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Innovative technologies for healthy education: a practical guide for educational institutions

Інноваційні технології здоров'язберігаючої освіти: практичні рекомендації для закладів освіти

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Written by:

Vitalii Leleka¹

 <https://orcid.org/0000-0001-5680-7784>

Uliana Ketsyk-Zinchenko²

 <https://orcid.org/0000-0002-3173-3392>

Nataliia Petrenko³

 <https://orcid.org/0000-0002-8563-8606>

Nataliia Potapchuk⁴

 <https://orcid.org/0000-0001-8303-6196>

Olha Syroiezhko⁵


 <https://orcid.org/0000-0001-9101-6590>


Abstract


The article substantiates the health-preserving components of the educational environment, which determine the content of health-preserving technologies and factors that affect the state of human health; the functions performed by innovative health-saving technologies in the educational process are highlighted. The effectiveness of introducing innovative health-preserving technologies in educational institutions is shown. The main web orientations of the technology supporting health-saving education are described. The main segments of web-based technologies for supporting health education are described. Emphasis is placed on effective Web 2.0 technologies in foreign healthcare education practices. As shown by the results of the ascertaining stage of the pedagogical experiment,


Анотація


У статті обґрунтовано здоров'язберезувальні компоненти освітнього середовища, що визначають зміст здоров'язберезувальних технологій та чинники, які впливають на стан здоров'я людини; виокремлено функції, що виконують інноваційні здоров'язберезувальні технології в освітньому процесі. Показано дієвість впровадження інноваційних здоров'язберігаючих технологій у освітніх закладах. Розписано основні веб-орієнтовані технології підтримки здоров'язберезувального навчання. Описано основні сегменти веб-орієнтованих технологій підтримки здоров'язберезувального навчання. Наголошено на дієвих видах технологій Web 2.0 у зарубіжних практиках

¹ Doctor of Philosophy in the field of Education, Associate Professor of the Department of Physical Culture and Sports, V.O. Sukhomlynskyi National University of Mykolaiv, Ukraine.  WoS Researcher ID: IWU-4464-2023

² Candidate of Pedagogical Sciences, Associate Professor of the Foreign Languages Department, Vasyl Stefanyk Precarpathian National University, Ukraine.  WoS Researcher ID: HKW-8823-2023

³ Ph.D., in Physical Education and Sports, Associate Professor, Sumy State University, Ukraine.  WoS Researcher ID: HJI-1547-2023

⁴ Doctor of Psychologic Sciences, Professor Leading Researcher, Scientific and Organizational Department, Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine, Ukraine.  WoS Researcher ID: AAL-9426-2021

⁵ Candidate of Pedagogical Sciences, Assistant of Pedagogy Department, National University of Life and Environmental Sciences of Ukraine, Ukraine.  WoS Researcher ID: IRZ-3414-2023



students do not pay much attention to health-preserving technologies in educational institutions and have a weak readiness to implement health-preserving systems in the process of life activities and a lack of interest in physical activities. A comparative analysis of the levels of readiness to use health-preserving technologies gave the following results: according to the cognitive-intellectual criterion, 7% of respondents showed a high level at the beginning of the experiment, at the end – 36%; the average level at the beginning of the experiment – 20%, at the end – 60%; 73% of respondents had a low level at the beginning, and 4% at the end. As the results of the conducted experiment showed, there is a natural connection between the introduction of innovative health-preserving technologies in educational institutions and the readiness of students to implement health-preserving systems in the process of life and interest in motor activity.

Keywords: innovativeness of the educational system, health-preserving technologies, web-oriented technologies, health-preserving education, digital health.

Introduction

The greatest value of a person is health. Humanity needs such conditions for a happy and healthy life, where the main place belongs to the environment in which a person lives and the way of life in it. A person should be in a health-developing and health-preserving environment, including an educational one, in addition, a person should constantly strengthen their health and monitor their health. The introduction and development of innovative technologies and educational systems, in particular those that have a health-improving and health-preserving orientation, involves the modernization of the content of modern national education, directing its development to the integration of the European educational space. After all, the modern young generation will be far-sighted and promising only if it is strengthened in all aspects and preserves its health. There is a need to apply health technologies and health technologies, creating a healthy environment in everyday life, not only in educational institutions.

The problem of strengthening, preserving, forming, and restoring human health in the conditions of renewal of socio-economic life remains relevant because modern society itself is characterized by a decrease in the human development index, which supports the state of human health and contributes to life expectancy.

Today's realities regarding the way of life, the state of health of student youth, and their existing health culture determine the relevance of the problem of health care. 50% of modern youth have functional disorders of various organ systems, and 42% have chronic diseases, unfortunately, in recent years, the prevalence of chronic pathology among young people has been increasing, morbidity is increasing, and the number of healthy people in all sex and age groups is decreasing (Romanova et al., 2022).

Among students of grades 2-8, compared to children of preschool age, posture disorders are registered more than 5.2 times, scoliosis 11.2 times, hearing disorders three times, and vision disorders 3.7 times. The share of healthy school-age children decreases significantly during the study period, which acquires a strategic

здоров'язбережувального навчання. Як показали результати проведеного констатувального етапу педагогічного експерименту студенти не дуже звертають увагу на здоров'язберігаючі технології у освітніх закладах та мають слабку готовність до здійснення здоров'язбережувальної системи у процесі життєдіяльності та недостатню наявність інтересу в них до фізичних навантажень. Порівняльний аналіз рівнів сформованості готовності до використання здоров'язберігаючих технологій дав такі результати: за когнітивно-інтелектуальним критерієм високий рівень на початку експерименту показали 7% респондентів, наприкінці – 36%; середній рівень на початку експерименту – 20%, в кінці – 60%; низький рівень на початку мали 73% респондентів, а наприкінці – 4%. Як показали результати проведеного експерименту, існує закономірний зв'язок між впровадженням інноваційних здоров'язберігаючих технологій у закладах освіти та готовністю студентів до впровадження здоров'язберігаючих систем у процесі життєдіяльності та інтересом до рухової активності.

Ключові слова: інноваційність освітньої системи, здоров'язберігаючі технології, веб-орієнтовані технології, здоров'язбережувальне навчання, цифрове здоров'я.

national significance: to 6-9% of high school-age children from 33% of healthy children of junior school age (Horiana, 2015).

The negative trend towards the deterioration of the mental and physical health of adolescents and children is primarily related to socio-hygienic life factors that lead to the growth of psychosomatic pathology and an increase in the risk of student maladjustment (neuro-psychological) due to the stages of pre-morbid and pre-morbid conditions; prevalence of bad habits (use of narcotic substances, alcoholic beverages, smoking); growth in the popularity of attractive non-physical activities among youth and children; deviant behavior; vagrancy; gambling addiction.

