

Research on the Cultivation Mode of Innovative Practical Ability of Non-commissioned Officers from the Perspective of the Integration of National Defense Science and Technology

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Abstract

Innovative practical ability is the core quality of military talents in the new era, which is of great significance for enhancing the combat effectiveness of the troops and ensuring national defense security. Constrained by the traditional military education model and institutional mechanisms, the cultivation of innovative practical ability of non-commissioned officer students still faces many difficulties. It is urgent to explore the breakthrough path from the perspective of the integration of national defense science and technology. Based on the analysis of the significance of cultivating innovative practical ability of non-commissioned officer students, The problems such as insufficient integration of science and technology, lack of practical ability, insufficient platform support and single evaluation mechanism were analyzed. Countermeasures and suggestions such as building a collaborative education mechanism of “military-civilian coordination and integration of science and education”, an innovative practice platform of “government, industry, academia, research and application” in a five-in-one manner, an ability cultivation path of “integration of science and education and combination of competition and training”, and a practical teaching model of “problem-oriented and project-driven” were proposed. In the hope of providing ideas and references for the cultivation of innovative practical ability of non-commissioned officers in the new era.

Keywords

Integration of national defense
Technology
Non-commissioned officer student
Innovative practical ability
Talent cultivation

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1. Introduction

National leaders emphasized at the National Conference on Science and Technology Innovation that innovation is the primary driving force for development. National defense science and technology innovation is the strategic support for the modernization of national defense. The advent of intelligent warfare and unmanned battlefields has put forward requirements for the innovative and practical abilities of military talents in modern warfare. Enhancing the innovative and practical abilities of non-commissioned officers is crucial for forging high-quality new military talents. Promoting the development of military scientific and technological innovation, enhancing the combat effectiveness of the military, and safeguarding national security interests are of great significance. However, there are still many shortcomings in the cultivation of the innovative practical ability of non-commissioned officer students, mainly manifested as insufficient integration of military and civilian science and technology, emphasizing theory over practice, weak platform support, and a single evaluation mechanism, which restrict the improvement of the innovative practical ability of non-commissioned officer students. It is necessary to start from the perspective of the integration of national defense science and technology. Give full play to the resource advantages within the military, coordinate the efforts of all parties, promote the in-depth integration of military and civilian, science and education, government, industry, academia, research and application, and build a large platform for innovative practice for non-commissioned officer students.

2. The significance of cultivating the Innovative Practical ability of non-commissioned officers from the Perspective of the Integration of National Defense Science and Technology

2.1. The need to enhance the modernization level of the military

Entering the era of information warfare, technological factors have had an impact on the form of war. The wide application of high-tech weapons such as intelligent equipment, unmanned combat platforms, and precision-guided weapons has made the battlefield situation change

rapidly, the pace of combat continuously accelerate, and the scale of war expand sharply. As the “rising stars” of the future battlefield, non-commissioned officers need to master proficient skills in operating weapons and equipment. The ability to analyze the battlefield environment, optimize combat decisions and improve tactics and combat methods by using technological means is required. Non-commissioned officers should have solid scientific and technological innovation literacy and excellent practical ability. In complex battlefield environments, they should flexibly respond to various challenges by applying scientific and technological knowledge and innovative thinking. The innovative practical ability of non-commissioned officers has become a key variable affecting the level of modernization construction of the military. In the era of intelligent warfare, it is of vital importance for safeguarding national security and winning future wars ^[1].

2.2. The need to enhance the scientific and technological innovation capabilities of the military

Strengthening military training and combat readiness, enhancing the strategic capacity to safeguard national sovereignty, security and development interests, and providing a strong guarantee for achieving the goal of building the People’s military into a world-class force, in military training and combat readiness, science and technology are the key. Major countries around the world are stepping up their layout of military scientific and technological innovation, focusing on cutting-edge fields such as artificial intelligence, quantum information and brain-computer interfaces. Our military must closely follow the global military development trend. National leaders have pointed out that we should do a good job in strategic planning and top-level design, adhere to the fundamental standard of combat effectiveness, and vigorously enhance our military’s scientific and technological innovation capabilities. Under the international situation where powerful enemies are lurking, seizing innovation means seizing development and planning for innovation means planning for the future. We should constantly improve the innovation and practical abilities of non-commissioned officers. Only by stimulating the enthusiasm of the vast number

of grassroots officers and soldiers to engage in scientific and technological innovation, and injecting new blood into weapons and equipment and bringing new changes to training models with innovative achievements, can the overall scientific and technological innovation capacity of the troops be enhanced, and they can outpace their opponents and The Times on the track of intelligent warfare^[2].

