

The Cultivation of Innovative Spirit and Practical Ability of Military Cadets

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Abstract: The overall goal of aviation maintenance military professional schools is to cultivate technically skilled talents who have comprehensive development in morality, intelligence, military training, and physical fitness, master a certain amount of scientific and cultural knowledge, as well as the theoretical knowledge and operational skills necessary for aviation maintenance and management. They should also have certain technical application, organization and maintenance management skills, good maintenance work style, achieve corresponding vocational skill level, be able to meet aviation maintenance professional positions, and have potential for sustainable development. This article briefly analyzes the methods and ways of talent cultivation from the perspectives of exploration spirit and learning methods, for reference by relevant units and institutions.

Keywords: NCO Cadets; Innovation Spirit; Practical Ability; Talent Cultivation

1. Introduction

"The Vocational Education Law of the People's Republic of China" has improved the connotation of vocational education, which requires the cultivation of high-quality technical and vocational talents. In military academy vocational education, it has put forward the requirement to comprehensively promote the development of vocational education and cultivate modern professional soldiers in the new era. Vocational education is the scientific and purposeful educational practice that enables people's innate potential and professional job abilities to be maximally developed and perfected. Vocational education also needs to cultivate students' innovative spirit and practical ability.

The spirit of innovation refers to the personality trait of being able and good at discovering new

problems and using new methods to create new results.[1] Practical abilities refer to the personality trait of effectively analyzing and solving practical problems. The innovative spirit and practical abilities of students are not just a genetic crystallization of innate qualities, nor are they the sudden whim of subjective wishes. Rather, they are excellent psychological and characteristics developed through the process of creating education and teaching. Therefore, in the process of implementing quality education, we should actively and effectively apply the laws of education and teaching, and strengthen the cultivation of students' innovative spirit and practical abilities in a targeted manner.

2. Emphasizing Students' Exploratory Spirit and Autonomous Learning Ability

The teaching process is an educational transformation process from known to unknown. Known refers to the knowledge, skills, and character that have been mastered, while unknown refers to the new knowledge, skills, and character that have not yet been acquired. The relationship between known and unknown is relative and can be transformed with each other. [2] By utilizing this rule, we can cultivate students' innovative spirit and practical abilities.

2.1 Education Focusing on Learning Motivation

Inspire students' motivation to explore known knowledge to gain unknown knowledge, and mobilize their enthusiasm and initiative for learning. Motivation is like a soul, which is clear at present. Motivation is the internal psychological tendency or internal drive that stimulates and maintains individual activities and drives them towards a certain goal. It is the direct internal motive force for students' learning activities.[3] There are multiple factors that influence students' learning enthusiasm and initiative, including purposeful learning motivation, achievement motivation, and

learning interests that form exploratory spirit and desire for active learning.

The purpose of learning motivation refers to the psychological drive that students generate from being clear about the goals and significance of their own learning. There are two types of purpose of learning motivation: long-term and short-term. Long-term purpose of learning motivation mainly refers to the motivation that students have for learning the significance of society, the country, personal ideals, and aspirations. It can generate sustained learning motivation and exploration enthusiasm in students. Therefore, educators should often educate students on the purpose of learning, so that they can integrate their learning with the needs of human society, personal aspirations, and lofty ideals. In the process of teaching and learning, short-term purpose of learning motivation refers to the motivation that students have for recognizing the current value and significance of specific learning activities, and linking it with their personal current needs and interests. This kind of motivation can immediately affect students' learning, so teachers should transform specific teaching goals into students' own learning goals. This short-term purpose of learning motivation often becomes a direct driving force for students to explore from known to unknown, forming a spirit of exploration and a desire for autonomous learning.

Achievement motivation refers to the psychological drive of students to achieve good academic results, which plays a crucial role in fostering their exploratory spirit. Achievement motivation has two factors: wanting to succeed and fearing failure. These two factors play different roles in students' learning activities.[4] The former is strongly driven by the desire to achieve goals and is willing to face difficulties and hardships to strive for success. On the other hand, the latter may be hesitant and timid in learning activities to avoid failure. The formation of achievement motivation is largely determined by the environment, teachers, and parents' emphasis on it. When students achieve good grades, they can experience a sense of success in their minds, which in turn stimulates them to actively learn even more. Teachers should start from the actual situation, set new learning goals based on the students' existing knowledge, skills, and character development, create conditions to help them achieve these

