

SECTION 9. LIFE SAFETY

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9.1 Safety culture as a new principle of safety management

9.1.1. Personal and social safety culture: formation in educational institutions in modern conditions

9.1.1.1 Personal and social safety culture: basic concepts

The concept of personal and social culture is currently one of the central concepts in the integral study of occupational health and safety.

The study and definition of this issue characterises a person's aspiration for safe living in unstable social conditions, for reducing risks and hazards in various types of environment and for the rapid development of ensuring safe activities system. The works of Yu. Skaletskyi, L.O. Durnev, T.M. Tairova, V.I. Hnatovskyi, Y.L. Vorobiov, O.I. Zaporozhets, V.O. Mykhailiuk, N.V. Kulalaeva, M.O. Zorina and others have a significant value in the study of personal and social safety issues. An analysis of the above literature shows that a significant number of scientific works are devoted to the problem of personal and social safety in general. However, insufficient attention has been paid to the issue of personal and social safety culture. Recent studies show that the issue of forming knowledge on personal and social safety remains relevant. Especially against the backdrop of social, political and technological changes. This is the reason for the growth of the human factor in the emergence of uncertain situations in the human-environment system.

Taking into account a growing number of various accidents, catastrophes, natural and political disasters that cause high mortality, massive injuries and long-term disability, the issues of ensuring personal and social safety, protecting human life and health are becoming increasingly important.

For the development of modern industrial and social technologies, a high level of compliance with safety rules is not enough, as there is a need not only for knowledge, skills and abilities to ensure personal and social safety, but also for the safe

implementation of any type of activity, understanding the goals and consequences of one's actions for society and the environment. It means that the most important goal of the educational process in the field of safety is to form a person's thinking based on a deep understanding of the main principle - the unconditional priority of safety in solving any professional and personal problems. Therefore, there is a need to develop a special type of culture that takes into account the specifics of an activity and the culture of personal and social safety.

Culture, as a complex and multifaceted social phenomenon, permeates all spheres of human life and activity. It is the most important means of acquiring social experience and therefore provides the strategic direction of development to achieve the required level of society.

The concept of 'safety culture' first appeared in 1986 in the process of analysing the causes and consequences of the Chornobyl accident, conducted by the International Atomic Energy Agency (IAEA). It was recognised that the lack of a safety culture was one of the reasons for the tragedy [392].

Safety culture is a component of the overall culture which characterises the level of training in the field of personal and social safety and the conscious need to comply with the rules and regulations of safe behaviour.

Safety culture is a certain level of human and social development characterised by the importance of safety in the system of personal and social values. It is manifested in the prevalence of stereotypes of safe behaviour, the degree of protection against threats and dangers in all spheres of life.

The effectiveness of measures to ensure personal and social safety and reduce individual, collective and global risks depends to a large extent on people's value systems, motives for their behaviour, personal and professional qualities and abilities. As a component of the general culture, the culture of personal and social safety is aimed at a specific result - mandatory compliance with the norms of behaviour in society.

All of the above-mentioned is aimed at reducing or completely eliminating the likelihood of life-threatening conditions and factors. Accordingly, we can talk about three levels of safety culture. The meta-level refers to the culture of safety of a

mankind, civilisation, continent; the macro-level is related to the culture of safety of a society, state, region; the micro-level addresses the tasks of fostering a safety culture of an individual, family, small social group, etc.

Based on the analysis of domestic and foreign authors' work, it is possible to define the culture of personal and social safety as the ability to use knowledge and skills in practical activities. It can be argued that the culture of personal and social safety includes knowledge, worldview and, as a result, a safe type of behaviour.

Thus, it can be noted that the culture of personal and social safety includes:

- issues of ensuring personal safety, the safety of society and the environment;
- skills and abilities of safe behaviour; knowledge of ways and means of protection in dangerous and emergency situations,
- a set of ecological and environmental concepts that are the basis for reducing the risks of human life.

An essential factor is a person's preparedness, level of knowledge, skills and abilities. The depth and strength of mastering the ways and means of protection against hazards and emergencies, the development of skills and abilities to behave safely in different conditions are the basis for reducing the risks to people's lives.

The theoretical analysis has shown that the concept of 'culture of personal and social safety' does not have a single terminology. In the educational field, the definition of personal and social safety is seen as the formation of a culture of personal safety, the formation of a mass culture of safety and a culture of life safety [393]. In psychology, personal and social safety is considered in the context of the influence of personal factors on an individual level of injury and adaptation in the environment. Personal and social safety in technical environment is the knowledge of safe and comfortable human interaction with the technosphere. Safety of life in society includes protection of the interests of society and individuals from internal and external threats, prevention of social disorders, control over the degradation of social structures, ensuring maximum stability and normalisation of economic and political situation.

Considering the safety culture of human life in the context of the integral quality of a personality, it can be noted that integrity directs a person to develop motivation

for safety based on a set of professional and specific knowledge, continuous improvement of skills and abilities for the safe implementation of professional and social activities.

The society is faced with the contradictions between the increase in dangers resulting from the intensive activity and the lack of a culture of safe existence in society. The progressive decline in the scale of individual values of a healthy and long life and the need for a high level of health in modern conditions for family formation, professional career and material security is striking. It is due to changes in the structure of society, the priority of career choices and living conditions. Therefore, the problem of forming a culture of personal safety in different environments is becoming more relevant in society than ever. This problem requires the integrated research in pedagogy, psychology, culture, and safety of an individual's life [394].

