

Conceptual and Technological Support for Self-assessment of the Cadet Training Effectiveness

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Abstract

The current trends in professional military education and professional activity of special military school graduates as future officers require a more thorough and detailed approach not only to assessing the development of their professional and general competencies, but also constant monitoring of the quality of curricula and speciality-oriented study guides. This paper provides a brief substantiation for the need to create an internal automated programme adapted to the capabilities of a special military school and designed for self-assessment of the quality of cadets' training and key performance indicators for evaluating the training process. The paper also describes the current developments on this matter, proposes approaches to the solution and offers some recommendations. The present paper also presents the results of an empirical study on evaluating the cadets' satisfaction with the quality of teaching and customers' satisfaction with the degree of readiness of special military school graduates. This study is prepared and published within the framework of the grant research project "Development of a comprehensive methodology for evaluating the quality of education of special military school graduates" by order of the Committee of Science of the Ministry of Education and Science of the Republic of Kazakhstan. Research methods: theoretical analysis, generalisation, comparison, modelling, survey, SPSS data processing, interpretation. Expected results: substantiation of the key performance indicators of the educational activities of the special military school, the results of the survey on two samples.

Keywords: management, quality assessment, process quality, training quality, key performance indicators

1. Introduction

In the modern socio-information space, educational institutions constitute one of the most influential social mechanisms responsible for the progress of state systems. Nowadays, the quality of education is becoming a fundamental feature of social development since it determines the competitiveness of the state in the international arena. Therewith, the quality of military education determines the readiness of special military school graduates to successfully defend national interests in military-political, economic, information, and other spheres of activity, thereby ensuring the national security of the state (Larina, 2015). The requirements for graduates — future border guards — are also increasing in the context of a change in the paradigm of border policy (Salii et al, 2019).

Notably, military education is described by considerable conservatism and inertia, which is a property of self-preservation of the military organisation as a social system, and is expressed in a very critical and cautious

attitude towards social innovations that can affect its stability. Therewith, modern reality forces the military-educational environment to change, to introduce new management principles into it, including those based on modern management technologies. Effective management of the educational process and quality assessment of military specialists' training is one of the key elements of management tasks, which covers a considerable number of people involved in this process, and directly affects the conditions of their work and study. In this regard, the authors of this study have made an attempt to develop a model of self-assessment to be performed by the special military schools in terms of the quality of their educational activities, as well as to introduce an automated programme to ensure the quality of education at the special military schools.

Higher education systems and organisations around the world have undergone extensive reforms and changes over the past twenty-five years in pursuit of quality improvement. An important feature of this aspiration was the introduction of systematic formalised quality assurance processes that recognise the effectiveness of internal accountability methods and self-assessment of the organisation itself. The establishment of internal assessment systems took place simultaneously with the creation of state systems for monitoring and auditing the quality of education. Therewith, higher education institutions and the national assessment level use performance indicators for different purposes.

Table 1. Characteristics of the Goals of Using Performance Indicators

At the university level	At the state level
to monitor own performance and conduct a comparative analysis	to improve the quality of educational services provided
to facilitate the assessment and evaluation of institutional operations	to stimulate competition between universities
to provide for external audit	to promote international quality research
to provide information to the state	to check the quality of universities and assign the status of an educational organisation

Usually, "performance indicators" mean "data that assesses a certain aspect of the activity of an individual or organisation, which can be compared with changes in the activities of other people or organisations" (Harvey, 2004). Performance indicators allow educational organisations to evaluate their indicators or to make a comparison between higher educational institutions (Vlăsceanu et al, 2004). Thus, the authors of this study approach the official terminology. UNESCO considers several statistical parameters under performance indicators, which constitute a measure of the extent to which a higher educational institution or a curriculum performs in a certain quality measurement (Fielden, & Abercrombie, 2001). Council for Higher Education Accreditation (CHEA, 2001) defines performance indicators as: "representations (usually numerical) of the state or result of an educational organisation, its curricula or processes. Sometimes they are called "management indicators". The Higher Education Funding Council of England (HEFCE, 2011) identifies the following performance indicators: indicators of increased involvement; indicators of lack of continuing education (including projected results); indicators of module completion; research results; graduate employment.

