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THE SYSTEMS APPROACH TO TRAINING IN THE MILITARY EDUCATIONAL SYSTEM – AGGREGATION OF INTEGRATION PROCESSES

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Abstract: This report looks into the Systems Approach to Training, in the context of educational institutions in the armed forces, as a logical and systematic process. Documents regulating the implementation of the Systems Approach to Training in the US Army, United Kingdom and Bulgaria are analyzed. The first part of the report outlines the requirements of the military educational system based on the made analysis. It is reasonably stated that these requirements apply to all military education systems and constitute a valid framework for all models. This framework sufficiently allows those who make the training to do so in a flexible way, in accordance to the learners' educational needs. From the standpoint of the management of each education system, the Systems Approach to Training is the most appropriate way to identify learning and development needs. It is reasonably stated that this is an adaptive, continuous training model focused on providing quality, appropriate and effective learning practices. The main features of the Systems Approach to Training applied in the military education systems of the United States, the United Kingdom and the Republic of Bulgaria are examined in the second part of the report. Different definitions are used to describe the Systems Approach to Training. From the analysis of the definitions given, the authors justify the assertion, that inherently, the Systems Approach to Training to a certain extent approaches the architectural approach. It is established that for the needs of the armed forces of all three countries the Systems Approach to Training is presented as an aggregation of interrelated and interdependent processes (or stages) aimed at designing the modern military education process in a highly dynamic and external environment. A comparative analysis of the stages (phases) of the Systems Approach to Training applied in the military education systems of the United States, United Kingdom and the Republic of Bulgaria is made. In conclusion of this report the authors justify the opinion that the Systems Approach to Training in the context of the armed forces is an aggregation of integration processes not only aimed at the end result, but also in the learning process itself.
Keywords: military educational system, systems approach to training

1. INTRODUCTION

At today's stage of development of our society, the design of educational products is influenced by different factors. Some of them are a direct consequence of the ongoing globalization. Another group is the associated with the accelerated pace of change and improvement of information and technologies and systems and giving ground for the mark of the "digital era". Additionally, the impact of globalization is reflected upon the demographic and ecological environment. Last, but not least, the design of educational products is directly dependent on the demand for highly qualified people on the labor market – professionals who must have the necessary knowledge, skills, professional and personal qualities to adequately fulfill specific tasks or specific work. This means that the competences mentioned must correspond to the most of the requirements for taking up a job. This dependency contributes to the employability of the people for employment.

Nevertheless, when it comes to educating people about a state's armed forces, and in particular – the military education system of the country, there are many other factors influencing the development of educational products, stemming from the strategic security environment. To describe what is happening in it, L. Lazarov points out that modern wars and conflicts are characterized by the widespread use of technically and technologically advanced weapons. The experience of armed conflicts indicates that the real ratio of the forces of belligerent parties is determined not by the potential as much as the combat capabilities of opposing groups. [3] This gives us ground to determine some of the factors, which influence the modeling of the process of training of people in the armed forces, as key. Such factors, for example, are the increasing complexity of asymmetric war, radical ideologies and unresolved conflicts, the continuous modernization of military equipment and methods of its production. Finally yet

importantly we must emphasize, that education has been defined as a key factor in the transformation of NATO. All of this necessitates the use of wide-ranging approaches.

In support of the institutional reform and capacity building in partner countries, NATO armies radically transformed their combat capabilities, including culture, doctrine, personnel, training and weapon systems. This transformation is based on the concepts and development goals, design of new formations, etc. In the process of their conversion efforts, the armies planned to change the way that they organize, train, deploy, and equip their forces. [7] This shows that in the process of building and maintaining the necessary capabilities for an army, the human factor is in the center. That is why it does not make any exception to the improvement of the personnel training system, whose main function is to prepare all the human resources of our increasing risks and challenges of the modern age.

2. REQUIREMENTS TO THE MILITARY EDUCATIONAL SYSTEM

The growing demand of skills and competences within the armed forces of each country requires military education institutions (schools, colleges, centres, etc.) to react in new ways. Responding to the diversity and growing expectations of the military education system, fundamental change was required and some essential requirements were introduced for the education and training provided.