The educational process during the implementation of the policy of health promotion increases the capabilities of adults and children in terms of ensuring a favorable and safe physical, psychological, and social environment for health, contributes to the formation of a person's conscious attitude to the health of others and his own health. After all, only 37% of students believe that they monitor their physical health and lead a healthy lifestyle, and the rest want to be physically healthy but do not think about their lifestyle. This indicates the lack of personal, purposeful motivation of student youth to preserve, form, and strengthen their health.

In recent years, the increase in morbidity of the global population has been noted for congenital anomalies of development – by 21.5%, diseases of the circulatory system and blood – by 51.3%, digestive organs – by 28%, diseases of the respiratory system – by 21%, endocrine system – 47% (Rybalko, 2019).

Therefore, in a century when the problem of protecting the health of the younger generation has become acute because the state of health of pupils and student youth has significantly deteriorated, the effectiveness of the work of an educational institution must be measured by an environment that will contribute to the strengthening and preservation of the mental and physical health of its subjects, will safe, and not only the quality of education (Rybalko et al., 2020).

Even though humanity has constantly strived at all stages of the development of society to preserve health and life in the system "environment – man" and personal safety, this issue is relevant now.

The development of innovative technologies of health care education in the quality training of future specialists is currently an urgent issue of theory and teaching methods in the educational process. Based on this, we considered the following questions in the article:

- The main approaches to the interpretation of the definition of "health-preserving technologies", are health-preserving components of the educational environment, which determine the content of health-preserving technologies and factors affecting the state of human health.
- Analyze the isolated factors that affect a person's health.
- Functions performed by innovative health-preserving technologies in the educational process.
- Implementation of innovative health-preserving technologies in educational institutions.
- Web-oriented technologies for supporting health-saving training of education seekers.
- Formation of health care competence of student youth.
- Experiment with innovative technologies of health care education.

Literature Review

In the modern conditions of providing educational services, scientists from different countries are engaged in the implementation of innovative health-preserving technologies in educational institutions.

Scientists have made a theoretical analysis of the content of health-preserving competence of graduates of higher education. Thus, A. Chychuk, I. Oros, & O. Bida (2023) singled out different approaches, substantiated the expediency of using health-preserving technologies in educational institutions, presented the content of the concept of "health-preserving technologies" in a broad and narrow sense. In the professional training of future specialists, ways of forming key health-preserving competence are highlighted. The role of the family in the education of the personality (healthy, physically developed) and the formation of the health-preserving competence of a person, preparing him for socially useful activities, is shown. Tasks have been developed that will ensure the main areas of educational activity of the family.

The research of L. Horiana (2015) provides an overview of normative and legal documents on the problem of the introduction of health-preserving technologies and reveals the main categorical concepts of the introduction of health-preserving technologies into the system of pedagogical postgraduate education. Based on clear definitions, the essence of the formation of readiness for the implementation of health-preserving technologies of pedagogical workers is shown, and the contradictory and ambiguous interpretation of health-preserving technologies is clarified, which deepens the content of the professional competence of a person of any specialty. Based on the analysis of scientific sources, N. Onishchenko & O. Lykhovyd (2016) also revealed the main categorical concepts of the introduction of health-preserving technologies into the pedagogical education system and showed the essence of the concepts of "innovative activity", "health-preserving technology", presented various classifications of health-preserving technologies. Pedagogical aspects of the application of health-preserving pedagogy were considered during the preparation of future teachers to preserve their health, and that of their students, and pedagogical problems in the educational process of the higher school were investigated. In the system of training future teachers for innovative activities, the features of the use of health-preserving technologies are revealed. The examples prove the importance of the use of health-preserving technologies in education in connection with the deterioration of the health of pupils and student youth, which is an urgent modern problem because it is connected with the irresponsible attitude of the students themselves toward their health, with a low level of culture human health, insufficient worldview orientation of the individual; insufficient regular, timely, complete and medical examination; insufficient implementation of health-preserving measures in the educational process of the higher school, lack of due attention of teachers to the preservation of students' health.

The research of A. Sukhikh (2018) is interesting and important, where the problems of developing scientific-methodological support and theoretical justification of the health-preserving use of hardware and software by high school students are discussed. For teachers engaged in educational and educational work, working in institutions of general secondary education and extracurricular education, students who are still studying in institutions of higher pedagogical education, and for improving the qualifications of pedagogical workers, tasks have been developed that will ensure the main directions of the introduction of innovative health-preserving technologies in educational institutions.

In the educational environment of a higher pedagogical educational institution, Maryna Dyachenko-Bohun (2015) analyzed the main components and structural characteristics of the methodical system of teaching health-preserving technologies and revealed approaches to defining the concept of "health-preserving technologies". The author, who is engaged in the professional training of future biology teachers, specified the directions of the professional training of specialists capable of forming a high level of health culture in the students of education in further professional activities and not only providing knowledge for professional subject training.

L. Rybalko, O. Permykov, T. Synytsya, A. Ostapov, & T. Yopa (2020) dedicated their research to the institution of higher education, in particular, they showed the urgent problems of organizing a health-preserving educational environment and identified ways to solve them. Scientists have singled out the reasons for the deterioration of students' health and substantiated the factors of this phenomenon; the method of organizing a health-preserving educational environment is highlighted, various approaches to its organization are presented, its main components are characterized, and the content is revealed. Health-preserving educational technologies include all pedagogical technologies that create safe conditions and do not harm the health of students: health-preserving, physical culture and health, medical-hygienic, life safety, ecological-recreational, and others. The main characteristics of the educational health-preserving environment were established and researched, and the positive impact of the educational process on the development of the mental, physical, and health of the students was proven. The components that have a positive result in terms of strengthening, preserving, and forming the health of students have been determined. The expediency of the positive impact of technology on students' health, taking into account the individual and age characteristics of student youth, has been clarified.

However, despite a significant number of studies devoted to the implementation of health-preserving technologies in educational institutions and the training of future specialists to preserve their health and the health of children and young people, this problem requires a detailed solution, is relevant in the context of the application of innovative health-preserving technologies in the system of training future individuals for innovative activities and life.

Despite the significant interest of the scientific community in various aspects of health-preserving, the problem of innovative technologies of health-preserving education was not the subject of a comprehensive study. The relevance and expediency of the study of the specified problem require the resolution of several contradictions, namely, between:

- Society's need for teachers with developed health-preserving competence and future teachers' lack of awareness of the importance of health-preserving for the successful implementation of professional activities;
- The need to strengthen the health-preserving component of the content of the training of future teachers in higher education institutions and the lack of a unified approach to educational programs for the formation of health-preserving competence;
- The objective expediency of diversifying the forms of health-preserving activities of future teachers in extracurricular work and the lack of necessary content and methodical support.

