

# Reform and Innovation of the "Learning-Research-Capability Enhancement" Teaching Model Anchored in Job Requirements

-- Taking the "Wargaming" Course as an Example

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**Abstract:** This paper addresses the issues of rigid content, inefficient methods, and one-sided evaluation in traditional wargaming courses. Anchored in job task requirements and the goal of cultivating new-type command talents, a "Learning-Research-Capability Enhancement" teaching model is constructed. This model creates a progressive content system of "Basic Cognition - Specialized Application - Comprehensive Innovation," driving the transformation of teaching from fixed scripts to dynamic generation. It innovatively adopts the "Integration of Research and Creation" teaching method, motivating students to transform from rule users to tactical creators through a complete closed loop of design, deduction, and iteration. Simultaneously, a comprehensive evaluation system integrating "Theory, Skills, and Application" is established. Teaching practice shows that this model effectively enhances teaching quality and efficiency, significantly improves students' command decision-making, rule design, and innovation capabilities, providing a valuable reference for practical teaching in military academies.

**Keywords:** Military Academies; Operational Command Teaching; Wargaming; Teaching Reform.

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## 1. Course Positioning and Teaching Objectives of the "Wargaming" Course

This course is based on the urgent need to cultivate new-type operational command talents, constructing a teaching objective system driven by job requirements and oriented towards capability generation. The overall objective of the course is to enable students to comprehensively master the basic theories and methods of wargaming through systematic teaching, proficiently participate in complex war games as red or blue forces, and possess the ability to independently organize and implement the entire wargaming process, including scenario design, rule formulation, execution, and post-game analysis. At the knowledge and skill level, emphasis is placed on profound understanding of wargame rules and mechanisms, and cultivation of wargame design capabilities. At the process and method level, core theories are taught using "heuristic and inquiry-based theoretical learning," combined with physical wargames for problem-oriented learning to stimulate students' independent inquiry and collaborative discussion. "Immersive and interactive case study research" is employed using typical mission scenario wargames, enabling students to comprehend wargame principles and practical value during exercise drills, honing critical thinking and innovative adaptability. At the emotional attitude and values level, the aim is to shape students' rigorous and realistic scientific command literacy, collaborative teamwork spirit, and sense of responsibility and mission towards the command profession, ultimately achieving a fundamental transformation from knowledge recipients to practical innovators and future commanders.[1]

## 2. Analysis of the Current Teaching Situation of the Wargaming Course

Currently, traditional wargaming courses face insurmountable bottlenecks in the three core links of the teaching cycle: teaching content, teaching methods, and teaching evaluation, severely constraining their teaching effectiveness and the quality of talent cultivation.[2]

### 2.1. Rigid and Static Teaching Content, Poor Precision Adaptability to Talent Cultivation

Limited by physical teaching aids and fixed rules, the teaching content of traditional courses presents as a closed, static "script." Due to the long iteration cycle and high cost of manual wargames—from scenario design and piece production to rule balancing—classes often use existing manual wargames, making it difficult to quickly adjust and optimize teaching content according to different professional backgrounds and ability stage teaching objectives. This results in a serious disconnect between teaching content and students' actual needs, as well as the ever-changing forms of modern warfare, failing to support the dynamic evolution and personalized customization of the course, ultimately falling into the rigid situation of "one battle, one wargame." Students can only act as passive "users" of rules, finding it difficult to touch upon the core of tactical thought expression and rule design.[3]

## **2.2. Inefficient and Cumbersome Teaching Methods, Severely Restricting Teaching Depth and Breadth**

Traditional models rely on "manual deduction"—a high-threshold, low-efficiency teaching method. Novice students must spend considerable class time learning complex physical operations, and the high entry cost dampens learning enthusiasm. In the core deduction phase, class time is heavily occupied by routine tasks such as placing pieces on maps, measuring distances, manual table lookups, and adjudication calculations, causing "strategy training" and "decision-making thinking refinement"—the core objectives—to be squeezed out. This backward teaching method mires instructors and students in low-level labor, preventing the release of valuable class time for in-depth discussion and real-time review, slowing the teaching pace and resulting in low efficiency.