First, the military education system should provide training that has to be logically linked, continuous and throughout the professional life. In addition, it has to be needs based, available on demand and to be available right on time. Finally yet importantly, military education must be up to date – it must lead to and not lag behind the changes. [5] In this connection, it finds its application on the philosophy of lifelong learning. Lifelong learning as a routine activity supports the pursuit of defense professions, because most of the knowledge:

- give ready solutions for a larger number of standard situations;
- provide an advantage in finding effective solutions in a non-traditional environment and a non-standard situation;
- lead to an accumulation which combined with the accumulation of life experience and common sense, provides a wider range and scale of thought patterns and improve the overall lifestyle attitude of human resources.[1]

This gives us ground to define the provision of military education and training as a managed or designed process, which is based on developed concepts, models and mechanisms for their realization.

Although each military education system has its own specific features, the above can be defined as a valid framework for all models. The arguments in this regard are that this sufficiently allows those who design the training to do so in a flexible way, in accordance with the needs of the learners. Furthermore, in this way, we can reasonably point out that this is an adaptive, continuous learning model focused on providing quality, relevant and effective learning practices. Lastly, this model supports the development of results orientated learning strategies that promote thinking, initiatives and provide an operationally relevant context. [9] Change through adaptation is a normal way of improvement and naturally reflects the dynamic state of the system.

From the point of view of the management of each education system, the systems approach to training is the most appropriate way to identify learning and development needs. It is widely used both by civil education systems and by the military education systems of different countries.

3. CHARACTERISTICS OF THE SYSTEMS APPROACH TO TRAINING APPLIED TO MILITARY EDUCATIONAL SYSTEMS

The most common definition we can refer to the systems approach to training is that it is a methodology for managing training programs and is an orderly, logical approach to determining what you need to know and how to make people work at a particular job or in a particular profession. [6] Of course, when it comes to the military education system, the definition of the systems approach has a wider structure.

In the framework of the Armed Forces of the Republic of Bulgaria, the systems approach to training is defined as a model for the management of individual and collective training in order to control the quality of the preparation and the amount of resources allocated for training and preparation of the staffs and units of the armed forces. This analytical method determines what training needs to be done with personnel, headquarters and formations to reach certain standards that ensure successful implementation of tasks in crisis response operations and to ensure national security. [2]

Another definition, which we can point out as an example, is the one, which is most common in all structures of the United States Armed Forces involved in training and education. In their publication, they describe the systems approach to training[70] as a process, which is systematic, iterative, spiraling approach to making collective, individual and self-developing solutions for army education/ training. It determines whether training is needed or not; what training has been done so far; who needs training; how well and where learning is delivered; and maintenance training/ resources needed to develop, disseminate, implement and evaluate the necessary educational/ training products. [10]

In the British Army the term – The Defence Systems Approach to Training (DSAT) is accepted, to describe the process to be used by those involved in defense training design, delivery, guarantee, management and defense management. DSAT is designed to create a training system that allows trainers to provide learners with an appropriate, effective, efficient, responsible, safe and risk-orientated training. [8]

From these definitions, we can justify the assertion that inherently the systems approach to learning is, to certain extent, approaching the architectural approach. In view of the latter, Ts. Semerdjiev points out that, it identifies and removes the obstacles to the achievement of synergy, quality and efficiency in the work of organizations. In addition, the author points out that the process of building the architecture is divided into five stages. At each stage, one or more products are created. They are reviewed and evaluated in the design process, thus making it iterative and uninterrupted. They reveal the sequence and casual links of the actions in the process of obtaining the architectural products. [4]

Similar to the architectural approach, a systems approach to training is also a process that involves separate phases. The elements (phases) of the systems approach to training in the United States, United Kingdom and the Bulgarian Armed Forces are set out in Table 1.

Table 1. Elements of Systems Approach to Training in the United States, United Kingdom and the Bulgarian Armed Forces.

