

IMPROVING THE QUALITY OF ADVANCED HUMAN RESOURCE TRAINING IN MILITARY SCIENCE AND TECHNOLOGY TO ADAPT TO THE FOURTH INDUSTRIAL REVOLUTION

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Abstract

Developing military science and technology potential to adapt to the Fourth Industrial Revolution requires a well-rounded strategy in which human resource training in military science and technology takes priority over other factors. Improving the quality of advanced human resource training in military science and technology is not only a mission to develop military science and technology potential but also an essential requirement to reinforce military strength, fulfilling the requirements for the process of building and defending the Socialist Fatherland of Vietnam in a new state of affairs. The Fourth Industrial Revolution has significantly influenced all-round process of education and training, especially advanced human resource training in military science and technology.

Keywords: *High quality human resources, Fourth Industrial Revolution*

1. Introduction

The Fourth Industrial Revolution is no longer a new trend, and indeed it is happening. This revolution clearly has a sharp impact on every social aspect including the matter of improving the quality of human resource training in military science and technology. Building a “revolutionary, formal, high-skilled, modernized” military in the context of the Fourth Industrial Revolution requires a well-rounded strategy in which advanced human resource training in military science and technology takes priority over other factors. Education and training strategy in the armed forces during the period 2011-2020 is determined: “Training the advanced human resource of the armed forces has a strategic meaning in the process of building a revolutionary, formal, high-skilled, modernized Vietnamese National Army. This in part determines the success of building and defending the Socialist Fatherland of Vietnam in a new state of affairs.”⁹⁸

⁹⁸ Ministry of National Defense (2013), *Strategy of developing education and training in the army during the period 2011-2020*, enacted with Decision no.2523/QĐ-BQP passed by Minister of National Defense on Sept. 15th, 2013

2. Methods

The article used an overall and comprehensive approach to collect and summarize the last studies and reports that related to this topic. We mainly use statistical methods, synthesis and secondary data in this article research.

3. Results

Advanced human resource training in military science and technology is an interconnected, unitary process which is mainly manifested in its quantity, forms, divisional structure, training contents, and capability to enable a sustainable, long-term employment of those trained individuals for the goal of nation-building and defense. Each mentioned factor either directly or indirectly influences the quality of human resource in military science and technology. Among those factors, however, recruitment process serves a decisive role. If the recruitment process produces an outcome of below required standards, the wanted post-training results will hardly be obtained. Hence, to work towards the goals, contents, and requirements of improving the quality of advanced human resource training in military science and technology, the process of recruitment must be appropriately appreciated. In fact, in recent years, the number of applicants for different majors is relatively high, yet the overall quality of applicant pool remains low. This problem impedes the process of improving the quality of advanced human resource in military science and technology nowadays.

Other than recruitment process, factors, such as training goals, program contents, training methods of each specialization and each study level, play an integral part in influencing the quality of human resource in military science and technology. K. Marx stated: "Altering human's mutual instincts to make humans possess knowledge and tactful habits in a specific profession, meaning to become a full-grown and distinctive worker, necessitates a certain level of education"⁹⁹. To attain a certain level of knowledge and ensure continuous enhancement of human resource in military science and technology, all the factors relating to training process must be considered, for example: training goals, contents, methods, investment in modernizing infrastructure, and attractive benefits for advanced human resource in military science and technology. To be more specific, in the current situation, to improve the quality of advanced human resource training in military science and technology regarding the adaptation to the Fourth Industrial Revolution, in our opinion, some main matters, as following, need to be addressed:

First, military technology institutes need to standardize goals and clarify training motto accordingly to the objective requirements for improving the quality of human resource in military science and technology nowadays.

Current training goals and requirements of military technology institutes are: Educating military engineers, cadres, technicians to have decent work-related understanding,

⁹⁹ K.Marx(1867), "Capitalism", K.Marx & F. Engels - complete works, vol.23, p.285. National Politics Publisher, 2002.

strong political mind, ability to think independently and creatively; Undergraduate level, graduate level, and military talents; In-depth work-related knowledge and ability to fulfill appointed responsibilities. Based on the general goals, each specialization taught at military technology institutes is materialized to reach specific sub-goals in accordance with the quality, capability, and knowledge required for the respective positions that will be occupied by those trained groups upon graduation. Throughout the process of standardizing goals, the relationship between goals of the whole training program and goals of each specific period, each study level, each school year, and each specialization must be harmonized; Simultaneously, the process should comply with current developing strategy of the armed forces: “revolutionary, formal, high-skilled, modernized.”