Thus, the relevance of the problem of Innovative technologies in health-preserving education and certain contradictions led to the choice of the topic of our article.

The purpose of the study: to show the importance and necessity of introducing innovative health-preserving technologies in educational institutions.

Methodology

To achieve the goal, a set of the following research methods was used:

- **Theoretical** – method of synthesis and analysis during the study of educational and methodological documentation, documents, statistical data, scientific and pedagogical sources, etc.; analysis (structural and systemic) of educational and methodological support for the training of future specialists to clarify the specifics of the implementation of innovative health-preserving technologies in educational institutions; when comparing various approaches – the comparison method, to solve the problem under study; for formulating and concretizing conclusions – the method of theoretical generalization;
- **Empirical** – pedagogical observation, questionnaires, and interviews of respondents.

As shown by the results of the ascertaining stage of the pedagogical experiment, students do not pay much attention to health-preserving technologies in educational institutions and have a weak readiness to implement health-preserving systems in the process of life activities and a lack of interest in physical activities.

According to the results of the ascertainment stage of the study, it was determined that most respondents are not sufficiently motivated to use health-preserving technologies, are not ready to implement health-preserving systems in the process of life, and are not interested in physical exertion.

According to the results of the formative stage of the study, we can see that in the experimental group, the number of respondents with a high level and an average level has significantly increased according to the motivational-target criterion, while in the control group, this increase is not significant. The number of respondents with a low level significantly decreased in the experimental group according to the motivational-target criterion, while in the control group, the changes were not significant.

A comparative analysis of the levels of readiness to use health-preserving technologies students' readiness to implement a health-preserving system in the process of life and their interest in physical exertion at the beginning and end of the experiment in the experimental group shows positive changes.

As the results of the conducted experiment showed, there was a natural connection between the implementation of innovative health-preserving technologies in educational institutions and students' readiness to implement health-preserving systems in the process of life and their interest in physical activity. The pedagogical experiment took place in three stages.

The preparatory stage provided an opportunity to determine the purpose of the study, develop an experiment plan, distinguish CG and EG, and check their homogeneity according to the chosen measurement methods and methods of processing the results.

The main stage of the research allowed experimenting.

The final stage indicates that the results of the experiment analyzed on it are reliable. At this stage of the research, conclusions are made about the pedagogical expediency of the experiment.

We include the most important characteristics as criteria for evaluating the quality of pedagogical research: reliability, objectivity, validity, reliability, and accuracy of the obtained results.

We carried out statistical processing to assess the homogeneity of CG and EG using such programs as MS Excel and Statistical Package for Social Science.

As part of the conducted experimental work, we believed that the quality of the analysis of the collected data contributes to the formation of reasonable general conclusions and not only adds weight to the research. The research used digital data collection tools: Google Forms, JSTOR, Google Scholar, and other academic search engines, and Microsoft Excel for data analysis, data volume processing, and statistical analysis of research results.

The choice of each of the tools helped to achieve the most informative and accurate results. A key role in this process was played by the use of appropriate software, which facilitated the process of health and data analysis.

In the research work, we took into account the ethical aspects of data collection and processing. We tried to experiment transparently, honestly, with respect for the rights of participants in the experimental work. This is the consent of the participants of the experiment, anonymity of the research, confidentiality, compliance with ethical standards in the processing and collection of research data, responsible dissemination, and use of data.

Experimental research is conducted with respect for the well-being and rights of all its participants.

The choice of a pedagogical experiment in our research is a certain set of research methods that provides a scientific objective and evidentiary verification of the correctness of the goal justified at the beginning of the research. It allows you to check the effectiveness of certain innovations in education and upbringing more deeply than other methods, to compare the importance of various factors in the structure of the pedagogical process, and to choose the best (optimal) combination of them for the relevant situation, to identify the proper conditions for the implementation of certain pedagogical tasks.

The total volume of the sample in the article is 68 subjects. When creating the sample, the criteria of meaningfulness, representativeness, and equivalence were taken into account. The sample of respondents was formed by random selection using the technical procedure for calculating the selection step.

During the experiment, the target, substantive, and procedural components of the specialists were implemented, and the effectiveness of the ways we discovered in the use of innovative technologies in health-preserving education was verified. The results of the experimental study confirmed the applicability, optimality, and effectiveness of the proposed ways of using innovative technologies in health education.

The experiment was conducted at V.O. Sukhomlynskyi National University of Mykolaiv, Vasyl Stefanyk Precarpathian National University, Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine, National University of Life and Environmental Sciences of Ukraine. The conduct of the experiment is permitted by the scientific councils of the universities in order not to violate ethical considerations in institutions of higher education.

The reliability and validity of the obtained results and the objectivity of their assessment were ensured by the application of a complex of different research methods and the use of the results of a group of respondents from educational institutions for analysis.

In our article, we used quantitative data analysis methods. This group of methods of empirical research includes methods of obtaining information about the researched object, which allows it to reveal its quantitative characteristics.

Results and Discussion

The main approaches to the interpretation of the definition of "health-preserving technologies", are health-preserving components of the educational environment, which determine the content of health-preserving technologies and factors affecting the state of human health.

The problem of preserving and strengthening people's health requires purposeful management of this process and special work and is extremely important.

We will distinguish the main approaches to the interpretation of the definition of "health-preserving technologies", namely:

- **System** – an indicator of the quality of educational technologies;
- **Personally oriented** – provision of the educational process and training taking into account the age, psychophysiological, and individual characteristics of the students of education;
- **Environmental** – creation of an educational environment favorable for health;
- **Competent** – technologies for forming a picture of the world of a healthy individual, teaching the basics of health, forming health-development and health-preserving competencies, and a healthy lifestyle;
- **Active** – optimal combination with techniques, principles, methods, and traditional learning technologies aimed at supporting and preserving the health of the young generation;
- **Integrated** – educational and methodical complex of medical and preventive health and physical education activities.

Expands the understanding of the essence of the concept of "health-preserving technologies" by distinguishing scientific approaches, which makes it possible to understand it as the construction of techniques, content, means, and education of learning, a systematic method of programming goals aimed at creating a health-preserving educational environment in an educational institution, raising the level individual health, formation of health-development and health-preserving competencies under the conditions of monitoring the state of health of subjects studying.