Vlăsceanu (2004) cites the following examples of the performance indicators used: the number of applications for one place, candidates' entrance points, the workload of staff, the possibility of employment of graduates, research grants and contracts, the number of published articles or studies, the ratio of staff and students, institutional income and expenses, as well as institutional and departmental equipment and furniture. Performance indicators are associated with benchmarking activities and are determined using a particular piloting exercise to best serve their use in comparative or profile analysis.

2. Materials and Methods

Since the independence of the Republic of Kazakhstan, the Academy has trained over 7 thousand officers in higher education programmes, and since 2006, more than 200 officers have been trained in postgraduate curricula. The mission of the Academy is connected with the training of patriotic professional military personnel of the Republic of Kazakhstan, capable of independently, efficiently, and effectively solving the tasks set based on the practical implementation of universal knowledge and skills. The system of activity of a higher specialised educational

institution does not allow applying the KPI (Key Performance Indicators) system in its classical form, since numerous key strategic priorities of activity lie in the non-commercial plane and cannot be determined by financial indicators. Analysing the practice of using KPI, the following principles of using this system in the educational activities of the special military schools can be distinguished:

- the principle of strategy orientation: all criteria should be related to the factors necessary for the long-term success;
- the principle of objectivity: all indicators and criteria are determined based on objective reality, based on the analysis of the development of an educational organisation, and considering the interests of key participants in the educational process and partners;
- the principle of flexibility: the criteria are mobile and can be changed depending on the circumstances of the external environment and the strategy of the educational organisation;
- the principle of consistency: criteria and indicators should cover various aspects of the organisation's activities, forming an adequate assessment picture;
- the principle of achievability: the approved indicators and standards should be achievable, even though they are associated with significant efforts.

Table 2. Model Representation of Key Indicators for Self-Assessment of the Educational Process Quality

Categories		Indicators	
Scientific community	% of the patrol-guard service (PGS) and cadets who received awards and won various competitions	Number of research grants and projects carried out by the PGS	Quality of publications
Tools	Average age of educational buildings, percentage of buildings that have been renovated	Book and library fund for one cadet and teacher	Classroom utilisation rate, classroom fund
Information and technological support	Percentage of classrooms equipped with information technologies for training	Percentage of PGS officers using information technologies	Applications to the technical department per month
Image-building work	Percentage of active coverage in social networks	Percentage of involvement of cadets and PGS in community service	Number of publications in the journals of the Border Service of the National Security Committee of the Republic of Kazakhstan, image-building publications
Personnel management	Percentage of teachers with advanced certificates or academic degrees	Academic workload of PGS	Level of retention of the teaching staff and personnel (staff turnover)
Curriculum	The level of knowledge of cadets (academic performance)	The level of academic performance on internships	The level of academic performance in social and humanitarian subjects
Educational and methodological support	Quality of the educational and methodological complex	Quality of control and measuring materials	Quality of educational and methodological support for internships and practices
Technological support	Percentage of implementation of author's and innovative learning technologies	Number of prepared video lectures and video courses	Number of educational and methodological developments and methodological publications
Capitalisation indicators	Degree of customer satisfaction with the training of cadets	Ratio of cadets and teachers, teachers and administration	Number of cadets enrolled per the number of applications (competition)

There are hundreds of key performance indicators, and one needs to choose the most suitable for the system of higher military education. For this purpose, the authors of this study have narrowed the list down to 27 key indicators, divided between nine categories.

To provide feedback, the authors of this study developed questionnaires "The degree of cadets' satisfaction with the education quality" and "Assessment of corporate values, personal, and professional competencies of graduates". The first questionnaire was filled out by cadets, the second was filled out by managers, colleagues, and mentors. The object of the study is the qualitative indicators of the educational process of the military school. The subject of the study is the degree of satisfaction of stakeholders with the education quality at the Border Academy of the National Security Committee of the Republic of Kazakhstan.

The working hypothesis of the study: the satisfaction of internal stakeholders (cadets) and external stakeholders (managers of various levels) with the quality of educational services provided by the Border Academy of the National Security Committee of the Republic of Kazakhstan in the conditions of ongoing reform of the education system and further conceptualisation of the training content, in accordance with the competence approach and a result-oriented educational process, can be described by average and below average indicators.