9.1.1.2 The main structural components of personal and social safety culture

There is a great number of definitions of the 'culture' concept. It is a complex, multilevel, multifunctional system that absorbs and reflects the contradictions of the whole world: between specialisation and individualisation, between normativity of culture and freedom, between traditional culture and renewal. Components of culture are: worldview base, system of values; traditions, stable rules of behaviour of society members; spiritual, intellectual and material results of people's activities in the field of safety [395,396]. Culture is formed in various types of activities, including activities aimed at forming a culture of personal safety. The culture of human life safety is part of the general culture and is connected with the personality in general. The culture of safety appears as a new education. It influences the formation of personality, as it includes natural, philosophical, moral, political, legal, aesthetic, professional and other aspects of ensuring the safety of life.

In the late 1990s and at the beginning of the XXI century, there was an understanding that the effectiveness of measures to ensure the safety of life, to reduce individual, social and global risks depends to a decisive degree on the value attitudes

of people, the motives of their behaviour, personal and professional qualities and abilities [397].

There are the following criteria for the formation of a culture of personal safety in the course of life:

- cognitive,
- procedural,
- emotional and motivational,
- psychological comfort of relationships;
- effective and practical [397]

Personal and social safety also has a number of specific tasks, the main ones being:

- identification of threats, recognition and analysis of negative environmental impacts;
- preventing the impact of certain negative factors on a person;
- protection from danger;
- elimination of negative consequences of hazardous and threatening factors;
- formation of a favourable state of the environment [398].

Literature sources describing the structure of human life safety culture distinguish the following components:

- activity as the basis of safety culture structure (motivation, knowledge, skills, etc.);
- personal qualities of a person in the structure of safety culture (value orientations, personal meanings, etc.);
- components of basic personality culture as the main content of safety culture (moral, aesthetic, environmental culture, etc.) [399].

Taking into account the structure of activity, the content of life safety culture in terms of the parameter ‘activity components’ includes motives, knowledge, ideas, images, skills, practical experience, creative experience, self-control. Accordingly, the content of safety culture education includes motivational (motives, aspirations,

interests), substantive (knowledge, ideas), operational (skills and abilities), creative (experience of creativity) and control-regulatory (experience of self-control in dangerous situations) components.

Motivation means the desire to anticipate and prevent harmful and dangerous factors, to overcome them with the least possible losses. to reduce the negative effects of harmful and dangerous factors. Motivation includes a person's desire to acquire systematic knowledge about safety, to improve practical experience, personal qualities for safe life, creative independent application of safety rules and regulations, and readiness for self-control in uncertain situations.

Knowledge, perceptions, images in the structure of safety culture is a system of reliable scientific knowledge about the types of harmful and dangerous factors of life, their causes, the nature of their impact on a person, typical mistakes of people in contact with dangerous and harmful factors, the content and sequence of actions in preventing and overcoming harmful and dangerous factors, the ways to reduce the negative effects of harmful and dangerous factors.

Skills, abilities and practical experience in this structure include the following abilities:

- to set a goal of self-improvement and preparedness for safe life;
- to update knowledge about danger and safety;
- to foresee and prevent the impact of harmful and dangerous factors;
- to notice danger and the possibility of harm;
- to use means taking into account the nature of a danger;
- to reduce the negative effects of harmful and dangerous factors;
- to provide various types of assistance in dangerous situations;
- to learn from the experience of others in ensuring safety;
- to share experience of safe behaviour.

Creativity is considered as the experience of independent analysis of dangerous situations contradictions, combining new safety measures with the familiar ones, taking into account specific conditions, developing fundamentally new approaches,

strategies and means of safe behaviour. A person's creative abilities can be an indicator of readiness for non-standard solutions to cognitive and practical safety problems in dangerous and extreme situations.

Self-control as one of the most important components of safety system includes: an adequate step-by-step and prognostic self-control in preventing and overcoming harmful and dangerous factors, an ability to learn from mistakes and to gain experience of how to behave in dangerous situations.

In the course of any activity, the process of improving a person's readiness for safe life is based on the assignment of various elements of safety culture. [400] The content of security culture education of an individual includes value orientations, personal meanings, abilities, views and beliefs, personal qualities.

The content of human security culture is also considered in terms of personality qualities. Qualities are understood as psychological characteristics of a person. These are temperament, character (traits), will, emotional sphere, human abilities, etc. Some of them, for example, temperament, indicators of some cognitive processes are genetically determined and can change slightly under the influence of social environment. Others are shaped by the social environment and depend on both individual and collective social experience. These are character traits, will, emotional mood, physical condition, etc.

Let's consider the following personality traits:

- value orientations,
- personal meanings,
- abilities,
- views and beliefs,
- character.

Value orientations are the awareness of the priorities of ensuring personal safety, safety of other people, society and nature. The ideal is a perfect person prepared for safe living. The priority is human life and health over other values (economic, political, etc.) [401].

Personal meanings are the understanding that a person is independent, self-reliant, and free by his or her nature. The meaning of life is in self-realisation, which includes the development of readiness for safe life, increasing the safety of society and nature [402].

