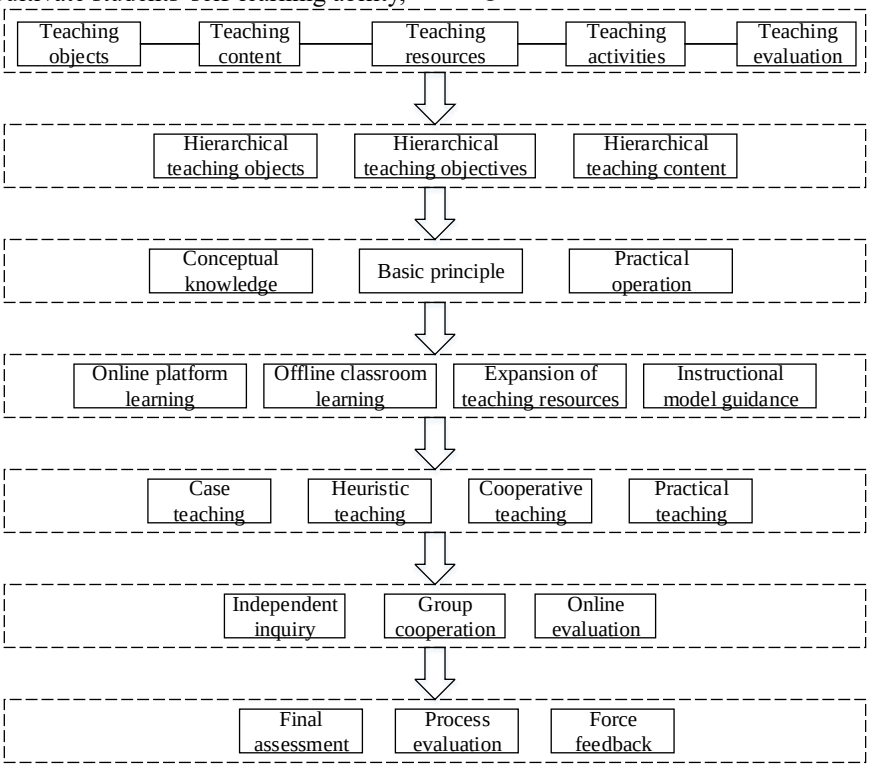


Fig. 1 Mixed teaching system

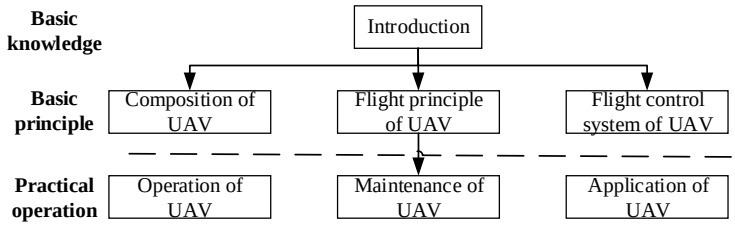


Fig. 2 Framework of course content

The content framework of the course is shown in Figure 2, including 1+3+3 modules, 1 basic knowledge module, to learn the basic concepts of UAV and preliminarily understand UAV; Three basic principle modules to learn the composition,

flight principle and flight control system of UAV and further increase the understanding of UAV; Three practical operation modules to master the operation and maintenance of UAV and learn the application of UAV in various fields, especially in military.

According to the different course hours of students, online resources can be used to complete learning. Teachers can upload resources, assign learning tasks, and complete online Q&A. Students need to learn online, complete test tasks, and interact with teachers. In offline courses, teachers explain key and difficult points, set up problems to organize students to discuss, set up various teaching methods, guide students to think, and deeply participate in learning. This part can be appropriately expanded according to different training objectives of students. Teachers can use video display, practice comparison and other methods to explain, and can use online and offline mixed learning. The practical operation is the key and difficult part of the study. Students need to master the practical operations such as takeoff and landing, flight, assembly, maintenance, etc. of UAVs. Different tasks are set during the class, and the assessment is conducted based on the results-oriented mechanism. In the after-class link, teachers should assign after-class learning tasks, expand learning resources, answer students' questions, remind students to complete online evaluation in time, and teachers need to complete process assessment and final assessment in time to achieve closed-loop teaching links. In the teaching process, teachers can organize students to participate in expert lectures, skill contests, scientific research projects, basic army practice, etc., to expand students' innovative thinking and post holding ability.

4. Conclusion

The mixed teaching mode is an important direction of teaching reform in military schools. It can make full use of the advantages of online and offline teaching and give play to the leading role of students and teachers. This paper takes the teaching of UAV course as an example to explore the teaching method suitable for the training needs of the first-class military talents in the new era under the mixed teaching mode, adhere to the problem-oriented, elaborate and professional development of talent training programs, closely follow the needs of the army, overcome the contradiction between supply and demand, training and employment, and effectively connect with the position to accurately train talents.

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