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# METHODOLOGICAL GUIDELINES FOR THE FORMATION OF A CULTURE OF SAFETY IN PROFESSIONAL ACTIVITIES IN FUTURE ENGINEERS OF LABOR PROTECTION

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**Abstract**

*Relevance.* In modern conditions, when the country is in a military conflict, workers are faced with stressful situations and an increase in the number of industrial injuries. Ensuring safe working conditions, prevention of accidents and diseases at the workplace continues to be an important problem. This requires the training of highly qualified workers, in particular occupational safety engineers, who have great responsibility, stress resistance, the ability to communicate effectively, the ability to quickly make decisions in dangerous situations and establish an effective occupational safety management system.

*Aim.* The purpose of this article is research and analysis of scientific and practical approaches to the formation of a safety culture in the professional activity of future occupational safety engineers.

*Methods:* theoretical (induction, deduction, synthesis, generalization and modeling) and empirical, in particular praximetric (research and analysis of pedagogical experience, training programs, work plans of future occupational safety engineers, as well as evaluation of the results of their activities).

*Results.* It was investigated that the organization of the educational process, based on the use of systemic, technological, pedagogical interaction, cooperation and co-creation, personal and activity approaches; content-procedural, task-oriented, dialogic, competence-based, individual-differential and simulation-game approaches, requires: systematic study by scientific and pedagogical workers of higher educational institutions of Ukraine of the research experience of students and the differentiation of this experience depending on the level of expressiveness of its components (cognitive, activity, axiological ); creation of a system of educational and research tasks aimed at the gradual expansion of students' research experience; development of effective methods, techniques and forms aimed at organizing research activities of students; creation of educational situations that contribute to the simulation of real professional cases in which students learn new knowledge and methods of action.

*Conclusions.* It has been established that the integration of the presented scientific and practical approaches to the professional training of future occupational safety engineers in the system of higher education of Ukraine is effectively implemented in practical activities through the selection of appropriate tasks, methods, techniques, forms and means of training. The application of these components in the educational process of the university represents a significant potential for increasing the effectiveness of the professional training of future occupational safety engineers in educational institutions of higher education of Ukraine.

**Keywords**: *future labor protection engineers, occupational safety culture, higher education system, educational process, forms, methods and means of education, scientific and practical approach*

**Introduction.** The main task of the modern system of higher education in Ukraine is to develop the creative potential of future specialists who are able to transform society and create new forms of social life, to show a non-standard approach to the performance of their professional duties. To achieve

this goal, it is necessary for scientific and pedagogical workers of higher education institutions to understand the methodological and psychological and pedagogical aspects of educational, research and labor activities, as well as the logic of educational processes aimed at developing students' creative abilities.

The formation of future specialists involves, first of all, promoting the self-development of their natural abilities and creative potential, for which it is necessary to create appropriate conditions that ensure the acquisition of new knowledge, its preservation and use depending on functional needs that go beyond the cognitive aspect. The organization of professional training of future specialists should be based not only on subject logic, but also on the logic of future professional activity, which involves constant interaction with people and direct communication in the process of professional practice with the aim of providing assistance to an individual or a group of people, as well as ensuring effective direct or indirect contact.

In modern conditions, when martial law has been declared in the country, a tense situation is observed, and the number of industrial injuries is continuously increasing.

The problem of ensuring safe working conditions and preventing accidents, accidents, and occupational diseases during work remains relevant. Based on this, there is a need to train occupational safety engineers who have a high level of responsibility, the ability to communicate effectively, resistance to stress and the ability to quickly make decisions in traumatic situations, as well as to develop effective occupational safety management systems.

Therefore, it is necessary to modernize the professional training of occupational safety engineers with a focus on forming a high level of occupational safety culture in them. It is important that they have not only technical knowledge and skills, but also a developed awareness of security, be able to analyze risks and take appropriate measures to prevent them. This modernization of engineer training will contribute to ensuring safe working conditions, reducing the number of accidents and improving general labor protection in Ukraine.

