



“Equipment + Actual Combat” Research on Teaching Reform of Intelligent Unmanned System Countermeasure Series Course

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Abstract. As a professional course oriented to actual combat, intelligent unmanned system countermeasure series courses play an important role in national defense construction of China. However, there are still some problems to be solved in the process of cultivating students of related majors. This paper analyzes the policy of military education policy in the new era from the perspective of intelligent unmanned system confrontation series courses, puts forward the general idea of teaching reform of intelligent unmanned system confrontation series courses, explores the specific teaching reform method of “Equipment + Actual Combat” with the guidance of combat effectiveness standards and actual combat requirements, so as to comprehensively improve the teaching effect of intelligent unmanned system countermeasure series courses and enhance the quality of training professionals in unmanned systems.

Keywords: Equipment + Actual Combat; Intelligent Unmanned System Countermeasure; Educate Students for War; Policy of Military Education in the New Era

1 Introduction

At the opening ceremony of the training for headmasters of colleges in the whole army, President Xi stressed that “we should focus on the needs of the goal of building a strong military, adhere to the standards of combat capability, and improve the dynamic adjustment mechanism of disciplines and majors.” The policy of military education in the new era requires insisting on educating students for war, and needs military academy education to accurately connect troops and create a training organization model consistent with war and training [1-3]. In order to implement the instructions of President Xi and the policy of military education in the new era, it is necessary to regularly promote the achievements of military combat training into the classroom and speed up the updating of teaching content in colleges to enhance the pertinence, timeliness and effectiveness of personnel training.

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At present, some military academies such as Air Force Engineering University, Aviation University Air Force, Army Engineering University, Army Academy of Artillery and Air Defense and Naval Aeronautical University have set up unmanned system related majors and established corresponding curriculum systems. Air Force Aviation University mainly undertakes the teaching tasks such as the operation and maintenance of UAV represented by XXX1/2. Army Engineering University mainly undertakes the teaching tasks related to small and medium-sized UAVs in the Army. Army Academy of Artillery and Air Defense is mainly aimed at artillery aiming and shooting UAV. Naval Aeronautical University mainly undertakes the teaching tasks such as the operation and maintenance of UAV equipment represented by NavyXXX005. The cultivation of students majoring in unmanned systems still stays in how to operate a certain type of unmanned equipment and pays more attention to the cultivation of mechanized operation ability of the platform. The students lack understanding of the principal technology and innovation of unmanned system countermeasure technology system and equipment combat application. Army Academy of Artillery and Air Defense and Air Force Logistics University have carried out research on the teaching reform with the theme of "Teaching for War", but they mainly focus on a single course.

Generally speaking, the contradiction between the intelligent, practical and forward-looking requirements of the intelligent unmanned system confrontation system and the current situation of postgraduate teaching is prominent. At home and abroad, there is little research on the overall design of the curriculum system with the relevant professional direction close to actual combat. In order to meet the needs of the army, we must shorten the distance from the classroom to the battlefield, connect intelligence with equipment and actual combat closely, grasp the key links of “post demand, curriculum system, future traction, actual combat, long-term development” and teach scientifically.

2 General Thought

2.1 Focus on the Requirements of the Goal of Building a Strong Military, Adhere to the Combat Effectiveness Standard, Carry Out New Fields, New Quality and New Equipment, and Cultivate Practical Talents

Present Xi pointed out that in the face of the vivid practice of military struggle preparation, college education must keep pace with the times, persist in facing the battlefield, the army and the future, focus on actual combat in teaching, make the students meet the needs of army building and future war, and be close to the army, actual combat and future.

Graduate students in military schools are the main force in the design, research and maintenance of weapons and equipment. The cultivation of graduate students should follow the requirements of the goal of building a strong military closely, adhere to the combat effectiveness standard, develop knowledge reserves around the key technical fields of war, and adapt to the demand of information-based, intelligent and unmanned wars for practical talents with new fields, new quality and new equipment[4-5].

