

**INTEGRATION OF HEALTH-PRESERVING
TECHNOLOGIES INTO THE PROCESS OF TRAINING
SPECIALISTS IN THE NATURAL AND MEDICAL-BIOLOGICAL
FIELDS AS A FACTOR IN THE FORMATION
OF PROFESSIONAL COMPETENCE**

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INTRODUCTION

In modern conditions of urbanization, physical inactivity, pandemics and intensive use of digital technologies, health is becoming a key factor in the professional effectiveness of specialists in the natural and medical-biological industries. The integration of health-preserving technologies into the training of such specialists contributes not only to the preservation of their psychophysical well-being, but also to the formation of competencies for work in difficult conditions, which emphasizes the need for a comprehensive approach and a combination of medical-biological, psychological-pedagogical and technological aspects. The inclusion of health-preserving technologies in the professional training of specialists contributes not only to their personal professional fulfillment, but also has a positive impact on society as a whole. And the lack of such integration, according to research¹ leads to decreased productivity and increased professional burnout.

Modern higher education in natural sciences and medical and biological specialties should not only transfer professional knowledge and skills, but also form the ability to preserve one's own health and ensure one's own working capacity in conditions of professional loads. Health-preserving technologies in education are a set of approaches, organizational, pedagogical and technological solutions aimed at preserving and strengthening the physical, mental and social health of participants in the educational process.

The integration of health-saving technologies into the training process of specialists in the natural and medical-biological fields is a key factor in the formation of their professional competence. The use of such technologies improves the quality of theoretical and practical training, contributes to the development of the ability of future specialists to effectively implement preventive, diagnostic and health-improving measures, and also optimizes the educational environment. Thanks to the implementation of health-preserving

¹ Борейко Н. Ю. Організація здоров'язберігаючого навчального процесу у вищій школі в сучасних умовах. *Педагогіка, психологія та медико-біологічні проблеми фізичного виховання і спорту*, 2010. № 12. С. 15–18.

approaches, a stable motivation to maintain one's own health is formed, the ability to apply scientifically based methods of health preservation in working with different groups of the population, which ensures the development of systemic thinking, increases professional responsibility and creates conditions for the training of competitive specialists, the use of health-preserving technologies in the training of specialists in the natural and medical and biological industries is a significant factor in increasing the effectiveness of the formation of their professional competence.

According to the Ministry of Health of Ukraine (as of January 1, 2018), 50% of schoolchildren have functional disorders of various organ systems, and 42% have chronic diseases. Unfortunately, in recent years, the trend towards increasing morbidity has persisted, the prevalence of chronic pathology is increasing, and the number of healthy children in all age and gender groups is decreasing, which is confirmed by both official statistics and the results of scientific research². As pedagogical practice shows, only 37% of students believe that they lead a healthy lifestyle and monitor their physical health, the rest do not think about their lifestyle, but want to be physically healthy. The latter indicates the lack of purposeful personal motivation of student youth to form, preserve and strengthen their health. One of the reasons for the indifferent attitude of young people to preserving their own health is the state of the modern education system, including physical education and health education in higher educational institutions of various professional directions³.

1. The problem's prerequisites emergence and the problem's formulation

In the context of the renewal of socio-economic life, the problem of forming, preserving, strengthening and restoring human health remains relevant. After all, today's society is characterized by a decrease in the human development index, which characterizes the health status of Ukrainians and their life expectancy.

According to the Constitution of Ukraine, a person, his life and health are recognized as the highest social value, the formation of which should be ensured by education throughout life. That is why there is an objective need to develop health-saving technologies and introduce them into the educational process not only of schools and preschool institutions, but also of higher educational institutions, which will ensure the formation of health-saving and health-developing competencies, an appropriate health

² Лозинський В. Техніки збереження здоров'я. К. : Главник, 2008. 160 с.

³ Ващенко О., Свириденко С. Готовність вчителя до використання здоров'язберезувальних технологій у навчально-виховному процесі. *Здоров'я та фізична культура*, 2006. № 8. С. 1–6/

culture, and the establishment of the priority of a healthy lifestyle in the younger generation⁴.