Let's name the health-preserving components of the educational environment that determine the content of health-preserving technologies:

- Content (study of elements of health care provided by the content of educational disciplines);
- Physical culture and health (high adaptability of the body, formation of its physical qualities using increasing motor activity, sports training, a system of physical exercises, hardening of the body);
- Axiological (the influence of value orientations on the highest vital value of a person – health);
- Ecological (dependence of human health on the ecological state of the environment, awareness of the unity of nature and man, the formation of a valuable attitude towards nature itself);
- Epistemological (formation of a system of scientific knowledge about the basics of skills for leading a healthy human lifestyle, personal health, safe behavior in society, and practical skills);
- Emotional-volitional (formation of stable emotional behavior of a person: responsibility, organization, honor, duty, dignity);
- Functional (correct alternation of rest and work, compliance with the diet, prevention of functional diseases and disorders of the body, and harmful human habits) (Rybalko, 2019).

The experts of the World Health Organization determined the (approximate) ratio of factors that ensure the health of a modern person, distinguishing the following four main groups of factors:

- Conditions and lifestyle of people – 50-55%;
- Environmental condition – 20-25%;
- Genetic factors – 15-20%;
- Medical care – 10-15%.

Let's analyze the isolated factors that affect a person's health.

- 1. Conditions and lifestyle.** First of all, the diseases of modern man are caused by his everyday behavior and lifestyle. Nowadays, a healthy lifestyle is considered the basis of disease prevention. This is confirmed by the fact that in the USA, for example, infant mortality rates are reduced by 80% and the mortality rates of the entire population by 94%, and the expected average life expectancy of a person increases by 85%, which is not associated with the success of medicine, but with the rationalization of the method life of the population and improvement of working conditions and human life. A sufficient number of people, at the same time, lead an unhealthy lifestyle. Let's emphasize the factors that should be included in the structure of a healthy human lifestyle: rational lifestyle, rational nutrition, optimal movement mode, psychosexual and sexual culture, psychophysiological regulation, hardening, immunity training, valeological education, and the absence of bad habits.

As a system, a healthy lifestyle consists of the following main interchangeable and interconnected elements, three cultures:

- Food culture (food corresponds to natural technologies of assimilation of food substances);
- Movement culture, which includes physical exercises (swimming, walking, skiing, running, working on a plot of land, etc.) in natural conditions;
- The culture of emotions (maintenance and formation of positive emotions that contribute to human success and preserve health).

Thus, a healthy lifestyle of each individual has a decisive influence on strengthening the health of each person, which should be constantly and purposefully formed during a person's life and not depend on life situations and circumstances. Therefore, during the educational process, it is important to develop the valeological literacy of children, adolescents, and young men.

- 2. State of the environment.** The basis on which human health is based is the biological features of the body. However, the genetic program of a person in the presence of certain environmental conditions ensures its development. An organism without an external environment will not exist, here lies the inseparable unity of the environment and man, his residence.

The environment includes natural, social, artificially created biological, chemical, and physical factors, that is, what affects human health, life, and activity. The human himself is a part of society – a special social environment, because he is a social being, not just a biological one. The social basis of a person's existence is the leading one and mediates his biological ways of dispatching and the existence of physiological functions, which makes it necessary to determine the place of educational institutions, health care authorities, family, and physical education organizations in the performance of the main task of social policy – the formation of a healthy lifestyle for a person.

- 3. Genetic factors.** The development of daughter organisms, which is ontogenetic, is determined by the hereditary program that they inherit with chromosomes from their parents. The structural elements of chromosomes and the chromosomes themselves – genes, can be exposed to harmful influences throughout the life of the future parents, and as a result, this is the occurrence of hereditary diseases. Despite the importance of the influence of upbringing and environment, the determining role of hereditary factors is revealed. The environment and heredity play their role in the pathogenesis of any disease act as etiological factors, and the greater the share of one factor, the smaller the contribution of the other. Hereditary factors play an important role in ensuring human health. In the majority of cases, taking into account these factors through the rationalization of a person's lifestyle can make his life healthy and long-lasting.
- 4. Medical support.** Most people associate their hopes for health with this factor, but the share of responsibility of this factor turns out to be unexpectedly low. As diseases spread more widely and civilization developed, medicine began to pay less and less attention to human health and, to a greater extent, began to specialize in the treatment of diseases. Curative medicine does not always improve human health. Often, treatment reduces the stock of health due to the side effects of medicines. The most effective are primary and secondary prevention, which means working with people who have just started to get sick or with healthy people. Primary prevention involves close cooperation between the doctor and the population. Although the health care system itself does not provide the necessary time for this process, therefore the doctor does not meet with the population to clarify issues of prevention, and the contact with the patient is for examination, examination, and prescribing treatment. Today requires shifting the center of attention to physiology, psychology, cultural studies, and sociology from

medical aspects, as well as to specific regimes, to the spiritual sphere, technologies of education, training, and physical training (Dubaseniuk, 2020).

Functions performed by innovative health-preserving technologies in the educational process.

Health-preserving technologies perform the following functions in preparing future specialists for innovative activities:

- **Formative** (it is carried out based on hereditary qualities and social and biological patterns of personality formation, which determine the individual mental and physical properties of a person);
- **Informative and communicative** (ensures the continuity of traditions, the transmission of experience in organizing a healthy lifestyle, and value orientations to form a caring attitude toward one's own life and personal health);
- **Adaptive** (provides an increase in resistance to stressogenic factors of the social and natural environment, optimization of the state of one's own body, education in the acquirers of the educational space for a healthy lifestyle);
- **Diagnostic** (based on prognostic control aimed at monitoring the development of students, at comparing the actions of the teacher and his efforts by the natural capabilities of the individual);
- **Integration** (in the field of physical education, combines educational standards, national experience, all systems of education, and innovative scientific concepts regarding the preservation of the health of the younger generation);
- **Reflexive** (to preserve health consists in rethinking a person's personal previous experience) (Onishchenko & Lykhovyd, 2016).

Implementation of innovative health-preserving technologies in educational institutions.

Art therapy harmonizes personality development through self-discovery and self-expression. When using art therapy technologies, learners of educational space become more self-confident, gradually assert themselves, can dialogue with peers and teachers, look forward to the next classes, and become more open, they like everything that happens around them. Art therapy corrects the emotional state, heals the child's soul, harmonizes it with the surrounding world, relieves accumulated mental tension after classes, calms the child, and helps him concentrate. Art therapy can be used if there is no problem of a psychological nature to relieve a person of overfatigue after class work, which helps to understand a person's preferences, reveal his abilities in art, and open up.

Let's highlight the most common types of art therapy: drawing, music therapy, fairy-tale therapy, color therapy, drama therapy, mask therapy, origami therapy, image therapy, bibliotherapy, and others.

One of the main methods of art therapy is drawing or isotherapy, which allows a person to express his fears on paper to help survivors of any violence. A new type of abstract art is fluid art, which is also used in art therapy classes.