Aptitude (talent) is the ability to set goals in the field of safety, self-improvement of readiness for harmful and dangerous factors of life, self-control in dangerous and extreme situations, stress resistance, ability to maintain and restore strength and performance in dangerous and extreme situations [403].

In this case, attitudes and beliefs are presented as an element of the worldview that gives an individual or social group confidence in their views on safety and safe activities, knowledge and assessments of reality, dangers and threats. In contrast to suggestion, attitudes and beliefs are based on a person's informed acceptance of any information at the time of, before or after a dangerous situation. Formation of attitudes and beliefs in the culture of personal and social safety requires a lot of time and the use of various information, including one's personal experience in the past.

Character is one of the components of a personality, a unique set of properties of the psyche that determines the attitude to the world around him(her), the way he(she) reacts to the events and interacts with other people.

Thus, the content of safety culture contains priority areas of the basic culture of an individual, which include worldview, moral and psychological culture.

Therefore, the structure of personal and social safety culture should be considered as a unity of personal (values, motives, personal qualities) and activity (knowledge, skills, experience) components.

One of the main factors of safety is the activity of an individual based on his knowledge of the safety of society and other components of the environment. With basic knowledge, most of the impact of harmful and dangerous environmental factors can be prevented. Accidental impacts, which are almost impossible to prevent, should be treated as one of the components of human life.

In general, the formation of safety culture in all spheres of activity becomes a guarantee of the readiness of each person to live safely. Understanding the structural

components of safety culture and their interrelations makes it possible to develop the most effective methods of forming a culture of personal and social safety.

The goal of personal and social safety culture is safety itself, which is achieved as a comprehensive combination of material and technical, economic, civil, legal and other aspects of human life. The culture of personal and social safety is a component of general culture. Therefore, the fundamental properties of the general culture are inherent in the culture of personal and social safety.

The culture of personal and social safety consists of the substantive results of human activity and the knowledge, skills and abilities implemented in the course of their functioning, as well as the levels of development, methods and forms of communication [399] The culture of personal and social safety includes worldview ideas, various values, intellectual experience in solving various problems, experience of safe communication among people in their joint survival, etc.

A number of researchers distinguish three structural levels of personal and social safety culture: individual, collective and societal and state level [399].

The constituent elements of personal and social safety culture are: at the individual level - worldview, behavioural norms, individual values and preparedness of a person in personal and social safety culture. At the collective level - corporate values, professional ethics and morality, and personnel preparedness in this area. At the societal and state level - traditions of safe behaviour, social values, preparedness of the entire population in personal and social safety culture.

At the individual level, the following actions take place as part of personal and social safety culture:

1. Instilling values and beliefs in the vital importance of ensuring the safety of others.
2. Preservation and conservation of the environment.
3. Developing the existing understanding of the global nature of negative changes in the world that are related to anthropogenic activities.

4. Establishment of a worldview where the importance of solving environmental problems, as well as problems of countering terrorism and extremist activities, will be a priority.

5. Motivating safe activities and favourable living conditions.

6. Improvement of innate and development of vital abilities that provide the ability to reliably prevent and protect against various external and internal threats and dangers.

7. Imparting knowledge, skills and abilities to ensure safety in all sectors and areas of activity.

8. Compliance with the rules of safe behaviour in different conditions and situations.

At the collective level, the development of personal and social safety culture should include:

- establishing personal and social safety as one of the highest values of the organisation;
- creating an atmosphere of psychological safety mindset;
- development of professional responsibility in safety issues;
- conducting the necessary education and training of personnel in each area of activity affecting safety;
- moral and material incentives for personnel aimed at reducing the risks of dangerous situations and situations of uncertainty;
- clear regulation of actions, especially those related to high risks; control over compliance with labour discipline.

At the societal and state level, the development of personal and social safety culture should comprise:

- formation of a system of social values and priorities;
- social consciousness in the field of personal and social safety;
- development of the regulatory and legal framework and mechanisms to ensure safety;

- implementation of a policy to ensure the safety of society and individuals;
- reducing risks and protecting against emergencies.

The culture of personal and social safety, as a component of education, consists of knowledge, skills, abilities, norms and rules, the main function of which is to develop readiness to prevent and minimise harmful and threatening factors.

As a component of the general culture, the culture of personal and social safety includes some social processes. The main ones are as follows:

1. Material products of human activity. Their special purpose is aimed at preventing injuries, illnesses and damage to people and society. The main function of these products is to prevent and overcome the negative impact of hazardous factors on a person.

2. Social institutions whose main task is to ensure the safety of people and society. These institutions include: fire protection, units of the Ministry of Emergency Situations, emergency gas service, etc;

3. Forms of organisation of people's life, their relationships, whose task is to ensure individual and collective safety.

4. Embodiment of safety culture in the life of professionals and members of public organisations.

5. Branches of scientific knowledge that summarise and study the laws of safe personal and social life, as well as knowledge that captures the basic laws and rules of safe life. The results of the scientific study of the rules and patterns of personal and social safety are recorded using signs, symbols, graphics, text, etc.

It should be borne in mind that the culture of personal safety includes a number of additional components that are formed in the process of information and psychological influence. It is not only safe living, but also motivation, experience of self-improvement and readiness for safe living. Therefore, the concept of 'security culture' in relation to a person is broader than the concept of 'personal and social safety' (of a person).

