The Research on the Teaching Reform of Electronic Countermeasures Tactics

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**Abstract.** As a special field of information warfare, electronic countermeasures (ecm) is closely related to training new combat force command talents and supporting the generation of new quality combat effectiveness. At present, as to promote college education focusing the combat, closing the forces, personnel training requirements of electronic countermeasures must be focused on fighting and command, which could establish the teaching orientation by practical requirements, optimize the teaching content by actual combat ability, build the teaching platform with practical conditions, and reform the teaching mode in the practical form. The teaching transformation will be promoted at the new starting point.

**The Curriculum System is Constructed According to the Method of Hierarchical and Progressive Course Setting**

According to the training object type and the ability generation route, in-service education and in-degree education were designed as two classification groups\textsuperscript{[1]}. By the idea of integrated curriculum design and special subject teaching, the main core courses should be built by taking mission and task as the driving force, teaching topics determined by taking practical problems as the center, and curriculum knowledge modules set by taking special subject as the main line, which would promote the transformation of curriculum teaching from subject based department to subject based training and post based capacity requirements.

(1) Focusing on the path of talent cultivation and the law of ability generation, in-service education and in-degree education must be distinguished. According to the requirements of post ability and the key point of organizing and implementing electronic countermeasures combat operations, core courses should be set up step by step. Through the study of a series of core courses, the ability of electronic countermeasures commanders would be further improved to organize and command the combat training ability of electronic countermeasures departments.

(2) Focusing on the important practical problems of the military struggle preparation and combat training in electronic confrontation forces, in accordance with the outstanding ability training, the combination of theory and practice, some projects has been designed such as the equipment utilization, offensive and defensive tactics, case study, which could promote the teaching reform from discipline system based on the subject training to new system based on post ability demand change.

(3) In accordance with the practical needs of personnel training and the improvement of electromagnetic warfare ability, the construction of special customized courses has been established to meet the needs of training objects based on the principle of customized training and personalized creation, which must promote the enrichment and improvement of the actual combat course system.
Optimizing the Teaching Content accord to the ‘Problem Traction, Dynamic Update’ Method

Basically, applicable and forward-looking studies are carried out on the basic laws of electronic countermeasures; practical issues are also researched based on the operational readiness of the armed forces, and frontier issues in the development of the electromagnetic field. To promote the integration of teaching content with the integration of information and attacking, teaching content must be updated with the practice of war and training. To strengthen the innovation of teaching content with the emerging fields as the growth point, the teaching content achievements must be explicitly stipulated with the teaching material system.

(1) Aim to the knowledge innovation of realistic problem, the research has been strengthened on how to use electronic counter force, how promote training effect, which could solve the bottleneck problems in the army combat training in time by use of the intelligence research category of colleges and scientific research. All above would promote the achievements using in the teaching and getting feedback to force training, which update the teaching content system.

(2) According to the characteristics and the inherent requirement of the command activities of all forces in joint operations, further study would be researched about the fusion rule of the action in electricity and all the services and arms operations. Considering the different types and different levels of command personnel training needs, the extent of content integration must be determined which would take the content about integrated electronic attack, information integrated fire into the classroom and extend tactical by professional electronic countermeasures to comprehensive confrontation and the joint operations.

(3) Aim to the construction of teaching material from achievements in teaching content, the problems has been solved about lack of revealing the depth of the electronic countermeasure combat special rule, the connotation of the knowledge to guide the military practice and the feasibility and effectiveness, etc. Based on the position of the actual needs and the distinguish of the types of training and level, the classification of the teaching material construction must be fulfilled in time to build the inner link of teaching materials, curriculum and subject teaching material, establish the new teaching material system about the theory of teaching materials and case teaching material comprehensive.

The Practice Platform Shall be Constructed in Accordance with the Method of ‘Internal and External Combination, Virtual and Real Combination’

By using of the combination of the simulation and equipment combined with the combat and tactical training laboratory construction, the construction has been researched on development of customized electronic target simulation device, independent research and development equipment operation and combat simulation training software, joint research and development field mobile command control system, which would carry out electronic countermeasures against tactical support conditions for practice teaching.

