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Higher military education focused on quantifiable learning outcomes

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Abstract

This article proposes potential solutions for adapting higher military education to the trends of education centered on learning outcomes. These solutions are based on specific military competences captured by national specialized institutions and aim to meet the requirements of the European Qualifications Framework (EQF). The analysis and proposed model are based on the Sectoral Qualifications Framework for the Military Officer Profession (SQF-MILOF), which was proposed by the European Security and Defence College (ESDC) and recognized by the Military Committee of the European Union in 2021. This approach is relevant because the ESDC system will serve as the basis for developing a model based on learning outcomes, adapted to the national framework for training future commanders and staff officers. The authors intend to promote this solution as one aligned with European standards.

Keywords:
higher military education; learning outcomes; the resilience of the higher military education system.

In this paper, we aimed to identify potential solutions for adapting higher military education to the trends of education cantered on learning outcomes. These solutions are based on specific military competences captured by national specialized institutions and aim to meet the requirements of the European Qualifications Framework (EQF) (CEDEFOP 2017). We will use the Sectoral Qualifications Framework – Military Officer Profession – SQF-MLOF as a benchmark for the development of this approach (Sectoral Qualifications Framework – Military Officer Profession – SQF-MLOF) proposed by the European Security and Defence College/ ESDC (European Security and Defence College-ESDC 2021) in two volumes, volume 1 (ESDC 2021b, Vol. I) and volume 2 (ESDC 2021c, Vol. II).

Higher military education primarily aims to prepare individuals for the officer profession, but the sectoral qualifications framework primarily focuses on lifelong learning for specialist military officers in security and defence-related fields. The relevance of this approach derives from the fact that this European system will serve as the basis for developing a model based on learning outcomes, adapted to the national framework for training future specialist officers. This approach aims to align with European standards in the higher military education system.

The novelty of our approach is proposing a learning model to achieve competences specific to a particular spectrum of manifestation and capitalization of work skills relevant to the joint operational level and leadership. This field corresponds to the profile of our master's degree graduates and postgraduate leadership courses. Our aim is to follow the guidelines of the European Qualifications Framework applicable in the education system of the European Union and NATO, suitable for all forms of lifelong learning and officer career. The argument underlying this approach is reinforced by the results of a comparative analysis of several models used by other European member states (MS) in the higher military education process. Beyond comparability with models from other European military education systems, we believe that implementing our proposed model offers several benefits.

The first benefit is aligning with a European trend for developing higher military education and achieving harmonization. This will facilitate compatibility and comparability with similar higher military education programs developed by various allied or EU MS.

The second benefit is capitalizing on education and training opportunities provided in different countries through the Erasmus programs, which are currently not utilized by the higher military education system at the master's level. Recognition of equivalent training carried out in another EU MS will be facilitated.

The third benefit is the contribution of this model to creating a common security and defense culture. We advocate for creating a national school of thought that gives our future graduates the opportunity to demonstrate competences developed

as a result of the skills acquired during basic training and continuous training throughout their careers.

Sectoral Qualifications Framework – Military Officer Profession – SQF-MLOF

SQF-MILOF was developed by a working group under the auspices of the ESDC at the request of the Military Committee of the European Union and attended by representatives from 21 MS and numerous experts belonging to European institutions, non-affiliated higher education institutions, non-governmental or independent organizations. This product package has been evaluated by a team of international experts, validated by the MS, and recognized by the Council of the European Union which tasked the ESDC to *develop, maintain and promote* the SQF-MILOF (EUR-Lex 2020, art. 4 (m)).

SQF-MILOF is not just a taxonomy of learning outcomes (although this is the main product) but a package of products available to institutions responsible for human resource management or military education and training. SQF-MILOF, through the competence profile it proposes, helps human resource managers to develop occupational standards and the beneficiaries of educational programs to write the graduate profile. Through the core curriculum (MILOF-CORE), vocational education and training institutions can develop learning outcomes for various programs using a standardized language agreed upon at the EU level.

SQF-MILOF is perfectly aligned with the EQF, the SQF-MILOF descriptors being an adaptation to the military officer profession of the EQF descriptors. Considering its limited scope (officer profession only), the framework has been developed on four levels of complexity corresponding to EQF levels 5-8.

Thus, SQF-MILOF level 1 corresponds to EQF level 5, SQF-MILOF level 2 corresponds to EQF level 6, SQF-MILOF level 3 corresponds to EQF level 7 and SQF-MILOF level 4 corresponds to EQF level 8. Similar to EQF, SQF-MILOF is a framework that covers learning that takes place continuously, throughout life and in any context: formal, informal or non-formal.