Thus, safe human activity, which is formed by means of information and psychological influence, is the main component of the personal embodiment of safety

culture. Only through the education system, through fostering a culture of safety, it is possible to cultivate the ability to value one's life, which is closely linked to the lives of others.

Summarising the above, the culture of personal and social safety is understood as a complex of knowledge, traditions, ideals that ensure the self-preservation of a person, society and their development. The culture of personal and social safety is aimed to integrate experience, knowledge, skills, types of organisation related to safety, which are passed down from generation to generation, from person to person, from one society to another. The combination of the concepts of 'culture' and 'safety' concretises the cultural in the whole content of social life and is the life-sustaining foundation of society. The conceptualisation of these spaces within individual sciences structures the spheres of human presence and creates safe conditions for the life of an individual as a whole.

9.1.1.3 Formation of safety culture in educational institutions (in modern conditions)

One of the most effective ways to achieve a safe society is to develop and shape a culture of personal safety in life and at work by means of the educational process.

A necessary condition for the existence of human society is human life. Human life covers practical, intellectual and spiritual processes occurring in everyday life, public, cultural, professional, scientific and other spheres of life. The model of the process of life in the most simplified form is a component of two elements: human and environment. These elements are related to the constant bilateral exchange between the flows of substances, energy and information. In the "person - environment" system, it is planned to achieve two goals at the same time: the first goal is to achieve a certain effect in the process of activity; The second is to exclude the undesirable consequences of this activity. That is, the environment can be considered from two opposite sides. On the one hand, the safe condition of a person requires the stability of all factors of the environment, on the other - human life is impossible without the negative impact on the factors of the environment. A prerequisite for the formation of a culture of life

is to teach safe methods of interaction between man and environment. The formation of a safety culture aims to base on the following aspects:

- formation of a system of special knowledge on safe life;
- formation of a system of knowledge about psychological components of safe life.

The need for special purposeful formation of life culture is related to the active development and introduction of new technologies, a high technogenic load on the environment and a person, the spread of new types of dangers. Education, vocational training and continuous education, in the process of which a person should be aware of the need to be part of the system of safe life, are critical. [404]

The category "Culture of personal and social safety" is the subject of interdisciplinary study. By this time, three approaches have emerged on the issue of justification of the category "Culture of Safety of Life": socio-philosophical, psychological and pedagogical.

Within the framework of the socio-philosophical approach of scientists "Culture of personal and social safety " is understood as ".. The process and result of overcoming danger for the cultural life of society" [405]. Such dangers include: deformation of traditional norms and values of spirituality; uncontrolled expansion of low quality samples of mass culture; lifting of the conscious and the post -fountain of cultural heritage objects, etc. [405].

The proponents of the psychological approach state that cultural personal and social safety "means complex multidimensional psychological activity in the direction of change of younger generation of certain representations on the formation of competence of personal and social safety" [406].. The competence includes:

- willingness to ensure safety in the occurrence of risks and threats and is based on the knowledge about the psychological features of each age period of younger generation [407];
- socio-psychological characteristics of an individual, which expresses the attitude to the issues of ensuring a safe life and activity; motivational-value sphere and is realized in behavior [408].

In the context of pedagogical approach, the culture of personal and social safety is considered as a complex integral property of personality, components that act as an interconnected set liquidation, responsible for their life and life of others [409].

At the heart of all basic approaches is an understanding of the culture of personal and social safety through the prism of the triad of its elements in accordance with certain levels [399]:

- at the personal level: outlook, norms of behavior, personal values and preparedness of a person in the field of personal and social safety;
- at the collective level: values, ethics and morality, preparedness in the specified field;
- at the social and state level: traditions of safe behavior, social values, preparedness of the entire population in the field of personal and social safety.

Issues of personal and social safety culture and pedagogical practices of its formation are constantly in the focus of attention of educational institutions. It is an educational institution that should form the basis of competencies of safe life in society and form a motivation for safe activity.

A detailed study of the research on this issue [405] allowed us to mark two groups of principles of formation of personal and social safety culture in educational institutions - general and specific. The general principles are classified in:

- legality: legitimacy of activity;
- democracy: harmonization of interests of all participants of education (teachers, students, parents);
- close interaction with different security bodies and their employees in order to actively involve them in the educational process;
- continuity: continuous purposeful work on the formation of safety culture;
- planning and control. Purposeful pedagogical influences should be carefully planned and have a clear schedule;

- Scientific and information support. Pedagogical activity should be based on a scientific and organizational basis and modern ideas about risks, threats, dangerous life situations taking into account urgent information.

A group of specific principles contains the rules of:

- accessibility: the proposed material and its complexity must correspond to the age of the students and be provided in the optimal amount of information;
- combining theoretical material with a practical-oriented component. It will contribute to its best perception;
- positive orientation: focusing on positive in terms of personal and social safety, their favorable influence on personal safety;
- sequence: adherence to a certain algorithm, gradual pedagogical activity, logical availability of information;
- systematic: ensuring the constant assimilation of relevant knowledge in the form of a holistic system;
- consciousness and activity: stimulating students' activity in personal safety in everyday life. The main condition is the awareness of responsibility for your own health and safety.