**Research sources.** Of particular interest to our research are the works of domestic and foreign scientists who widely shed light on current aspects of the philosophy of education, such as V. Andrushchenko, I. Zyazyun, V. Kremen, and others. Our attention is also drawn to studies devoted to continuing professional education, the authors of which are R. Gurevich, A. Gurzhii, V. Lugovoi, P. Luzan, N. Nychkalo, V. Orlov, V. Radkevich, S. Sysoeva, O. Shcherbak and others. In addition, important theoretical foundations of the professional development of specialists are revealed in the works of L. Bazil, T. Herlyand, A. Kalenskyi, M. Prygodiya, O. Titova, V. Yagupov, and others. In our research, we pay special attention to the psychological aspects of professional activity, which are considered in the works of I. Bekh, Z. Vyatrovsky, P. Halperin, E. Zeyer, S. Maksimenko, T. Novatskyi, V. Rybalka, and others.

We also study the psychology of work, in particular, the works of M. Weber, F. Taylor, A. Maslow, J. Mooney, E. Mayo, G. Ford and others. Organizational aspects of the workplace with an ergonomic orientation, which include the research of N. Bernshtein, A. Gastev, V. Chebysheva, I. Spielrein and others, are also the subject of our attention. We also consider the human factor in traumatic situations based on the works of V. Bodrov, L. Vainstein, A. Yemelyanov, M. Kotyk, A. Leonova, D. Merzlyakov and others. Safety culture and life safety culture are studied on the basis of the works of various authors (M. Astakhova, V. Bielan, A. Borkanyuk, L. Horina, I. Grabovska, N. Husyatynska, V. Demyanchuk, A. Dronov, T. Zyryanova , M. Zorina, S. Ignatenko, H. Kazmina, A. Kobylansky, S. Kosynkina, L. Kravchenko, A. Kuzmenko, N. Kulalayeva, V. Malimon, V. Moshkin, I. Nemkova, T. Petukhova, V. Prokhorova, O. Pulyak, Yu. Razlivinskikh, L. Romaniv, O. Tretyakov, V. Fedorchuk-Moroz, O. Sharovatova and others. We also explore safety climate and organizational culture based on works by A. Williamson, R. Díaz, D. Zohar, D. Cabrera, S. Cox, M. Cooper, A. Oliver, T. D'Oliveira, N. Pidgeon, R. Flynn and others. We analyze scientific theories related to the formation of motives, based on the works of J. Atkinson, F. Herzberg, E. Ilyin, D. McClelland, A. Maslow, X. Heckhausen, D. Uznadze, and others. We also consider security theories contained in the works of S. Belov, V. Devisilov, V. Sapronov, V. Moshkin, O. Rus, M. Sulla and others.

Despite a wide range of various studies, the problem of forming a culture of occupational safety among future occupational safety engineers remains insufficiently studied. Scientific and practical approaches to this process are not fully reflected and not disclosed in full.

**The objective** of this article is research and analysis of scientific and practical approaches to the formation of a safety culture in the professional

activity of future occupational safety engineers.

**Research methods:** theoretical (induction, deduction, synthesis, generalization and modeling) and empirical, in particular praximetric (research and analysis of pedagogical experience, training programs, work plans of future occupational safety engineers, as well as evaluation of the results of their activities).

**Results and discussion.** In Ukraine, the content, structure and functions of higher education are implemented through a holistic educational process. The modern branch of knowledge related to the formation of a safety culture of professional activity among future labor protection engineers is based on a systemic approach.