The use of health-preserving technologies contributes to the comprehensive improvement of the content of the educational process and the learning environment in terms of health preservation. This is especially effective when studying the medical and biological fields and natural sciences, where the combination of theoretical material with practical health-preserving approaches deepens the understanding of the mechanisms of health preservation and forms a responsible attitude of students to their own well-being.

Medical-Biological sciences are an interdisciplinary branch of science that combines the principles of biology and medicine to understand the structure, function, and behavior of living organisms, particularly in the context of health and disease. Modern solutions in life sciences help groups studying biology, botany, zoology, microbiology, physiology, and biochemistry to manage processes more effectively.

Natural sciences are components of applied fields (astronomy, chemistry, physics, biology, ecology, Earth sciences (geography, geology, etc.) that study the phenomena of the surrounding world in living and inanimate nature. The natural sciences educational branch of the National University of Science and Technology covers physics and chemistry, geography, the environment, biology, and the study of nature. The aim of the natural sciences educational branch is to form the personality of a student who knows and understands the basic laws of living and inanimate nature, is aware of the integrity of the natural science picture of the world, and is able to realize the influence of natural sciences on the sustainable development of society.

Health-preserving technologies – a set of organizational, pedagogical, psychological, pedagogical and technical means that create a favorable educational environment and form in higher education students the skills of self-preservation, adaptation to educational and professional loads, prevention of occupational diseases; a set of methods aimed at preserving and strengthening health in the educational process.

Preservation and strengthening of health of students is one of the key priorities of modern pedagogy. In this context, the health-preserving paradigm acts as a conceptual basis that determines approaches to the organization of the educational process and the formation of professional competence of future specialists. It involves the integration of the principles of health protection, physiological comfort and psycho-emotional well-being into curricula and teaching methods, which is especially important for the natural and medical-biological branches.

⁴ Ващенко О., Свириденко С. Здоров'язберігаючі технології в загальноосвітніх навчальних закладах. *Директор школи*, 2010. № 20. С. 12–20.

The essence of the health-preserving paradigm is to create such learning conditions that allow combining the acquisition of theoretical knowledge with the formation of skills for preserving one's own health. For specialists in natural sciences and medical and biological specialties, this means not only acquiring professional competencies in the field of biology, physiology, ecology and medicine, but also developing a conscious attitude towards one's own physical and mental state, as well as the health of others.

The introduction of health-saving technologies into the educational process contributes to the optimization of the educational environment, the reduction of stress factors and the increase in the efficiency of learning material. In particular, the use of interactive teaching methods, active forms of work, adapted physical and psycho-emotional loads, as well as a system of preventive measures allows future specialists in natural sciences and medical and biological specialties to develop sustainable self-control skills, adaptation to different working conditions and a responsible attitude to their own health.

The health-preserving paradigm also promotes the development of systems thinking, critical analysis, and interdisciplinary competence. It integrates biological, medical, and social knowledge, which allows future specialists in the natural and biomedical fields to effectively implement professional functions related to the protection and promotion of public health, scientific research, and practical activities in various fields. The essence of the health-preserving paradigm in the training of specialists in the natural and medical-biological fields lies in the combination of educational, professional and health-preserving components, which ensures the formation of a competent, responsible and competitive specialist of a modern level. It serves as a foundation for increasing the efficiency of the educational process, developing the personal potential of students and forming in them a holistic approach to preserving and strengthening health⁵.

2. The analysis of existing methods for solving the problem and formulating a task for the optimal technique development

The concept of «health» is complex and multifaceted. An analysis of scientific pedagogical and medical literature shows that many scientific works are devoted to the study of the phenomenon of health. Thus, P. Anokhin, V. Afanasiev, G. Belenka, P. Gusak, B. Lomov, E. Smirnov considered this category in the aspect of a systemic approach to cognition; T. Boychenko, Yu. Boychuk, O. Vasilyeva, L. Sushchenko – as an integral indicator of the state of functioning of the human body; O. Asmolv,

⁵ Годун Н. Впровадження здоров'язберігаючих технологій в умовах ВНЗ: сучасний стан та перспективи. *Гуманітарний вісник ДВНЗ «Переяслав-Хмельницький державний педагогічний університет імені Григорія Сковороди»*, 2012. № 27. С. 55–59.

