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Risk-Thinking Forming In The Aspect Of The Sendai Risk-Thinking Forming In The Aspect Of The Sendai Program Requirements

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Abstract

The relevance of the problem is caused by the increasing scale of the consequences of natural disasters and the number of people getting into the zone of these disasters. Concern about the preparation of the population for emergency actions was also indicated by the United Nations Organization by having adopted the Sendai Disaster Risk Reduction Program. The purpose of the article is to develop methods for developing risk-thinking in order to reduce situational risk through the use of active teaching methods. The leading method of investigating this problem is the modeling of situational risk, which allows us to consider this problem from the point of view of minimizing the consequences of emergency situations with appropriate training of the population and professional rescuers. The result of the study is justification of the use of role-playing methods as a factor of reducing situational risk, forming risk-thinking with the help of games in the aspect of implementing the Sendai program. The practical importance lies in the adaptation of active training methods to the requirements of the Sendai Program on the inclusion of the education on issues related to disaster risk, mitigation of its consequences, preparedness for them, reaction, recovery and rehabilitation, into formal and non-formal education programs, as well as into activities of educating citizens at all levels, and vocational training programs.
Keywords: risk-thinking; Sendai program; disaster risk reduction; active methods; situational risk.

Introduction

On March 18, 2015, the Sendai Framework Program for Disaster Risk Reduction for 2015-2030 was adopted in the Japanese city of Sendai.

The Program states that "disaster risk reduction requires an approach that takes into account different types of threats and an inclusive decision-making process based on the open exchange and distribution of disaggregated data,including data broken down by sex, age and the presence or absence of disability, as well as on easily accessible, updated, understandable, scientifically sound, non-confidential information on risks supplemented by traditional knowledge "(Grote, 2012; Treleaven, Ormiston & Sykes, 2011).

In this aspect, we can talk about the necessity to form a risk-mindedness in different groups of the population, with reference to their behavior in critical and emergency situations.

As you can see, the definition of "risk-thinking" is becoming more and more in demand, which is confirmed by the fact that one of the key changes in the edition of ISO 9001: 2015 (the Russian equivalent is GOST R ISO 9001, 2015) was the introduction of a systematic approach to the consideration of risks.

In this document it is noted that "risk is the influence of uncertainty on the achievement of the goal. Risk is inherent in all aspects of the management system of any organization.

Risks are present in all systems, processes and functions. Risk-oriented thinking provides assurance that risks are identified, examined and managed during the design and application of the management system "(Sumin & Chalkin, 2010; Zhumabaeva et al., 2013).

And in the document it is also noted that "the standart requires from the organization: to keep the higher management aware of risk-oriented thinking; to identify (identify) and consider the risks and opportunities of processes that may affect the conformity of products / services to customer requirements and to take appropriate actions to respond to them;

To carry out the constant risk management of production processes; to monitor, measure, analyze and evaluate the effectiveness of actions taken in response to risks and opportunities (Maslennikova et al., 2017; Larionova et al., 2017; Tastan et al., 2018).

In addition, in the Sendai Framework it is said about:

- The need for a better understanding of disaster risk in all its aspects related to the characteristics of impacts, vulnerabilities and hazards;
- disaster risk management, including national platforms;
- responsibility for disaster risk management;
- readiness for restoration on the principle of "better than it was"
- mobilizing of risk-sensitive investments to prevent the emergence of a new risk;
- the sustainability of the health infrastructure, cultural heritage and work environment;
- strengthening of the international cooperation and global partnership, also based on the information on risks
- the policies and programs of donors, including financial support and attracting loans from international financial institutions (Sendai Framework Program disaster risk reduction 2015-2030, 2015).

Obviously, there is a growing need in society to adapt the definitions of "risk" and "risk-thinking" to different spheres of life.

Methodological Framework

To form the definition of "risk-thinking" we use the method of analysis of definitions "thinking" and "risk", and then the method of synthesis of these definitions.

For the beginning let's consider some definitions of the word "thinking", provided in different fields of science.

"Thinking is one of the highest demonstrations of the psychological process of the cognitive activity of the individual, the process of modeling non-random relations of the external world, characterized by a generalized and indirect reflection of reality; it is an analysis, synthesis, generalization of the conditions and requirements of the problem being solved and the ways to solve it (Romanovsky & Muravyeva, 2010a; Romanovsky & Muravyeva, 2010b; Nikolaikin, Nikolaikina & Melehova, 2005).