In the context of human existence factors in modern society, the main directions of pedagogical influences regarding the formation of students' safety culture in students in educational institutions are distinguished. These are the following:

1. Formation of demographic safety:

- education of serious attitude to one's own life, health, physical, spiritual, intellectual development and improvement;
- prevention of negative phenomena;
- counteracting the spread of crime, deviant behavior, asocial manifestations.

2. Formation of information security. The main purpose is to counteract the negative influences of the mass media and the Internet on individual and public consciousness and psyche, the development of skills of competent orientation in the

information environment, maintaining constant readiness for adequate measures in information confrontation.

3. Formation of environmental safety. Education of norms to ensure the protection of vital interests of an individual, society, the environment from possible threats and risks due to the anthropogenic or natural impact on the environment.

4. Formation of technical safety through the development of safe use of technical means, formation of knowledge about the possible consequences of negligent treatment of technical devices and ways of elimination of dangerous and emergencies.

5. Formation of legal security through education of legal competence on life safety, readiness for legal assessment of threats, risks and events, constructing behavior in accordance with the current legislation and established legal rules.

6. Formation of psychological safety through the development of protection against all forms of discrimination, aggression, confrontation of psycho -emotional pressure.

Therefore, the search for effective means of forming personal and social safety culture is one of the most important problems of modern pedagogical science and practice.

Education and upbringing should be built on the basis of safety culture. Education in the field of safety is carried out throughout the life of a person. Modern society requires the formation of safety culture based on the application of scientific approaches and systematic inclusion of security issues to education and upbringing. The formation of a new safety culture, which is based on increasing the degree of development of an individual and society, is possible as a result of the transformation of society consciousness. At the same time, education should have a predetermined nature, which allows the society to move from the priority of protection in the current situations to the priority of preventing these situations, to eliminate the causes of threats, to ensure the safety of life.

The main tasks of education and upbringing in the field of safety are:

– for preschool children - instilling standards of safe behavior in the surrounding environment;

- for students of general institutions - formation of a responsible attitude to their own safety and safety of others; formation of environmental consciousness, awareness of the priority of safety in all areas of activity;
- for students of primary vocational education institutions - to form an understanding of the need to ensure safe conditions in a profession; compliance with environmental standards;
- for students of secondary and higher professional education institutions - development of the ability to make competent (from the point of view of safety) decisions in management of production, education, organization of team activities, formation of professionally significant characteristics;
- for older generations employed in the fields of production and service - formation of conscious implementation of norms and rules of labor and technological discipline;
- for non -working population - forming a responsible attitude to their own safety, security of society.

Safety culture is most favorable for students. It is easier to encourage them to obey the rules and norms of safe behavior, which will eventually serve as the basis of safe life. The development of self -awareness, personal self -determination, formation of personal position, professional orientation and determination of their social status are the main features of educational institutions` students [410].

Some components of students' safety culture should be distinguished:

1. Motivational and Value. Education of value attitude to a healthy lifestyle; development of the need for safe life; formation of positive motivation of safe life in students.
2. Cognitive. Mastering the basic concepts, definitions and terms by students; formation of optimal options for existing emergencies; mastering research methods for life.
3. Operational activity. Education of conscious adherence to a healthy lifestyle; formation of practical skills and skills of getting out of difficult situations; formation

of the ability to live safe and skills in owning health -saving technologies; control and self -control of the safety culture process.

In order to achieve the goal in shaping the safety culture of students, the following tasks should be determined:

1. Continuous maintaining interest in life safety and labor protection.
2. Education of conscious attitude to safety.
3. Formation of ecocentric consciousness.
4. Implementation of new security facilities.
5. Search and use of modern means of occupational safety and safety in the educational process.
6. Creating safe working conditions and training.

Thus, the culture of safety is an important integral block of the general culture of a man and society in the social conditions of the 21st century. Security culture is integrally related to social management, national security, education systems. Therefore, the formation of this block of knowledge should be constant purposeful, to be carried out taking into account the principles of philosophy of education and to be introduced in the education system. Of particular importance is the degree of mastering the necessary knowledge of safety at the appropriate levels of training. The main ones include the knowledge of the concepts of culture of personal safety and safety in the fields of social relations, in the technosphere, natural-anthropogenic and natural spheres; understanding of theoretical and practical ways of optimizing the life of socio-natural systems; knowledge about the world dangers, the ways how to protect from them; skills to restore life after emergencies and catastrophes. It is the meaning of the concept of "security culture". The key links in the formation of safety culture are: upbringing and education in continuous learning systems with the constant interaction of theory and practice of education in the sphere of safety culture and socialization of subjects` lives; continuous information and ideological work that supports and develops a healthy ideological environment as a set of vital ideas optimization oof coexistence of a man, society and nature.

9.1.1.4 Pedagogical aspect of forming a safety of activity

The determination of the degree of development of safety culture problems formation indicates a non-compliance of professional safety knowledge with the actual achievement of safety level. While forming the strategy of overcoming the causes of safety training inefficiency, the following disadvantages have been found:

- isolation of the principles of training on safety from the principles of performing the professional algorithm;
- inconsistency of tasks on operations safety with the possibility to use it;
- insufficient financial support of measures to ensure the safety of operations;
- non-use of stimulating systems of training in safety of operations;
- lack of a clear system of responsibility for failure to meet safety requirements and to apply liability measures;
- low level of labor and industrial discipline;
- insufficient level of knowledge in the field of safety among workers' and lack of managers competence in issues of safety;
- low level of control over safety efficiency, etc.

