

UDK 378.355

A. A. Abdrakhmanov, G. A. Sharipov

Malik Gabdullin Academy of Civil Protection of the Ministry of Emergency Situations of the Republic of Kazakhstan, Kokshetau, Kazakhstan

DEVELOPMENT OF A RATIONAL VARIANT OF THE TECHNICAL EQUIPMENT OF THE EDUCATIONAL PLACE «BLOCKAGES» OF THE TRAINING GROUND OF THE M. GABDULLIN ACADEMY OF CIVIL PROTECTION OF THE MINISTRY OF EMERGENCY SITUATIONS OF THE REPUBLIC OF KAZAKHSTAN

Abstract. The article develops and presents the main stages of the work of officials of a special educational institution to choose a rational option for the technical equipment of a new educational place «Blockages». An algorithm has been developed within which a certain list of interrelated activities for the development of a new educational place is carried out. The proposed algorithm is designed to select a rational option for the technical equipment of a modern educational place, taking into account the restrictions on the total time of training specialists and the allocated financial resources. The implementation in practice of equipping the Academy's training center with a rational variant of technical equipment will increase the level of professional training of specialists of civil protection bodies during rescue and emergency operations.

Key words: rational option of equipping the training place, technical equipment of the training place, improving the level of training, training of civil protection forces, emergency rescue operations, training center.

The formation of a new image of the civil protection forces consists in the implementation of measures for rapid response to modern challenges and threats, protection of the territory and the population from natural and man-made emergencies in peacetime and wartime, effective training of civil protection forces.

Civil protection forces, emergency rescue services and formations, subdivisions of the state and non-state fire service, civil protection formations, aviation of the authorized body in the field of civil protection, surveillance, situation control and forecasting services designed for advance or operational actions on engineering, radiation, chemical, medical, fire, transport, logistics, hydrometeorological and other support of works aimed at protecting the population, objects and territories of the Republic of Kazakhstan from the dangers arising in emergency situations of peacetime and wartime [1].

One of the main necessary elements in the process of training at the Malik Gabdullin Academy of Civil Protection of the Ministry of Emergency Situations of the Republic of Kazakhstan (hereinafter referred to as the Academy) is the instilling of the necessary skills and abilities during emergency rescue operations.

The purpose of the initiative study of the Department of Civil Defense and Military Training of the Academy (hereinafter referred to as the Department of Civil Defense and VP) is to substantiate the requirements for a specialized new training complex, to develop and identify the features of a new training place "Blockages" for the training of civil protection forces for emergency rescue operations. Considering the essence of the process of training cadets and undergraduates, it should be noted that the increasing requirements for

their training in modern conditions, as well as the rapid growth of scientific information, have determined the urgent need to transition, build up and conduct all practical classes of the Academy's training ground, which determines the relevance of the topic we are studying.

The purpose of the initiative study of the Department of Civil Defense and Military Training of the Academy is to substantiate the requirements for a specialized new training complex, to develop and identify the features of a new training place «Blockages» for the training of civil protection forces for emergency rescue operations.

One of the main actions aimed at instilling the necessary skills and abilities, professional development in the normative operational condition of the Academy's training ground, is planning and carrying out work on the creation of facilities, training places, which will allow for more qualitative implementation of all types of practical classes in the training of specialists in the field of civil protection, expanding the specific efficiency of the operation of facilities for its intended purpose.

Exploring the essence of the process of training cadets and undergraduates, it should be noted that the increasing requirements for their training in modern conditions, as well as the rapid growth of scientific information, determined the need to transition, build up and conduct all practical classes at the Academy's training ground, which determines the relevance of the topic we are investigating.

The purpose of the initiative study of the Department of Civil Defense and Military Training (hereinafter referred to as the Department of Civil Defense and VP) of the Academy is to substantiate the requirements for a specialized new training complex, to develop and identify the features of a new training place «Blockages» for the training of civil protection forces for emergency rescue operations.

The article develops and describes a methodological approach to choosing a rational option for the technical equipment of educational places, which ensures the maximum overall level of training of specialists [2].