Thinking often develops as a process of solving a problem, where conditions and requirements are highlighted. The task should not only be understood, but also accepted by the subject - correlated with its need-motivational sphere.

An important role in thinking is played by emotions that provide control over the search for a solution to a problem. The product of thinking may be presented by goals of subsequent actions ... (highlighted by the author)" (Muravyeva et al., 2016).

Thinking is the purposeful use, development and increment of knowledge (highlighted by the author), which is possible only if it is aimed at resolving contradictions that are objectively inherent to the real subject of thought (Ge Zhang et al., 2013).

Thinking is the highest form of active reflection of objective reality, consisting in a purposeful, mediated knowledge of the essential connections and relations of objects and phenomena, in the constructive creation of new ideas, in predicting events and actions.

It arises and is realized in the process of posing and solving practical and theoretical problems (highlighted by the author) (Masalimova et al., 2014).

Thinking is the complex of psychological processes, states, and human actions aimed at solving various problems (practical, theoretical) and providing this solution (finding answers to the questions posed, confirmations or refutations of the hypotheses introduced).

An internally accepted task (that is, some idea of the desired future, given in terms of specific possibilities and limitations) is a system-forming link in the processes of thinking.

Mobilization of thinking as a mentally functioning system is carried out partly consciously and intentionally, partly involuntarily, due to habitual skills and other automatisms, as well as motivations, character traits, experiences formed in the person in the course of his previous development, upbringing, education, self-education (Berkimbaev et al., 2013).

Next, let us consider the definition of the word "risk".

The risk (Greek. risikon – rock) - a possible danger of any adverse outcome.

Risk - a combination of the probability and consequences of an adverse event;

Risk - a characteristic of a situation that has an uncertain outcome, with obligatory presence of adverse consequences.

Risk in a narrow sense - a quantitative assessment of hazards, is defined as the frequency of one event when another comes.

Risk as a situation of choice. The choice should be made between a less attractive, but more reliable strategy, and more attractive, but less reliable (A Note on Optimization Problems of a Parallel System with a Random Number of Units, 2017).

Risk: A combination of the probability of an event and its consequences. The term "risk" is usually used when there is a possibility of negative consequences. In some situations, the risk due to the possibility of deviation from the expected result or event.

The risk factor can be considered as a measure of the discrepancy between the various possible outcomes of the accepted decision (provided that the probability of the complex of the results is known or can be determined), which makes it possible to achieve the goal. (Romanovsky & Muravyeva, 2010a, 2010b).

The experiment on the development and the adaptation of the definition of "risk-thinking" was conducted at the Department of Industrial and Ecological Safety of the KNITU-KAI, where the bachelors are trained specialized subject "Protection in emergency situations" of the 20.03.01 "Technospheric Security" course, in the framework of the formation of the all-cultural competence "possession culture of safety and the risk-oriented thinking, with which issues of safety and environmental preservation are considered as the most important priorities in life and activity." (Ministry of Education and Science of the Republic of Tatarstan, 2015; Ministry of Economy of the Republic of Tatarstan, 2016).

Results

Having analyzed the points of contact between the two numerous definitions of "risk" and "thinking", the authors of the article propose to define risk-thinking as a process of mental solution of a problem on the basis of available knowledge and experience, which, in theory, should lead to avoidance of an undesirable event (Zhang et al., 2013).

So, in this case, what will characterize the developed risk-thinking? The first is choosing the optimal solution leading to the least undesirable event. The second is the speed of decision-making, which, from our point of view, is an important factor, because the choice of the right decision, right after the accomplishment of the event is completely useless.

Consequently, the criterion of developed risk-thinking is the ability to analyze the largest number of possible options per unit of time and the choice of the variant leading to the least adverse consequences (Aven & Reniers, 2013).

However, it is necessary to differentiate risk-thinking in everyday and professional activities. If in everyday activities risk-thinking is largely determined by character traits, upbringing, education and experience gained during life, then the pillar of professional risk-thinking will be professional reflection.

D.S. Schoon (1983) suggests that the reflective practitioner perspective is an important factor in improving professional skills and productivity.

This is due to the fact that a security professional, while thinking of his own activities, can consider the implicit standards and assessments underlying his decision, the perception of the situation that led him to a particular pattern of action.

That is to say, the knowledge gained during the preparation for the professional activity will be the implicit foundation of the decisions made by him.