I. Bekh, A. Brushlinsky, M. Boryshevsky – through a personal approach. Some scientists (G. Apanasenko, L. Burlachuk, V. Voitenko, V. Kaznacheev, V. Kopa, I. Kotsan, S. Maksymenko, G. Tsaregorodtsev) consider the phenomenon of «health» in its social and philosophical reconstruction.

Health is a social value that must be ensured by a system of scientific and practical measures to preserve and strengthen health, by the activities of the structures that implement them, and by the conscious concern of every member of society for personal and public health⁶. Such qualities are brought up both in the family and during training, since education is a purposeful cognitive activity of people to obtain knowledge, skills and abilities or to improve them. However, only in medical universities does the integration of these global goals of humanity reach the maximum degree. However, an increase in the amount of information to be learned, the constant use of information and communication technologies, the workload of educational tasks, a decrease in active leisure time, an increase in the share of static load in conditions of a shortage of educational time become the main risk factors that lead to overloads, stress, negatively affecting the health of participants in the educational process. The process of obtaining knowledge becomes a risk factor, and health problems are a serious obstacle to achieving academic success and professional growth.

So, health problems have always occupied and occupy an important place in the social, economic and cultural life of society and are associated with the development of social production and the formation of social existence. It is quite natural that at different stages of the development of society, serious attention has always been paid to the study of health problems. Scientists, doctors, philosophers, representatives of other sciences and professions have made attempts to penetrate the secrets of the phenomenon of health, to recognize its essence in order to learn how to skillfully manage it, to use health economically throughout life and to find means for its preservation.

Progressive views on health were defined at the beginning of the 19th century by the prominent scientist M. Ya. Mudrov: «To take healthy people into one's own hands, to protect them from hereditary or threatening diseases, to recommend to them a proper lifestyle is honest and calm for a doctor. Because it is easier to prevent diseases than to treat them...»⁷.

The health of modern man is the result of the natural evolution of the species homo sapiens, in which social factors have gradually gained

⁶ Здоров'язбережувальні технології в освітньому середовищі: колективна монографія [за заг. ред. Л.М. Рибалко]. Тернопіль : Осадца В.М., 2019. 400 с. ISBN: 978-617-7793-05-1, DOI 10.5281/zenodo.3266175

⁷ Платонов В. Н. Фізична культура – культура здоров'я. *Фізичне виховання в школі*, 2009. № 2. С. 40–43.

increasing influence. In a certain sense, health is given to man as a natural resource, inherent in him due to biological heredity and behavioral patterns formed in animal ancestors. At the same time, in the process of socialization, its level can change in different directions, since man manifests the action of natural laws in a specific and unique form, combining the influence of the environment, social experience and individual characteristics.

The history of the development of knowledge about health has more than 2000 years. The historical period of the formation of ideas about the essence of the concept of health is divided into two stages. The first of them falls on the 4th century BC. e. – 1941, when health was considered as the absence of diseases or physical defects. The studies of the American scientist Henry Sigerist, published in 1941, marked the beginning of a new, modern period of valeology.

Despite the importance of the first period of health education, without which the second stage would not have been possible, it should be recognized that the first period, however, did not bring (and could not bring) anything but speculative knowledge. Among them were many correct ideas, predictions and generalizations. However, it was only after the work of G. Sigerist and, especially, after 1948, when WHO, considering the ideas of this scientist fundamental for the health of the whole world, included them in the Preamble of its Constitution, that the period of accumulation of knowledge about health began⁸.