After analyzing scientific research and the practice of training specialists in higher educational institutions, we can determine the specifics of scientific and practical approaches to the formation of a culture of occupational safety among future occupational safety engineers. To date, we offer the following *scientific and practical approaches to the formation of the safety culture of professional activity among future occupational safety engineers: systemic, pedagogical interaction, content-procedural, technological, problem-based, individual-differential, dialogical, personal-activity, competence-based and imitative-playing.*

Complex studies of domestic scientists, such as S. Goncharenko, O. Kustovska, V. Kushnir, V. Semichenko, Yu. Surmin, focus on a systematic approach to the educational process in institutions of higher education, where the professional competence of future specialists is formed. Their research and experimental searches are based on the important proposition that the personality of a modern specialist develops within the framework of a holistic pedagogical process. Only under such conditions can a specialist be trained who has a systematic understanding of the educational process as a holistic phenomenon and shows readiness for its implementation.

*The technological approach* to understanding the readiness of the formation of a safety culture of professional activity among future occupational safety engineers is based on the interaction between the teacher and students, as well as the active cognitive activity of the latter. This approach allows students to organize educational material in such a way that they are actively involved in the learning process and develop all aspects of their personality, which leads to its further improvement. Modern researchers note that the active role of the student in the pedagogical process helps to effectively prepare him for future independent professional activity, giving him the opportunity to rely on his own initiative and strength and providing creative freedom in professional actions.

In most European countries, a technological approach to the organization of student education is used, which gives them the opportunity to independently formulate goals, set tasks, plan and organize work, make management decisions, monitor and evaluate the results obtained. This approach promotes creative interaction between students and teachers, where the pedagogical process turns into a mechanism for transferring professional knowledge, abilities, skills, as well as general human and professional values.

The organization and direction of the educational process in universities with the aim of forming a culture of occupational safety among future occupational safety engineers is based on the leading idea of pedagogical interaction, cooperation and co-creation between teachers and students. This idea involves setting creative educational tasks that require joint forecasting, modeling and development of ways to solve them, performing tasks using different approaches and formulating conclusions about the effectiveness of the obtained results.

«The psychological strategy of interaction during the educational process is the inclusion of each student in mastering the educational material, relying on his personal experience» (Gluzman, 1998, p. 90). Pedagogical interaction is characterized by the creation of an atmosphere of psychological comfort in classes, which contributes to the cognitive and emotional development of the student, as well as the creation of conditions for his self-expression and independent actions. In this context, each student must be aware of and learn the principles of pedagogical interaction, which include the intensity and expansion of the volumes and forms of communication, ensuring psychological comfort for self-disclosure of the individual and creating an individual program of interaction with each student. Students who master the principles of pedagogical interaction must learn to establish contacts and practice productive professional communication, which is based on mutual acceptance, respect and trust for each other.

*The personal-activity approach* to the formation of the safety culture of professional activity among future occupational safety engineers is aimed at the development and self-development of the student by identifying and taking into account his unique characteristics as a person who actively learns and engages in professional activity. Person-oriented

education is based on the recognition of the right of each student to his own path of development and is aimed at maximally revealing his potential, satisfying his own requests and finding answers to the question: «What did I achieve, what results did I get and with what efforts was this achieved? ».

In the content of education, as well as in the means and methods used in it, the student is given the opportunity to independently choose the subject material, its form and type. In order to achieve these goals, individual programs (concepts, maps, diaries) are developed that promote the development of research thinking. Group classes based on dialogue and simulation role-playing are also organized, and the learning material is integrated to implement the method of research projects that students carry out independently. The central element of the studied approach is a *person-oriented situation*, where the student searches for personal and professional meaning, forms an image and model of his activity, and evaluates the results of a creative search for optimal ways of self-development.

The technology of forming a personally-oriented situation involves three main characteristics: a) the situation has a dialogic nature and can take on different forms and modifications; b) it is related to the real life of the student and is contextualized in the sphere of his life activity; c) involves free, creative and socially active activity. According to this, the experience of the future occupational safety engineer is formed through the performance of the functions of choice, expression of one's own opinion, definition of values and implementation of autonomous life plans. The source of this experience is all aspects related to the orientation of the student's personality, such as motives, interests, needs and goals.

