

# The Practice and Exploration of Combat-Oriented Teaching in Equipment Support Courses of PAP

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**Abstract:** Guided by the military educational principles of the new era, the effectiveness of combat-oriented teaching in PAP equipment support courses has become a crucial determinant of trainees' initial job readiness. Graduates of the Equipment Support Management program face challenges such as extended adaptation periods, limited adaptability, and insufficient innovation capacity. To address these issues, this paper proposes several targeted strategies, including the integration of teaching resources, enhancement of instructors' combat experience, improvement of teaching methodologies, and strengthening of practical skills training for graduates. These measures are aimed at improving the combat-oriented teaching approach and advancing the overall quality of the courses. Furthermore, this study offers valuable insights and considerations for the comprehensive implementation of the Talent-Driven Military Strength Strategy and for promoting deeper reform and innovation within military academies.

**Keywords:** New Era Educational Principles; Combat-Oriented Teaching; PAP Equipment Support Courses; Teaching Research; Curriculum Innovation

## 1. Introduction

Equipment support is a crucial aspect of military operations and serves as the foundational element for all levels in accomplishing the "Six-Sphere Integrated" tasks and achieving strategic objectives. In the context of the military's emphasis on enhancing training, equipment support training plays a decisive role in improving the comprehensive support capabilities of rear echelon emergency logistics forces. Among various methods,

combat-oriented teaching has become an essential approach to improving the quality and effectiveness of equipment support training, and is now a standard initiative in the teaching reforms of PAP academies [1-3]. This paper focuses on the reform of combat-oriented teaching in the equipment support courses of PAP academies, with the ultimate goal of cultivating versatile equipment specialists capable of meeting the demands of the "Six-Sphere Integrated" tasks. The learning of specialized courses and practical training represents the final stage before students' transition from theoretical education to operational roles within the military. This phase is crucial for combining theory with practice and serves as a key period for enhancing trainees' initial job capabilities. The question of how to make equipment support courses more combat-focused, more aligned with the needs of the military, and better suited to meet the demands for skilled personnel in grassroots units, is an important issue that warrants careful consideration and practical exploration.

## 2. Existing Problems in Current Teaching and Their Causes

### 2.1 Course Positioning

The course is designed with reference to the PAP Equipment Support Management major's teaching syllabus and talent development plan. Its primary objective is to align the course content with the overall disciplinary framework, ensuring a logical connection between it and other related courses, such as *Introduction to Military Equipment*, *PAP Equipment Management*, and *Equipment Staff Operations*. At the same time, the course aims to maintain a clear internal structure, ensuring smooth transitions between topics to enhance students' understanding and retention. The course

primarily consists of theoretical instruction and practical exercises, following the principles of knowledge acquisition, skill development, and competency building. It is organized around key modules: theoretical knowledge, professional skills, and practical abilities. This structure ensures that the curriculum aligns with the requirements of equipment support management positions, focusing on fundamental knowledge, core skills, and essential methodologies. By doing these, the course lays a strong foundation for training officers who are capable of fulfilling the equipment support management responsibilities in the PAP. The course objectives are well-defined. The goal is to equip students with a comprehensive understanding of the basic theories underlying PAP equipment support, covering key areas such as equipment allocation, maintenance, operational support, training, combat readiness, and emerging trends in the field. Students can also understand the unique characteristics and principles of equipment support work within the PAP. Ultimately, the course aims to improve students' ability to effectively manage and execute equipment support tasks.

## 2.2 Existing Problems

According to relevant data, students majoring in PAP Equipment Support Management typically experience a relatively long growth period after graduation. On average, it takes around a year for them to integrate the theoretical knowledge acquired in school with the practical use of common equipment at the grassroots level, eventually developing their own distinct management style. However, becoming an excellent frontline commander—reaching the required level of proficiency in equipment operation and maintenance (referred to as the "Four Familiarities" and "Four Capabilities")—requires an even longer period of time [4]. Some students fail to fully grasp the knowledge of equipment operation and maintenance during their time at the academy, and their skills are not sufficiently honed. When they encounter new issues with equipment in the field, they struggle to find solutions. Over time, this results in two main problems: either they fail to utilize equipment effectively, which weakens their ability to carry out critical combat readiness training and support tasks; or they become overly focused on personnel management and cease engaging in equipment management duties.

Both of these issues negatively impact the overall combat readiness of the unit, creating a significant gap between the actual performance and the "capable of fighting and winning" requirements for operational readiness.