Healthy, as G. Sigerist wrote, can be considered a person who is characterized by harmonious physical and mental development and is well adapted to the surrounding physical and social environment. He fully realizes his physical and mental abilities, can adapt to changes in his environment, if these changes do not go beyond the norm, and makes his contribution to the well-being of society. Health therefore does not simply mean the absence of diseases. Health is often considered as the absence of disease. Medical science pays great attention to this. The developed classification of diseases includes thousands of names. The mechanism of development, clinical manifestations, treatment and prognosis of each of them are described. Of course, all this is the applied side of the issue under discussion. Health must be considered as a purely qualitative concept of the limits of the norm. Not everything is known about the norm as a biological concept, as well as about health as a social category.

What is a norm? Here are a few definitions. A norm is a measure, a model, a normal state. This is how the encyclopedic dictionary interprets it. Or: «A norm is the optimal option for every person. A normal person should

⁸ Поташнюк І.В. Теоретичні і методичні засади застосування здоров'язбережувальних технологій навчання учнів у загальноосвітніх навчальних закладах : дис.... докт. наук: 13.00.02. К., 2012. 507 с.

be able to satisfy all human needs». As we can see, the interpretations are far from unambiguous. There are many examples. For example, M.M. Amosov (1990) believes that the definition of health as a complex of normative morpho-functional indicators of the human body is insufficient, since a quantitative assessment of health is also necessary.

The amount of health can be defined as the sum of the reserve capacities of the main functional systems. In turn, reserve capacities can be expressed through the so-called reserve coefficient. That is, illness is to some extent compatible with health: often it is not the illness itself that occurs, but the lack of health. As noted, health and illness are categories that are a consequence of social conditioning, that is, the influence of social conditions and factors, which, of course, does not contradict the allocation of the role of biological equivalents of health and illness and their definition from the standpoint of biological laws⁹.

Review of international documents¹⁰ (WHO/UNESCO initiatives) on the Health-Promoting Schools approach and global standards (the documents contain recommendations on creating a health-promoting educational environment and including preventive programs in curricula), the National Doctrine of Education Development in Ukraine notes the importance of caring for the health of young people, which is reflected in educational programs, which specify disciplines and methods for health preservation in education (curriculums on valeology and health-promoting pedagogical technologies).

Professional competence in biomedical and natural science fields encompasses knowledge, practical skills, communicative and ethical competencies, the ability to self-educate and self-organize during professional activities; modern standards emphasize occupational safety and prevention of occupational risks. Given the overload of higher education students, the lack of self-regulation skills, and the low level of practical training regarding one's own health as a resource for professional activity, the formation of self-preservation skills during training is strategically important.

Many scientists have described the problem of health-preserving competence, seeing the importance of the professional component: L. Barna, T. Boychenko, T. Bondarenko, N. Vasina, D. Voronin, E. Zeer, V. Lobachev, Yu. Lukashyn, I. Mamakina, G. Meshko, O. Mytchyk, S. Morozova, V. Ovcharuk, V. Omelyanenko, Yu. Pavlov, M. Pazyrkina, N. Polishchuk, E. Svyrydyuk, V. Sergienko, G. Sopko, V. Uspenska, M. Churkina,

⁹ Рибалко Л.М. Педагогічні умови формування здорового способу життя в студентської молоді. *Вісник Чернігівського національного педагогічного університету імені Т.Г. Шевченка*. Вип. 147. Т. II / Чернігівський національний педагогічний університет імені Т.Г. Шевченка; гол. ред. Носко М.О. Чернігів : ЧНПУ, 2017. С. 118–121. *Серія: Педагогічні науки. Фізичне виховання та спорт*.

¹⁰ Gozhenko A., Biryukov V., Gozhenko O., Zukow W. Health as a space-time continuum. *Journal of Education (Health and Sport)*, 2018. Vol. 8(11). P. 763–777.

O. Shukatka, E. Yugova. The beginning of developments in this area is associated with the study of the possibility of training applicants to higher education institutions for health preservation, which was continued in the study of the possibilities of forming health preservation competence as an indispensable condition for a number of professional competencies of specialists in the natural and medical and biological fields. Analysis of the scientists' research showed that they study various aspects of professional training of specialists, including health preservation.