goals, and promptly affirm, praise, and encourage them once they have achieved these goals. This will help them gain a sense of success and pleasure, thus stimulating their confidence, autonomy, and enthusiasm for learning. It is important to encourage students' independence, self-control, and perseverance.[5] Interest is an internal tendency and selectivity towards objective things, and it is an optional attitude towards objective things. Students' interest in learning content is also the most practical and direct internal motivation for promoting learning activities. It is a necessary factor for students to generate their explorative spirit and autonomous learning ability. Interest can stimulate students to take active learning. It can fully exert its role of activating, making them have more perceptive, active thinking, rich imagination, and generate strong thirst for knowledge. Interest is preceded by curiosity, and strong curiosity can promote students to actively explore, practice, and seek solutions to problems. Teachers should protect and satisfy students' curiosity and thirst for knowledge, and take students' questioning as a breakthrough point to help students discover new problems, enabling them to be brave in questioning and to have explorative spirit. Teachers should be good at creating problem situations in the teaching process, combine the learning of new and old knowledge, cultivate students' strong interest in the knowledge they learn while solving problems with book knowledge. Cultivate exploration motivation to mobilize students' motivation in learning.

2.2 Developing Autonomous Learning Ability

There are many teaching methods that can cultivate students' inquiry spirit. The prominent function of inquiry-based teaching methods is to cultivate students' spirit of exploration and their ability for independent learning. The basic idea is to fully mobilize students' learning enthusiasm under the guidance of teachers. Students should discover and solve their own problems, and acquire new knowledge, master new skills, and improve their abilities in this process.[6] They should also cultivate their creative spirit and character. In the process of using inquiry-based teaching, firstly, teachers can use guided conversation, review questions, diagnostic exercises to understand students' level of knowledge, and then propose some practical problems related to new knowledge to stimulate

students' curiosity, thirst for knowledge, and motivation for inquiry. Encourage students to express their own views and opinions on the problem. Teachers should help students clarify the problem, guide students to construct a solution to the problem. Subsequently, teachers should guide students to conduct systematic inquiry, recall known information, learn new knowledge, and add knowledge so that students can use their old knowledge and newly acquired knowledge and additional knowledge to solve problems, draw conclusions. Finally, teachers need to organize students to verify and modify the original problem-solving process, correct their previous misunderstandings and biases, and thus reach the correct conclusion of the inquiry activity. Using such teaching methods helps to cultivate students' inquiry spirit and independent learning ability, helps to develop students' subjectivity in learning, and improves their self-study and inquiry abilities.

3. Emphasize the Cultivation of Students' Divergent and Innovative Thinking Abilities

In learning, students' innovative spirit can only produce innovative learning outcomes through innovative thinking, and their practical activities can only be elevated to a higher level with the help of innovative thinking. In teaching work, we should pay attention to cultivating students' independent spirit and innovative thinking ability.

3.1 Divergent Thinking and Convergent Thinking are Two Main Components of Creative Thinking

Creative thinking is a product of the combination of these two thinking activities. Without divergent thinking, there can be no new creation. However, from divergent thinking to convergent thinking, and from convergent thinking to divergent thinking, multiple cycles are needed to form new ideas. The main components of creative thinking are characterized by their fluency, flexibility and uniqueness in terms of divergent thinking, while convergent thinking is characterized by its accuracy and correctness.[7] These characteristics are important conditions for generating creative thinking, which in turn leads to innovation. Therefore, in order to cultivate students' innovative spirit and creative thinking ability, we must first conduct training on divergent and convergent thinking, and cultivate

their creative thinking qualities. In teaching, we should integrate specific teaching content and train students' thinking fluency through activities such as constructing, working principles, troubleshooting equipment in aircraft maintenance practices. We should also train students' thinking flexibility through remote association and problem-solving activities, and their scientific independence through a series of activities such as troubleshooting and identifying the cause of a problem. We should also train students' ability for correct analysis and synthesis, comparison and categorization, abstraction and generalization, and make sure that theory is connected with practice. We should cultivate students' ability to analyze and solve problems by integrating theory with practice.

3.2 Abstract Thinking is the Recognition of the Essential Characteristics and Internal Relationships of Things

Abstract thinking is the core of all thinking, and abstract thinking must be assisted by language. Understanding principles, evaluating works, investigating and summarizing creations, etc. are all the effects of abstract thinking. Imagery thinking is very important for creative thinking, as creativity cannot be separated from imagination. Imagination is the process of transforming and creating images by utilizing existing imagery in one's mind. Imagination can be divided into recreated imagination and creative imagination, with the latter having more creative components than the former. It is the most active and active factor in creative thinking. Through creative imagination, one can compensate facts and find missing links. Imagination thinking can summarize everything in the world, so creative imagination is an important means of analogical and comparative reasoning. Abstract and imagery thinking in creative activities must be verified through abstract logical thinking. To cultivate students' innovative spirit and ability, enhance their novelty, initiative, and scientificity of thinking, it is necessary to develop their creative thinking abilities through multiple avenues in the teaching process, including training in imagery and abstract thinking, recreated and creative imagination, comparison and association.