2.3. Adapt to the needs of military talent cultivation in the new era

National leaders have pointed out that it is necessary to strengthen the construction of the military talent training system and cultivate high-quality, professional and new military talents with both moral integrity and professional competence. Our military is at a critical period of transformation from quantity and scale-oriented to quality and efficiency-oriented. The demand for high-quality and innovative military talents is more urgent than ever. Non-commissioned officer students are an important force of military talents in the new era. Cultivating and bringing up a large number of innovative non-commissioned officers who are both virtuous and talented, and good at planning and combat is an urgent need for strengthening and rejuvenating the military. We should accelerate the construction of a military talent training system that meets the needs of information-based warfare, enhance the innovative consciousness, broaden horizons and practical abilities of non-commissioned officer students, and encourage them to have the courage to break the fixed mindset and be courageous in innovation and creation. Only in this way can a high-quality non-commissioned officer team that meets the needs of modern warfare be cultivated^[3].

3. Problems existing in the cultivation of innovative practical ability of non-commissioned officer cadets

3.1. Insufficient integration of technology and a lack of cross-border collaborative education

The integration of science and technology is an important driver for cultivating the innovative practical ability of non-commissioned officer students. However, the breadth and depth of the integration of science and

technology between the military and civilian sectors are still insufficient. The institutional mechanisms for cross-border collaborative education have not been fully established. There is a lack of exchanges and cooperation between military academies and local universities in talent cultivation. The allocation of military and civilian resources is not entirely reasonable, and high-quality innovative resources have not been effectively shared. The cooperation between the military and local research institutes and enterprises is mostly limited to horizontal scientific research projects. The exploration in joint talent cultivation and the co-construction and sharing of scientific research platforms is still insufficient, which affects the opportunities for non-commissioned officer students to receive diversified and interdisciplinary training, restricts the complementary advantages and resource sharing between the military and local authorities, and is not conducive to the aggregation of innovative resources in the field of talent cultivation^[4].

3.2. Emphasizing theory over practice and lacking practical innovation ability

Practice is the fertile ground for cultivating innovation ability. Innovation originates from practice and relies on it. In the current military vocational education system, theoretical teaching dominates, while the proportion of practical teaching is relatively low. The problem of emphasizing knowledge imparting over ability cultivation remains prominent. Influenced by the inertia of exam-oriented education, many institutions still follow the “cramming” teaching mode, with teaching content divorced from reality. The connection with the demands of the military is not close. Practical teaching is merely a formality, making it difficult to stimulate the innovative thinking of trainees. The teaching organization methods are monotonous. The application of small-class, participatory and discussion-based teaching is insufficient. There is a lack of an open and cross-disciplinary practical teaching platform, making it hard to create a favorable atmosphere for independent exploration and bold innovation. Teachers lack front-line working experience in the military and have weak practical teaching abilities. The professional quality and teaching level are difficult to meet the requirements of cultivating the ability and quality of non-commissioned officer students^[5].

3.3. Insufficient platform support and the environment for innovative practice need to be optimized

Innovative practice relies on platforms. The construction of professional platforms directly affects the cultivation effect of the innovative practice ability of non-commissioned officer students. In current colleges and universities, there are generally problems such as insufficient investment and weak guarantee in the construction of practice platforms. The infrastructure is outdated, and there is a lack of fully functional and well-structured innovative practice bases. The homogeneity of scientific research platforms is serious. There is a lack of distinctive and deeply integrated military-civilian scientific and technological collaborative innovation platforms. The overall planning of military and civilian scientific and technological resources is insufficient, and there is a lack of complementary advantages. Innovation and entrepreneurship platforms are scarce. The construction of business nurseries and incubators for non-commissioned officer students is seriously lagging behind. There is a lack of necessary support in terms of policies, funds and technologies, making it difficult to help non-commissioned officer students put their ideas into practice and promote the transformation of achievements. The professional training platform is not well equipped, there is a lack of simulation equipment, the application of network information technology is insufficient, and modern information technologies such as big data and artificial intelligence are inadequately applied in practical teaching. As a result, an immersive and interactive practical environment cannot be created, making it difficult to stimulate the innovative inspiration and potential of non-commissioned officer students^[6].