(1) The electronic countermeasure battle laboratory system is gradually formed with the specialized counter group command post, combat simulation training room and reconnaissance jamming training workshop as the main body. Various professional countermeasure group command posts are used for group command post operation training, group combat command simulation training, electronic countermeasure battle room simulation, as well as electronic countermeasure tactical application research under a specific combat background. The combat simulation training room is used for operation simulation training of electronic countermeasures equipment, combat application simulation training of general electronic countermeasures equipment, cooperative training simulation of single station and tactical training simulation of unit. Reconnaissance jamming training workshop, used for signal interception, parameter analysis, target identification, tracking, control, jamming and other professional skills training.

(2) The simulation training of electronic warfare arms should be fulfilled based on the group combat simulation training system of electronic warfare, the combat application and effectiveness evaluation system of electronic warfare equipment, and the combat simulation training software of
electronic warfare station. Using the typical electronic countermeasures equipment operation simulation training software as the supplement, the full construction of simulation training conditions has been established to carry out the linkage training of electronic countermeasures equipment system, single outfit, command coordination, operation and combat operation and other categories under the background of joint operation.

(3) Aiming to solve the problems about lack of training targets and simulation intensity, the construction of environmental simulation equipment and electronic targets with multi-function, multi-type and multi-platform have been strengthened to provide environmental guarantee for the practical teaching and training of electronic warfare tactics. Taking the command and control system of electronic countermeasures tactical exercises and data acquisition terminal as the starting point, the condition construction of guidance and control, information transmission and command operation in practice teaching have been further improved, which solved the problems of lack of guidance and control equipment and single means of information transmission in tactical training teaching.

**Reforming the Teaching Mode in Accordance with the Method of ‘Guiding Students to Study and Practice, and Connecting with Four Real Streets’**

In accordance with the principle of elaborating theory and strengthening practice, the practical teaching, such as practical case teaching, multi-case practical assignment, visualized demonstration of real disturbance effect, and combat-oriented real soldier and real equipment drill have been widely carried out.

(1) As the bridge between combat practice and military theory, case study has always played an important role in the actual combat teaching in command and education institutions, which should stick to the principle of "learning to fight while studying to fight". All above could help college students to focus on the requirements of electronic warfare under the information condition, select the real electronic warfare of our army and the recent electronic warfare of foreign armies, and build and improve the tactical cases of electronic warfare.

(2) Focus on the main direction of military struggle preparation, supported by experiment and simulation deduction in combat, typical operations of electronic countermeasures integrated tactical scenario have been carried out under the various background, which could make the students familiar with electronic countermeasures combat power marshalling, fighting method of use and disposal of exercise to improve tactical thinking, planning decision-making, the integrated use of capacity and strengthen the students to participate in the practice and analysis of the ability to solve the problem.

(3) Through the active communication battle of electronic warfare equipment radar confrontation and typical demonstration communication interference, the influence of interference would make students intuitive feel the threat of electromagnetic environment actuality, the authenticity of on-site experience real interference effect, and also strengthen the students for the use of equipment control, deepening the understanding of the electronic countermeasure combat and electromagnetic environment.

(4) To change the traditional mode of training objects in drill teaching, college students, graduate students and undergraduate students of military science at different levels have been organized according to their positions; different majors adhere to the principle of post consistency and management of troops. Through the way of ‘real installation and network arrangement’, the electromagnetic target and complex environment of the combat opponent would be simulated realistically. According to the requirements of ‘no original plan and no plan’, the red and blue autonomous countermeasures and real disturbance real resistance have been carried out, and the electromagnetic situation and the drill process have also been monitored in real time by the method of ‘random setting and adjusting according to the situation’. All above would make students deepen the understanding of electronic countermeasures command and tactical theory, realize the basic knowledge skills to practical working ability, get comprehensive exercise brigade command ability and use tactics and organization management ability.
References