Survey sample characteristics: the sample of cadets: solid, in accordance with the lists of study groups; the sample of managers: leading officers of various departments with at least 5 years of teaching experience, including specialists engaged in the development of educational programmes. Research methods: survey. The cadets were surveyed in the usual way: in lecture halls by groups; specialists and managers were surveyed in the form of interviews and a postal inquiry.

For a full-fledged assessment of these indicators, the authors of the present study have developed instructional documents and methodological guidelines for evaluating each indicator. One of the important tools is a sociological study of the overall cadets' satisfaction with the quality of the services offered and the study of the customers' opinion on the degree of readiness of graduates for service and combat activities.

3. Results and Discussion

The survey involved 4 educational outposts of the 2nd year (2 Russian department, 2 Kazakh department), a total of 100 cadets. There was no significant difference in the responses of respondents from the Russian and Kazakh branches. Therefore, the results are presented jointly. Below, the study presents the results of the cadets' survey.

To the question "Are you satisfied with the quality of training at the academy?" – the majority of respondents answered "Definitely yes" – 67.5 %, 14 % expressed partial satisfaction, 15.5 % found it difficult to answer and 3 % of respondents were dissatisfied. The question "How satisfied are you with the facilities and resources of the university?" contained several indicators. Thus, according to the indicators of the availability of textbooks in the library, satisfaction was 54 %, the availability of necessary electronic educational materials – 30.8 %, the availability of computers available in classrooms – 10.8 %, the availability of computers in the academy for independent work of students (hereinafter – IWS) – 24.6 %, the number of seats in the library reading room satisfied over 50 % of respondents, the availability of educational equipment satisfied 43.4 % of cadets, the condition of classrooms satisfied 47.8 %.

The following questions were aimed at assessing satisfaction with the quality of teaching and identifying the most popular courses among the cadet audience. The highest percentage of satisfaction is expressed by students on the following points: the availability of the material presented by the teacher – 38 %, the humility of civilian teachers (65 %), the originality of the material presented (71 %), the material contributes to the development of educational achievements of cadets (72 %). Here it is also necessary to pay attention to the fact that according to the points such as the use of active training methods, the humility of the teaching officers, and the presence of a clear system of requirements for the implementation of IWS, a greater percentage leaned towards the answer "probably not". To the question "In which disciplines would you like to have more advisory classes?" the majority of respondents mention such popular subjects as Mathematics, English, Tactics. As the reasons why the cadets would like to increase the number of advisory classes – 72 % indicated the complexity of the material, due to gaps in the school curriculum, 20 % elaborated on their need for material in their future professional activities, only 8 % indicated the reason – I need more time to understand the material.

The third set of questions concerned the organisation of ISW and the evaluation system. The answers of the cadets demonstrate that the most frequently used tools by cadets when performing ISW are books and textbooks – 70 %, scientific articles – 23 %, Internet tools – 7 %; notably, other means of performing ISW are not updated and little used by teachers: information bases of journals and platforms, analysis of practice and field conditions, etc. To the question "Do you think that the existing ISW assessment system is sufficiently objective and fair?" the answers were distributed as follows: "definitely yes" – 46 %, "computer testing would be better" – 29 %, and 25 % indicated their dissatisfaction with the incomprehensibility of the evaluation criteria. Therewith, 21 % of respondents express a fairly high interest in performing ISW of a research nature. 46 % of respondents would like to carry out independent research projects, but are afraid of the academic workload. Only 33 % of cadets indicated a lack of desire to implement ISW of a research nature.

The second survey involved 120 managers. The survey included three blocks of competencies according to which graduates were evaluated: block 1 – assessment of corporate values, block 2 – personal competencies, block 3 – professional competencies.