Process of standardizing training goals must meet the requirements of integrating and outcome of undergraduate level being equivalent to that of national standard, suiting with each study level, specialization, and typical characteristics of training young cadres, high-quality cadres in the domain of military science and technology. Standardizing training goals must direct towards creating and developing young human resource which has enormous potential and adaptive capability to keep pace with the development of science and technology revolution, especially military science and technology nowadays. Indeed, this is one of the important factors for the process of building a “revolutionary, formal, high-skilled, modernized” army in the context of the Fourth Industrial Revolution. Accordingly, human resource training goals must include the requirement for a well-rounded basic understanding, yet an in-depth knowledge of the specialization. Besides, other matters, such as political and moral qualities, professional motives, are also main contents and ultimate goals that should be strived for in standardizing training goals for advanced human resource in military science and technology at the present.

Standardizing training goals needs to rest on cognitive basis and are able to resolve conflicting aspects such as: conflict between comprehensiveness and intensiveness; conflict between meeting short-term demand and meeting long-term demand; conflict between adjusting quantity and advancing quality of human resource; conflict between reality as well as potential existing during training process and ultimate goal which is ensuring the success of training human resource in military science and technology with sufficient quantity, appropriate structure, and high quality. This way, drawbacks deeply rooting in human resource training in military science and technology can be adequately addressed, thereby facilitating the adaptation to the Fourth Industrial Revolution.

As a matter of fact, apart from conventional functions and responsibilities of researching, mastering, and developing military science and technology, the crew of cadres and technicians also has to deal with many complex and sophisticated situations in the real world. This fact entails the need for required knowledge level of the staffs to be reflected in training goals standardization, taking into account the fundamental core, systematization, persistency, and the possibility of changes in reality to make appropriate adjustments or complements if necessary.

Motto of human resource training in military science and technology nowadays is “hands-on learning”, “theory is consistent with actuality”, “a close relationship between school and military units is fostered.” Therefore, a proper apportion among theory and practice, politics, military, and technical skills is crucial for the coherence not only between theoretical knowledge and practical experiences but also between knowledge of military science and technology and knowledge of other necessary fields. Within the context of the Fourth Industrial Revolution, science and technology in general and military science and technology in particular are climbing the ladder and achieving major breakthroughs, laying a firm foundation for further development in almost all military elements. A sound foundation of modern science and technology will bring about many potentials for military arms and equipment. This, accordingly, leads to the demand for transforming the process of advanced human resource training in military science and technology these days. The resolution of the Party Central Committee XII’s 5th Conference emphasized on “growing human resources, especially high-quality one, and seizing the opportunities and accomplishments of the Fourth Industrial Revolution.”¹⁰⁰ This is, indeed, a wise strategy of our Party. In modern war, payrolls of combatant arms are fundamentally lean and highly mobile; Also, the battleground is expanded, making it more difficult to recognize the boundary between battlefield and home front. Combat operations have also significantly changed. Collaborative combat and independent combat are tightly combined thanks to modern communication system. Strategies, command system, and combination of different types of military weapons and equipment have sharply altered. Perspectives on combat space, time, objectives, and strategies are considerably changing as well. These altered factors have deeply influenced the process of advanced human resource training in military science and technology. V.L. Lenin asserted that: “...modern war as well as modern techniques require high-quality human resource. Without land forces and marine forces, along with creative ideas and consciousness, victory in the modern war is unattainable.”¹⁰¹ Thus, training process in military technology institutes these days must be built based on the practical military conditions. This is the only philosophy to be considered accurate in standardizing goals and requirements for advanced human resource training in military science and technology nowadays.

Second, continue to update training programs for advanced human resource in military science and technology and thereby aim at a well-rounded, firm, and in-depth development.

Training syllabus regulates system of vital knowledge for learners. This is one of the most important matters in advanced human resource training in military science and technology to adapt to the Fourth Industrial Revolution. As we all know, the nature of the

¹⁰⁰ Vietnam Communist Party, Document of the 5th Conference - Central Committee XII, Office of Party Central Committee, Hanoi, 2017, p.54.