## **2.3. Subjective and One-sided Teaching Evaluation, Lacking Data Support and Process Insight**

Because process data from traditional wargaming is "instantaneous and unrecoverable," teaching evaluation has long been stuck in the rut of "result-orientation" and "empiricism." Instructors cannot accurately quantify, evaluate, or trace the decision-making thought processes, operational habits, or team collaboration processes of students. Post-game reviews can only rely on fragmented memories and the final situation, lacking objective, continuous data evidence. This "data black box" makes it difficult to achieve scientific and precise teaching evaluation, hinders the provision of personalized capability diagnosis and guidance for students, and fails to provide data-driven decision support for continuous teaching improvement, limiting the spiral improvement of teaching quality.

## **3. Demand Analysis for Teaching Model Reform Anchored in Student Job Requirements**

The systemic difficulties outlined above reveal that the traditional teaching model can no longer meet the requirements of modern military education centered on "capability generation." [4] Based on this, the reform of the wargaming course has urgent inherent needs at the following three levels:

### **3.1. Urgent Need for a "Dynamically Reconfigurable" Teaching Content System**

To break the closed nature of teaching content, a teaching resource system that can quickly respond and flexibly adapt must be constructed. This requires the teaching content to transform from a "fixed script" to "dynamic generation," possessing the capability for rapid iteration and modular combination to meet the precise alignment of different teaching objects and objectives, supporting students' capability leap from "wargame application" to "wargame design and innovative application."

### **3.2. Urgent Need for "Technology-Enabled, Efficient and Agile" Teaching Methods**

To free teaching quality and efficiency constrained by inefficient processes, information technology must be

introduced to digitally transform the deduction process. Through technological empowerment, instructors and students are liberated from tedious routine work, ensuring the teaching focus returns to cultivating higher-order capabilities such as command strategy, decision-making thinking, and teamwork, achieving a dual improvement in classroom teaching efficiency and depth.

## **3.3. Clear Requirement for a "Comprehensive Coverage, Capability-Oriented" Assessment Content System**

The assessment can verify students' familiarity with the basic theories of wargaming, particularly their mastery of skills such as tactical manual wargaming, computer wargaming systems, and manual wargame design principles. It enables students to organize and implement tactical manual wargaming exercises, operate computer wargaming systems for group formation and confrontation drills, and design manual wargames for typical mission scenarios.

## **4. Innovative Practice of the Teaching Model for the Wargaming Course**

The inherent defects of the traditional teaching model in the three dimensions of content, method, and evaluation collectively form the core barriers hindering the high-quality development of the wargaming course. Therefore, the course teaching team constructed a new teaching model capable of simultaneously overcoming these three dilemmas—a "Learning-Research-Capability Enhancement" teaching model that supports dynamic content reconfiguration, achieves efficient and agile teaching processes, and possesses the capability for whole-process data-driven evaluation. [5]

### **4.1. Teaching Content Innovation: Constructing a Progressive Teaching Content System Centered on Job Requirements**

This course closely revolves around the job requirements of junior commanding officers, systematically constructing a progressive teaching content system of "Basic Cognition - Specialized Application - Comprehensive Innovation," ensuring deep coupling and precise alignment between teaching content and job requirements.

#### **4.1.1. Basic Cognition Stage: Bridging Classic Theory and Command Requirements, Grasping the Essence of Wargaming**

In this stage, the course combines basic wargaming theory with classic battle case study wargaming, focusing on cultivating students' battlefield situational awareness and basic command decision-making abilities. The teaching content emphasizes integrating the command art of classic cases with the characteristics of modern missions, guiding students to understand the basic principles of wargaming while initially establishing its relevance to future job responsibilities, laying a solid foundation for subsequent specialized skill learning.