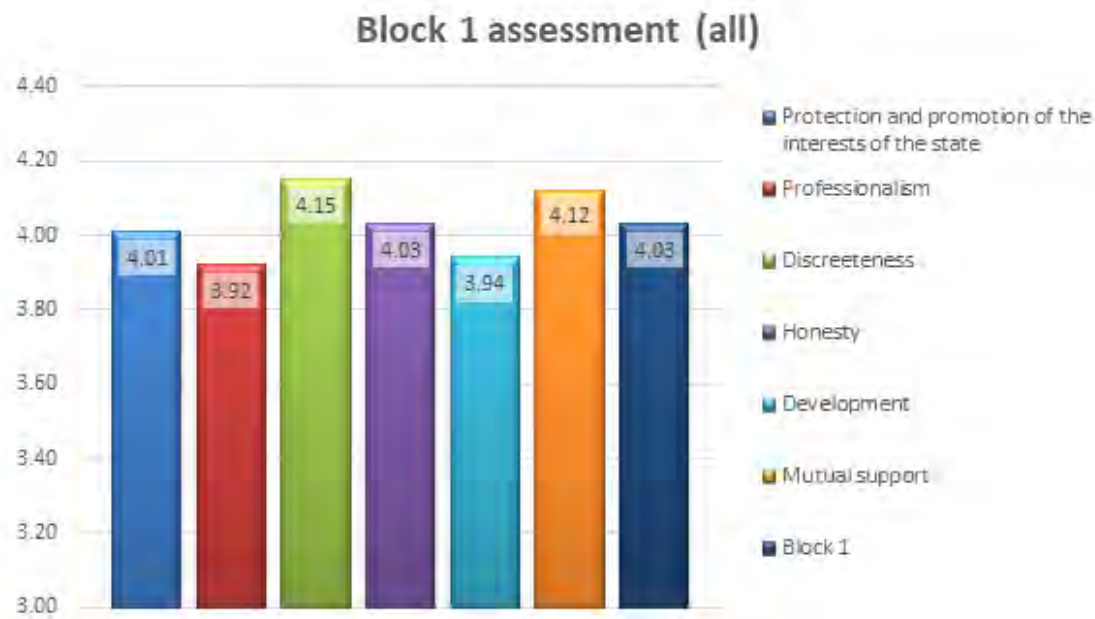


Figure 1. Managers' Assessment of the Corporate Values of Academy Graduates

The survey results demonstrate that according to such values as secrecy, mutual support, honesty, protection and promotion of the interests of the state, graduates of the Academy gain good reviews. However, according to the values such as development and professionalism, the reviews are weak. This may be conditioned upon the confusion of young officers upon arrival at the duty station and weak adaptive capabilities.