However, what SQF-MILOF brings in addition to EQF, due to its sectoral character, is the decomposition of learning outcomes into operational levels (from tactical to strategic) through the core curriculum (MILOF-CORE). In this way, the comparison of two qualifications is much more precise and is carried out not only on the basis of the SQF-MILOF level (1, 2, 3, or 4) but also of their military focus (tactical, operational, or strategic) described by MILOF- CORE. For example, it is irrelevant to compare two master's programs based only on SQF-MILOF level 3 (EQF 7), as long as one program is tactically oriented and the other operationally oriented.

The main aim of the project (SQF-MILOF) was to provide MS with an inclusive tool, a benchmark against which their military qualifications could be compared. This ambition will be achieved when all the military qualifications of the MS are "levelled" and uploaded into the ESDC's dedicated database.

Learning outcomes

In this chapter, our aim is to identify particularities of learning outcomes as expressed in national and international literature and law. Learning outcomes are "what a person knows, understands, and is able to do upon completion of the learning process" (Parlamentul României 2011). The EQF defines learning outcomes as those statements about what a learner knows, understands, and is able to do on completion of a learning process, and which are defined in terms of knowledge, skills, responsibility and autonomy (EUR-Lex 2017). In this context, it can be understood that learning outcomes are defined in the form of knowledge, skills, autonomy and responsibility following an educational teaching-learning process.

The learning outcomes underpin the National Qualifications Framework (NQF) which enables the recognition, measurement, and reporting of all learning outcomes acquired in formal, non-formal and informal learning contexts and ensures the consistency of qualifications and certified titles (Parlamentul României 2011). In other words, qualifications are the formal result of an assessment and validation process by a competent authority and indicate that the learning outcomes correspond to specific standards. Learning outcomes are the basis of the recognition of previous learning: experiences, knowledge, skills, attitudes and competencies that a person has acquired as a result of formal, non-formal or informal learning, which are evaluated by reference to a certain set of norms, objectives or learning outcomes" (Parlamentul României 2011; Parlamentul României 2021).

From the analysis of the two concepts (learning outcomes and qualifications), it is evident that they interrelate through a complex process of assessment, validation, and certification. Assessment of learning outcomes is the process that confirms the acquisition of knowledge and skills. Validation is the process of confirming that the learning outcomes achieved have been assessed and meet the specific requirements for a learning unit. Certification of learning outcomes is the process of formally confirming a particular qualification, signifying that knowledge, skills, responsibility, and autonomy have been acquired following an assessment process. As a result of this process, a proof, such as a certificate or diploma, is acquired, issued by an authorized, nationally or internationally recognized institution. In summary, learning outcomes can only be identified following the learning process, through evaluation, validation, and certification; the process is completed by matching the learning outcomes with the competences demonstrated at the workplace.

In this context, the existence of the formal framework through which learning outcomes are recognized at the international level, by applying a common set of evaluation and mutual recognition criteria, represents an important step towards the interoperability of skills at the European level. "The learning outcomes form the basis of the common European diploma, which is proposed to be awarded at the national level and which certifies the learning outcomes obtained in the framework of transnational cooperation between several institutions, such as European university alliances, based on a common set of criteria." (Comisia Europeană 2021) The value of learning outcomes can be also revealed in the context of quality assurance. Thus, "quality assurance includes information about situations, inputs, processes, and outcomes while emphasizing effects and learning outcomes." (Guvernul României 2000)

On the basis of the references presented, we can note that the generalization of the principles of student-centred education calls for the large-scale introduction of learning outcomes as a key element of curriculum design, learning assessment, and program accreditation. This paradigm dissociates from objective and content-based education, where the teacher is central and the measure of student outcomes.
In conclusion, learning outcomes do not suggest the way, the modality, or even the content, but the measurable conclusion of the learning process. How that finality is reached may differ from teacher to teacher, school to school, and even student to student.

A possible model of study program

The proposed model is based on the following elements captured by SQF-MILOF, in accordance with the ESCO classification system (*European Skills, Competencies, Qualifications and Occupations*) (ESDC 2021a, 10-12):
1. Organizational context/ level of operations: joint, operational.
2. Graduate Model: In this organizational context and at this level of operations, officers lead units and large joint or combined units, provide advice and support to senior commanders in the planning and conduct of joint operations at the tactical and operational component levels, plan logistical support, conducts and supervises training, oversees troop welfare and equipment administration and management.
3. Audience: Officers of all services who are promoted to the rank of lieutenant colonel.
4. Key competence areas at the joint operational level (we have highlighted the relevant competencies to the model we analysed in this paper):

> **• Member of the military profession: plans and conducts military operations; identifies security threats**; ensures information security; cooperates with civil organizations, agencies, and partners; **assesses risks**; ensures compliance and implementation of policies and concepts; **advises on force capabilities and limitations; analyses potential threats to national security**.