You can use the method of music therapy, which is passive and in which you can listen to classical calm music or the sounds of nature, which allows a person to relax and rest with the help of good music.

Fairy tale therapy and play therapy allow you to project yourself into the role of the main character, invent a story, and, together with the hero, find a way out of difficult situations to model your happy future.

Library therapy is a pleasant way to communicate because a person does not worry about the veracity of the drawn object. Glue allows a person to learn to sculpt his emotions, negative and positive, and to destroy negativity. Drama therapy – small theatrical productions on various topics allow you to improvise, learn your roles, or imagine yourself as the main characters in the city. Mask therapy and film therapy are important for showing different life situations and getting out of them. Origami therapy – work with an origami of different sizes and sand therapy is popular today, which promotes the development of speech and fine motor skills of hands, develops the sensory perception of a person, relieves stress, calms down, and relaxes after a busy day. It is necessary to alternate and combine different types of art therapy to reveal a person expressing his inner experiences and doubts.

We will prescribe methodical tips that are important when using art therapy in classes (Kuchai et al., 2022):

- 1) Remember that it can be difficult for a person to realize his functional capabilities;

- 2) A person must independently choose what he will do;
- 3) Find a common language with the student;
- 4) Choose such types of art therapy that are available for independent implementation and obtaining a positive result;
- 5) The art process itself: this is the main thing in art therapy – you don't need to do something for the personality to adapt it, and it doesn't matter what the result will be;
- 6) 2 hours, this is the maximum time for an art therapy class;
- 7) The entire process should be discussed with the student and what he wants to achieve at the end of the class.

In the process of art therapy classes, each person expresses his feelings, inner images, loneliness, and insecurity. After art therapy classes, a person can relax and is in harmony with the whole world and with himself, becomes interesting, active, mobile, more hardworking, and works to obtain results (Starubinska & Tanska, 2020).

The system of hardening actions in the system of innovative health-preserving technologies in educational institutions is aimed at improving a person's adaptation to rapid and drastic changes in society and increasing the body's endurance and resistance to bad environmental factors. Natural factors are primarily means of hardening: air, earth, sun, and water. Any natural factor that meets hygienic needs can be used for health purposes. The following hardening procedures are the most effective: wiping with a glove, hardening with water, walking barefoot, dousing the feet, swimming in a pool, hardening with air, hardening with sunlight, etc. (Kornilova & Pavliuchenko, 2020).

Web-oriented technologies for supporting health-saving training of education seekers.

We will reveal the meaning of the concept of the phenomenon of digital health, which is of great importance in educational institutions regarding the introduction of innovative health-preserving technologies and arose as a result of the convergence of the digital revolution with health, society and life, and health care. Investment in digital health in the US has exceeded \$4.1 billion annually. The concept of digital health involves expanding the opportunities and rights of members of society to better track, improve, and manage the health of families and their own health.

In the field of health care, digital technology reduces costs, improves access to information resources, makes medical care more personalized and accurate, and improves its quality.

The key elements of digital health as a result of the integration of health care and ICT contribute to the creative restructuring of medicine because the digital revolution creates a better healthcare system. These include the Internet, mobile networks, social networks, software and hardware, health information technologies, wireless devices, sensors, genomics, integrated and microprocessor circuits, and personal genetic information.

The conceptual sphere of digital health is extensive and includes the following categories: wireless health (Wireless Health), electronic health (e-Health), mobile health (mHealth), cloud computing (Cloud Computing), health 2.0 (Health 2.0), healthcare information technologies (Healthcare IT), electronic patients (e-Patient(s)), health and healthcare data, personalized medicine (Personalized Medicine), telemedicine (Telemedicine) and other health-related concepts.

There are more than 300 concepts of digital health, but all of them reflect the unity of ICT, health preservation measures, and health prevention, characterized by the wide use and mass production of digital logic circuits and derivative technologies (cell phones, computers). Digital health is created for the well-being of people. In the era of the digital revolution, 80% of people aged 18-50 have smartphones, and among people aged 18-30 – 95% of citizens, in particular, 72.5% of people who have smartphones use mobile applications.

The Google company submitted the Im2Calories project – software that will allow smartphone applications to count calories from a photo of food. Many applications nowadays function to calculate a physical activity and calories, the so-called "mobile trainers and nutritionists". Among the most popular calorie counters are FatSecret, MyFitnessPal, Sandwich, Diet&Diary, fitness applications Nike Training Club, Endomondo, In Shape Free, Samsung Gear Fit (fitness bracelet), and Runkeeper. Such applications have advantages: they

stimulate physical fitness, save time (for example, keeping a calorie diary), can always be with the user, etc.

So, digital health is a social program to preserve people's health using digital technologies. The category "digital health" is used to mean the use of devices to improve the entire health care system, social software tools, and devices to improve the health care of a specific person. Depending on the platform that underlies the use of web technologies for health care, Health 4.0, Health 3.0, and Health 2.0 are distinguished.

Health 2.0 is defined as a movement that unites all healthcare entities that use Web 2.0 technologies to improve the quality of this process. The term "Health 2.0" reflects the integration with the Web 2.0 platform of health care technologies and means the use of social software tools to promote collaboration between patients, rehabilitators, medical workers, consultants, educators, instructors, and other health care workers.

The social program includes the following components:

- To enrich the experience of consumers – personalized search for health-preserving information;
- Dissemination of knowledge between communities, dissemination of technologies for mutual exchange and delivery of content;
- The focus of each individual's activities on the development of self-care processes for their own health throughout life.

Web-oriented technologies for supporting health-preserving education of education seekers are "technologies of purposeful use of the Internet to improve access to health-preserving informational messages on the Internet, the creation and functioning of supportive virtual communities, with the help of which students can create subjectively meaningful health-preserving knowledge and exchange them" (Rybalko, 2019).

Web-oriented technology for supporting the health-preserving education of students combines four main segments:

1. *General problems of health-preserving and Web technologies:*

- In the field of health care and health care education, as a promising set of technologies – development of Web 2.0 social software;
- To improve the popularization of a healthy lifestyle for education seekers using Web 2.0;
- To promote a healthy lifestyle using Web 2.0;
- To ensure the need for the high-quality functioning of modern health-preserving, the use of innovative technologies.

2. *Methodology of using web technologies in health care education:*

- Cloud technologies in education;
- Integration of Web 2.0 into health education;
- Technologies, ideas, and their application in education;
- Studying the experience of using social networks in fitness and health care;
- The use of web technologies for multi-content training from strategic planning;
- The use of YouTube as an effective Web 2.0 information channel for health education.

3. *The use of web technologies (Web 2.0) in health education of students:*

- Prospects for the development of health-preserving education for the digital generation;
- Recommendations for the use of social networks in education;
- The use of web technologies in health education in schools and institutions of higher education;
- Health education in the 21st century and social networks and deepening the student experience through social networks.