In order to instill practical skills and abilities, students need to create and simulate various types of pinching, at a new special educational place «Blockages». There may be victims under the rubble, so it is not advisable to limit the rescuer or focus on fixed time indicators when performing a rescue operation.

The proposed methodological approach is based on the consistent solution of the following particular tasks [3]:

- determination of a rational variant of the distribution of study time in the areas of training, taking into account their significance coefficients;
- study of the level of training of specialists at a given training time and a variant of technical equipment;
- determination of the required financial resources for the implementation of possible options for the technical equipment of educational places;
- the choice of a rational option of technical equipment, taking into account the restrictions on the training time and the allocated financial resources.

In order to implement the methodological approach of training specialists in emergency rescue operations in the scientific task under study, it was envisaged to develop a rational version of the technical equipment of the new training place «Blockages» of the Academy's training ground.

The development of a rational version of the technical equipment of the training ground of the Academy is intended to implement the general idea of achieving the goal aimed at improving the level of training of specialists in emergency rescue operations by justifying a rational version of the technical equipment of the new educational place «Blockages».

The methodological approach consists of six stages:

- 1) organizational stage;
- 2) information stage;
- 3) the stage of distribution of study time in the areas of training;
- 4) stage of assessment of the level of training of specialists;
- 5) the stage of determining the required financial resources for technical equipment;
- 6) the stage of choosing a rational option for the technical equipment of the new educational place «Blockages».

Within each of the stages, a strictly defined list of activities is carried out. The stages of the officials' work provide for the implementation of private plans for the implementation of mutually agreed measures to achieve the relevant goals.

The organizational stage includes the following main activities:

1. Formation of a working group and determination of its leader.
2. Formation of the idea of solving the problem of substantiating a rational variant of the technical equipment of the educational place «Blockages».
3. Setting tasks for the officials of the working group.

The working group, designed to select a rational option for the technical equipment of the educational place «Blockages» of the Academy's training center, includes analytical and expert groups.

The analytical group includes five employees of the profiling department for training specialists and the research center of the Academy, who have a fairly high level of training in the field of emergency rescue operations, as well as skills in processing statistical data and the results of an expert survey.

The expert group includes officials of the Faculty of full-time and additional education, the Department of monitoring and control (evaluation) of the quality of education, the research center, the management staff responsible for organizing the activities of educational, methodological and scientific work.

To determine the total number of experts, it is advisable to use the «Snowball method» [4].

The head of the working group was appointed Deputy Head of the Academy for Academic Affairs, Candidate of Technical Sciences, Colonel of Civil Protection Asan Ablavich Zhaulybaev, Deputy head of the working group – Head of the Department of Civil Defense and Military Training, Candidate of Military Sciences, Lieutenant Colonel Abdrakhmanov Arman Aitmukhametovich with the provision of appropriate powers to solve the task.

As part of the information stage, the head of the working group brought to the experts the necessary information regarding the acquisition of the Academy's educational and material base, and also determines the list of source data for solving the problem. Within the framework of this stage, the following main activities are carried out:

1. Analysis of the existing system of training specialists in emergency rescue operations, bringing to the members of the expert group the conceptual apparatus and the main provisions of regulatory legal acts regulating the training of specialists;

2. Analysis of the compliance of the technical equipment of educational places with modern and promising models of emergency rescue equipment and a number of other measures.

The analysis of the procedure for comparative evaluation of the educational place «Blockages» of the Academy's training ground in order to determine their significance showed that this task belongs to an area where the solution does not lend itself to effective formalization and the experience and intuition of officials organizing the training of specialists in the field of civil protection plays a great role. Therefore, for a comparative assessment of educational places, it is advisable to use the method of expert assessments, which should be understood as a set of logical and mathematical methods and algorithms that allow to streamline and systematize the procedures for collecting and analyzing the opinions of specialists, to bring them to the form most suitable for making a rational decision [5].