Currently, due to the widespread development of mass media, the overall problem is that the amount of knowledge acquired by future experts is superficial, quite large. This puts special requirements for the content and organization of their cognitive activity. Therefore, for the successful formation of professional knowledge and skills in any sphere, it is necessary to rely on the existing knowledge of students, activating their cognitive activity. Of particular importance is the fulfillment of this condition in the formation of knowledge in the field of professional training and formation of safety culture in any profession. For the performance of professional functions, first of all, the acquired knowledge must be systematized, have a practical orientation in order to ensure the personal safety of a specialist.

The issues of safety culture education are reflected in the works of leading scientists, in particular V.V. Beguna, V.M. Pllatinsky, OV Kobylansky, Acting Mikhailuk, I.M. Naumenko, LA Sidorchuk, B.D. Khalmradov and others. The analysis

of literary sources indicates that the links between courses and various disciplines in the system of knowledge when teaching safety disciplines are not fully used. This adversely affects the formation of knowledge and skills in the culture of safety of future specialists.

A general occupational safety system is provided to protect a person from professional dangers. This system includes a complex of means of influencing the profession and professional activity of a person aimed at preventing traumatism factors.

The overall safety of professional activity is ensured by a three -level security system:

1. The first level is a person's level.

There are four factors that determine a person's ability to counteract the danger in profession:

1. A purely biological factor consisting of the natural properties of a person caused by unconscious regulation. A complex of unconditional reflexes with the help of which a person unconsciously responds to different dangers. For example, in the case of impaired optimal environmental conditions in a human body, there are appropriate reactions that are created to compensate for harmful effects and adapted to the new environmental conditions.

2. A factor that determines the individual features of mental reflection and functions of a person. The determining reaction of a person can be:

- psychophysiological qualities and psychological state;
- sensitivity to danger signals;
- identification of a hazardous situation;
- ability to detect dangers;
- respond to these signals;
- emotional reactions;
- adequacy of the reaction, which depends on the individual characteristics

and structure of the CNS.

3. A factor that arises from a person's experience, skills, knowledge, abilities. It includes professional qualities of a person, ability to safely resolve the problem.

4. A factor that characterizes a person's orientation in the profession. It includes motivation for safety in the profession.

A person is a complex self-organizing system, capable of using his capabilities, depending on the situation, to achieve the desired result at minimal risk. For example, if a person has low biological qualities to counteract hazards, he or she can compensate for this by developing professional skills and high motivation for workplace safety. And vice versa. If a person has high biophysiological and professional qualities to counteract danger, due to low motivation to work, he or she may be poorly protected from danger.

2. Professional factors.

The profession is always regarded as a comprehensive source of danger. Among the various types of activity, there are high-risk occupations. Dividing the professions into high and low risk categories, it should be noted that accidents, as experience shows, most often occur when working with low risk. It can be explained by a number of reasons. First of all, only persons who have special safety training are allowed to work with high risk. Secondly, more advanced protective equipment is used in such work. Thirdly, there are significantly fewer hazardous jobs than ordinary ones. Fourthly, the high cost of making a mistake when working with high risk makes an employee take his job more seriously.

3. Occupational Safety.

Occupational Safety System is intended to solve three main tasks:

1. To reduce occupational hazards. It is assumed that occupational safety should be incorporated into the design of equipment and working conditions.

2. To promote human protection at work, to protect a person from harmful professional factors or to reduce their level of influence. To protect a person from harmful occupational factors or reduce the level of their impact, special mechanisms are built into technical devices that perform the functions of protective equipment. There is one serious requirement for all protective equipment: while performing their protective functions, they must not interfere with the performance of the main professional algorithm.

Therefore, the use of protective equipment should be integrated into the work process and not be an “add-on” to work operations.

Personal protective equipment, unlike stationary equipment, is not provided to machines, but to the person working directly. Personal protective equipment includes helmets, goggles and protective clothing. Moreover, while stationary means are devices, personal protective equipment is in full contact with a person, limiting to some extent and sometimes restricting his or her actions. Therefore, the development of personal protective equipment that would protect a worker, not only interfere, but also facilitate the main labour process is the most difficult psychological and technological problem of occupational safety. An example of personal protective equipment that is part of the labour process is safety glasses with corrective glass. By improving vision, such glasses contribute to greater work efficiency and at the same time protect the eyes from the effects of hazardous production factors.

3. Training in a safe professional algorithm. development and implementation of labour safety rules, training of employees, control of knowledge and compliance with these rules, formation of a culture of safe professional activity at different levels of the professional algorithm.

In the course of employment, an employee has to comply with professional rules, i.e. the relevant restrictions imposed on him/her by the production process. These restrictions are usually accepted by an employee as an objective necessity, without which the purpose of his or her work cannot be achieved. Safety rules impose additional restrictions on them. When these restrictions are insignificant or coincide with the limitations of the production process, they do not create additional difficulties for a person. However, more often, safety rules have their own additional restrictions, which to some extent complicate the implementation of a professional algorithm. Therefore, it is very important that vocational training is carried out taking into account both the rules of the production process and the basics of safety in the profession. This results in the simultaneous development of skills to perform a professional algorithm, mastery of safety rules in the profession, and the formation of a personal safety culture.