4. Use of web technologies in professional training of health professionals:

- Use of Facebook in higher education;
- Social networks in the professional education of health professionals;
- Adaptation of Web 2.0 technologies in the education of health professionals;
- Creative ways to use social media to improve fitness and improve health knowledge (Shuliak et al., 2022).

Learning through web technologies is a useful tool for the realization of educational goals because innovative technologies, which are called the "network generation", are increasingly popular among modern students. Pupils of the network generation feel more comfortable while studying in the online environment, students of the "network generation" feel more comfortable and, when using web technologies directly, have the opportunity to:

- To maximize self-motivation,
- To form skills of self-study, time management,
- Are responsible for active participation in training and their own educational development;
- Are constantly in touch with each other;
- Have digital literacy;
- Cooperate in a well-structured environment.

Therefore, the availability of technological competencies among all subjects of training significantly increases the effectiveness of training due to the influence of a health-preserving educational environment. Effective types of Web 2.0 technologies in foreign health care education practices. The following types of Web 2.0 technologies are used in foreign health education practices: blogs, social networks, wikis, podcasts, video exchanges, and chats.

In health education, thematic blogs that reflect different points of view are used – simple websites with short messages that contain information that is presented in a narrative form. Health education also uses special web pages and wiki pages that highlight health issues, which allow everyone to delete, add, and edit information. To connect users in the field of health care and allow them to communicate according to their interests, electronic social networks. Audio recordings in the form of chats, lectures, interviews, podcasts, and chats are used in health education, such as network tools for rapid real-time exchange of text messages between Internet users. Video sharing is a web page that allows professional or private users to upload video files. The most common type of health-preserving technologies in education, which are used to improve communication and expand the channels of information perception, are social networks that promote interaction with others, work in groups, cooperation, and creativity. Interesting results of the research of foreign scientists in the context of the introduction of innovative health-preserving technologies in educational institutions are the research of scientists.

R. Frimming, to obtain health information, directed his research to the evaluation of the quality of the use of social networks:

- 51% of higher education students believe that the long-term use of sites to introduce innovative health-preserving technologies in educational institutions improves the fitness regime of students;
- 52.9% of higher education students claim that they received the most useful information about innovative healthcare technologies from social networks.

It has been proven that for deepening and improving the knowledge of pupils and students, the ideal place for using social networks is educational institutions, both higher and secondary.

V. Asher proved that the following four groups of skills are developed and formed in healthcare education as a result of the use of social networks:

- The ability to communicate;
- Transform information;
- Control information;
- To adapt information to the needs of a specific group of people (Puhach et al., 2021).

In the educational space, it is advisable to conduct restorative and preventive classes while working with a computer in the context of the introduction of health-preserving technologies aimed at reducing the impact of hypodynamia and hypokinesia factors on the body, prevention, and correction of posture; decrease in tension of the visual analyzer and the psycho-emotional sphere; improvement of blood supply to the brain, relief of tension in the psycho-emotional sphere, increase in work capacity; normalization of digestive organs, prevention of stagnation in the lower limbs and pelvic organs.

When working with a computer, eye tag exercises deserve attention when bright visual tags (pictures) with one game plot are hung on the walls, under the ceiling, and in the corners of the computer classroom.

Students are asked to follow the plot during micropauses, moving their eyes from one mark to another slowly, without turning their heads, and turning their heads to observe a different plot (Alnabulsi, 2022).

It is worth doing visual gymnastics after working with a computer, which includes exercises to shift the fixation of vision from close-by objects to distant ones with the maximum amplitude of eye movements and to carry it out together with exercises to relieve general fatigue; ergonomic exercises to improve posture (stretching of tendons, muscles, ligaments); techniques that neutralize the negative impact of ICT on the user, athletic and rhythmic gymnastics, which should be carried out in extracurricular time using ICT to strengthen all muscle groups (with an emphasis on muscles that ensure the correct position of the spine) (Yastrebov, 2016).

Various health-preserving technologies are offered by researchers from foreign countries for the educational space, which will allow the safe use of web technologies and ICT without harmful consequences to people's health. In matters related to the quality of life of adults and children and their health, the usefulness and importance of the exchange of experience between scientists of different countries should be emphasized. The creation of favorable working conditions and the effective implementation of health-preserving technologies in a computer-oriented environment must be decided on a global scale and at the state level because the use of web technologies contributes to the provision of cognitive and creative development of students education, health-preserving training, formation of students of education the ability to use technologies to support motor activity and cooperation, organization of a healthy lifestyle (Yastrebov, 2019).

Formation of health care competence of student youth.

In the education of modern youth, one of the leading directions in the system of educational space is strengthening health, promoting the harmonious development of the personality, and preparing specialists for competitiveness in professional activities. Therefore, the formation of health-preserving competence is mandatory for students of general secondary education institutions and students of higher education in higher education. In the process of forming health care competence throughout a person's life, and not only during all the years of his acquisition of a modern educational trajectory, but it is also necessary to constantly strengthen health, improve the level of physical development, protection and safety of life, functional increase and improvement of the working capacity of the body of higher education students, hardening (Lushchynskyi & Shtompel, 2022).

The formation of a healthy lifestyle culture among students of higher education involves the formation of health-preserving competence of student youth because "the successful formation of health-preserving competence of young people consists in the ability of the individual to resist the pressure of the environment. Therefore, the formation of health-preserving competence of students is versatile and possible with:

- Harmonization of the body and spirit of the individual and nature in the process of physical education of students
- Ensuring the full development of the personality;
- Strengthening the health of modern youth;
- Formation of physical abilities of students of higher education, etc.

Special educational institutions, sports organizations, public organizations, educational institutions of all levels, sports schools, etc., participate in their decision (Shetelya et al., 2023).

The experiment.

Working in educational institutions, we observe that:

A large part of young people have health problems: 90% of students studying in higher education have health problems. The most widespread problems are deviations in the activity of various functional systems of the students' body – 58% of young people; abnormalities of the cardiovascular system are observed in 30%; 37% of students have neuropsychiatric disorders; diseases of digestive organs have 17%.

A significant part of the student youth improves their health by smoking (Fig. 1):

- At the age of 10-11 years, a significant part of teenagers start smoking;
- Up to 16 years of age, the number of such children among girls is 30%, and among boys – 50%;
- 60% of girls and 80% of boys smoke by the age of 18.