## 2.3 Root Cause Analysis

### 2.3.1 High course difficulty and limited instruction time

Courses related to equipment support are typically core professional courses offered shortly before graduation. These courses demand the comprehensive application and integration of foundational knowledge, making them inherently challenging to master. Prior to these classes, most students have had little to no exposure to equipment other than firearms, and they lack practical experience, making it difficult for them to form a clear conceptual understanding. Some courses cover a wide range of topics but are constrained by limited instructional hours. For instance, the theoretical component of the prerequisite course *Operation and Use of Common Equipment at the PAP Grassroots Level* is restricted to just 14 class hours. This insufficient allocation of time makes it nearly impossible to delve deeply into topics such as the 13 categories of typical equipment and the 10 major equipment systems, inevitably leading to an incomplete grasp of knowledge among students.

### 2.3.2 Insufficient teaching resources and weak practical application of theory

Classroom teaching is typically fast-paced and information-dense, leaving students to process and absorb much of the knowledge independently after class [5]. However, due to the impact of structural reforms in the military organization, the content of officially published teaching materials is often outdated and poorly aligned with current operational realities. As a result, academies are compelled to rely on internally compiled textbooks, which lack supplementary resources, making post-class review inconvenient and less effective for students. Although measures such as collating commonly asked questions and holding Q&A sessions during evening self-study hours have been implemented to address these issues, these solutions are limited by constraints of time and location, reducing their overall effectiveness. Meanwhile, the practical training component, which emphasizes the integration of theory and practice, poses significant challenges for students.

Faced with the complexities of equipment systems, students often struggle to connect theoretical knowledge to practical applications. Furthermore, due to the heavy daily training workload, heightened safety regulations, and limited support conditions of institutional training units, the results of hands-on equipment operation training within the academy are often suboptimal. Consequently, students exhibit a limited ability to calmly analyze and solve problems using the knowledge they have acquired.

### 2.3.3 Shortcomings in the teaching model and the lack of a cohesive framework

Firstly, the curriculum fails to emphasize the critical role of joint operations and regulations governing equipment support in standardizing and guiding support work. This results in students having a shallow and superficial understanding of rules related to equipment allocation, maintenance, and logistical support, leading to insufficient skill proficiency. Additionally, this oversight neglects addressing practical contradictions, such as the intangible and abstract nature of support activity workflows. Secondly, the curriculum does not place enough emphasis on standardizing wartime equipment support activities. It fails to adequately address key issues, such as improving the operational capabilities of essential support personnel and clarifying the organization and execution of logistical workflows. Thirdly, the equipment support knowledge system has not been fully integrated into teaching to achieve comprehensive coverage for all students. This has weakened their training and combat readiness capabilities, and there remains insufficient effort to elevate the students' overall theoretical understanding and technical expertise in equipment management. Lastly, communication and feedback channels are somewhat restricted. New tasks, emerging situations, and unforeseen challenges faced by field units are not promptly transmitted to teaching teams, leading to delays in updates and improvements to course content. This limitation diminishes the curriculum's ability to provide targeted and practical guidance.

## 3. Recommendations for Enhancing the Practical Effectiveness of Equipment Teaching

After conducting extensive research, the course team has optimized the curriculum framework,

updated the content, refined feedback mechanisms, and developed relevant strategies to transform the curriculum, making it more practical and aligned with combat scenarios.

### 3.1 Integrating Equipment Support Teaching Resources

#### 3.1.1 Developing online course resources

The primary advantage of video-based resources over traditional classroom instruction lies in their ability to be replayed and controlled by the learner, making them ideal for pre-class preparation, post-class review, and independent learning. For instance, lessons on equipment principles can be recorded as micro-courses or developed into online open courses, or distributed as educational DVDs to extend the classroom experience and promote continuous learning [6]. Military academies can focus on creating specialized courses, leveraging collective efforts to develop micro-courses and MOOCs (Massive Open Online Courses) on equipment support, which can then be uploaded to military education platforms. This approach benefits both current students and graduates, allowing them to combine practical equipment operations with theoretical learning, thus enhancing their ability to integrate knowledge and equipment seamlessly [7].

#### 3.1.2 Establishing a comprehensive professional knowledge database

The design of teaching content and methods should be based on the needs of the military and the mastery of core and challenging concepts. Emphasizing the achievement of competency objectives, the curriculum should be optimized for clarity and structure. Teaching plans, methodologies, and strategies should be continuously updated to ensure consistent improvement in teaching quality.