¹⁰¹ V.I.Lenin (1905), "Hai cang Lu- thuan that thu" , V.I.Lenin-complete works, vol.9, Progress Publisher Moscow. 1979, p.191

Fourth Industrial Revolution is relying on the foundation of digital technology and mingling with smart technologies, therefore resulting in the arrivals of new jobs, technologies, and techniques. This phenomenon arises not only in the general workforce but also in the domain of military science and technology. Thus, it is required that military engineers be equipped with the latest knowledge, skills, and qualities to keep up with new demands in practice. To meet this requirement, it is recommended to quickly complete training syllabus in an open and integrating way while speedily scrutinizing and properly arranging the contents included in the training syllabus. Moreover, it is essential to focus on leading fields which greatly affects the development of military science and technology in the context of the Fourth Industrial Revolution.

When updating training syllabus, training capability and demands need to be accurately determined with a concentration on developing plans and forecasting future demand for human resource in different fields of the armed forces. Under current circumstances, training syllabus need to acknowledge the importance of improving education and training quality in accordance with regional and international standards, thereby bringing about positive transitions in advanced human resource training in military science and technology.

Update on training syllabus needs to rest on practical requirements of current military activities and learners' abilities and requirements, thus ensuring lean, modern, practical characteristics as determined in our Party's ideology: "Quickly transforming education procedures from mainly providing knowledge to thoroughly developing learners' capabilities and qualities; hands-on learning; theory is consistent with actuality. Education and training development must go along with demands for economic and social developments, nation-building and defense, science and technology enhancement, requirements for human resource and workforce development"¹⁰². Training syllabus needs to equip learners with both knowledge and skills that are suitable with the fast changes of the Fourth Industrial Revolution, especially changes in military science and technology. Training programs must aim at developing both capabilities and qualities of learners, thereby ensuring harmonious combination of moral, rational, physical, and artistic aspects; providing education with regard to becoming an ethical person, obtaining fundamental understanding and vocational knowledge; Particularly, teaching duration for foreign languages, information technology, and technology needs to be extended appropriately. Open-training programs must be carried out in such a way that is flexible and compatible with the fast changes of the Fourth Industrial Revolution. Also, training programs need to focus on the close relationship between "theory and actuality", "link between school and military units" ... This way, education is worth to be considered a priority in implementing plans and programs of economic and social development, as our Party determined: "Transforming

¹⁰² Vietnam Communist Party, Documentary of the 12th National Party Congress, Office of Party Central Committee, 2016, p.114-115.

education and training both fundamentally and comprehensively; improving the quality of human resource; promoting research, development, and applications of science and technology; maximizing leading, central role of education, training, science and technology in our country's transformation and development progress.¹⁰³

However, updating syllabus for advanced human resource training in military science and technology is a complex problem these days. This complexity directly derives from conflicts arising during training process, in which the major conflict is between the fast augmentation of humankind knowledge, particularly improvements in military science and technology, and limited time for training. To settle this conflict, the problem arising in the process of updating training syllabus is the need for a fundamental, systematic, and in-depth resolution. Therefore, under current circumstances, training syllabus update needs to be coupled with the current requirements for army's development, particularly military science and technology's development, and to be suitable with prevailing trends of education development both nationally and globally. Most importantly, training syllabus update for advanced human resource training in military science and technology needs to be well-rounded and practical with a concentration on systematic, unitary, flexible, and modern characteristics. Some other problems emerging during the process of updating training syllabus are: scrutinizing, eliminating overlaps in different subjects and modules; determining the accurate volumes of fundamental knowledge and specialization's knowledge; new subjects and new problems need to be researched fundamentally and systematically so as to, then, be added to the syllabus; rectifying adverse trend of prioritizing only specialization's subjects over other scientific subjects and vice versa.

Third, acknowledging the importance of modernizing education and training's methods, investments, and improvements in military technology institutes to energize learners.

Accompanying training syllabus update's progress, a crucial factor contributing to the improvements of advanced human resource training in military science and technology under the influence of the Fourth Industrial Revolution is transformation in education and training's methods. Teaching methods these days are required to focus on teaching learners to study and think independently; Particularly, encouraging self-study and life-long study among learners is very important. This means that we have to "continue to quickly modernize teaching methods; encourage positiveness, proactiveness, and creativity among learners when it comes to knowledge and skills application; change the habit of passive learning and memorization. The emphasis should be teaching and encouraging independent study and thinking, thereby equipping learners with the abilities to absorb new knowledge and skills by themselves"¹⁰⁴. Under the strong influence of the Fourth Industrial Revolution

¹⁰³ Vietnam Communist Party, Document of the 12th National Party Congress, National Politics Publisher, 2016, p.77.