#### **4.1.2. Specialized Application Stage: Focusing on Core Missions, Honing Command and Wargaming Abilities**

This stage benchmarks the core missions of the military, constructing a progressive chain of "Theoretical Learning - Group Design - Introductory Drill - Comprehensive Drill."

After theoretical study, students form groups to conduct practical wargame design based on "introductory scenarios," transforming tactical principles into specific rules, completing the cognitive shift from "following rules" to "constructing rules." Subsequently, they use self-designed wargames to conduct drills in scenarios of increasing complexity, and through the introduction of complex situations by exercise directors, they test their designs under pressure and hone rapid decision-making and action control abilities, systematically forging specialized command and systematic planning literacy.[6]

#### **4.1.3. Comprehensive Innovation Stage: Strengthening Wargaming Thinking, Stimulating Design and Innovation Capabilities**

This stage elevates teaching content to the higher level of wargame design and rule innovation, aiming to cultivate students' military innovation and systems thinking abilities. Relying on the independently developed B/S structure-based tactical manual wargame support platform, students can complete specific operational scenario construction, wargame map and piece design, and rule writing based on actual mission contexts. Through this creative practical process, students deepen their understanding of the inherent laws of operational command, and their systematic planning and independent innovation capabilities are substantially exercised, generating the ability to design and apply tailored wargames for future job tasks.

The entire teaching content system takes job requirements as the fundamental starting point and ultimate goal. Through the three interconnected stages of training, it ensures that students not only systematically master the professional knowledge and skills of wargaming but also transform what they have learned into the command literacy and innovation ability required for their first job position, effectively enhancing the pertinence and effectiveness of talent cultivation.

## **4.2. Teaching Method Innovation: Constructing an "Integration of Research and Creation" Teaching Method, Promoting Students' Transformation into Active Wargame Creators**

The core goal of the teaching method innovation in this course is to achieve a fundamental transformation in the student's role from a passive "user" of wargame rules to an active "creator" of tactical systems. Centered on this goal, an "Integration of Research and Creation" teaching method system running through pre-class, in-class, and post-class stages is constructed. Driven by the dual engines of "heuristic inquiry" and "immersive interaction," students systematically generate the ability to design and practically apply wargames based on job requirements within the complete closed loop of "Design-Drill-Verification-Iteration." [7]

### **4.2.1. Pre-class Preparation and Research Stage**

Before theory classes, instructors use "heuristic inquiry" teaching, posing core problem chains. Students acquire and analyze real geographic maps independently through literature study and group discussion, thereby determining core framework parameters such as map resolution and turn length, completing the first step of transformation from operational concept to mathematical model. Before practical classes, student groups, based on given typical mission backgrounds and using preliminary theoretical results,

collaborate to complete preliminary designs for piece data sheets, rule adjudication tables, and initial scenario texts, preparing the original "script" and "rulebook" for in-class wargaming, laying the foundation for active creation.

### **4.2.2. In-class Practical Training and Research Stage**

During theoretical intensive sessions, instructors no longer lecture flatly but focus on common controversies and logical flaws exposed in each group's design plans, organizing targeted debates and heuristic questioning to guide students back to design principles and self-correct theoretical cognitive deviations, achieving deep learning "for creation." In practical wargaming sessions, the "immersive and interactive" teaching method is fully applied. Groups use their self-designed maps, pieces, and rules to play red and blue forces in drills. Instructors inject real-time unexpected situations through the tactical manual wargame support platform, breaking preset scripts. Under high-immersion pressure, students personally experience the advantages, shortcomings, and even "breaking points" resulting from their own designs. This "immersion" based on their creative results makes post-game reflection extremely profound, driving design iteration from "reasonable on paper" to "effective in combat."