Establishing databases containing case studies, battle examples, and scenario-based assignments is essential to integrate knowledge relevant to equipment specialties. Most of these materials can be sourced from usual military exercises, while others may come from major projects such as the "Dual Support", and "New Three Projects".

The curriculum should also integrate ideological and political education, contemporary Chinese and international equipment support theories, and related operational tasks. By structuring teaching segments based on quality objectives, the curriculum elevates the development of

knowledge and skills to cultivate practical abilities, patriotism, and responsibility. For example, the inclusion of ideological and political elements throughout the course combines value formation, knowledge transmission, and skill development, embedding value education directly within the teaching process [8].

### 3.1.3 Utilizing existing military and civilian resources

The theoretical framework for the courses is grounded in existing laws and research outcomes, and the overall structure and content are aligned with these sources.

The Central Military Commission, focusing on new-era military strategies, has issued key documents, such as the *Joint Operations Outline (Trial)*, *Rear Support Outline (Trial)*, and *Outline of Military Non-War Operations (Trial)*, which provide essential guidelines for equipment support in the execution of various missions. These documents serve as the theoretical foundation for teaching and research, strengthening the practical combat readiness of both instructors and students. Laws such as the *Law of the Chinese People's PAP Force*, *Military Equipment Regulations*, and *Military Equipment Support Regulations* play a crucial role in guiding equipment support activities. The curriculum should reflect these comprehensive support concepts, focusing on "multi-functional integration and maintaining stability and rights", which helps students concentrate on mission tasks and achieve competence in their objectives. The course team incorporates the latest domestic and international achievements in equipment support from recent years, drawing from military operational procedures, technical maintenance manuals, and fault compilations. By combining research from academic institutions and military activities, the team directly addresses the existing shortcomings and issues in military equipment support. Adopting a problem-oriented approach, valuable experiences are compiled into standardized norms, which can be used as training materials for students at various levels and also be promoted for training use by relevant military units.

## 3.2 Enhancing Instructors' Combat-Oriented Competence

Combat-oriented teaching requires instructors to not only have a thorough understanding of the functional principles of commonly used

equipment but also to be highly familiar with the equipment's performance parameters, operational procedures, technical maintenance, and other related aspects [9]. The goal is to cultivate students' emotional objectives of resilience and adaptability [10].

To achieve this, the course team must engage deeply with military units, gaining a firsthand understanding of grassroots operations. This engagement should be rooted in the basic theories of equipment support, professional skills, operational readiness, and training exercises. The objective is to foster individuals with both the technical competence and emotional fortitude necessary to support the strategic needs of military forces. This initiative is crucial for enhancing overall equipment support and ensuring that military units are prepared to tackle strategic missions effectively. To achieve these goals, the course design must reflect the real-world needs of the military, addressing the demand for highly capable and adaptable personnel. Instructors should be encouraged to engage in direct exchanges with military units, participate in the "Guardian" series of exercises, and attend specialized training organized by the defense industry. These experiences will allow instructors to improve their understanding of military operations and equipment, and to bridge the gap between theoretical knowledge and practical application. By continuously refining their expertise, instructors can develop into a highly skilled and well-rounded team, proficient in both theory and the realities of combat [11].

## 3.3 Improving the Teaching Methods of Equipment Support Courses

### 3.3.1 Preemptive deployment: maximizing the utilization of available course resources

Before the formal start of the course, instructors should distribute foundational knowledge to students, such as the names, functions, and precautions of commonly used equipment, allowing students to memorize these in advance. This will lay a solid foundation for in-class learning. Prior to lectures on theoretical concepts, instructors should familiarize themselves with the equipment in the laboratory to establish a more intuitive understanding. In cases where laboratory resources are unavailable, students should be encouraged to engage in self-study through online courses, with the instructor focusing on in-depth explanations and providing guidance during class. Post-class video reviews

should be utilized to reinforce and consolidate the knowledge learned. Additionally, instructors should leverage their individual expertise to expand the scope of the curriculum, providing supplementary knowledge as appropriate.

### 3.3.2 Integrating case-based teaching into theoretical courses

The teaching content should be modularized and organized into a network of interconnected knowledge points. By expanding on the cutting edge of the discipline, instructors can create a step-by-step vertical structure that advances students' cognitive development from "memory" and "understanding" to "analysis", "application", "evaluation", and ultimately "creation". This approach provides robust support for students to master the regulations and theoretical knowledge related to equipment support. Case studies should be used as entry points to stimulate students' curiosity about equipment knowledge, sparking greater interest in theoretical courses. Adopting the problem-solving approach—posing a question, analyzing it, and finding a solution—allows students to learn through active engagement, leading them to reflect deeply while acquiring knowledge. This method ensures that students not only understand the principles but also grasp the processes and strategies of equipment management, accumulate practical experience in support operations, broaden their perspectives, and enhance their problem-solving abilities [12].