¹⁰⁴ Vietnam Communist Party (2013), Document of the 8th Congress - the 11th Party Central Committee, Office of Party Central Committee, Hanoi, p.128-129.

on all social aspects including military science and technology, humankind knowledge is rapidly gaining in numbers. Therefore, the essence of advanced human resource training in military science and technology must be instilling in learners the abilities to think logically, synthesize, and apply absorbed knowledge in practice. Professors must inspire learners to be proactive in studying and researching so that learners can devise new findings and effectively address new problems without rigidly sticking to outdated methods. Professors also need to trigger and nurture both critical thinking and creativity of learners; In return, learners must be surrounded by a creative environment because only in such environment can learners' potentials of consciousness and practice be maximized. Under prevailing circumstances, the effectiveness of advanced human resource training in military science and technology is not measured by the volume of delivered knowledge but mostly by the development of creative ability, logical thinking, adaptive ability, and the ability to apply acquired knowledge in military practice. Military technology institutes need to provide military engineers and cadres with decent infrastructures for the purpose of promoting self-study and avoiding being left behind by the current state of technology explosion.

Aside from transforming teaching methods, upgrading teaching facilities is also an important factor to exploit full benefits of currently available resources. Apparently, modern technological facilities have become an inevitable element of modern education system in the prevailing situation. Hence, the process of advanced human resource training in military science and technology requires gradual investments in modern facilities, coupled with carefully considered alternative of upgrading equipment which is directly involved in technical specialization of each study level and each major.

Fourth, completing system of policies and procedures for training and developing advanced human resource in military science and technology.

This is one of the crucial factors generating direct motivation for continuous improvements in advanced human resource training in military science and technology of our country nowadays. Our Party has determined that: “Completing institutions for developing, applying science and technology, education and training, human resource, especially high-quality human resource”¹⁰⁵. With the passage of time, our Party, nation, and army have passed many proper institutions and policies, favorably influencing the process of advanced human resource training in military science and technology. However, during the progress of implementation, the existing policies exhibit some drawbacks and fail to exert expected effects. As a result, improving quality of advanced human resource training in military science and technology requires not only regular adjustments and complements but also complete, appropriate institutions and benefit schemes for in-charge staffs.

4. Discussion and Conclusion

In the forthcoming years, it is necessary to continue to rigorously implement

¹⁰⁵ Vietnam Communist Party, Document of the 5th Congress - the 12th Party Central Committee, p.54.

“Proposal of ameliorating and developing military teaching staffs”. In the short term, training and re-training teaching staffs, taking on different forms, should be further advanced. In arranging and appointing teaching cadres, people with decent abilities and qualities are prioritized to effectively nurture the potentials of this group. Functional departments, together with military units, elect officers who possess adequate abilities and teaching skills, to receive trainings for changes in work position, from working in military units or factories to working as lecturers. Selections of lecturers among outstanding students are prioritized. Furthermore, it is beneficial to establish partnerships with other universities and military technology institutes to recruit students graduating from technology specializations with decent abilities, qualities and are willing to work for military institutes in the long term; expand joint training networks; send outstanding cadres, lecturers, and students abroad to enhance their technical knowledge ...

The works of completing institutions and policies for training advanced human resource in military science and technology need to be carried out simultaneously in all aspects such as: career orientation, education and training’s quality, development policies, working conditions and environment, along with benefit schemes’ policies and military home front policies ... Especially, employment and benefits must be concentrated on to generate motivation and encourage positive attitudes towards continuous improvements in all aspects among students of military technology institutes. Proper, effective policies regulating scientific research activities should be implemented; Excellent research proposals should also be offered well-deserved rewards.

In conclusion, the Fourth Industrial Revolution has significantly influenced all-round process of education and training, especially advanced human resource training in military science and technology. Therefore, improving the quality of human resource in military science and technology entails education and training’s process to be transformed with adaptation to the Fourth Industrial Revolution. In other words, the progress of building a “revolutionary, formal, high-skilled, modernized” army under the context of the Fourth Industrial Revolution largely depends on the exploitation of human resource, especially advanced human resource training in military science and technology these days.

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