Exploration of Military Talent Training Modes Based on Data Application Ability

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Abstract. This essay made pertinent investigations into how to educate military talent in data application, with a focus on the guiding significance of data application ability in improving the scientificity of the work such as combat command of troops, and organizing and implementing training was teased out. Additionally, the course system and training mode of data application ability were correlatively explored.

Keywords: Military Talent Training · Data Application Ability

1 Introduction

With the continuous development of data acquisition, storage and analysis technology, military data has received more and more attention. The relevant military business is interpreted and presented in a digitalized manner as a basis for revision and supplementation of management and decision-making, which is constantly promoting the construction of war-preparedness and combat capabilities based on data to be deep-going in theory and practice, and practical in theory and feasible in practice [1]. The data are not only new technology, resources and infrastructure generated under new requirements, but also their application ability has become an integral part of the army's fighting capacity in the new era [2].

The data application ability of military talents is the one to apply relevant data technology to military business, and to generate, collect, process and analyze military data in military training in order to ensure scientific decision-making and efficient operation. It can be seen that the data application ability is not a single one, but a composite one. The essence of the training of military talents' data application ability is to train the relevant skills such as military data acquisition, storage, transmission, analysis, processing and application.

For the sake of meeting the scenario application requirements of military talents' data capabilities, the post requirements and technology development are combined. The training effect of military talents' data application ability can be improved by introducing data analysis awareness through general courses, the training of data application ability in project practice, and the evaluation and feedback of comprehensive ability.

D. Kumar et al. (Eds.): IEIT 2023, AHSSEH 10, pp. 1072–1077, 2023.
https://doi.org/10.2991/978-94-6463-230-9_129

2 Teasing Out the Course System of Data Ability Training

Knowledge is the foundation of ability, and the general course system for military data application ability building is the cornerstone of the whole training system [3]. Considering the characteristics of military academies, it is advocated to strengthen the basic knowledge and methods of data analysis on the basis of the existing general courses [5].

2.1 General Basic Course Module

The module, mainly including "Fundamentals of probability and statistics" and "Fundamentals of university computer", are commonly opened for cadets, with statistics and induction as the core, combined with the knowledge and technology related to big data in university computer courses. And it aims to develop relevant military data analysis cases, establish the awareness of data analysis, and master the basic methods of data analysis.

2.2 Course Modules for Data Analysis Methods

This module includes basic statistical analysis methods and big data analysis ones. Big data analysis methods for growing cadres in undergraduates include the knowledge such as the introduction to data science and big data technology, data mining, data visualization and big data analysis methods. The learning of this part should break discipline boundaries, establish relevancy within computing science, and actively explore practical courses closely related to military business to improve the engineering practice ability of cadets. Meanwhile, cadets are encouraged to participate in scientific and technological competitions such as relevant military innovation and Internet+, apply for patents, etc. to increase credits, and practice innovation. Professional application courses such as distributed computing, machine learning, and deep learning oriented toward natural language processing and image data can be opened for postgraduate growth cadres.

2.3 Application Practice Course Modules for Different Professionals

Courses of military data science oriented toward the needs of the troops are opened, including the content such as militarized data analysis, militarized data practice platform and practical training. Based on the characteristics and needs of different military fields in different services, the practical application needs are clarified, with relevant professional background knowledge supplemented. The military data practical training, internship, and military empowerment courses are pushed forward. Special topics on military big data will be opened for on-the-job training cadets, with the construction of special teaching materials oriented toward specific applications; Big data skill training courses for sergeant officer cadets are opened, with skilled platforms built for use.

3 Establishment of an Experimental Practice Teaching Platform with Data Analysis Ability

Data processing ability is the key embodiment of the training of cadets' data ability in military academies. In practical teaching, it is necessary to fully consider the training objectives and practical application scenarios of military academies. A blended teaching system based on a practical training platform and supplemented by group project practice can be constructed.

The practical training platform promotes the application of military empowerment, focuses on scientific research, teaching and military applications, and provides technical support platforms, tools and core course resources and services oriented toward the training of military data talents. And a practical training platform for talent training of military big data is constructed, including algorithm, hardware, system and teaching platforms from the aspects such as resource sharing, platform co-construction, joint scientific research, talent training, course construction, teacher training and network swarm intelligence. The training of military big data talents has been upgraded from a platform of "speaking, teaching and learning" to a large one of "empowerment, practice and innovation" jointly built by grass-roots troops, military academies and the military commission. New mechanisms are explored in such aspects as theoretical teaching, practical training and technological innovation. In the practical training platform, the training needs of grass-roots troops will be fully considered. Based on big data professional curriculum systems in academies, combined with the requirements of the relevant organizational structure of the military commission, relevant practical training projects are constructed, such as web crawlers and data collection, military data analysis and visualization processing, military command planning and decision-making, training data analysis, and weapons and equipment data analysis. Data acquisition, analysis, computing and interpretation abilities in cadets are practically cultivated.