2.2 Guided by the Standard of Combat Effectiveness and Actual Combat Demand, Construct a Dynamically Adjusted Cultivation Direction and Research Direction Based on the Specialty Direction, and Enhance the Systematization and Militancy of Personnel Cultivate

As shown in Fig. 1, according to the requirements of combat effectiveness standard, we constructed the Intelligent Unmanned System Countermeasure cultivation direction and research direction on the basic of Instrumental science and technology specialty direction, integrating scientific research with talent training.

Specialty is the basic unit of talent training, and curriculum is the core element of talent training. Curriculum is the most basic component of teaching activities, and its essential attribute of "transmitting inherent knowledge" determines that it is an important foundation for graduate education to "create brand-new knowledge". Teaching has an innate function of supporting and feeding back scientific research.

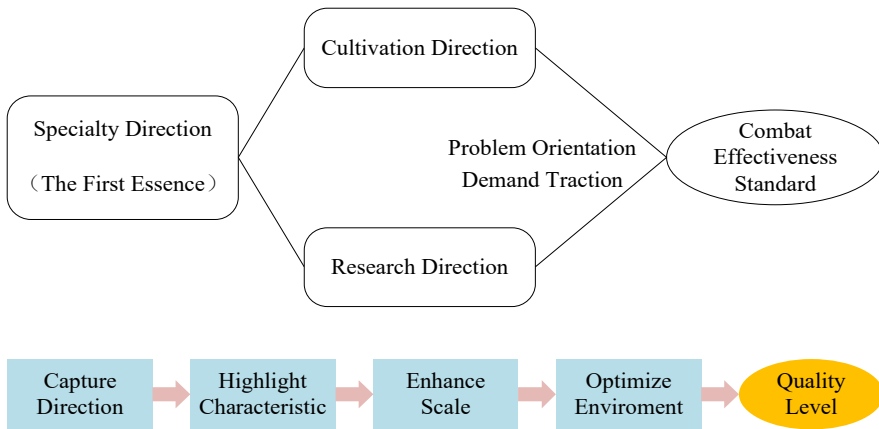


Fig. 1. The relationship of specialty direction, cultivation direction, research direction and combat effectiveness standard.

2.3 Connect the “First Kilometer” and the “Last Kilometer” Leading to the Battlefield, Teach Facing Actual Combat and the Future

The “first kilometer” aims to shorten the distance from equipment research to battlefield practice, and it is the response of scientific research and talent training to the needs of the battlefield. The process of postgraduate training and scientific research are inseparable. The “last kilometer” aims to shorten the cohesion from actual combat feedback to scientific research, and is a test of scientific research and talent training based on actual combat effectiveness. By connecting the “first kilometer” and the “last kilometer”, curriculum teaching reform can realize the unity of facing actual combat and facing the future in postgraduate training, especially in the field of intelligent unmanned system countermeasure.

3 Specific Measures of Teaching Reform

3.1 Take Multiple Measures to Stabilize the Goal of Talent Training, Aim at the Direction of Curriculum System Construction and Shape the Plan of Curriculum Teaching

Combined with the policy of military education in the new era, we should accurately grasp the needs of the talent training goal of intelligent unmanned system countermeasure specialty and stabilize the construction direction of series course. In view of the rapid development and urgent demand of new theories, technologies, equipment and tactics of intelligent unmanned system countermeasure construction in recent years, we have optimized the teaching content, compiled and revised the curriculum standards and shaped the teaching plan. According to the achievements of scientific research and practice, such as the integrated construction of military intelligent unmanned countermeasure system, the application of military intelligent unmanned countermeasure system and the development of our military intelligent unmanned countermeasure system, new textbook is compiled to enrich the theoretical frontier knowledge and the current situation of new equipment in the army. The new textbook focuses on the latest technological frontier and development, and embodies the characteristics of military courses. The military application of the latest technology, the application technology of military equipment and the operational application of intelligent unmanned system occupy a certain proportion in the new textbook.

3.2 Perfect the Teaching Content System of the Course and Establish the Specific Methods of Series Courses

In order to further meet the characteristics of the teaching object and realize the connection between the “first kilometer” and the “last kilometer”, the construction of the teaching content pays attention to the foundation and advancement, reflecting the scientificity and systematicness. In addition, we also explore the application of emerging technologies in the field of intelligent unmanned system countermeasures, enrich the theoretical frontier knowledge and the current situation of new equipment in the army to enrich teaching content close to actual combat.