The key stage of this scientific task is the stage of the distribution of study time in the areas of training. Which includes an analysis of the procedure for comparative evaluation of training places in order to determine their significance, which showed that this task belongs to an area where the solution does not lend itself to effective formalization and the experience and intuition of officials organizing the training of specialists in emergency rescue operations plays a great role. In the comparative assessment of the new educational place, we used the method of expert assessments, which is understood as a set of logical and mathematical methods and algorithms that allow us to streamline and systematize the procedures for collecting and analyzing the opinions of specialists, to bring them to the form most suitable for making a rational decision.

For the distribution of training time by training areas, the coefficients of significance (vector of global priorities) of training areas (training places) for emergency rescue specialists were determined on the basis of a comparative assessment of private criteria, a training place for each particular criterion [6].

Based on the obtained significance coefficients and taking into account the given total time for training specialists in emergency rescue operations, rational values of the time allocated for training in each area of training can be determined.

Within the framework of this stage, the following activities are carried out:

- a) definition of a list of particular criteria;
- b) experts filling in matrices of pairwise comparisons of particular criteria and study places for each particular criterion;
- c) processing of the results of an expert survey in order to determine the significance coefficients of training places (areas of training);
- d) distribution of the total time allocated for training specialists in emergency rescue operations by training places, taking into account their significance coefficients.

The algorithm for the development of a new educational place «Blockages» at the stage of assessing the level of training of specialists, taking into account the rational variant of the distribution of study time, involves the implementation of a number of activities, the main of which are:

- 1) determination of the training time for specialists for each standard, taking into account the rational distribution of the time for instilling skills and abilities in training places;
- 2) assessment of the probability of meeting particular standards in the allowable time

for each variant of technical equipment;

3) an assessment of the probability of meeting the standards for each variant of technical equipment in the allowable time, taking into account the estimates of the implementation of private standards on each element;

4) assessment of the significance of the standards worked out at each training place;

5) determination of the level of training of cadets at a specific training place with a given variant of technical equipment, taking into account the probability of meeting each standard in an acceptable time and its significance.

The implementation of the construction of a specialized new training complex with the allocation of financial resources for the implementation of the option of technical equipment of the training place «Blockages» will be aimed at the implementation of the following main activities:

a) determination of one-time costs for the implementation of elements of each variant of technical equipment;

b) determination of operating costs for the entire period of operation;

c) determination of the cost of disposal of each element of technical equipment;

d) determination of the present value of each element of technical equipment per year;

e) determination of the required financial resources for the technical equipment of training places.

For the distribution of study time by training areas, it is necessary to determine the significance coefficients (vector of global priorities) of training areas (training places) of specialists in the field of civil protection on the basis of a comparative assessment of private criteria, the training place «Blockages» of the training ground of the Academy for each private criterion.

In order to obtain objective data substantiating the educational place «Blockages» of the training ground of the Academy, we used a data processing technique [7].

The algorithm of work of officials at the stage of determining the rational option of technical equipment of the educational place «Blockages» includes the following main activities:

1) preparation of initial data, including the level of training of specialists and the required financial resources for the implementation of various options for the technical equipment of training places;

2) formation of the initial version of the technical equipment;

3) determination of the values of the gradients of the level of training in the implementation of possible options for technical equipment for each training place;

4) the formation of a new version of the technical equipment of all training places in accordance with the maximum value of the gradient;

5) determining the value of the level of training of specialists and the required financial resources for the implementation of a new version of technical equipment.

The cyclical implementation of these measures is carried out until the value of the financial resources required for the implementation of the technical equipment option does not exceed the allocated amount of financial resources.

Based on the above, the development of an initiative scientific study of the Department of GO and VP allows us to determine a rational option for the technical equipment of the educational place «Blockages» of the Academy's training center, taking

into account the restrictions on the total training time of cadets and employees of civil protection bodies. In turn, the implementation in practice of a new rational variant of technical equipment will increase the level of professional training of graduates of the Academy for the effective performance of tasks for their intended purpose.