### **4.2.3. Post-class Expansion and Creation Stage**

After wargaming, each group's primary task is to review tactical gains and losses from the designer's perspective based on drill records, collectively discussing and revising rules, balancing data, and improving scenarios. This "self-iteration" process is a concentrated exercise of critical thinking and systematic optimization abilities. Students are actively encouraged and guided to expand second-classroom activities, participate in various competitions like the National Wargaming Competition, stimulating their sense of honor and continuous innovation motivation through "competition promoting learning and validating creation" at higher levels of Confrontation. Furthermore, through lectures, symposiums, simulations, and other forms, multiple rounds of communication are conducted with frontline unit commanders, unit leaders, and professional instructors, allowing students' designs to be tested by the "battlefield," deepening their understanding of the gap between theory and practice, and truly rooting their creative foundation in troop requirements.

Through the complete chain of "pre-class preparation and research, in-class practical training, and post-class expansion and creation," students are successfully placed at the center of the entire wargame creation process. Students are no longer operators of existing wargames but complete creators, starting from map processing, through rule definition, scenario construction, drill validation, and iterative optimization. This transformation not only deepens their understanding of military theory but also fundamentally cultivates the core capabilities for tactical innovation and wargame rule transformation required for future complex battlefields, providing methodological support for cultivating new-type command talents capable of adapting to and leading the design of warfare.

## **4.3. Teaching Evaluation Innovation: Constructing a "Learning-Research-Capability" Three-in-One Comprehensive Evaluation System**

This course closely aligns with the command talent cultivation plan, constructing a "Learning-Research-

Capability" three-in-one comprehensive evaluation system centered on job competence. This system combines process evaluation and summative evaluation, supplementing quantitative analysis with qualitative judgment, achieving multi-dimensional and accurate assessment of students' theoretical learning, practical operation, and innovative design abilities.[8]

#### 4.3.1. Theoretical Ability Assessment (Formative Assessment 20%)

The theoretical ability assessment mainly examines students' ability to transform theory. Students are required to complete one manual wargame rule formulation for a typical mission scenario (including scenario, action rules, and adjudication rules). The assignment is completed in two steps: Step 1, after completing the first module on basic wargaming theory and the second module on typical mission tactical manual wargaming, students write a framework design for the typical mission scenario manual wargame rules, accounting for 10% (formative assessment). The instructor scores and provides modification comments. Step 2, after completing the third module on tactical wargame design basics, students refine the typical mission scenario manual wargame rules and submit the final draft, accounting for 10% (formative assessment). The instructor scores and provides centralized guidance on common issues. The theoretical ability

assessment aims to promote students' transformation of wargame-related theoretical knowledge into practical application capabilities.[9]

#### 4.3.2. Operational Skill Assessment (Formative Assessment 20% + Summative Assessment 30%)

The operational skill assessment mainly examines students' organizational and practical abilities. The assessment is divided into two parts: First, completing the organization and implementation of a tactical manual wargame. This is conducted after completing the second module on wargame application practice (typical mission tactical manual wargaming). Students form groups to complete the given typical mission scenario manual wargame (all elements), accounting for 20% (formative assessment). The instructor scores and provides comments and summaries on issues during the wargame. Second, completing a tactical computer wargame system hands-on Confrontation exercise. This is conducted after the course is completed. Students form groups to complete a computer wargame red-blue Confrontation exercise, accounting for 30% (summative assessment). The operational skill assessment aims to promote students' consolidation of practical abilities in organizing and implementing wargames, cultivating "wargame-enabled" commanders for the troops who can organize wargames and use wargames for tactical research and training.[10]