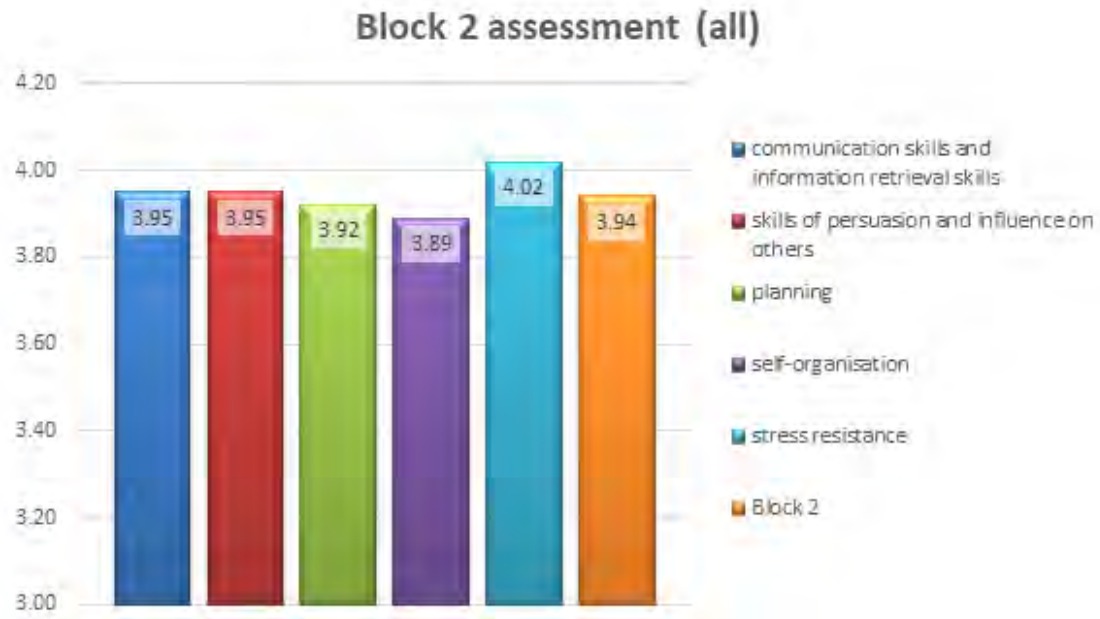


Figure 2. Managers' Assessment of the Personal Competencies of Academy Graduates

Figure 2 clearly demonstrates that the Academy graduates receive the highest rating for the stress resistance parameter. However, such competencies as sociability, persuasion, planning, and self-organisation skills require additional development. This may also be explained by a more specialised professional training to the detriment of the socio-cultural block of curricula.

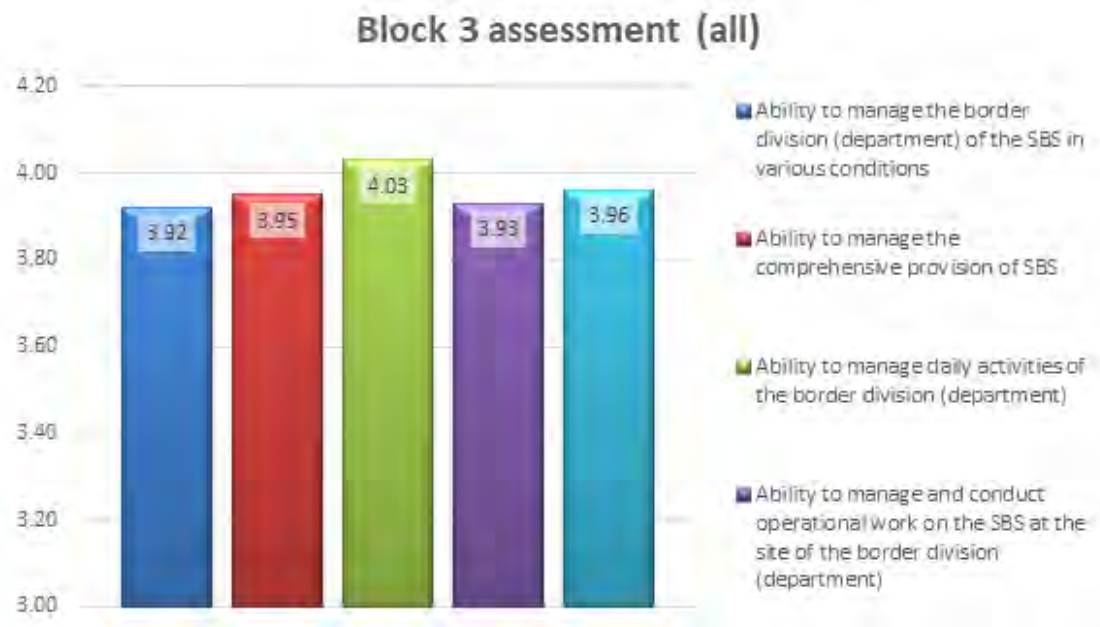


Figure 3. Managers' Assessment of the Professional Competencies of Academy Graduates

Note: SBS – State Border Security

The survey results demonstrate that graduates are more oriented in solving tactical daily functions and tasks, while the rest of the blocks require additional work.

There are four types of performance indicators: costs, process, output, and result (Cave et al, 1997). In a broader sense, they can be divided into quantitative and qualitative indicators. Quantitative indicators include indicators of the efficiency of input and output. Cost indicators reflect the human, financial, and physical resources involved in supporting institutional programmes, activities, and services. From the standpoint of assessing the quality of teaching and learning, quantitative indicators do not provide an opportunity to study educational and interactive processes that are crucial for the quality of an educational institution, its curricula, and its graduates. Therefore, the authors of the present study focus on quality indicators, as they allow concentrating on in-depth and sophisticated aspects of quality. Indicators of results and processes are included in the classification of qualitative indicators. The results indicators are focused on the quality of the curriculum, activities, and services, benefits for all stakeholders. These key stakeholders include students, parents, the community, employers, and industry (Burke, 1998; Warglien & Savoia, 2001). The nature of the performance indicators contained in the values "quality", "satisfaction", and "learning outcomes" means that results are more difficult to measure than numerical outputs. Hence they are not used as often as their quantitative counterparts. However, performance indicators are considered more informative, meaningful, and accurate in assessing the methods and quality of teaching and learning, since they are related to the goals of higher education. They are also more useful in providing information that can be used to improve teaching and learning.