References

1. The Republic of Kazakhstan. The Law of the Republic of Kazakhstan. On Civil protection: approved on April 11, 2014 No. 188-V.
2. Order of the Minister of Internal Affairs of the Republic of Kazakhstan dated April 23, 2015 No. 387 «Rules for the creation, maintenance, logistics, training and involvement of GZ formations».
3. Abdrakhmanov A. A., Mazanik A. I., Druzhinin V. P., Malinin R. S. Analysis of the existing system of professional training of civil protection personnel in the field of radiation, chemical and biological protection at the Kokshetau Technical Institute of the Committee for Emergency Situations of the Ministry of Internal Affairs of the Republic of Kazakhstan // «Historical aspects, current problems and prospects of development of the State system of civil protection». Collection of abstracts and reports of the International Scientific and Practical Conference of Adjuncts, undergraduates, cadets and students. March 15, 2023 – Kokshetau, GU «AGZ named after M. Gabdullina of the Ministry of Emergency Situations of the Republic of Kazakhstan». – 2023. – P. 32-37.
4. Abdikarimov D. K., Duisen O. N. Readiness of civil protection formation to respond to emergencies and to carry out work on their elimination // Scientific and educational problems of civil protection. Khimki: FGBVOU IN the AGZ of the Ministry of Emergency Situations of Russia. 2019. No. 4 (43). From 22-26.
5. Saati T.L. Decision-making. Method of hierarchy analysis: Trans. from English. – M.: Radio and Communications, 1993. – 301 p.
6. Abdrakhmanov A. A., Kondrashin F. P., Mendybaev M. A. Substantiation of a rational variant of the technical equipment of training sites for training specialists in the field of radiation, chemical and biological protection // «Science and education in civil protection». – 2022. – № 1 (45). – P. 18 -28.
7. Statistical methods of empirical data processing [Text]: Recommendations / VNII on normalization in Mechanical Engineering. – M.: Publishing House of Standards, 1978. – 232 p.

А. А. Абдрахманов, Г. А. Шарипов

*Қазақстан Республикасы ТЖМ Мәлік Ғабдуллин атындағы Азаматтық қорғау академиясы,
Көкшетау, Қазақстан*

**ҚАЗАҚСТАН РЕСПУБЛИКАСЫ ТЖМ М.ҒАБДУЛЛИН АТЫНДАҒЫ АЗАМАТТЫҚ
ҚОРҒАУ АКАДЕМИЯСЫНЫҢ ОҚУ-ЖАТТЫҒУ ПОЛИГОНЫНЫҢ «ҮЙІНДІЛЕР» ОҚУ
ОРНЫН ТЕХНИКАЛЫҚ ЖАРАҚТАНДЫРУДЫҢ ҰТЫМДЫ НҰСҚАСЫН НЕГІЗДЕУ
БОЙЫНША ЛАУАЗЫМДЫ ТҮЛҒАЛАР ЖҰМЫСЫНЫҢ НЕГІЗГІ КЕЗЕҢДЕРІ**

Аңдатпа. Мақалада "үйінділер" оқу орнын техникалық жарактандырудың ұтымды нұсқасын таңдау бойынша арнайы оқу орнының лауазымды адамдары жұмысының штабтық әдістемесінің негізгі кезеңдері келтірілген. Алгоритм әзірленді, оның шеңберінде өзара байланысты іс-шаралардың белгілі бір тізімі орындалады. Ұсынылған алгоритм мамандарды даярлаудың жалпы уақытына және бөлінетін қаржы ресурстарына шектеулерді ескере отырып, оқу орындарын техникалық жарактандырудың ұтымды нұсқасын таңдауға арналған. Өз кезегінде, техникалық жарактандырудың ұтымды нұсқасын практикада іске асыру мамандардың кәсіби даярлығының деңгейін арттыруға мүмкіндік береді.

Түйінді сөздер: штабтық әдістеме, оқу орнын техникалық жарактандыру, дайындық деңгейін арттыру, азаматтық қорғау күштерін даярлау, авариялық-құтқару жұмыстары.