- **Military technician**: **plans the force**; manages administrative systems and budgets, supervises the maintenance of military equipment and technique; tests safety strategies, **supports logistics activity**.
- **Leader and decision-maker: leads and commands military structures; advises superiors on military operations;** delegate powers; manage change**.**
- **Combat-role model: upholds ethical and moral imperatives**.
- **Communicator: drafts and presents military communications; negotiates and mediates conflict situations; communicates with various audiences**; interacts, communicates, and collaborates through digital technologies.
- Learner/Teacher: oversees troop training and human resource management.
- Critical thinker and researcher: scientifically research the military field; articulates information needs, identifies and obtains digital data.
- International security actor and diplomat: cooperates with international organizations, agencies and partners; advise superiors on the development of international security policies.

The competence profile presented above is an exhaustive one, encompassing all the competencies of an officer capable of operating at this level, but it can be adapted and configured for the target audience by the beneficiary. For our model, we **have highlighted** only those skills that will be the subject of the graduate's profile.

Based on this competence profile, the educational institution develops the learning outcomes, grouped by subjects or modules and which form the curriculum.

For the proposed model, we developed a program, which from a functional point of view is organized into 11 disciplines: (1) the employment of forces on the full spectrum of operations, (2) the decision-making process, (3) operational planning, (4) national and international security strategies and policies, (5) force support, (6) C4ISR, cyber security, (7) military leadership, (8) ethics of the use of force, rules of engagement and protection of civilians, (9) military history, 10) gender and (11) cultural issues. The learning outcomes described in the table have been selected from the tabular framework on page 34, SQF-MILOF vol.1 (*SQF-MILOF Proper*) and are written at the program level. At the subject level, learning unit, learning outcomes can be detailed using the tabular framework (MILOF-CORE) on pages 31-54 of SQF-MILOF vol.2. Temporally and organizationally, the program is carried out in four phases: initial, intermediate 1, intermediate 2 and final.

The program is levelled at the SQF-MILOF level 2, and the military focus is OPERATIONAL/JOINT. Determination of SQF-MILOF level and military focus is based on a levelling process described on page 39 of SQF-MILOF vol. 1.

We analysed, as a benchmark, a similar program organized by an educational institution in Italy (Centre for Defence Higher Studies). In this example, the Centre for Defence Higher Studies (CASD) – Joint Services Staff College Italy (ISSMI) followed the five steps of the process of levelling to SQF-MILOF and defining the military focus (Levelling national military qualifications to SQF-MILOF and defining the military focus), for the Advanced Joint Staff Course, as described below:

Step 1 – Identify the National Military Qualification (NMQ) and its constituent elements.

Step 2 – Identify NMQ Key Learning Outcomes (KLOs) in core competence areas to achieve the overall NMQ objective.

Step 3 – Match the NMQ KLOs to the learning outcomes in the relevant learning areas in the MILOF-CORE focus and at the corresponding SQF-MILOF level.

Step 4 – Determine the SQF-MILOF level of the NMQ.

Step 5 – Determine the military focus of the NMQ.

As a result of this process, the Advanced Joint Staff Course organized by the Centre for Defence Higher Studies (CASD) - Joint Services Staff College (ISSMI) has been levelled at SQF-MILOF level 2, focused on the OPERATIONBAL/JOINT level.

Building on the previously presented analysis and as a result of our experience in the educational field, we will elaborate on a potential model for the development of learning outcomes correlated with specific competences gradually acquired, from the tactical to the strategic level.

In the presented model (Table 1), the learning outcomes (knowledge, skills, responsibility and autonomy), are distributed by phases (from 1 to 4) and within phases, by levels of operations (from tactical to strategic) and levels of complexity (from 1 to 3). It follows from this that, although the overall level of the program is level 2, the program will also include sessions of higher complexity (e.g. level 3 in phases 3 and 4) but also of lower complexity (e.g. level 1 in phases 1 and 2) and which will have an introductory, informative or general character and a smaller weight in the economy of the program. Learning is done progressively, incrementally, to fix and gradually increase the complexity of learning. At the program level, the complexity is expressed by the attributes of the results (comprehensive, advanced, or