By participating in major special training tasks and guiding army training, we have learned a wealth of experience and army training achievement which are applied to the teaching process. Specifically, we introduce new theories, new technologies, new methods, new tactics, new training methods and the latest scientific research achievements into the classroom, dynamically update the teaching content to ensure its advanced nature[6-7]. This approach not only closely integrates college teaching with military training, but also broadens the horizons of students, which effectively improves the quality of teaching.

Taking the reform of teaching methods as a breakthrough, we adhere to the principle “learning-oriented” and fully mobilize the subjective initiative of students. The heuristic, discussion-based and case-based teaching methods are promoted actively to teach students in accordance with their aptitude. By combining intelligent unmanned system

countermeasure equipment and utilizing various forms of teaching such as practical teaching and professional internships, we aim to stimulate students' strong interest in learning, researching, innovating, methods, and technologies.

3.3 Improve the Level of Curriculum Resources Construction and Establish An Effective Evaluation System

We regularly organize teachers to visit military enterprises and research institutes for equipment training and learning, collect the latest technical information, update the teaching content, and enhance the professional abilities of them. We also encourage teachers to go to the army for investigation and support teachers to participate in major military activities such as military exercises, so that teachers can truly understand the actual situation of military weapons and equipment, combat training, enhance the pertinence of teachers' classroom teaching, and improve teachers' teaching ability of unmanned system confrontation.

Implementing the fundamental task of "cultivating virtue and nurturing people", with the fundamental goal of educating people, shifting the focus from "teaching" to strengthening "educating people", actively promoting the construction of ideological and political education in the curriculum, and demonstrating the "soul casting" of the curriculum. Digging into the depth of content, expanding the width of teaching design, and improving the quality of curriculum construction[8]. Deeply study the system, laws, and methods of integrating ideological and political education into the curriculum, systematically and deeply explore the ideological and political elements contained in the curriculum, establish a library of ideological and political elements in the curriculum, and carry out ideological and political education.

Adhere to the guidance of improving the thinking ability of intelligent unmanned system adversarial system, with the goal of focusing on laying a solid theoretical and technical foundation, and form a combination of formative assessment and summative assessment evaluation methods. At the same time, we focus on stimulating students' learning motivation and professional interests, and strengthen formative assessment. By improving the rationality and measurability of formative assessment through various methods such as classroom performance, homework quality, stage testing, and innovative practice, the assessment based on knowledge points will be transformed into an assessment based on higher-order goals. Emphasis will be placed on the assessment of students' knowledge application ability and comprehensive quality, and the learning effectiveness of students will be dynamically and comprehensively evaluated throughout the entire process.

4 Conclusion

Proactively responding to the talent cultivation needs of new combat forces in the context of a new round of technological revolution and military transformation, actively connecting with the demand for military intelligent unmanned systems to combat talent capabilities, exploring the deep integration of professional teaching and service forces,

and integrating basic theoretical teaching with equipment application as the background and practical teaching with professional theoretical knowledge.

Design a case library with "combat examples+ equipment+ scientific research achievements" as the core, and carry out research-based teaching methods based on three-dimensional teaching resources. In response to the development of adversarial equipment and the demand for practical teaching, we vigorously promote the transformation of equipment construction achievements into teaching resources. Based on the case library of curriculum construction, we combine traditional teaching methods with modern educational methods, analyze the technological elements in combat examples and equipment from a technical perspective, stimulate the enthusiasm of students to engage in warfare, and cultivate research interests in promoting the development of science and technology in the military. Carry out research-oriented learning centered on students, deeply grasp complex equipment structures and cutting-edge technology reserves.

Expanding the discussion style practical intelligent unmanned system adversarial innovation ability training mode, adhering to the equal emphasis on training mechanism and teaching environment, combining the themes of unmanned aerial vehicle confrontation and intelligent unmanned systems, designing from theory to practice, and constructing a practical teaching content system with the characteristics of "combining politics and military, combining command and technology, and combining theory and practice". Increase openness in course content arrangement, teaching process design, and student participation, in line with the trend of technological development and the requirements of student innovation ability and quality, and bring school education closer to practical combat in the military.

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