№	ADDIE (USA)	DSAT (United Kingdom)	SAT (Bulgaria)
1.	**ANALYSIS:**	**ANALYSIS:**	**ANALYSIS**
1.1.	**- Needs analysis;**	**- Role Analysis;**	
1.2.	**- Mission analysis;**	**- Training Gap Analysis;**	
1.3.	**- Doctrine analysis;**	**- Training Options Analysis;**	
1.4.	**- Target audience analysis;**	**- Team/Collective Task Analysis;**	
1.5.	**- Collective task analysis;**	**- Overlay Analysis;**	
1.6.	**- Job analysis;**	**- Environment Analysis.**	
1.7.	**- Individual task analysis.**		
2.	**DESIGN**	**DESIGN**	**DESIGN OF TRAINING**
3.	**DEVELOPMENT**		**ORGANIZATION**
4.	**IMPLEMENTATION**	**DELIVERY**	**CONDUCT**
5.	**EVALUATION**	**ASSURANCE (Internal and External Validation)**	**EVALUATION (INTERNAL)**
6.			**VALIDATION (EXTERNAL)**

[70] In the US Armed Forces the concept of „systems approach to training“ is used in TRADOC Pamphlet 350-70-6**,** SYSTEMS APPROACH TO TRAINING ANALYSIS, Department of the Army Headquarters, United States Army Training and Doctrine Command Fort Monroe, Virginia 23651-1047, 7 September 2004. In addition, the US Armed Forces also use the longer term – Analysis, Design, Development, Implementation, and Evaluation (ADDIE) process**.** It is the basis of the systems, cyclical, repetitive approach to formulating, planning, organizing and documenting all army educational products. It supports the production of military training products to meet training requirements, focuses on critical job and/or function requirements, provides feedback on assessment and/or evaluation identifying alternative training methods and achieves effectiveness by providing information that helps focus resources on critical learning requirements. TRADOC Regulation 350-70, ARMY LEARNING POLICY AND SYSTEMS, Department of the Army Headquarters, United States Army Training and Doctrine Command Fort Eustis, Virginia 23604-5700, 10 July 2017, p. 44.

The comparative table shows that in different countries the phases of the systems approach, with few exceptions, are the same.

Another similarity of the architectural approach with the systems approach to training is that each phase also creates a product. In support of this statement, we need to highlight the main features of each phase. Reflections are based on the descriptions of the different phases of the systems approach to training adopted by the US Armed Forces. This approach is dictated not by the need to favor one country or another, but by the fact that for the needs of the military education system of this state, the phases of the systems approach to training are described in the most comprehensive way. However, where there are nuances with respect to the other two countries, they are outlined and explained.

The analysis phase includes a detailed breakdown and study of workplaces, functions, tasks, objectives and implementation measures to determine the requirements and the way these requirements relate to each other. The analysis provides the basis that justifies the continuation or termination of the learning product in the process. [9] The analysis process provides information on the design and development of education/ training, which are used to form units that can fulfill their missions, as well as soldiers who can perform their tasks and duties. [10]

Table 1 lists the types of analyzes that are being conducted. In the case of Bulgaria, in the document dealing with the systems approach to training, the analysis phase is described in general and the individual types of analyzes that are being conducted are not highlighted.[71] However, it should be clearly emphasized that the analysis, as a part of the process, has the same objective as the other countries.

In the **design phase,** the data is being interpreted into outlining learning processes, creating a detailed plan for the development of learning products, and defining the sequence and way of learning. The design phase identifies all resource requirements, the learning environment, the learning objectives, the test elements, the training sequence and the requirements for the assessment and / or graduation of the learners. [9] For the other two countries, descriptions of this phase have similar content. For example, for the UK, the following questions need to be answered at this stage: What should the training activity look like; who will deliver it, and with what resources? [8] For the Republic of Bulgaria it is specified that at this stage, the training objectives should be specified for each task carried out by the soldiers and the units; methods, forms and resources to be used; requirements for instructors and trainees, and giving instructions for developing plans and programs, in accordance with the commander's intentions.[2]

The development phase extends to products from the design phase. This phase continues the research process by collecting references and supporting materials. Training methods and tools are selected and/ or developed. The main purpose of the development is to create educational products ready for implementation and use, validate evaluation tools and teaching materials, and develop evaluation tools. [9] For the UK, this phase is an integral part of the previous phase of design.