Thus, the occupational safety system, by influencing a person, contributes, on the one hand, to improving skills for safe work, motivation for safe work and the formation of a safety culture, and, on the other hand, provides a person with rules and individual protective equipment, thus further enhancing his or her protection. The interaction of all three subsystems considered (a person, occupational factors and occupational safety system) is the basis for the actual level of personal safety in professional activities.

The content of education in a higher education institution is a category that is conditioned by the needs of society and production and is reflected in the requirements of society to the system of knowledge, skills, worldview and professionally important personal qualities of specialists [411].

If a general understanding of the components of the safety culture of a future specialist's activity implies the presence in its structure of culture, professional culture and specific knowledge, skills and abilities that constitute the safety of the acquired profession, then in modern conditions, an important component of it is the performance of organisational and managerial functions. In recent years, the socio-technical factor has become particularly important in the formation of a safety culture, with the main focus not only on the technical components of profession, but also on the human factor, i.e. the content and nature of human activity, its value, social and psychological aspects.

The problem of occupational safety culture is now becoming one of the central issues in a comprehensive study of occupational safety components. Its solution reflects a person's desire to work safely in a dynamic society, to avoid risks and hazards in social and professional systems, to develop an effective occupational safety system and to continuously improve skills in managing it. Recent studies show that the issue of developing knowledge of occupational safety culture remains relevant [412]. Especially against the background of computerization of production, which is the reason for the growth of the man-made factor in the emergence of special professional situations. It should be noted that in the context of reforming higher education, the culture of safety should be formed and developed in a specially organized educational and pedagogical activity. Namely, a rational combination of innovative forms and

methods of teaching with traditional ones, a comprehensive combination of general and special disciplines, solving organisational, technical, educational and methodological issues, etc.

The content of education in a higher education institution is a category that is conditioned by the needs of society and production and is reflected in the requirements of society to the system of knowledge, skills, worldview and professionally important personal qualities of specialists [412]. Today, it is of particular relevance to develop in future specialists an understanding of not only the main aspects of safety but also the acquiring of sustainable skills in safe working practices and the formation of a safety culture at all levels of production algorithm. It is important to show the connection between this area and the general ways of solving professional problems: technical, social and economic. The occupational safety system takes an important place in the structure of professional activity. It must be present in any of its components: social, psychological, technical, organisational and scientific. Therefore, it is necessary to develop in future specialists an understanding of a personality, his life and health as the highest values. This task is becoming complex and should be implemented not only in professional training while learning the specialized disciplines, but also in the study of safe work principles [394].

The need to improve safety training methods for future specialists appeared due to the fact that in recent years there has been a noticeable decrease in the permissible level of hazards and harmful loads in various industrial sectors of Ukraine, i.e. there is a reorientation in the values and assessments of modern society, primarily in relation to the human factor.

One of the important components of occupational safety culture is the development of knowledge on the safety of professional activities. The formation of knowledge should be based on the following aspects:

- 1) general and specialised disciplines should have a close connection with the elements of occupational safety disciplines;
- 2) teaching special courses on occupational safety.

The achievement of specific results of knowledge formation is the development and implementation of special courses in training future specialists that will ensure high competence of professionals in the field of occupational safety.

Formation of the knowledge system in this way will make it possible to provide systematic methods of creating and maintaining occupational safety and will allow to separate the essence of the safety area from the content of other disciplines and to determine the links between disciplines [411].

It should also be noted that the specialized knowledge of occupational safety is possible only if specialists are familiar with the issues related to the regulatory and legal documents on occupational safety as well as occupational safety terminology and are aware of the current state of problems and the main tasks of preventing special occupational situations.

The organisation of learning the principles of occupational safety is based on the social need to create safe conditions for human life and activity. The acquired knowledge on occupational safety should have a clear practical orientation, promote the ability to make a quick and correct decision regarding the situation and the most appropriate response to the occurrence of standard and especially non-standard production situations. These modern requirements set a number of goals and objectives for the development of safety skills and safety culture in specialists training, such as:

- 1) forming an awareness of the importance of occupational safety disciplines;
- 2) providing in-depth knowledge of the regulatory and legal framework for occupational safety, including the organisation and management of occupational safety at all levels and stages of professional algorithm;
- 3) formation of knowledge about the principles, methods and means of ensuring occupational safety and the ability to find reasonable optimal organizational, managerial and technical solutions for each specific case, deeply understanding the essence of the proposed solutions and their possible consequences;
- 4) development of knowledge and skills to predict and assess possible economic, social and environmental consequences of decisions, giving preference to moral and ethical requirements [394].

The formation of safety culture, professional training on safety issues in modern conditions, creation and maintenance of safe working conditions are possible if the following requirements are met: all specialists have a sufficient level of knowledge, skills and abilities on occupational safety issues.

Professional training is an important component of safety culture formation. The professional training of a safety specialist includes: professional orientation, professional selection and training in safe working practices. Professional orientation is a system of forms, methods, measures of influence on students, employment of persons who have consciously chosen a type of labour activity. An essential component of vocational guidance is the rational placement and efficient use of personnel, taking into account the abilities and aptitudes of each employee. Professional selection is a component of professional orientation designed to identify professional abilities, namely, compliance with the psychophysiological characteristics of a human body to perform the functional duties of the chosen profession. The goal of creating a safety culture is to convince employees of the need to comply with labour safety requirements, to foster a conscious attitude to measures to improve working conditions and to promote the scientific achievements and best practices.