Scientists believe that health-preserving competence, as a key one, is formed at the interdisciplinary level using subject-specific competencies, taking into account the specifics of the subjects and the cognitive capabilities of specialists in the natural and medical and biological fields¹¹. Although some aspects of the problem of forming health-preserving competence of specialists in natural and medical and biological fields have not yet been considered.

The content of health-preserving competence of specialists in the natural and medical-biological fields is: knowledge and adherence to the norms of a healthy lifestyle, knowledge of the dangers of smoking, alcoholism, drug addiction, AIDS; knowledge and adherence to the rules of personal hygiene, everyday life; physical culture of a person, freedom and responsibility for choosing a lifestyle; experience and readiness to implement this knowledge in life activities, acceptance of health preservation as a value, regulation of psychosomatic and emotional health.

Smirnov N.K. developed a basic classification of health-preserving technologies, which, in our opinion, is the most universal for specialists in various fields. In particular, he identified the following blocks:

- *medical and hygienic* (compliance with sanitary and hygienic standards and providing medical care to participants in the educational process);
- *physical culture and health improvement* (use of physical culture facilities to develop physical qualities and improve health);
- *ecological* (formation of environmental awareness among schoolchildren and the desire to preserve the environment);
- *safety of life* (observance of life, labor protection, civil defense);
- *safety rules* – health (use of therapeutic physical education classes, prevention of posture disorders and decreased visual acuity);
- *developmental and adaptive* (use of social and psychological trainings for teachers, students and parents in the educational process).

¹¹ Khrystova T., Pyurko V., Arabadzhy-Tipenko L., Pyurko O., Oleksenko R., Melnyk S., Protsenko A., Gorna O. Bioecomedicine as a social determinant of the sustainable development of society. *Journal of Infrastructure, Policy and Development*, 2024. Vol. 8. Issue 8 (Article ID: 6338) <https://doi.org/10.24294/jipd.v8i8.6338>

– Vashchenko O. distinguishes the following types of health-saving technologies¹²:

– *health-preserving* (technologies that create safe conditions for learning and work and those that contribute to solving the problems of rational organization of the educational process, compliance of educational and physical loads with human capabilities);

– *health-improving* (technologies aimed at solving the problems of strengthening physical health, increasing health resources);

– *health education technologies* (hygienic education, life skills development, injury prevention, sex education);

– *health culture education* (education of personal qualities that contribute to the preservation and strengthening of health, strengthening motivation to lead a healthy lifestyle).

By the nature of the activity, health-saving technologies can be either separate (narrowly specialized) or complex (integrated). By the direction of activity, the following are distinguished among individual health-saving technologies:

– *medical* (technologies for disease prevention; correction and rehabilitation of physical health; sanitary and hygienic);

– *educational, promoting health*;

– *social* (technologies for organizing a healthy lifestyle; prevention and correction of deviant behavior);

– *psychological* (technologies for prevention and psycho-correction of mental deviations of personal and intellectual development).

Comprehensive health-preserving technologies include technologies for comprehensive disease prevention, health correction and rehabilitation.

In the structure of health-saving technologies, scientists (Gozhenko A., Biryukov V., Gozhenko O., Zukow W.) distinguish the following components¹³: axiological, epistemological, health-preserving, emotional-volitional, ecological, physical culture and health-improving. Basic classification of health-saving technologies, developed by M. Goncharenko¹⁴, includes:

¹² Pyurko V.E., Khrystova T.E., Pyurko O.E., Kazakova S.M. Information concept of the human health phenomenon as a guarantee of biosystem stability. IOP Conference Series: Earth and Environmental Science : 3rd International Conference on Sustainable Futures: Environmental, Technological, Social and Economic Matters, 2022 (24.05.2022 – 27.05.2022, Kryvyi Rih, Ukraine). Vol. 1049, special issue 1: 012070. P. 1–8. DOI:10.1088/1755-1315/1049/1/012070 <https://iopscience.iop.org/issue/1755-1315/1049/1>

¹³ Ilhan N., Batmaz M., Akhan L. Healthy Lifestyle Behaviors of University Students. Nursing Science and Art. Ilhan, 2010. Vol. 3 (3). P. 34–44.

