Improving Training in the Field Safety Management and Protection in Emergency Situations

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Abstract. The object of the research is the process of creating distance learning courses on the program of professional retraining in the field of technosphere safety. The subject of research should be considered professional retraining in the field of technosphere safety. In the process of research, the main forms of public education in the field of natural and man-made emergency situations were reviewed and presented. Learning using modern technology, i.e. distance education. As a result of research on the basis of the Higher School of Technospheric Safety of Peter the Great St. Petersburg Polytechnic University, he developed a distance learning course, which is a set of activities aimed at finding information on the Internet, communication, teacher training, access to databases, periodic analysis, information publications distributed over the Internet. Developed programs for EMERCOM employees of Russia, employees of federal fire services, employees of the ATC ROSATOM, employees of the “Training and Methodological and Operational Character”, search and rescue services, as well as representatives of the armed forces and emergency situations, etc.

1. Introduction
In the modern world, natural disasters, catastrophes, accidents, emergencies, military conflicts, which, as a rule, lead to the destruction of buildings, structures, harmful and destructive effects on people, as well as to pollution and environmental pollution, are increasingly occurring.

In addition, people in extreme conditions may suffer from unfair factors that contribute to protection against certain situations.

In order not to harm oneself and others, to preserve one’s own property, material and cultural values, it is necessary to undergo training in advance in defense and protection from natural and man-made emergencies.

Subjects of the Russian Federation and municipalities in institutions of advanced training and retraining of personnel.

Decree of the President of the Russian Federation No. 696 of December 20, 2016 states that “all measures for the implementation of the state policy in the field of the population’s defense are aimed at strengthening the defense”. training programs and teaching methods, information technology and simulators ...

Also, the Decree of the President of the Russian Federation No. 12 of January 11, 2018 “On Approval of the Basis of the State Policy of the Russian Federation in the Field of Emergencies for the Period until 2030” states that training is carried out using modern methods and technical training aids.
Obviously, distance education is gaining popularity and is the most optimal form of education for all segments of the population, especially for managers. This form involves learning at any convenient time for the learner, which allows you to learn on the job, while spending significantly less time and money than training in an arbitrary form.

In this regard, it is necessary to develop a remote course of professional retraining under the program "Safety and Protection Management in Emergency Situations", taking into account the possibilities of placement on an electronic platform.

Objective: to increase the level of security through the development of practical skills of state authorities, local governments and organizations in organizing and conducting activities to prevent emergency situations and eliminate their consequences.

The main tasks that need to be addressed to achieve the goals are as follows:

- to study the regulatory and legal base for training the population in the field of civil defense and protection in emergency situations;
- analyze the forms and technologies of training in civil defense and emergency situations;
- to form a lecture material of a distance course on the program of professional retraining “Safety management and protection in emergency situations”;
- to develop and form a bank of control questions in the disciplines of the distance course of professional retraining “Safety management and protection in emergency situations”; 
- prepare materials for the distance course of professional retraining “Safety management and protection in emergency situations” for display on the electronic platform of St. Petersburg Polytechnic University of Peter the Great [1-28].

2. Methods

Federal Law No. 28 “On Civil Defense” defines the term “civil defense”. It means "... a system of measures to prepare for the protection and protection of the population, material and cultural values in the territory of the Russian Federation from the dangers arising during military conflicts or as a result of these conflicts, as well as in emergency situations of natural and man-made character".

The Federal Law No. 68 “On the protection of the population and territories from natural and man-made emergencies” defines the term “emergency”. It means "... the situation in a certain area, resulting from an accident, a dangerous natural phenomenon, catastrophe, natural or other disaster, which may or may have resulted in loss of life, damage to human health or the environment, significant material losses and violation of living conditions people".

Within the framework of a unified system of training the population, all citizens are trained in the field of civil defense and protection from natural and man-made emergencies. Depending on the category of students, training can be carried out in the Civil Defense Academies of the Ministry of the Russian Federation for Civil Defense, Emergencies and Disaster Relief (EMERCOM of Russia), in advanced training institutions of ministries, departments, committees, administrations of a constituent entity of the Russian Federation and organizations, training centers for civil defense and emergency situations of the constituent entities of the Russian Federation, at the place of work, study, and place of residence dan.