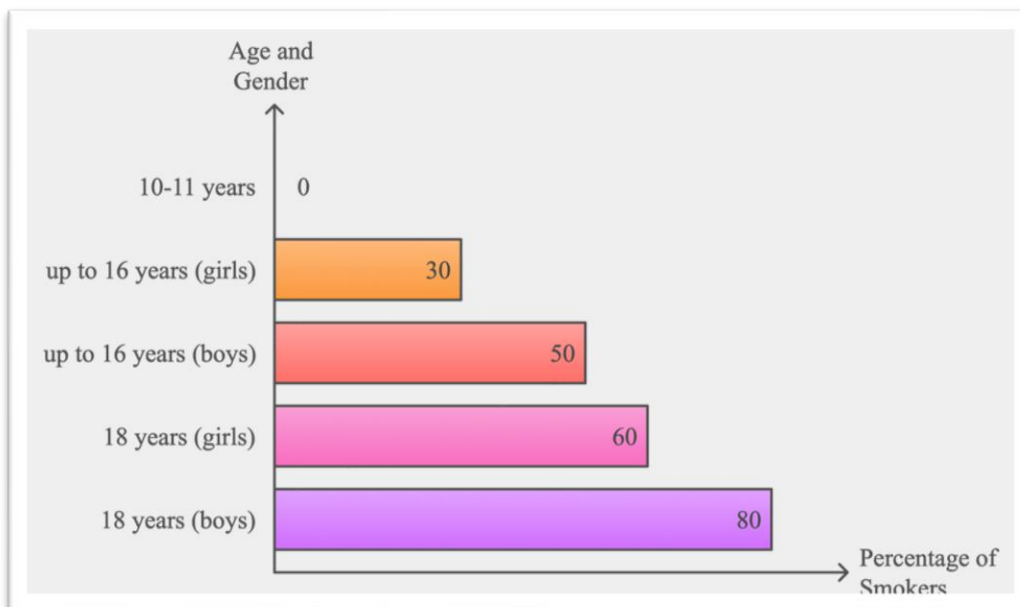


Figure 1. Teenage Smoking Rates by Age and Gender.

Student youth weakens their health by drinking alcohol:

- 30% of young people drink alcohol often;
- 20% of girls drink alcohol often;
- 13% of students tried drugs.



Figure 2. Drug and alcohol use by young people.

Scientists have proven that for human health, the minimum amount of physical activity should be 8-10 hours per week.

But, according to our research, this norm is observed by a small part of young people (Fig. 3):

- 25% of student youth spend 8-10 hours a week for physical activity;
- 40% of student youth spend 2 hours a week on sports and physical exercises;
- 35% of student youth spend 3 hours a week on sports and exercises.

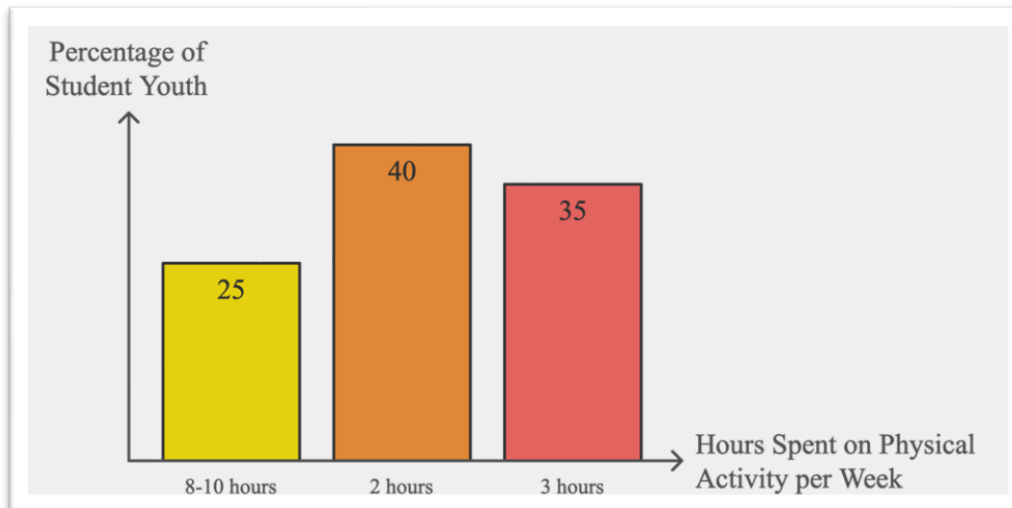


Figure 3. Student Youth Physical Activity Participation.

As shown by the results of the ascertaining stage of the pedagogical experiment, students do not pay much attention to health-preserving technologies in educational institutions and have a weak readiness to implement health-preserving systems in the process of life activities and a lack of interest in physical activity.

At the ascertainment stage of the experiment, according to the results of the questionnaire in the control group:

- 11% of respondents had a very positive personal attitude towards health-preserving technologies in educational institutions and readiness to implement health-preserving systems in the process of life activities and the presence of interest in physical exertion;
- 27% of respondents had a positive personal attitude;
- 16% of respondents had a negative personal attitude;
- 23% of respondents are undecided;
- It is difficult to answer 23% of respondents.

In the experimental group

- 10% of respondents had a very positive personal attitude towards health-preserving technologies in educational institutions and readiness to implement health-preserving systems in the process of life activities and the presence of interest in physical exertion;
- Positive 19% of respondents;
- Negative 21% of respondents;
- 30% of respondents are undecided;
- It is difficult to answer 20% of respondents.

So, we see that the problem of using health-preserving technologies in educational institutions, the readiness to implement health-preserving systems in the process of life, and the presence of interest in physical exertion are very relevant and timely. Young people are sufficiently ready for its implementation, know how to learn in the process of professional training, and also feel their own need for it.

The obtained results of the survey among students of the 1st to 4th years proved that:

1. The level of teaching of disciplines in a higher educational institution aimed at health-preserving technologies and the readiness of students to implement health-preserving systems in the process of life activities and the presence of their interest in physical exertion:
 - Very high – 30% of respondents;
 - High – 40% of respondents;
 - Sufficient – 20% of respondents;
 - Difficult to answer – 10% of respondents.
2. The level of practical training is aimed at health-preserving technologies and the readiness of students to implement health-preserving systems in the process of life and their interest in physical exertion in a higher educational institution:
 - Very high – 55% of respondents;
 - High – 25% of respondents;
 - Sufficient – 15% of respondents;
 - Difficult to answer – 5% of respondents.
3. Students determined their own setting for further readiness to implement health-preserving systems in the process of life and their interest in physical exertion:
 - Very positive – 30% of respondents;
 - Positive – 30% of respondents;
 - Negative – 20% of respondents;
 - Difficult to answer – 20% of respondents.
4. Students noted the question that caused difficulties: "Name the factors, methods, rules, ways, and means that contribute to the implementation of a health-preserving system in the process of life and the presence of interest in physical activity?". Most of the respondents (70%) could not clearly answer these questions.