¹⁴ Pyurko V., Khrystova T., Pyurko O., Bilohur V., Moskalyk H. Impacto social de las políticas educativas para la enseñanza del deporte en contextos de crisis: Visión general. Visión general. Interacción y Perspectiva, 2024. Vol. 14, № 2. P. 534–546. ISSN 2244-808X <https://doi.org/10.5281/zenodo.10929047>

– *medical and hygienic technologies* (compliance with sanitary and hygienic standards, provision of full medical care to subjects of the educational process, etc.);

– *physical culture and health technologies* (hardening, development of physical qualities (strength, speed, flexibility, endurance));

– *ecological health-preserving technologies* (increasing the level of spiritual and ethical health of students, forming in them ecological awareness and the desire to preserve the environment);

– *technologies for ensuring life safety* (compliance with fire safety rules, labor protection, civil defense, etc.);

– *medical and health technologies* (implementation of the principles of therapeutic pedagogy and therapeutic physical education);

– *socially adaptive and personally developing technologies* (introduction of social and family pedagogy programs, socio-psychological trainings for teachers, students and their parents into the educational process);

– *health-preserving educational technologies* (application of psychological and pedagogical methods and techniques aimed at preserving the health of children and increasing the efficiency of the educational process).

The identified types of health-preserving technologies are aimed at forming health-preserving and health-developing competencies in the subjects of the educational process by strengthening their value attitude towards their own health and the health of other people, expanding the knowledge base about health-preserving behavior, and improving the skills and abilities of maintaining individual health at the level of spiritual, socio-cultural, and physical components.

Analysis of the content of modern health-saving technologies makes it possible to distinguish the following types (according to O. Vashchenko):

– *health-preserving* – technologies that create safe conditions for staying, studying and working in a general educational institution and those that solve the problems of rational organization of the educational process (taking into account age, gender, individual characteristics and hygiene standards), compliance of educational and physical loads with the child's capabilities;

– *health-improving* – technologies aimed at strengthening the physical health of pupils/students, increasing the potential (resources) of health (physical training, physiotherapy, aromatherapy, hardening, gymnastics, massage, phytotherapy, music therapy);

– *health education technologies* – teaching hygienic behavior, forming life skills (emotion management, conflict resolution, etc.), prevention of trauma and abuse of psychoactive substances, sex education. These

technologies are implemented by including relevant topics in the subjects of the general educational cycle, introducing new subjects into the variable part of the curriculum, organizing optional training and additional education;

education of a culture of health – education in students of personal qualities that contribute to the preservation and strengthening of health, the formation of ideas about health as a value, strengthening motivation to lead a healthy lifestyle, increasing responsibility for personal health, family health¹⁵.

Therefore, the analysis and generalization of scientific and methodological literature allows us to assert that the introduction of health-saving technologies in the education system is associated with the use of a complex of measures, which include: medical, physical education and health-improving, medical and health-improving, rehabilitation, social and adaptation, environmental, and ensuring the safety of life.

An analysis of scientific literature indicates that, despite the persistent interest in the problem of strengthening and preserving the health of specialists in the natural and medical-biological fields, to date there is a lack of theoretical and practical research devoted to the problem of forming health-preserving competence of future biology teachers using innovative technologies in the educational environment of higher education institutions.

Anosov I. noted that the main criterion of health-preserving competence is the state of optimal correspondence, harmony between the biological, psychological and social in human life and activity. Basically, the process of forming health-preserving competence of specialists in natural and medical-biological fields is focused on cognitive-informational and practical-activity criteria, and less on motivational-value criteria. However, the improvement of educational technologies leads to the fact that the pedagogical process becomes person-oriented, and the interaction of teachers and students is subject-subject. Therefore, the motivational and value criterion of health-preserving competence of specialists in the natural and medical-biological fields comes to the fore.