TABLE 1 Competency-based learning outcomes development model

Level SQF-MILOF	Phase	1 Initial	2 Intermediar 1	3 Intermediar 2	4 Final
1	Comprehensiv / Focus MILOF-CORE	**Tactical**	**Operational**		
	Learning outcomes: -Knowledge -Abilities -Responsibility and autonomy	• The comprehensive and specialized knowledge • A comprehensive set of cognitive and practical skills is needed to develop various options and plans for implementing military tasks and actions at the level of... • Limited exercise of command and control functions of military activities in a fluid, unpredictable, ever-changing environment.			
2	Advanced / Focus MILOF-CORE		**Tactical**	**Operational**	**Strategic**
	Learning outcomes: -Knowledge -Abilities -Responsibility and autonomy		• Advanced knowledge of the level ... involving a critical understanding of the theory and principles of military science and art. • Advanced skills that demonstrate the innovation necessary to solve unpredictable complex problems in the application of military science and art. • Exercises command and control of complex tactical and technical activities and tasks, assuming responsibility for decision-making under unforeseen circumstances.		
3	Highly specialized / Focus MILOF-CORE			**Tactical**	**Operational**
	Learning outcomes: -Knowledge -Abilities -Responsibility and autonomy			• Highly specialized knowledge of the level ... as a foundation of original cross-force categories and multi-domain thinking. • Specialized problem-solving skills are required to advise and develop new knowledge and procedures and to integrate knowledge from different arms/specialties and force categories. • Manage and transform complex military tasks and activities in unpredictable contexts with strategic consequences. Assumes leadership and management responsibilities of units and large military units.	

highly specialized). At the level of the discipline or learning unit, the complexity of learning is expressed by action verbs that help measure the student's behaviour at the end of the learning process (describe, examine, analyse, elaborate, etc.)

In phase 1 (initial), the student learns various subjects focused on tactical level, introductory/comprehensive level (SQF-MILOF level 1). In this phase, the student will acquire a series of skills specific to the functions of a tactical-level command and functional modules on operating environments, including support. The student is able to explain the principles of employing subunits and units in combat belonging to a specific service at the tactical level, in accordance with national doctrine, on a broad spectrum of operations.

In phase 2 (intermediate 1), the student learns various subjects focused on an operational level, introductory/comprehensive level (SQF-MILOF level 1), and tactical level, advanced level (SQF-MILOF level 2). In this phase, the student will acquire a range of analysis skills of the operating environment and complete the acquisition of combat support procedures specific to various operating environments at an advanced level. They are able to describe the capabilities of different services and military specializations and can analyse the factors that produce effects at the operational level.

In phase 3 (intermediate 2), the student learns various disciplines focused on an operational level, advanced level (SQF-MILOF level 2), and tactical level at a highly specialized level (SQF-MILOF level 3). In this phase, the student will acquire a series of skills to integrate the planning procedures at operational/ joint level. He/ she should be able to apply the principles of employing units and structures at the operational level in a multinational joint context, in accordance with national and multinational doctrine, on a wide spectrum of operations.

In phase 4 (final), the student learns within the various disciplines focused at the strategic level, advanced level (SQF-MILOF level 2), and at the operational level, highly specialized level (SQF-MILOF level 3). In this phase, the student will acquire a range of skills to integrate the planning processes and functions in combat and operations at the tactical and operational levels in a strategic level planning context. He/ she should be able to critically evaluate the specific capabilities of the services, land, naval, and air, their contribution to the conduct of the joint operation, allocate resources appropriately and propose ways to implement the objectives in coordination with all relevant actors. They apply the principles of the joint-level planning process to a wide range of operations.

Starting from this model, we will present, in the following chapter, a model for the development of learning outcomes, at the level of a discipline/functional unit, which will represent a starting point in the higher military institutional approach of harmonizing analytical programs on these criteria.

A possible model for developing learning outcomes for a discipline

At this stage of our approach, we will present an example of developing learning outcomes for a discipline (Employment of forces - Full Spectrum Operations).
We will capitalize on the milestones on which the curriculum is built and based on learning outcomes, as presented in the previous section.

Based on the model described in the previous section, the model below is based on the four phases and 3 levels of learning complexity, which reflects the gradual increase in the level of skills, from initial to final skills, in correspondence with the level of complexity of the teaching-learning process, from complexity level 1 to complexity level 3. The learning outcomes are derived from the core curriculum (MILOF-CORE) from pages 31-54 of SQF-MILOF vol.2.