The Government of the Russian Federation Decree No. 841 “Regulations on the organization of training in the field of civil defense” dated November 2, 2000 states that "... the persons to be trained are divided into the following groups:

"a) heads of federal executive bodies and bodies of executive power of the subjects of the Russian Federation, heads of municipalities, heads of local administrations and heads of organizations;

b) employees of federal executive authorities, executive authorities of the constituent entities of the Russian Federation, local governments and organizations included in the structural units authorized to solve tasks in the field of civil defense, evacuation and evacuation commissions, as well as commissions on improving the sustainability of facilities economics, managers, teachers and instructors of civil defense training centers for civil defense and emergency situations of the constituent entities of the Russian Federation and civil defense courses of municipalities, as well as
teachers of the subject "Basics of life safety" and the discipline "Life safety" of organizations conducting educational activities on basic general educational programs (except educational programs of pre-school education), secondary educational programs vocational education and higher education programs motion;

c) the personnel of the formations and services;

d) the working population;

e) students of organizations carrying out educational activities in basic general education programs (except for educational programs of pre-school education), educational programs of secondary vocational education and educational programs of higher education (except for programs for the training of scientific and pedagogical personnel in postgraduate study (adjunct), residency programs, assistant programs) internships);

f) non-working population ... ".

According to the Decree of the Government of the Russian Federation No. 547 “On the preparation of the population in the field of protection from natural and man-made emergencies”, it is determined that the following are subject to training in the field of protection from emergency situations:

1) persons engaged in the production and services that are not included in the governing bodies of the unified state system of prevention and liquidation of emergency situations;

2) persons not engaged in production and services;

3) persons studying in organizations carrying out educational activities in basic general educational programs (except for educational programs of pre-school education), educational programs of secondary vocational education and educational programs of higher education (except for programs for the training of scientific and pedagogical personnel in postgraduate (adjunct) programs, residency programs, internship programs;

4) heads of state authorities, local governments and organizations;

5) employees of federal executive authorities, executive authorities of the constituent entities of the Russian Federation, local governments and organizations specifically authorized to perform tasks for the prevention and elimination of emergency situations and included in the management bodies of the unified state system of prevention and liquidation of emergency situations;

6) the chairmen of the emergency commissions of the federal executive bodies, the executive bodies of the constituent entities of the Russian Federation, local governments and organizations.

Each of the above selected groups is trained in a special program. Approximate programs define a compulsory educational unit for all categories of students in order to prepare them for correct actions in case of threats and various types of hazards, including those arising during military conflicts or as a result of these conflicts, as well as in everyday activities. These programs set out the organization and technology of training, the content of classes and the calculation of hours, as well as the requirements for the level of knowledge and skills of the population who received training.

The main purpose of training the heads of state authorities, chairmen of emergency commissions of the constituent entities of the Russian Federation is to develop the necessary skills to enable qualified planning of measures to prevent and eliminate the consequences of emergency situations and skillfully manage work on their implementation, as well as inculcate practical skills to manage actions of personnel civil organizations.

On the basis of exemplary programs, an educational and material base is formed for training any categories of the population in the field of life safety - a complex of educational facilities with educational and methodical manuals, material and technical support intended for training various categories of the population in the field of protection from natural and man-made emergencies.

Improving the system of training the population in civil defense and protection from natural and man-made emergencies is impossible without the development and modernization of the training and material base. To solve these problems, automated situational centers are being created for training the management staff of the Unified State System for Preventing and Elimination of Emergencies at regional centers, as well as training institutions for advanced training and retraining of management personnel for ministries and departments to act in emergency situations. In training centers for civil
defense and emergency situations of the constituent entities of the Russian Federation, computerized classes are created.

Based on the modern biorhythm, as well as improvements in technical means of communication and the capabilities of the Internet, the distance learning form based on Internet technologies is being promoted.

Distance education has several advantages:
- access to the course from any place and at any convenient time;
- the ability to quickly transfer information of any size and type (visual and audio, text and graphic, static and dynamic) to any distances;
- the ability to quickly change information through the Internet from your workplace;
- storing the course information in the computer’s memory for a required period of time, the possibility of editing, processing, printing, etc.;
- the possibility of interactivity with the help of specially created for these purposes multimedia information and operational feedback;
- the ability to access various sources of information, primarily Internet Web sites, remote databases, numerous conferences via the Internet, work with this information;
- in the case of geographically distant students, training without the cost of teaching aids, the cost of travel, living in another city.