The *motivational and value* criterion, determined by the set of knowledge and practical skills, includes the formation of students' stable life motivation for the priority of health and orients them towards healthy life activities. The motivational and value criterion, according to T. Ghygolayeva, is the priority of the value of health in the system of views of specialists in the natural and medical and biological fields. The formation of the motivational and value

¹⁵ Pyurko V. Kinesotherapy in vegeto-vascular dystonia as a component of inclusive education in conditions of implementation of the concept of a New Ukrainian School. Problems and process of reforming education in the field of Natural Sciences in Ukraine and EU countries : scientific and pedagogic internship (internship proceedings, November 4-December 13, 2019). Wloclawek, Republic of Poland. 2019. P. 30–35.

sphere of the future teacher contributes to precise goal-setting and design of his activities, determines the priorities of pedagogical activity.

The *motivational and value* criterion of the formation of health-preserving competence of higher education applicants determines the goal of professional training of specialists in the natural and medical and biological fields, motives, needs and regulates and directs this process. The formation of health-preserving competence is based on values, value orientations, value attitudes, needs, therefore it is important to clarify the value aspect of this problem. The concept of «value» in the psychological dictionary is interpreted as «any object» (in particular, ideal), which is of vital importance for the subject (individual, group, ethnic group)¹⁶. According to the definition in the sociological dictionary, «value» is «the property of a social object to satisfy certain needs of a social subject (a person, a group of people, society)». Value orientations are special psychological formations that have a hierarchical system and exist in the structure of the personality only as its elements.

The *motivational and value* criterion performs an indicative and diagnostic function. With the help of this function, specialists in the natural and medical and biological fields perceive and interpret the features of a healthy lifestyle that constitute a certain value for them.

The *cognitive-informational criterion* of health-preserving competence is based on the fact that the correct assessment and forecast of a person's functional capabilities depend significantly on knowledge of the biological characteristics of one's own organism, on the ability to correctly take them into account in specific circumstances of real life. However, knowledge is needed not as an end in itself, but as a means for the development of the personality, as a tool for solving one's life tasks.

Specialists in the natural and medical-biological fields, in accordance with the cognitive-informational criterion of health-preserving competence, must analytically perceive information related to various aspects of human health, especially children's health¹⁷.

The *practical and activity criterion* of health-preserving competence is formed as a result of the subject's active activity aimed at preserving and maintaining his health, orients towards the creative refraction of basic knowledge, skills and abilities in the process of his own life activity, and

¹⁶ Von Ah D., Ebert S., Ngamvitroj A., Park N. Predictors of health behaviors in college students. *Adv Nurs DH. Kang.*, 2004. Vol. 48 (5). P. 63–74.

¹⁷ Pyurko O. Continuous biological education as an incredible component of the professional potential of future professionals in the «School-higher education» system. *Problems and process of reforming education in the field of Natural Sciences in Ukraine and EU countries* : scientific and pedagogic internship (internship proceedings, November 4-December 13, 2019). Wloclawek, Republic of Poland. 2019. P. 36–41.

provides knowledge of practical methods for satisfying various needs that form the basis of health-preserving activities.

The practical-activity criterion assumes the formation of a health culture of higher education students, their activities to strengthen their own health and the health of others. It is characterized by the ability to translate knowledge on health issues into practical application. The formation of this criterion is expressed in the ability to establish professional relationships between participants in the educational process, analyze the educational situation, formulate tasks, obtain new knowledge necessary for their solution, analyze the advantages and disadvantages of knowledge, activities, behavior of students, one's own activities and behavior, and predict possible consequences of certain actions.

The professional activity of specialists in the natural and medical and biological fields is carried out at two different, but closely related levels: theoretical and practical. The practical and activity criterion of health-preserving competence reflects the degree of inclusion of the individual in a holistic health-preserving system, as well as the development of skills and abilities for leading a healthy lifestyle in everyday life (rational nutrition skills; physical activity; sanitary and hygienic skills; work and rest regime; conflict resolution skills; joint activity and cooperation skills), the readiness of specialists in the natural and medical and biological fields to promote a healthy lifestyle.