4 Exploration of the Training Mode Integrated with Military Business

Data application ability is the criterion for judging the big data ability of cadets in military academies, and where the value lies [6]. And its core is application driven, and cadets' performing practical training combined with military post tasks is the military business scenario support for military big data to achieve military empowerment. Nowadays, big data technology is gradually applied in the troops [7], which improves the efficiency of troop management and the scientificity of command and decision-making. Grass root troops actually master rich application scenario data, explore and practice advanced development tools and cutting-edge technologies. Military academies should carry out technical internship cooperation with these departments to make full use of actual data resources and application technology and establish cooperative bases, thereby realizing the integration of production and education of theoretical education and practical application. This creates practical training opportunities of military big data projects for cadets, and enables the trained talents to play their due role in the actual application and realistic problems in troops.

5 Exploration of Evaluation Models for Data Application Ability in Military Academies

Scientific teaching evaluation is the main means of measuring and assessing the achievement of teaching objectives. The training system that serves the data application ability in military academies is composed of assessment forms such as content learning, case analysis, group practical assignments in class, course group practice and defense, and practical training in off-campus practical training base. A process assessment mechanism is formulated. And the feedback mechanism of the troops is made full of to continuously promote the achievement of teaching objectives, with objective evaluation of the learning effect and teaching design. The assessment aims to cultivate cadets' learning habits of initiative and active exploration, and ensure that cadets practically become the most important roles in teaching, with their potential stimulated, and their innovative quality is developed in practice through the assessment mechanism.

5.1 Learning of Teaching Content

Combined with the major tasks of the troops, the transformation from "knowledge-driven" to "task-driven" teaching modes is promoted, and the knowledge points of data application ability training are decomposed and run through the teaching process in the form of tasks.

5.2 Analysis and Discussion of Relevant Cases

Case analysis and discussion of the inspiring events are performed in recent international community and wartime. With the big data-related technology involved in the case as the entry point, the military data application scenario is inserted in the unfolding interpretation. Through communication and discussion, cadets' data application ability is enlightened.

5.3 Group Practical Assignment in Class

With 3–4 cadets as a group, the groups crawl the key data they are interested in, such as the military input of various countries, the admission score line of military academies, the entrance height of freshmen, the distribution of student sources, and the average height of the national population. The group members conduct data analysis by themselves, use the learned technical analysis knowledge to get the corresponding results, and share them with other cadets for the same class learning. Through the exchange of works of small components, students are encouraged to innovate practice research.

5.4 Grouping Defense After Class

The students are divided into groups, and the experts of the research group draw up relevant research directions. The group members carry out practice on a certain data set, such as crawling, mining and analysis within 48 h. One person is selected at random in

front of the experts in the research group for course defense. For example, "borrowing and reading records of libraries in Military academies Based on big data" can be taken as the topic. In the defense, questions related to engineering ethics and innovation spirits, such as "whether the use of data infringes on personal privacy, how to solve it, and where are the innovation points of technology" can be involved. In the process of thinking about these questions, students realize the improvement in their comprehensive quality.

5.5 Military Data Project Internship and Practical Training Based on the Troops

Typical application scenarios for brigades and regiments are constructed. And the application scenarios of military data are visited [6]. Cadets are encouraged to apply a virtual data pool to carry out internship and practical training combined with actual military business. The focuses and methods of teaching are improved by learning from the troops' judgment and opinions on the cadets' data application ability [7].

6 Conclusion

In this paper, the training mode for military talents based on data application was proposed. This mode starts from the application requirements of the troops, and through the relevant course system, the engineering practice training of data processing ability is carried out on the basis of cultivating data acquisition ability. Through the system engineering training combined with the actual military business, the talents with the ability to discover, analyze and solve actual military business are cultivated. And guided by the needs of the troops, military talents are transported for them.

References

1. Zhan Xiaosu. Status and Prospect of Military Big Data [J]. Military digest, 2020 (09): 57–61.
2. He you, Zhu Yangyong, Zhao Peng, Chai Yong, Liao Zhicheng, Zhou Wei, Zhou Xiangdong, Wang Haipeng, Wang Wei, Xiong Yun, Xu Zhoujun, Peng Xuan, Meng Hui, Wang Shengjin. A Conspectus of National Defense Big Data [J]. Systems Engineering and Electronic Technology, 2016, 38(06): 1300–1305.
3. Xie Zheng, Li Jianping, Su Jinying. Discussion on the Course Setting of Postgraduates in the Direction of Data Science in Military Academies [J]. Journal of Higher Education Research, 2018, 41(04): 84–87 + 98.
4. Gao YM, Li XF. Research on the cultivation of professional talents in big data technology and application in China's higher education institutions under the background of new engineering [J]. Experimental Technology and Management, 2021, 38(04): 264-270. DOI: https://doi.org/10.16791/j.cnki.sjg.2021.04.053.
5. Y. Zheng, W. Li, X. Dong, M. Zhou and L. Xu, "Application Research on Big Data of Military Training in Military Academy Teaching," 2020 International Conference on Modern Education and Information Management (ICMEIM), Dalian, China, 2020, pp. 357–361, doi: https://doi.org/10.1109/ICMEIM51375.2020.00088.

6. Song X, Wu Y, Ma Y, et al. Military simulation big data: background, state of the art, and challenges [J]. Mathematical Problems in Engineering, 2015, 2015.
7. Vie, Loryana, L., Scheier, Lawrence, M., Lester, Paul, B., Ho, Tiffany, E., Labarthe, Darwin, R., Seligman, Martin, E., & P. (2015).The U.S. Army Person-Event Data Environment: A Military-Civilian Big Data Enterprise. BIG DATA, 3(2), 67–79.