Disadvantages of distance education:
- lack of live communication between the student and the teacher;
- the need for a personal computer and Internet access;
- the complexity of the test of knowledge;
- high complexity of the development of a distance course.

The success of distance learning depends largely on:
1) the course coverage of all stages of training and all participants in the learning process;
2) simplicity of the interface for students and teachers;
3) forms of presenting educational material;
4) a variant of communication between students and teachers (for example, a forum, audio or video communication, etc.).

When creating distance learning courses, you should familiarize yourself with the Federal Law of the Russian Federation No. 273 “On Education in the Russian Federation”. This law specifies the learning process, dividing it into three main parts: obtaining theoretical knowledge, obtaining practical skills, monitoring acquired knowledge and skills.

Based on regulatory requirements and analysis of the structure of distance courses, the components of a distance course are formed, such as:
- course information;
- the purpose of the course;
- course schedule (schedule of passing topics or sections, reporting forms and time, schedule of consultations, etc.);
- course materials;
- tasks for independent work;
- guidelines;
- performance appraisal procedure;
- glossary;
- library (links to online sources, electronic reading materials, etc.);
- tests;
- Feedback;
- additional sections.

Considering all the above, the creation of a distance course for the purpose of professional retraining of chiefs and employees of organizations whose position is connected with civil defense and protection from natural and man-made emergency situations is a highly topical task today.
The main objective of this course is to master the knowledge and skills that provide a competent approach to solving practical problems of protection in emergency situations of natural and man-made nature, giving the right to conduct professional activity in the field of technospheric safety.

On the basis of exemplary programs compiled by the EMERCOM of Russia, training of certain categories of citizens, the course involves the study of several disciplines, therefore, for the flexibility of studying the subject, the course is divided into several modules of similar meaning, containing approximately equal number of disciplines.

The course on the program "Safety Management and Protection in Emergency Situations" involves the study of the following disciplines:

- Evaluation of the effectiveness of safety systems in emergency situations;
- Integrated systems for ensuring technosphere safety;
- Risk assessment of natural and man-made emergencies;
- Regulatory security in emergencies;
- Resistance to stress and emotional stress;
- Organization and maintenance of rescue operations;
- Safety management of natural-technical systems;
- Management of civil protection.

For each discipline formed lecture and practical exercises, regulatory documents, manuals and other additional literature. Also at the end of the disciplines, students are certified in the form of testing.

For this, when developing a course, multidirectional tasks were compiled with the choice of one correct or several answer options, as well as tasks for establishing order and correlation, etc.

To develop a remote program had practical application, you should use the electronic platform. In this case, SPbPU Peter the Great's Distance Learning Portal is used.

Since the platform in question is generally accessible, it provides for the authorization of teachers and trainees of the course.

Students of the course in this system should have the opportunity to study the lecture material, refer to additional literature, consult with the teaching staff, pass the attestation control and monitor their own performance.

For the convenience of students on this platform are provided:
- a calendar showing the deadlines for completing courses taught by courses;
- a summary of the courses traveled (the percentage of the course traveled, the discipline);
- notification line;
- “messages” menu for feedback from teachers, administrators, or discussions with fellow students.
- forum for collective discussion with the teacher of any questions on disciplines;
- a log for tracking course grade;
- a folder for storing personal files, which later, if necessary, can be attached to the solution of the task;
- news system, from which you can find current site updates.

3. Results

The success of propaganda of knowledge in the field of protection in emergency situations of natural and man-made character depends largely on its skillful organization in the field, in the wide use of various forms and methods of its implementation and the active use of modern and promising media and technical propaganda.

As a result of research on the basis of the Higher School of Technosphere Safety of Peter the Great St. Petersburg Polytechnic University, a distance learning course has been developed as a set of activities covering the search for necessary information on the Internet, communication with teachers and students, access to databases, periodic information publications distributed via the Internet.
4. Discussion

Unlike the existing distance learning course “Safety Management and Protection in Emergency Situations”, the course materials allow a more detailed and structured study of the course materials with further practical application of acquired skills and skills.

It is worth noting that the elements of the course being developed have already been introduced into the curriculum for the master's degree program at the Higher School of Technospheric Safety at St. Petersburg Polytechnic University of Peter the Great.

In the future, this course can serve as part of an expanded program designed to train specialists in the field of "Technosphere safety".

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