Therefore, for a qualitative training of a security specialist, in the educational process, it is not enough to give qualitative knowledge, it is necessary to develop the ability to analyze the situation, which the use of active teaching methods quite a few contribute to.

However, in addition to training professionals in the field of emergency situations, it is also necessary to form a risk-thinking in the population, and depending on the age categories. And, taking into consideration the sufficient practical experience of the authors of the article, we can say that here the active methods also will be the best option (Muravyeva, 2014; Muravyeva, 2012)!

Let us consider a model of situational risk analysis.

Stages of risk generation			
Danger	Demonstration	Effects	Evaluation

Participants in the risk situation

Producers of risk	The risk consumer	Regulatory Agency

Components of a risk response		
Mechanisms of risk production	Problems of risk perception	The problems of legitimization and protection against risk

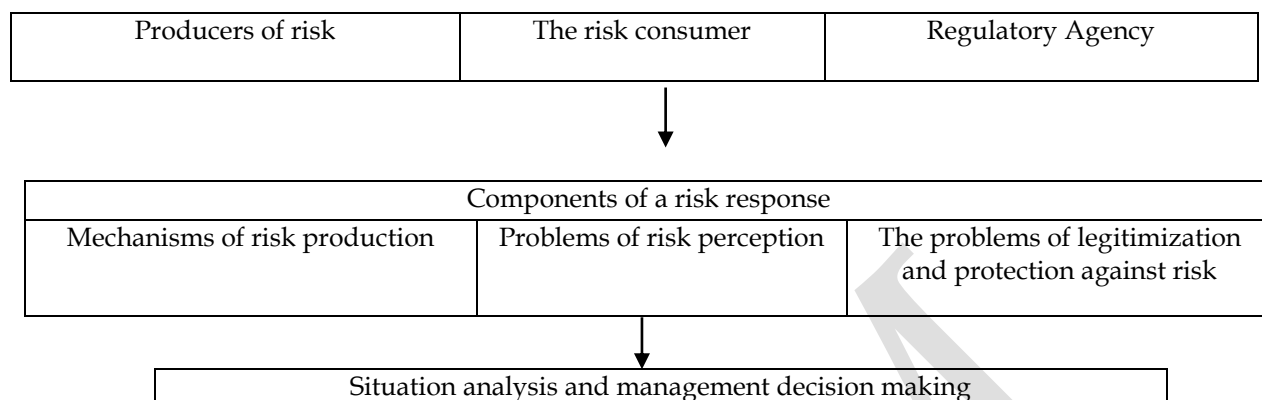| Situation analysis and management decision making |
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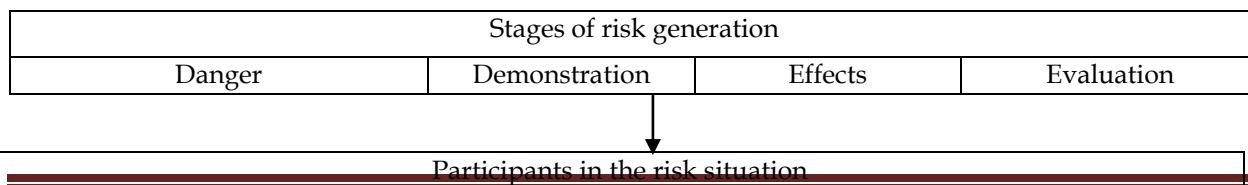
Figure 1. Model of Situational Risk Analysis

On the one hand, risk consumers (ordinary citizens) often do not have information to adequately assess the degree of risk, be it a natural emergency or an industrial disaster. They perceive it as a reality and that what the problem of people's perception of risk exactly consist in.

The way to minimize the situational risk is to change people's behavior. This modification is possible by encouraging the selection of safer or new alternatives to the action. In this case, the change is possible:

- by prescribing mandatory standards and rules that reduce risk;
- by transforming motivation;
- through the distribution of information about risk.

Obviously, the activities to prevent and mitigate the consequences of threats and dangers of the different nature can not be limited only by legal, organizational and technical arrangements, and if we talk about methods and means of forming risk-thinking, then it should be noted that the educational activity from this point of view is the most effective (Shavalieva et al., 2013).