Safety training is an important component of safety culture. The training is provided at industry-specific qualification courses, where modern safety techniques, methods and tools are studied. The organisation's technical staff improve their knowledge of safety issues at special courses in industry-specific training centres.

Developing a safety culture is an important component of professional training. Lectures, talks and conferences are used as a means of formation. Information stands on occupational safety are set up, and express information on accidents, occupational diseases, and conflicting occupational situations is issued. One of the most effective means of creating a safety culture is the creation of popular science films.

Experience has shown that there is no such thing as a completely safe activity. According to the axiom of potential danger, no area of professional activity and the environment can be considered completely safe [411]. In this regard, the development

of knowledge and skills in safe professional activity is an important element of future specialists training in higher education institutions.

A prerequisite for the development of skills and abilities of a modern specialist is to learn safe methods of interaction between a person and his professional environment. In 1971, American psychologist A. Skinner pointed out that in practical activities, a person relies on two categories of knowledge. The first category is formed by knowledge obtained from a teacher, a more experienced colleague or from information sources, which he defined as 'cold knowledge'. The second category includes the knowledge accumulated by a person in the course of his or her own practical activities, gained through his or her own experience and mistakes. According to Skinner, it is 'hot knowledge' [394].

In order for a specialist to focus on 'cold' knowledge in his professional activity, it is necessary to change the teaching methods that teachers use in their pedagogical practice significantly, taking into account the current needs of society and the requirements for the professional competence of a specialist. The level of knowledge should be such that in their future professional activities, specialists will be able to apply safe working methods and take appropriate occupational safety measures consciously.

The formation of competencies in occupational safety of future specialists should be based on the following aspects:

- 1) general and specialized disciplines should have a close connection with the elements of occupational safety disciplines;
- 2) teaching special courses on occupational safety. The achievement of specific results of knowledge formation is the development and implementation of training courses in the process of training future specialists that will ensure high competence of specialists in the field of safety [413].

The formation of occupational safety culture of future specialists in higher education institutions, in particular in the humanities universities, is based on teaching such courses throughout the entire period of study as:

- 1) Health psychology and occupational safety;

- 2) Psychology of uncertainty and risk in professional activity;
- 3) Psychological and pedagogical principles of safety in education.

These blocks of disciplines encourage safety teachers to apply new approaches and innovative teaching methods to ensure the proper quality of training of future specialists. It should help to reduce the period of adaptation of specialists to the conditions of their professions and to professional situations.

Violation of the systematic and logical approach to the formation of competences, abilities and skills in the field of occupational safety leads to a superficial study of the cycle of occupational safety disciplines by students. As a result, today young professionals often have to master the functions of occupational safety and health on their own in a haphazard manner, directly in their professional environment. It can lead to an increase in the number of wrong decisions, erroneous actions, occupational risk and professional burnout. Unfortunately, it poses a serious threat to human life and health. The catastrophic increase in occupational injuries can only be stopped by introducing effective innovative methods of teaching the principles of occupational safety.

Currently, pedagogical science is actively implementing the trend of STEAM approach, one of the breakthrough tools for transforming modern higher education through science. The STEAM approach is aimed to develop an individual through the formation of competences, a natural science picture of the world, worldview and life values using a transdisciplinary approach to learning based on the practical application of Scientific, Technical, Engineering, Artistic and Mathematical knowledge and skills to solve practical problems for their further use in professional activities. Students learn to harmoniously combine scientific accuracy and creative freedom in their work [414].

The most important goal of the educational process in the field of safety is to develop in future specialists a mindset based on a deep understanding of its main principle - the unconditional priority of safety in performing any professional and personal tasks. Therefore, there is a need to form a special kind of culture that takes into account the specifics of human activity in the context of reaching the limits of growth of safe environmental transformation, a culture of personal and social safety.

At the methodological level, in relation to the topic under consideration, we can identify the main areas of the STEAM approach where, in addition to solving engineering problems, students use in their project such activities as:

- acquiring social competence (mastery of joint activity and cooperation methods, accepted methods of professional communication); create a climate of safety in the workplace;
- learning to constructively criticise and defend their opinions;
- mastering soft skills;
- learning to generate ideas in conditions of uncertainty and act in conditions of danger;
- demonstrating creative activity in ensuring personal and social safety (ability to see problems; non-standard thinking; ability to perceive innovations);
- enhancing the integration of knowledge of individual aspects of personal and social safety into a single interconnected (interdependent) complex;
- transferring the focus of perception from thinking to thought-making, which together contributes not only to the enhancement and development of creative abilities, but also to the formation of experience in making non-standard decisions in the course of professional activity.

Thus, summarising all of the above, we believe that the use of the STEAM approach and special pedagogical conditions in the formation of an occupational safety culture of future specialists in the process of their professional training:

- enhances the integration of knowledge of individual aspects of ensuring the safety of activities into a single interconnected (interdependent) complex;
- strengthens the applied orientation of skills and abilities to ensure the safety of activities;
- develops the student's cultural outlook, as well as a variety of techniques, means and methods in their future professional activities;
- increases the part of creative forms of learning while mastering knowledge and skills of safe activity in order to initiate students' activity;