The basis of the *content-procedural approach* to the formation of the safety culture of professional activity among future occupational safety engineers is the consistency between the content and organizational forms, methods and means of pedagogical interaction aimed at stimulating the active cognitive activity of the student (Sapozhnykov, 2017, p. 360).

The content-processual approach combines educational information with the process of its assimilation, which stimulates the active cognitive position of students and contributes to the development of their professional properties and personal qualities. This approach, similar to the technological approach, contributes to the structuring of educational material with the aim of involving students in an active learning process and influencing all aspects of their personality, contributing to their further professional growth. Elevation to the level of an actor, an active participant in the pedagogical process, allows to effectively prepare students for independent professional activity based on personal initiative and own efforts, and gives them freedom in professional performance.

The content-procedural approach is in contrast to the situation when students are directed to the simple accumulation of knowledge that is not directly related to their future professional activities. With the help of this approach, students are oriented towards active understanding and application of knowledge in the context of their professional needs (Sapozhnykov, 2017, p. 362). Students transfer stereotypes of behavior that were formed in the institution of higher education to their further independent professional activity.

*The task-based approach* to the formation of the safety culture of professional activity among future occupational safety engineers involves the inclusion of tasks in the educational material that activate the thinking processes of students, develop their ability to apply theoretical knowledge in practical situations, as well as understanding the possibility of their practical application in professional activity. The task-based approach to education in institutions of higher education is based on the fact that the assimilation of educational material occurs through the solution of special educational and research tasks. It is important to note that training covers not only fundamental educational concepts, but also types and methods of educational activity, in particular research. The educational and research task is a means of transforming new knowledge into practical activity, which is the simplest model of this knowledge. When students master the concepts and theoretical propositions that are presented in the form of a thinking task, they feel the need to implement this knowledge in practical actions. The task-based approach to the educational process in a higher education institution provides: transformation of connections between theoretical positions; variable presentation of educational material with setting different goals; use of knowledge in similar and creative situations; systematization of knowledge; independent finding of evidence and answers to questions.

The application of a problem-based approach to learning encourages students to quickly adapt to professional activity (Sapozhnykov, 2017, p. 363). Adaptation processes in this case can be understood as a relationship between the "ideal aspirations" of an individual and his ideas about a certain way of

professional behavior, compared to the real possibilities that students can implement in practical activities.

*A dialogical approach* to the formation of a safety culture of professional activity among future occupational safety engineers includes the use of hypotheses, questions, models and the creation of images as means of stimulating ideas and reflections. This approach contributes to the identification of contradictions, paradoxes and difficulties, and also contributes to the active solving of problematic problems by students. A dialogic approach to learning involves the use of questions and discussions in the form of a dialogue, which helps students find their own solutions. It is important to ensure equality between the teacher and students in actions, thoughts and conclusions during dialogic learning. This approach contributes to the development of students' abilities to identify educational problems, find ways to solve them, and actively participate in a dialogue situation.

In modern Ukrainian institutions of higher education, the leading approach to the formation of the safety culture of professional activity among future occupational safety engineers is the competence approach. The competent approach focuses on achieving the main goals of education, such as learning, self-determination, self-actualization, socialization, and the development of the creative individuality of future teaching professionals. It is aimed at the development of a wide range of competencies necessary for successful professional activity. A competent approach allows students not only to acquire knowledge, but also to develop the ability to apply this knowledge in practical situations, solve problems, work in a team and adapt to changes in the professional sphere (Kondrashova, 2007, p. 122).