3.4. The evaluation mechanism is single and the orientation towards innovative practice is not strong

A scientific evaluation mechanism is the key to ensuring the quality of innovative practice teaching. Reviewing the current situation of non-military officer student training, it is found that the orientation of innovative practice is not distinct enough, the evaluation system is not complete enough, the tendency of “score only” still exists. In

teaching evaluation, knowledge-based evaluation is more than ability and quality evaluation. The final examination paper assessment is still the main evaluation method, and the proportion of innovative practice ability assessment is relatively low. It is difficult to guide non-commissioned officer students to engage in innovative practices and enhance their practical skills. In the evaluation of trainees, subjective impressions and the phenomenon of “measuring everything with the same yardstick” are quite common. Insufficient attention is paid to the innovative performances of trainees in classroom discussions, project research, and work development, making it hard to motivate non-commissioned officer students to participate in innovative practices and challenge their own limits. The evaluation mechanism is monotonous and subjective. The goal-oriented role of cultivating innovation ability has been ignored, and a strong atmosphere has not been formed where non-commissioned officer students compete to engage in innovation practice, which has restricted the effective exertion of the educational function of innovation practice^[7].

4. Strategies for Cultivating the Innovative Practical Ability of Non-commissioned officers from the Perspective of the Integration of National Defense Science and Technology

4.1. A collaborative education mechanism featuring “military-civilian coordination and integration of science and education”

We should enhance military-civilian collaboration, promote the integration of science and education, and provide strong support for improving the innovative and practical abilities of non-commissioned officer students. We should establish and improve the mechanism and system for military-civilian collaborative education, and promote in-depth cooperation between active-duty colleges and local universities in areas such as talent cultivation, course sharing, and mutual appointment of teachers. We should give full play to the advantages of local universities in terms of strong basic research capabilities and complete disciplines. Strengthen joint research and development with the military in key areas of national defense science and technology, build a broad

platform for theoretical learning and project research for non-commissioned officer students, actively connect with industry leaders and technology giants, attract more high-quality resources to participate in talent cultivation, encourage enterprises to hold military-themed classes and targeted training classes, and through project practice, subject research and other means Help non-commissioned officer students broaden their horizons and enhance their capabilities, explore the construction of an integrated innovation practice system of “government, industry, academia, research and application”, support the two-way exchange of military and civilian talents and the transformation of achievements, guide advanced technologies and high-end talents from local universities and research institutions to “come in”, and assist the military in independent innovation. Promote the practical demands and research and development projects of the military to “go global”, and enable the innovative achievements of non-commissioned officer students to play a significant role and enhance their capabilities in serving the military and supporting national defense^[8].

4.2. An innovative practice platform integrating “government, industry, academia, research and application”

The platform serves as a carrier. The key to innovative practice lies in focusing on the platform. Based on the actual situation of the military, we should integrate the forces of all parties, build and make good use of a five-in-one innovative practice platform integrating “government, industry, academia, research and application”. Under the guidance of the “government”, we should give full play to the backbone role of military academies, research institutions and experimental training bases, and create a collaborative innovation platform with distinct military characteristics. Provide a fertile ground for technical breakthroughs and the transformation of achievements for non-commissioned officer students, actively seek support from local governments, attract policies, projects and funds to gather towards military talent cultivation, strengthen military-civilian technological collaboration with the participation of “industry”, support enterprises in setting up project research and development platforms around the urgent needs of the military, and open up and share advanced scientific research facilities such as

big data, artificial intelligence and virtual simulation. Attract non-commissioned officer students to participate with high-level projects, encourage enterprises to cooperate with military academies to jointly build “mass entrepreneurship and innovation” practice bases, provide technical support and entrepreneurship guidance, guide non-commissioned officer students to engage in innovation and entrepreneurship, and under the leadership of “learning”, promote the strong alliance between military and civilian universities to jointly build a number of distinctive and military-civilian integrated innovation practice teaching platforms. With the assistance of “research”, Actively connect with high-end research institutions such as military industrial groups and the Academy of Military Sciences, establish an open innovation alliance, carry out joint technological research and development, guide non-commissioned officer students to participate in major project research and development, hone their innovative abilities on the front line of research and production, strengthen the orientation of technology transfer and application under the test of “application”, and build a platform for the coordinated development of industry, academia, research and application. Organize project breakthroughs and joint research and development around the demands of practical combat training, accelerate the transformation of innovative achievements into combat effectiveness, and enable the innovative achievements of non-commissioned officers to be tested during trial training and demonstrate their capabilities in military applications^[9].