3.3 Intuition is the Source of Creative Thinking

It can help people make correct predictions and innovations in cases where there is insufficient facts and evidence. Although intuitive thinking does not have a clear intermediate reasoning process, this process still exists. It is just highly compressed and not consciously perceived. The reason is that daily life experience, rich scientific knowledge, and various thinking skills are often perceived and used by the subject, making the subject see scientific knowledge of the essential features and their connections as obvious and preserving them in their minds in the form of conclusions, while simplifying the process of reasoning and evidence. However, intuition thinking often manifests as sudden enlightenment and leapfrogging.[8] Therefore, people cannot clearly express its process and conclusions. Often, it is "knowing it without knowing its reasons." Therefore, intuitive thinking in creative thinking activities needs logical analysis and verification to enhance the rigor and reliability of the thinking process. It can be seen that intuition thinking and logical thinking are complementary in creative thinking activities. Intuitive thinking is formed and developed on the basis of individual's existing knowledge and experience. It can be directly cultivated. Therefore, in teaching, it is important to enrich students' knowledge, assign some logical thinking problems with certain difficulties, encourage students to think outside the box, allow them to temporarily put aside difficult problems to be solved later, help students prove and solve the process of difficult problems through their knowledge and skills, and further cultivate their spirit of inquiry and creative thinking through improving their thinking's foresight, enlightenment, concision, and logic.

4. Emphasize the Cultivation of Students' Spirit of Inquiry and Innovation, and Master Learning Abilities

The teaching process is a process from understanding to memory, and understanding the learning content plays an important role in the learning of students, being the central link of students' grasping knowledge. It is also the key stage to cultivate students' spirit of inquiry and their ability of creative mastering learning. In order to enable students to form a clear image of the learning content, students must based on corresponding perception of teaching content in the teaching materials.[9] Only then can the

concepts and principles in the text become knowledge content that represents meaning. The learning process is a complex thinking process for students themselves, and the teaching process is a process of teachers and students exploring new knowledge together. It is a process where each student brings their own experience, background, and unique feelings to communicate. Teachers should actively guide students to observe, operate, experience, perceive the teaching content, actively analyze, summarize, compare, abstract and generalize the thinking processing activities of the perceived teaching content. This will help students form concepts and grasp laws. Teachers should consciously teach students how to think, cultivate their spirit of inquiry and their ability of creative mastering learning.

Understanding plays an important role in students' learning and mastering knowledge, and creative learning requires creative understanding. The spirit of seeking truth is reflected in the process of understanding teaching content. Understanding knowledge needs to be retained in students' memory to become valuable components of their quality structure. Understanding helps memory, and for a lasting memory, it needs to be consolidated. Once the knowledge content is consolidated, it can be applied to reality. Consolidating knowledge requires that teaching activities be placed throughout all stages of the teaching process, and only by remembering previously learned knowledge can new knowledge be understood. The process of understanding is using previously learned knowledge to recognize new knowledge and establishing connections between old and new knowledge, incorporating them into their existing knowledge system. It is very important to emphasize review and consolidation of learned knowledge in the teaching process. To consolidate knowledge, it is necessary to avoid monotonous repetition, rote memorization, and excessive practice in problem-solving exercises, and instead, students' spirit of seeking truth and creativity should be fully utilized, learning abilities should be mastered, and scientific and creative methods should be used to organize students' consolidation exercises.

5. Emphasize the Cultivation of Practical Spirit and Analytical and Problem-Solving Abilities among Students

From perceptual knowledge to rational

knowledge, is the basic stage for students to master knowledge. However, the purpose of knowledge acquisition is to apply it. Through guidance from teachers and mentors, students apply learned theoretical knowledge to practical activities, fostering their practical spirit and forming skills and techniques.[10] This helps to enrich students' firsthand experience, consolidate and further understand the knowledge they have learned, and improve their analytical and problem-solving abilities. Therefore, it is essential to adhere to the principle of connecting theory with practice in teaching. It is necessary to integrate learning of textbooks with practical realities in daily life.

Practical activities allow students to experience the concrete and rich world, stimulate their interest and thirst for knowledge, and also exercise their hands-on abilities. They can discover and seek solutions to problems in the process of practice, and through practice cultivate their creativity, personality qualities. In the teaching process, practice is the key to learning, and various methods such as teaching exercises, simulations of social, production, and community-based practices can be used to allow students to gain a multi-faceted understanding of real life, strengthen the connection between theory and practice, and develop a spirit of action and the ability to apply various knowledge to solve practical problems.

Developing the creative spirit and practical abilities of students is a multifaceted and comprehensive process. Instructors need to update their educational concepts, and during the teaching process, they should base their efforts on the principles of education and psychology, combine them with actual teaching situations, and follow the teaching rule to continuously innovate education to meet the needs of cultivating modern innovative talents.

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