The content of the competence approach includes a set of abilities of the future specialist, which ensure the effectiveness of his professional actions. These abilities include fundamental and specialized knowledge, learning skills and abilities, means of thinking and responsibility for one's own decisions and actions. When structuring the educational content based on the competence approach, it is important to observe the proportions between fundamental and applied knowledge, to adapt training to the individual socio-psychological characteristics of students. It is important to avoid the shift of personal motivations from true values to abstract demands, as well as not to have a negative impact on the personal dignity and qualities of students. With the help of the competence approach, it is possible to implement a model of higher education that familiarizes future specialists with the basics of a systematic understanding of socio-professional reality and practical aspects of scientific knowledge. The implementation of this model will contribute to increasing the significance of professional knowledge and its use as a tool of practical activity. A competent approach contributes to the creation of a culture of knowledge and education among students, contributes to the development of their social vision, attitude to personal growth and professional development. The formation of the main components of the personality of future specialists - competence, competencies and professional qualities - is impossible without the individualization of the educational process in a higher educational institution.

*An individual and differential approach* to the formation of a safety culture of the professional activity of future occupational safety engineers is the basis of their creative training. Individualization of education acts as a procedural aspect of the educational process. A feature of the educational process in a higher educational institution is the combination of an individual approach with collective and group forms of educational work. Practice shows that underestimating the individualization of training or excluding collective and group forms of work from didactic technology can negatively affect the level of professionalism of future specialists. In the modern sense, an individual approach is a form of interaction between a teacher and a student, where the pedagogical influence is aimed at providing support to the future specialist in revealing his own individuality, developing abilities and skills in various situations to find his own style of activity (Kondrashova, 2007, p. 125). The individual-differential approach encourages students to realize their potential and has a positive effect on their cognitive activity and professional development. Its main rule is that the stimulation of students' activity contributes to the discovery and development of their abilities and opportunities, as well as the consolidation of professionally important qualities of their personality. The essence of the individual-differential approach is to help the future specialist in identifying his own features and what makes him unique. Finding oneself in the chosen professional field, developing pedagogical skills and mastering the profession is a purely individual process. The teacher of the institution of higher education acts as a consultant and an active assistant, but the main attention of each student should be directed to his own efforts that ensure

professional growth. The main goal of the individual differential approach is to help the future specialist find your place in the chosen profession, get closer to understanding your professional opportunities and abilities, find your own niche in the chosen profession, expand your understanding of professional opportunities and reveal your abilities, as well as learn to use them effectively and creatively in practical activities. The teacher emphasizes that an individual approach to higher education ensures the application of methods that affect each individual, taking into account his characteristics and capabilities, the creation of conditions that contribute to the development of professional qualities, the acquisition of the necessary knowledge and skills, as well as the satisfaction of the needs and interests of future teachers.

Orientation of higher education on the personality of the student requires the use of a *simulation-game approach* in the formation of the safety culture of professional activity among future occupational safety engineers. The use of game forms and methods in the training of future occupational safety engineers allows to optimally take into account the requirements of their chosen specialty, creating situations in which they can quickly and effectively solve professional problems, acquire communication skills and develop creative thinking. The use of a simulation-game approach in education replaces traditional methods with more rational and effective ones, in particular by means of simulation-game modeling. This form of activity encourages students to be creative and express themselves. While performing role-playing tasks, students not only use means of communication, but also anticipate game actions, reincarnate, improvise and create. The simulation-game approach in conducting educational classes creates an emotional and intellectual environment in the student audience. It provides psychological comfort for every student, ensuring his psychological security. Performance of game roles does not undermine social status and does not cause feelings of hopelessness or discomfort. The application of the simulation-game approach contributes to the understanding of the dependence between the quality of performance of a game role and success in professional development. It encourages the formation of a positive attitude towards simulation-game activity, develops independence and creativity. In addition, this approach contributes to the inclusion of students in the system of interaction, cooperation and co-creation with teachers, where everyone has the will to act and is active in a simulation-game situation. It also promotes the development of reflexive and empathetic processes that allow managing the emotions and state of participants in simulation-game activities, showing flexibility and accepting participants in their own uniqueness, without trying to impose a different approach to fulfilling educational roles. A simulation-game approach to learning creates conditions for training creative, active students who are able to see the future, formulate problems, pose and independently solve them, develop strategies for professional activity and use the communication skills of a future occupational safety engineer.