For the Armed Forces of the Republic of Bulgaria, the emphasis in this phase is to develop (collect) training materials that will lead to the implementation of the concept of training. Another important explanation for the Bulgarian Armed Forces is that the training plans transform the intent of the commander into interrelated events and requirements to meet certain standards. Plans should include the frequency, duration, sequence of events and the necessary resources. The programs define the methodological guidelines, content, conditions and standards to be achieved during training. [2]

The implementation phase includes the implementation and delivery of the planned training (covering the training schedule, the materials provided, the training/ education of the learners, the management of the tests). The implementation also applies to the assessment of student learning and data collection for evaluation. [9] This is followed by the stated for the Armed Forces of the Republic of Bulgaria where it is said that the purpose of this phase is to enable the achievement of the training objectives in accordance with the accepted standards. [2]

[71] In the Doctrine (NP-7) it is said that this is a process for determining the requirements on the basis of which the specific training is being developed. It includes a survey of the tasks to be performed and the collection of the necessary information and data. The analysis leads to the determination of the desired final state in the training of soldiers and units. The goal of this phase is the individual training to link the necessary results from the education and training with the main responsibilities for the performance of a job. Here we have to answer the questions who, what, when, where, how and why should it be train. **Доктрина (НП-7**), с. 23. In the British Army, the following questions should be answered in the analysis phase: *What is the requirement; is a new or amended training activity needed; and, if so, what kind?* **JSP 822 Pt 1 (V3.0 Mar 17)**, p. 2.

The final phase is the evaluation, which is a quality control mechanism for developing training and learning products. It also ensures that the learner has achieved the planned results. [9] In this phase the following questions should be answered: Is the training activity being delivered correctly and does it meet the requirement? Is the whole Training System fit for purpose? [8] In addition, the assessment is formulated as a systematic and continuous method for assessing the quality, effectiveness and efficiency of a program, process, product or procedure. It provides a decision-making mechanism to ensure the implementation of consistent quality standards.[9] Table 1 shows that for Bulgaria this phase is divided into two – internal and external evaluation. However, we have to emphasize that for the other two countries, this phase also covers both internal and external evaluation, which are not formally divided, but are presented as one.

As a summary of the considered phases of the systems approach to training, we must emphasize that each educational product goes through analyzes, design and development and evaluation phases. The common view is that each phase is based on the results of the previous phases. However, the phases are not consistent and the change in each phase requires an overview and may require corrections to previous phases. [9] In this regard, we should emphasize that although the evaluation is usually listed as the final phase, it is done throughout the whole process of the systems approach to training. [6] Meaning that those who develop the training products can move in and out of each phase. Continuous product evaluation of each phase, along with approvals, serves to eliminate or reduce the lost efforts. [9]

4. CONCLUSION

From the outlined characteristics of the systems approach to training applied in the military education system, we can reasonably argue that it represents an aggregation of integration processes. Applied as a whole, they transform the design training into a more streamlined process that is team-oriented and learner-centered. On one hand, this allows the provision of training products where necessary. On the other, by applying the systems approach to training, it contributes to adapting curricula to achieve the desired results at all levels of the training system. In this regard, it is also important to note that applying the systems approach to training emphasizes not only the outcome but also the learning process itself. Thus, applying the systems approach to training will be ensured:

- **Effective training,** to meet the demands of future work;
- **Efficient training,** to ensure the best use of resources;
- **Economic training,** which gives the best results for the money invested.

The general conclusion can be formulated is that the design of the educational process for the needs of the armed forces of all three states requires the application of a systems approach to training aimed at its continuous growth and improvement.

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