From the analysis of the four phases, it can be inferred that learning along the program follows a progressive course, both in terms of learning complexity (vertically, from 1 to 3) and operational focus (horizontally and diagonally, from tactical to strategic level). Horizontally, it is observed that the approach to the level of operations is increasing, from tactical to operational and strategic, at the same level of learning complexity. Vertically, the level of learning complexity increases with each phase, and the level of operations alternates.

It is important to note that at the discipline/learning unit level, the learning outcomes are no longer formulated on the three domains (knowledge, skills, responsibility and autonomy) because it is difficult to differentiate in which category a learning outcome falls, which would unnecessarily complicate the planning of the training for

TABLE 2 A potential model for developing learning outcomes for a discipline (Employment of forces - Full Spectrum Operations)

SQF-MILOF Level	Phase	1 Initial	2 Intermediate 1	3 Intermediate 2	4 Final
1 Comprehensive	MILOF-CORE Focus	Tactical	Operational		
	Learning Outcomes	Discuss the organisation and basic principles of employing forces at the service level.	Describe the possibilities of the different services, equally the composition and force enablers and multipliers at the operational level.		
2 Advanced	MILOF-CORE Focus		Tactical	Operational	Strategic
	Learning Outcomes		Explain the principles of employing combined arms forces at the tactical level in accordance with national /multinational doctrine, across the full spectrum of operations > Explain the tactics, techniques and procedures specific to the particular service for the full spectrum of operations at national /multinational levels with realistic consideration of the possibilities of the different branches.	Explain the principles of employing units and formations at the operational level in a joint multinational context, in accordance with national / multinational doctrine, across the full spectrum of operations.	Analyse the strategic employment of armed forces as part of an integrated crisis response architecture at national and multinational levels.
3 Highly Specialised	MILOF-CORE Focus			Tactical	Operational
	Learning Outcomes			Explore the requirements / conditions of integrating the effects of fire, influence and manoeuvre in joint operations > Balance own resources, the environment and the opponent to achieve the assigned tasks within a tactical framework, ensuring freedom of action for subordinate formations.	Critically assess the service-specific (land, maritime, air) forces capabilities, organization and specific activities that they conduct as part of a joint force, apportion / allocate resources accordingly and propose ways to implement objectives in coordination with all relevant actors > Apply the principles of operational art throughout the full spectrum of operations.

the instructor/teacher. Furthermore, from the point of view of learning assessment, differentiating learning outcomes across the three domains does not help, as they are often combined (CEDEFOP 2017).

It is worth noting the construction of the learning outcomes. The complexity of the learning is reflected by the verb, the context, and the standards described in the statement of the learning outcome, and the military focus is expressed by the specific conditions of the intended operational level.

Conclusions

The lifelong professional training of officers is closely related to the relationship and correspondence between ranks, age, the type of training they access, the level of the structure for which they are preparing, and the skills required for the specific form of training. As our officers prepare to become staff officers and commanders, from tactical to operational/joint level, with a higher-level horizon of planning (Brigade, Division, Corps, component commands, joint staff, multinational staff, etc.), they require minimal preliminary training. The types of training required for this target audience include command and staff courses, master's programs, postgraduate studies, strategic leadership courses, and the National Defence College.

The training model presented in this article has a generic relevance and can be used both as a component of a master's degree program and as a component of an operational-level career course.
Based on this approach, in which we intended to highlight the correlation between competences and learning outcomes, but also the division of labour in the development of these elements of career and learning planning, we would like to highlight a series of conclusions and proposals aimed at contributing to the resilience of the higher military education system and harmonization of the joint-level course curricula.

1. There is a need to distinguish between competences and learning outcomes. Competences are set by the employer and learning outcomes are set by the education system, based on the competencies. We found that, in general, curricula refer to competences and not to learning outcomes. This aspect requires the establishment of an organizational framework necessary to update the curricula so that the current competences are translated into learning outcomes, based on the model proposed by us.
2. It is necessary to standardize the national higher military educational process by facilitating the acquisition of specific competences according to the European trend of developing military education. Here we support the introduction, with effect from 2024, in the command master's program of some topics and in the joint operations course of a distinct discipline in the field of EU defence, as a requirement derived from the European EU War College project.

3. The adoption of the proposed model can facilitate the recognition of the qualification of staff officers at the joint level and the exchange of students between institutions in NATO and EU member states with similar programs.

4. Adopting this way of developing study programs, regardless of level and academic value, can contribute to the formation of a student-oriented national school of thought through learning outcomes and contribute, on a European level, to the creation of a common culture of security and defence.

5. The model proposed by us contributes to satisfying the beneficiary's requested qualifications and aligns the national higher military education with the requirements of a modern European military education of the future.

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