**Conclusions**. Thus, the organization of educational activities is based on a combination of systemic, pedagogical interaction, content-procedural, technological, problem-based, individual-differential, dialogic, personal-activity, competence and simulation-game approaches. This involves a systematic study by scientific and pedagogical workers of higher educational institutions of Ukraine of the experience of students and the distribution of this experience according to various components (cognitive, activity, axiological). It also includes the creation of a system of educational and research tasks aimed at gradually enriching students' research experience, identifying optimal methods, techniques and forms of organizing students' research activities, as well as modeling educational situations that help students learn new knowledge and skills.

The implementation of the above scientific and practical approaches to the professional training of future occupational safety engineers in the system of higher education of Ukraine is successfully implemented in practice thanks to the selection of appropriate tasks, methods, methods, forms and means of training. The application of these approaches in the educational process of higher education reveals a significant potential for increasing the efficiency of professional training of future occupational safety engineers in universities of Ukraine.

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# МЕТОДОЛОГІЧНІ ОРІЄНТИРИ ФОРМУВАННЯ КУЛЬТУРИ БЕЗПЕКИ ПРОФЕСІЙНОЇ ДІЯЛЬНОСТІ У МАЙБУТНІХ ІНЖЕНЕРІВ З ОХОРОНИ ПРАЦІ

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**Реферат**

*Актуальність.* У сучасних умовах, коли країна перебуває в стані військового конфлікту, працівники зіткнулася зі стресовими ситуаціями та зростанням числа виробничих травм. Забезпечення безпечних умов праці, запобігання аваріям, нещасним випадкам, професійним захворюванням на робочому місці продовжує залишатися важливою проблемою. Це вимагає підготовки висококваліфікованих працівників, зокрема інженерів з охорони праці, які мають велику відповідальність, стресостійкість, вміння ефективно спілкуватися, здатність швидко приймати рішення в небезпечних ситуаціях та встановлювати ефективну систему управління охороною праці.

*Метою* цієї статті є дослідження та аналіз науково-практичних підходів формування культури безпеки в професійній діяльності майбутніх інженерів з охорони праці.

*Методи:* теоретичні (індукція, дедукція, синтез, узагальнення та моделювання) та емпіричні, зокрема праксиметричні (дослідження і аналіз педагогічного досвіду, програм підготовки, робочих планів майбутніх інженерів з охорони праці, а також оцінювання результатів їхньої діяльності).

*Результати:* Досліджено, що організація освітнього процесу, базована на використанні системного, технологічного, педагогічного взаємодії, співробітництва та співтворчості, особистісно-діяльнісного підходів; змістово-процесуального, задачного, діалогічного, компетентнісного, індивідуально-диференціального та імітаційно-ігрового підходів, вимагає: системного вивчення науково-педагогічними працівниками вищих навчальних закладів України дослідницького досвіду студентів і диференціації цього досвіду залежно від рівня виразності його компонентів (когнітивного, діяльнісного, аксіологічного); створення системи навчально-дослідницьких завдань, орієнтованих на поетапне розширення дослідницького досвіду студентів; розроблення ефективних методів, прийомів та форм, спрямованих на організацію дослідницької діяльності студентів; створення навчальних ситуацій, які сприяють моделюванню реальних професійних випадків, в яких студенти засвоюють нові знання та способи дій.

*Висновки.* Встановлено, що інтеграція представлених науково-практичних підходів до професійної підготовки майбутніх інженерів з охорони праці в системі вищої освіти України ефективно реалізується у практичній діяльності шляхом вибору відповідних завдань, методів, прийомів, форм і засобів навчання. Застосування цих компонентів в освітньому процесі університету становить значний потенціал для підвищення ефективності професійної підготовки майбутніх інженерів з охорони праці в навчальних закладах вищої освіти України.

**Ключові слова:** *майбутні інженери з охорони праці, культура безпеки професійної діяльності, система вищої освіти, освітній процес, форми, методи та засоби навчання, науково-практичний підхід*

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