Process indicators are those that include the funds used to provide educational services. These are programmes, activities, and services in the institutional environment (Burke, 1998). These measurements focus on the way the system operates in its particular context, considering institutional diversity. Process indicators allow collecting high-quality information on such aspects of training as the policy and practice of training and teaching, performance management and professional development of staff, the quality of the curriculum and the assessment of student learning and the quality of facilities, services and technologies.

A key performance indicator is a type of performance measurement that helps understand how the organisation, department, or institution operates, and provides insight into whether a particular strategy is taking such formations in the right direction. According to E. V. Myalkina (2015), the introduction of the KPI system will allow establishing causal relationships between goals and performance indicators in the minds of teaching staff, shifting the emphasis from a systematic understanding of competitiveness factors to tools of personal effectiveness of research and teaching staff and administrative and managerial personnel. To implement the strategic development programme of the special military schools, it is possible to develop a system of indicators containing key result indicators (KRI), efficiency indicators (KPI) and production indicators (PI). Therewith, the main indicators of the strategic development plan can be grouped into categories: internal business processes, training and development (of personnel), environment and community, customer satisfaction, employee satisfaction, financial result (Richardson, 1994).

Within the framework of the result-oriented management methodology in accordance with the strategic mid-term goals, the goals and objectives of the current operational nature and the corresponding financial base, administrative and managerial decisions of scientific and educational activities are aimed at programme movements towards the development of the educational system, leading it to the desired result (Mutanov et al, 2011). Such approach to planning necessitates a system of indicative planning by the educational institution. The indicative planning system constitutes a set of indicators, regulators, and targets aimed at the sustainable development of the university's business processes. The study by G. M. Mutanov presents more than 16 groups of indicators and a detailed analysis of the indicator system for each indicator. This model has been successfully implemented and gives its positive results in the leading universities of the country (Mutanov et al, 2011). Next, groups of criteria and indicators for a military specialised educational institution are analysed and substantiated using the example of Border Academy of the National Security Committee of the Republic of Kazakhstan (Border Academy of the National Security Committee of the Republic of Kazakhstan, 2021). The Academy trains officers with higher and postgraduate levels of education, scientific and pedagogical personnel, advanced training and retraining of officers and non-commissioned officers of the Border Service, organising and conducting scientific research on the problems of ensuring border security of the Republic of Kazakhstan.

In general, the results of the study reflect the intermediate results of a large sociological study aimed at analysing the quality of higher military special education by its main consumers: cadets, parents, and the customers of special military training themselves. In addition, these survey instruments will be integrated into an automated system, which will further enable annual monitoring on an ongoing basis.

4. Conclusions

In general, the results of the study demonstrate the general satisfaction of cadets with the quality of the organisation of the educational process at the specialised military schools. Nevertheless, it is essential to continue the study and adjustment of managerial and educational-methodical actions. Due to the specific features of a military specialised educational institution, its closedness, cadets are limited in information resources. Therefore, it is necessary to provide cadets with methodological tools and brochures required to master the practical details of their future professional activities; strengthen the research component of their personal work and transform them into research project tasks; more clearly formulate the expected results and criteria for evaluating the independent work of cadets.

Based on the results of the managers' survey, the following recommendations can be made: to increase the adaptive capabilities and improve the quality of a young officer's entry into his activities, it is necessary to strengthen the mentoring school in the Border Service. In addition, it is necessary to improve the communicative and personal qualities, to ensure the quality of programmes of the social and humanitarian training block. Attention should be paid to the quality of practical classes. In the context of improving professional competencies, it is also essential to strengthen the use of situational task methods, project technologies and game modelling in solving service and combat tasks and preparing for professional activity. The interaction of the special military schools with the customer should be strengthened and new curricula should be designed, which would reflect trends and innovations in the protection of the state border.

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