4.3. The ability cultivation path of “integration of Science and education, combination of competition and training”

Adhere to the integration of science and education, follow the path of “combining competition and training”, and enhance the innovative practical ability of non-commissioned officer students. In teaching, deepen the reform of the “discipline and major + innovation and entrepreneurship” compound training model, optimize the curriculum system and teaching content, increase the proportion of courses such as innovation methods and scientific research norms, and lay a solid foundation for the innovative practice of non-commissioned officer students. In training, focus on the needs of combat

readiness and combat. Starting from the perspective of actual combat, optimize the content of military training, integrate the cultivation of innovative concepts and scientific and technological literacy into daily training, guide non-commissioned officer students to identify problems, solve them, and summarize and improve during the completion of training tasks. In scientific research, strengthen the traction of scientific research projects, encourage non-commissioned officer students to participate in major military scientific research breakthroughs, and enhance their innovative awareness and practical skills in project development and the transformation of achievements. Build a military-civilian scientific research collaboration platform, encourage the participation of universities and research institutions, and provide cross-disciplinary research opportunities for non-commissioned officer students. In competitions, establish the concept of “promoting learning, training and research through competitions”, widely carry out military professional skills competitions, innovative design competitions, etc., and lead the innovative practice of non-commissioned officer students with high-level competitions. In practice, broaden the channels for off-campus practice. Support non-commissioned officer students to take up positions in military industrial enterprises and military research institutions for on-the-job training, participate in major project breakthroughs, and enhance their abilities and skills in practice^[10].

4.4. “Problem-oriented and project-driven” practical teaching model

Centering on the vigorous military struggle practices of the troops, with problem-oriented and project-driven approaches, we will deepen the reform of the practical teaching model, establish a “military problem database”, strengthen the military characteristics of practical teaching, collect new situations and problems encountered by the troops, and in teaching, guide non-commissioned officer students to study with problems in mind and practice around problems, thereby enhancing their innovative practical abilities in solving practical problems. Implement the “challenge and response” system, promote major project-driven approaches, encourage non-commissioned officer students to take the lead in scientific research and strive to be the main force,

give full play to the leading role of project research in the cultivation of innovative talents, guide non-commissioned officer students to enhance their abilities through tackling difficulties and hone their skills through taking on responsibilities and making achievements, promote “case teaching”, enhance the effectiveness of practical teaching, summarize and distill typical cases emerging on the front line of the military, Form a teaching case library with rich content and diverse forms. Through methods such as case introduction, group discussion, and role-playing, the interest of trainees is stimulated. The “mixed group formation” is innovated to enrich the connotation of practical teaching, break the professional boundaries, and promote cross-disciplinary mixed group formation. Non-commissioned officer students are organized to form innovative practice groups, design and release innovative practice projects for different professional directions, and guide non-commissioned officer students with different backgrounds to collaborate in solving problems. In project research and the transformation of achievements, strengthen cooperation and communication, stimulate innovative inspiration, apply “intelligent technology”, innovate practical teaching methods, and use technologies such as big data analysis, virtual simulation, and augmented reality to build immersive and interactive practical teaching platforms and create an immersive practical environment.

5. Conclusion

National leaders pointed out that we should adhere to focusing on the world’s military frontiers and the demands of national defense and military modernization, vigorously carry out independent innovation, strengthen military-civilian collaborative innovation, intra-regional military branch innovation, and strategic innovation of military branches. Non-commissioned officer students are the vanguard force of scientific and technological innovation in our military. We should take improving the ability of innovation and practice as the core task, and improve the new mechanism of collaborative education integrating science and education and military-civilian integration. Optimize the five-in-one, open and shared innovation and practice platform, apply multiple paths such as teaching, research and competition, and carry

out project-driven practical teaching reform to expand broad space for enhancing the innovation and practice ability of non-commissioned officer students, provide powerful impetus for forging a force that is ready to be called upon, capable of fighting upon arrival and certain to win in battle, and accelerate the transformation of

the non-commissioned officer talent cultivation model. Only in this way can the non-commissioned officer team take on a leading role and act as a vanguard on the future battlefield, and strive to be the first and make achievements in the great journey of realizing the Chinese Dream and the dream of a strong military!

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