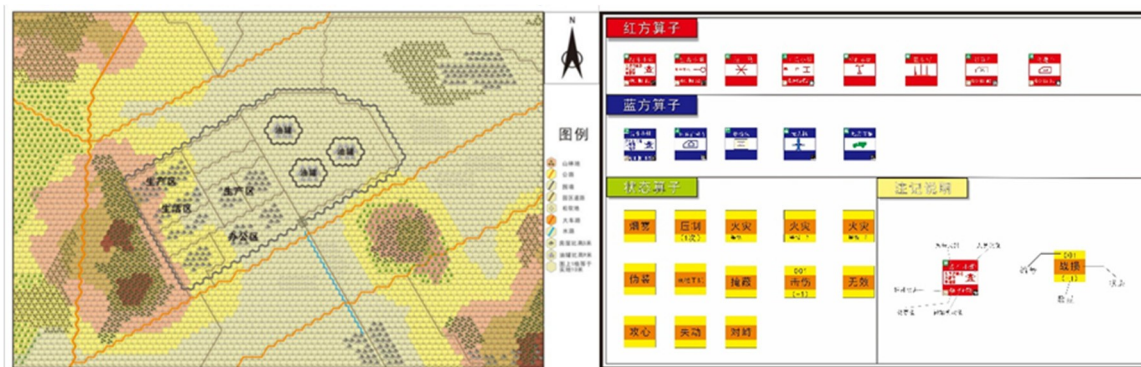


Fig 1. Tactical Manual Wargame Organization and Implementation Assessment Using the course team's self-developed "Critical Target Defense Manual Wargame"

#### 4.3.3. Application Ability Assessment (Summative Assessment 30%)

The application ability assessment mainly examines students' comprehensive ability in wargame application. Students need to form groups to complete a set of tactical manual wargame map and piece designs (based on the typical mission scenario manual wargame rules completed in the formative assessment). The assessment is conducted after completing the third module on tactical wargame design, accounting for 30% (summative assessment). It aims to promote students' comprehensive ability in wargame design and application, cultivating qualified wargame talents for the troops who can independently design dedicated manual wargames required for tasks.

Through the organic combination of the three-tiered assessment—"Theory---Skill---Application"—it not only focuses on the mastery of theoretical knowledge but also emphasizes practical application capabilities, and pays attention to the potential for innovative design, achieving a fundamental shift from single knowledge assessment to comprehensive quality evaluation.

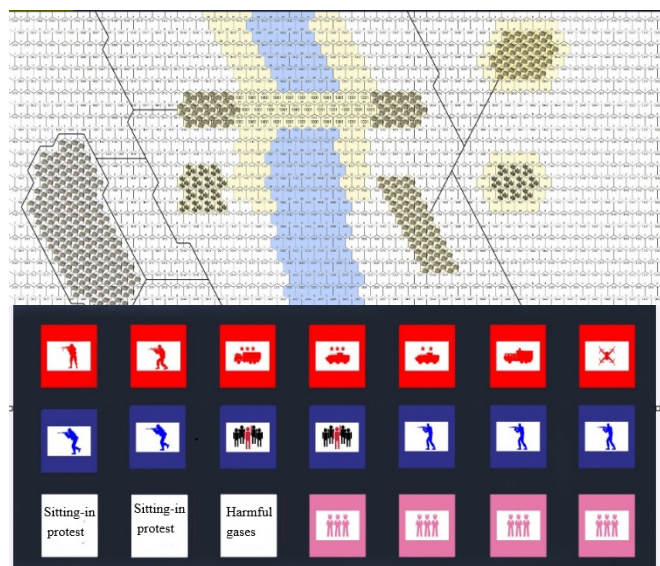


Fig 2. Tactical Manual Wargame Map and Piece Design Assessment

Using the course team's self-developed "Tactical Manual Wargame Intelligent Support Platform"

Through this system, not only can students' learning effectiveness be accurately assessed, but their overall job competence can also be effectively promoted, providing reliable assurance for cultivating new-type command talents adapted to mission requirements.

## 5. Conclusion

The innovative practice of this research has successfully constructed the "Learning-Research-Capability Enhancement" wargaming teaching model. It has been implemented for two rounds of teaching practice as a core discipline basic course in the operational command specialty and as an elective course in junior training courses, and for one round as a public elective course in non-operational command specialties, achieving good teaching results. This model effectively resolves the efficiency bottlenecks and capability cultivation dilemmas in traditional teaching, significantly enhancing students' command decision-making, rule design, and innovative thinking abilities. Practice has proven that this reform path provides a replicable and promotable innovative practice for practical teaching in military academies and holds significant demonstrative significance for cultivating new-type military talents adapted to future warfare needs.

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