### 3.3.3 Enhancing engagement during breaks to foster interest in learning

During class breaks, instructors can play videos showing the combat operations, training exercises, and maintenance activities of primary-level military units. This not only serves to engage students' interest but also provides them with a window into the practical operations of military units and equipment. This approach allows students to immerse themselves in real-world scenarios, enhancing their readiness and understanding before delving deeper into the subject matter.

## 3.4 Strengthening Skill Training for Senior Students

Breaking away from the traditional teaching model of "theory first, followed by practice" or "practice validating theory", the approach should prioritize hands-on practice before theoretical instruction. A combination of task demonstration, physical equipment display, and hands-on

operation should be employed to ensure that practical experience reinforces theory, and practice deepens theoretical understanding [13].

### 3.4.1 Strengthening practical instruction on basic documentation skills

Compared to primary-level military units, military colleges have access to more extensive learning resources. It is essential to conduct basic skills training that is more aligned with the real-world combat needs of military units. Offering supplementary skill-focused courses as extensions of theoretical and practical training brings classroom learning closer to the operational realities of military equipment. One fundamental skill is the drafting of plans and documents for equipment requests, replacements, and retirements. During their time at the institution, students gain a foundational understanding through practical lessons and comprehensive drills, but these still differ from the actual documentation used in operational units. In practice, students often struggle to write these documents effectively. Therefore, targeted training in the preparation of documents related to active equipment, along with imparting relevant techniques and experience, serves as a powerful tool to improve students' readiness for real-world roles.

### 3.4.2 Strengthening operational training with commonly used equipment

After completing theoretical courses, a designated period should be allocated for practical operation training. Organizing sessions where students operate actual equipment is an effective method to reinforce and enhance the impact of the teaching. The principle of progressing from simple to complex and from basic verification experiments to comprehensive and design-based exercises should be followed. The curriculum should include four experimental modules: virtual disassembly of drones, methods and processes for handling unexploded ordnance and riot control devices, disposal techniques for hazardous chemicals, and a field visit to the Shaanxi Automobile Group for military-civilian integration equipment support. These practical exercises will enhance students' hands-on abilities and help extend their knowledge from theory to practical application, making the transition from classroom learning to battlefield readiness seamless.

Weaponry, counter-terrorism, anti-riot equipment, and non-lethal weapons are commonly used in primary-level military units for security and

crisis management. Strengthening training on such equipment before graduation is invaluable, as it helps students adapt quickly to the equipment management and support work of military units. For institutions with simulation facilities, initial training can be conducted in the laboratory, followed by in-depth learning, thereby improving the effectiveness of the equipment operation training.

#### 3.4.3 Strengthening fault diagnosis skills

Understanding the structural principles of equipment plays a crucial role in troubleshooting. The ability to identify faults and analyze simple causes of malfunctions is an essential skill, particularly for high-tech equipment. For example, disassembling and reassembling equipment is a routine task in equipment maintenance, including the disassembly and installation of individual parts. When components are worn beyond the specified limits or reach their usage thresholds, or require upgrades, they need to be disassembled, replaced, and reassembled. The quality of disassembly, inspection, and reinstallation directly affects the safety and performance of the equipment.

Using a self-developed simulation system for equipment disassembly training, which accurately models the process in a three-dimensional scene, allows students to interactively control the disassembly and assembly of the equipment. This simulation system includes modules for system management, disassembly training, and fault troubleshooting.

#### 4. Conclusion

The principle "to strengthen the military, one must first strengthen the academy" plays a crucial role in advancing the development of military academies and talent cultivation. To fully implement the military education policies of the new era and to usher in a new phase of educational reform and talent development, it is essential to elevate the practical teaching standards of equipment support courses. This requires a concerted effort to improve the quality of these courses and ensure graduates are well-prepared for the field, with a focus on reducing the time needed for them to adapt and integrate into military operations. By enhancing the practical application of the skills taught, students will be able to quickly transition from learning to contributing to the combat effectiveness of military units. To achieve this, it

is imperative that faculty and leadership at all levels of military educational institutions engage in ongoing exploration and innovation. Only through continuous practice and refinement can the full teaching potential of equipment support courses be realized. This will not only improve the quality of training but also better serve the overall combat readiness of the military.

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