А. А. Абдрахманов, Г. А. Шарипов

*Академия гражданской защиты имени Малика Габдуллина МЧС Республики Казахстан,
Кокшетау, Казахстан*

**ОБОСНОВАНИЕ РАЦИОНАЛЬНОГО ВАРИАНТА ТЕХНИЧЕСКОГО ОСНАЩЕНИЯ
УЧЕБНОГО МЕСТО «ЗАВАЛЫ» УЧЕБНО-ТРЕНИРОВОЧНОГО ПОЛИГОНА АКАДЕМИИ
ГРАЖДАНСКОЙ ЗАЩИТЫ ИМЕНИ МАЛИКА ГАБДУЛЛИНА МИНИСТЕРСТВА ПО
ЧРЕЗВЫЧАЙНЫМ СИТУАЦИЯМ РЕСПУБЛИКИ КАЗАХСТАН**

Аннотация. В статье представлены основные этапы по выбору рационального варианта технического оснащения учебных мест. Разработан алгоритм, в рамках которой выполняется исследование научных подходов по созданию новых объектов, учебных мест, и их влияния на привития практических умений и навыков выпускников. Предложенный алгоритм предназначен для выбора рационального варианта технического оснащения учебных мест с учетом ограничений на общее время подготовки специалистов. Выработаны основные требования, предъявляемые к привитию практических умений и навыков. Проведено обоснование и реализация на практике рационального варианта нового учебного места «Завалы» и его технического оснащения учебно-тренировочного полигона Академии, которая позволит повысить уровень профессиональной подготовки специалистов.

Ключевые слова: воинские части гражданской обороны, разработка нового учебного места, учебно-тренировочный полигон, техническое оснащение учебного места, повышение уровня подготовки, повышению эффективности работы, моделирование различных видов заземлений, привития практических умений и навыков.

Information about the authors / Авторлар туралы мәлімет / Сведения об авторах

Арман Айтмухаметұлы Абдрахманов – әскери ғылымдарының кандидаты, Қазақстан Республикасы Төтенше жағдайлар министрлігі Мәлік Ғабдуллин атындағы азаматтық қорғаныс академиясының Азаматтық қорғаныс және әскери дайындық кафедрасының бастығы, Көкшетау, Ақан Сері көшесі, 136. E-mail: arman201079@gmail.com

Ғабит Әубәкірұлы Шәріпов – техника ғылымдарының кандидаты, Қазақстан Республикасы Төтенше жағдайлар министрлігі Мәлік Ғабдуллин атындағы азаматтық қорғаныс академиясының Азаматтық қорғаныс және әскери дайындық кафедрасының доценті, Көкшетау, Ақан Сері көшесі, 136. E-mail: emersharipovg@mail.ru

Абдрахманов Арман Айтмухаметович – кандидат военных наук, начальник кафедры гражданской обороны и военной подготовки Академии гражданской защиты имени Малика Габдуллина Министерства по чрезвычайным ситуациям Республики Казахстан, Казахстан, Кокшетау, ул. Акана Серэ, 136. E-mail: arman201079@gmail.com

Шарипов Ғабит Аубакирович – кандидат технических наук, доцент кафедры гражданской обороны и военной подготовки Академии гражданской защиты имени Малика Габдуллина Министерства по чрезвычайным ситуациям Республики Казахстан, Казахстан, Кокшетау, ул. Акана Серэ, 136. E-mail: emersharipovg@mail.ru

Arman A. Abdrakhmanov – Candidate of Military Sciences, Head of the Department of Civil Defense and Military Training of the Malik Gabdullin Academy of Civil Protection of the Ministry of Emergency Situations of the Republic of Kazakhstan, Kazakhstan, Kokshetau, 136 Akana Sere str., Kazakhstan. E-mail: arman201079@gmail.com

Gabit A. Sharipov – Candidate of Technical Sciences, Associate Professor of the Department of Civil Defense and Military Training of the Malik Gabdullin Academy of Civil Protection of the Ministry of Emergency Situations of the Republic of Kazakhstan, Kokshetau, 136 Akana Sere str., Kazakhstan. E-mail: emersharipovg@mail.ru