Each of the highlighted criteria is necessary, but not sufficient, for the formation of health-preserving competence in specialists in the natural and medical-biological fields. The listed criteria are closely interconnected and constantly interact, forming a single structure of health-preserving competence in specialists in the natural and medical-biological fields.

At the moment, the following basic criteria for the formation of health-preserving competence of specialists in the natural and medical-biological fields have been identified, necessary for further pedagogical activity: motivational and value (unity of stable motivation for a healthy lifestyle and a value-based attitude towards one's own health and the health of others); cognitive-informational (fundamental basic knowledge of students about health and its components, and a healthy lifestyle, ways of improving health and increasing health reserves as complex socio-personal and psychophysiological phenomena, knowledge of the content of health-preserving competence); practical-activity (practical skills and experience in implementing health-preserving activities necessary for preserving and maintaining health, which is oriented towards improving the health of all participants in the educational process) and three levels of its formation have been identified: low, medium, high.

The purposeful formation of health-preserving competence of higher education students, according to E. Svyrydyuk, ensures the development of a personality who consciously treats their own health and the health of others, adheres to a healthy lifestyle, which gives them the opportunity to work and study qualitatively, fully and productively. The formation of health-preserving competence of future specialists in the process of their professional training involves determining priority areas of preventive education, forms of preventive work to prevent HIV/AIDS with the mandatory formation of relevant personal competencies for specialists in the natural and medical and biological fields to ensure a healthy lifestyle¹⁸.

The classification includes organizational and pedagogical (changing types of activities in lessons), psychological and pedagogical (relaxation breaks), educational and educational (motivation for a healthy lifestyle) and environmental (greening and creating a safe educational environment). The health-preserving competence of specialists in the humanitarian field consists of a cognitive, motivational and activity component. The components of health-preserving technologies include: organizational (load regulation, class schedule), psychological and pedagogical (self-regulation techniques, stress resistance training), information and communication (mobile and distance learning, platforms for monitoring student status), physical culture and health (physical activity, ergonomics), medical and preventive (screenings, vaccination, preventive programs).

When implementing the described technologies in the educational sector, the following principles should be implemented: systematicity (integration at different levels of the program), prevention (prevention of diseases and overwork), integration of knowledge (inclusion of valeological approaches in professional educational components), adaptability (individualization), interdisciplinarity (combination of medical, pedagogical and technological solutions).

CONCLUSIONS

The integration of health-preserving technologies into the training of specialists in the natural and medical-biological fields is an important factor in the formation of full-fledged professional competence. Such integration enhances both practical training and the ability of a specialist in the natural and medical-biological fields to maintain their own health in conditions of professional stress, which, in turn, improves the quality of professional services. Efficiency requires consistency, interdisciplinary coordination, support for university policy, and the use of information and communication technologies.

¹⁸ Golodiuk L.S. The productive methods of teaching mathematics on the basis of competence approach. Science and Education a New Dimension. Pedagogy and Psychology, 2016. Vol. IV (38). Issue: 77. P. 17-21.

SUMMARY

The article considers the integration of health-preserving technologies into the process of training specialists in the natural and biomedical fields as a factor in the formation of professional competence, which enhances both practical training and the ability of a specialist to maintain his own health in conditions of professional stress, which, in turn, improves the quality of professional services. The development of ideas about the concepts of «health», «health-preserving technologies», «competence», «biomedical field», «natural sciences» is analyzed and their relationships and interdependencies are described in detail. The main criteria and types of modern health-saving technologies are provided, based on a deep analysis and disclosure of their content. It is proven that integration enhances both practical training and the ability of a specialist in the natural and medical-biological fields to maintain their own health in conditions of professional loads, which, in turn, increases the quality of professional services. And when introducing these technologies into the educational field, the principles of systematicity, integration of knowledge, adaptability (individualization), interdisciplinarity should be implemented, which ensures the development of a personality who consciously treats his own health and the health of others, adheres to a healthy lifestyle.

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