Discussion and Conclusion

As in the case of training professionals the authors propose the use of active methods of teaching the population, as one of the ways to regulate situational risk. In its turn it will increase the level of formation of risk-thinking and will accordingly reduce the possibility of situational risk occurence (Šafhalter & Pešaković, 2015; Salmon, Cornelissen & Trotter, 2012).

Today one of the most advanced active methods is believed to be a role-playing game, which is a kind of interactive art, that consist in the preparation and conduct of a joint production with a non-fixed, variable storyline by participants and organizers.

As on the basis of a literary plot one can make a movie, it is also possible to build a role-playing game. The plot undergoes changes in many details both in the case of the movie and in the case of the game, but it becomes more accessible and understandable for a wider audience (in the case of a successful adaptation of the literary work) or participants (in the case of role-playing game).

Due to its interactivity role-playing game not only causes emotional empathy with the characters of the plot, but also allows the player to get experience in the situation unfamiliar to him.

In the role-playing game the player is invited to act in conditions that are as close as possible to those, in which acted the character of the plot, underlying the game.

And the plot can be both literary or formed on the activity material; in our case it will be the simulation of an emergency situation.

When creating a role-playing game, the situations of any activity can be presented in the form of a plot, and the plot can be interpreted depending on the problems typical to the specific habitat, age category, etc.

Role-playing games are divided into the following types:

1. Situational (as a rule, short communicative games in which a certain type of situations is worked out in verbal mode - for example, negotiation), which is very important when preparing a person to the emergency situation.

2. Chip (the plot arises in these games due to manipulations on rather complicated rules with simple game things - chips, cards, dices, to which game values are assigned - rescue means, buildings, vehicles, etc.). This format allows to consolidate the order of actions in an extreme situation by building a logical chain of actions, repeatedly played on the board in the form of a system of logical moves.

3. Story-role games (most frequently created on the basis of a historical or political situation and affect the humanitarian, philosophical, psychological, sociocultural problems of our time, literary works usually become the material of such games).

This type of games allows you to fix actions in emergency situations at the level of muscle memory.

4. Strategic (the plot is connected with the management of a complex system, for example, production or military system; such games always require analysis of the game situation, decision-making with considering many factors and calculation of resources, that is why for conduct of these games a mathematical model is needed, better automated).

This option, of course, refers to the training of professionals, and allows a deep analysis of the arisen emergency situation in terms of prevention, co-ordination of the emergency actions and other professional requirements.

The most important thing in any role play is the ability to act in the situation that is fundamentally similar to the situation of any chosen character: from the modern head of the corporation to the medieval knight.

The plot is chosen by the organizers of the game, depending on the goals that they set for their project. It can be a joint creative activity, research, educational work.

The educational possibilities of the role-playing game are determined by two features of this practice.

First, despite the fact that role-playing games use "non-real" things (game "weapons", "documents", etc.), actions made with them are truly real.

In a situation-role game on the elimination of the consequences, for example of the crash, a player operates with "toy" means, the accident itself and its consequences being a game conventionality, but the player is being really required to analyze and evaluate the situation, make decisions, organize collective actions.

Only the danger to life and health and the social consequences associated with this accident are removed from the game, which allows the player to experiment while acting and take risks, that in real life would be excessive.

Second: the child or young man today treat the knowledge very practically: if knowledge can be applied here and now - it's considered an important and necessary knowledge.

If the application of knowledge is required to be postponed for undefined period, the need for knowledge is not obvious and requires evidence, or at least trust in the teacher.

In this aspect, the role-playing game allows to give the participant some practical field where it is possible to realize here and now all learned and mastered in the process of the game.

The most important part of the educational role-playing game is the analysis of its results, which can identify the unsuccessful actions committed by the participants and show the students what rules or procedures of the simulated activities were violated.

Here, the value of the knowledge, transmitted in learning, arises - abstract and often boring rules of action, sewn into the plot of the game, become practical after the game, because their application contributes to success in the game reality.

Thus the received knowledge, abilities and behavioral skills in critical situations are being fixed and allow to act more adequately in case of the emergency.

If we return to the requirements of the Sendai Program, the formation of the risk-based thinking on the base of games will "assist the inclusion of education on issues concerned with disaster risk, including disaster prevention, mitigation of consequences, preparedness, reacting, recovery and rehabilitation into the programs of formal and non-formal education, as well as in educational activities for citizens at all levels, and vocational training and other training programs" (Problems with safety observation reporting: A construction industry case study (2018), which is one of the priorities of this Program.

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