Based on the results of the ascertainment stage of the research, it was determined that:

- 60% of respondents are not sufficiently motivated to use health-preserving technologies, are not ready to implement health-preserving systems in the process of life, and are not interested in physical exertion;
- 58% of respondents have limited knowledge of methods and technologies for using healthcare technologies;
- 67% of future specialists are poorly versed in health-preserving technologies;
- 68% of respondents show no interest in physical improvement, are poorly versed in special methods of using health-preserving technologies, and weakly possess skills and knowledge under the condition of the initiative of the individual himself.

Let's analyze the research results obtained at the formative stage of the experiment.

At the beginning of the pedagogical experiment, only 13% of the respondents in the control group had a high level according to the motivational-target criterion, and at the end – 15% of the respondents and 25% of the students had an average level at the beginning of the experiment, at the end of the experiment – 28% of the respondents, a low level was at the beginning – 62% of respondents, at the end – 57% of respondents (Fig. 4).

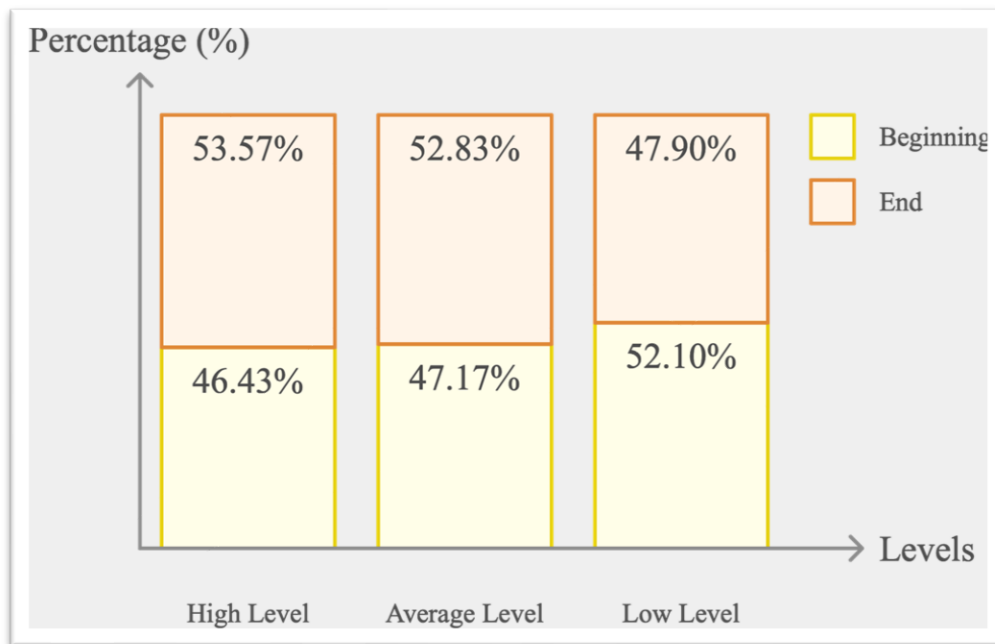


Figure 4. Respondent Levels in Control Group Before and After Experiment.

At the beginning of the experiment, we observed (Fig. 5):

- The high level of 14% of respondents in the experimental group according to the motivational-target criterion, and at the end of the experiment, 40% of respondents;
- The average level at the beginning of the experiment was 14% of respondents, at the end of the experiment, it was 55% of respondents;
- The low level at the beginning of the study was 72% of students, at the end, it was 5% of respondents.

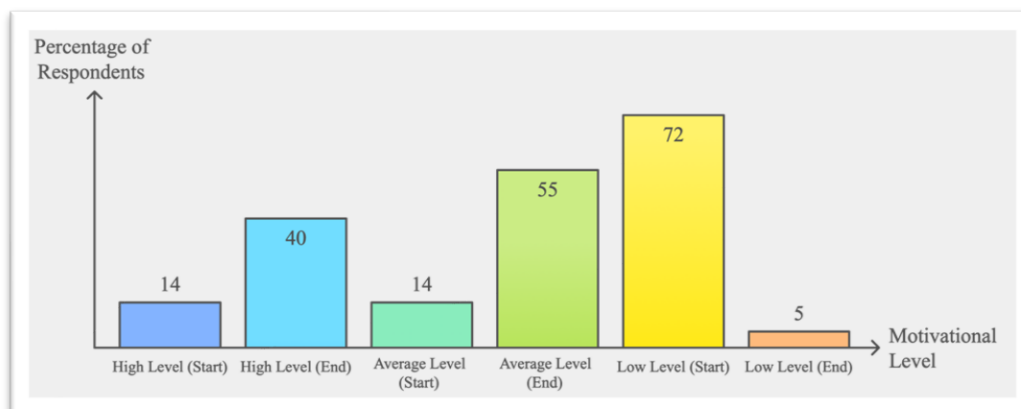


Figure 5. Changes in Motivational Levels Before and After Experiment.

We can see that in the experimental group, the number of respondents with a high level and an average level has significantly increased according to the motivational-target criterion, while in the control group, this increase is not significant. The number of respondents with a low level significantly decreased in the experimental group according to the motivational-target criterion, while in the control group, the changes were not significant.

Therefore, a comparative analysis of the levels of formation of the readiness to use health-preserving technologies and the readiness of students to implement a health-preserving system in the process of life and their interest in physical exertion according to the motivational and goal criteria at the beginning and the end of the experiment in the experimental group shows positive changes.

According to the cognitive-intellectual criterion, 8% of the respondents in the control group had a high level at the beginning of the experiment, and 9% of the students at the end of the experiment; the average level at the beginning was shown by 23% of respondents, at the end by 25% of respondents; 69% of respondents had a low level at the beginning, and 66% of respondents at the end.

According to the cognitive-intellectual criterion in the experimental group, 7% of respondents showed a high level at the beginning of the experiment, at the end – 36% of respondents had an average level at the beginning of the experiment – 20% of respondents, at the end – 60% of respondents; 73% of respondents had a low level at the beginning, and 4% of respondents at the end.

So, in the experimental group, the number of respondents with a high level increased significantly according to the cognitive-intellectual criterion, and in the control group, this indicator remained practically unchanged. The number of students in the experimental group with an average level according to the cognitive-intellectual criterion increased significantly, while the respondents in the control group remained practically at the same level. The situation is similar, with a low level of cognitive-intellectual criteria in the control group and the experimental group.

Therefore, a comparative analysis of the levels of readiness to use health-preserving technologies, students' readiness to implement health-preserving systems in the process of life, and their interest in physical exertion at the beginning and end of the experiment in the experimental group show positive changes.

As the results of the conducted experiment showed, there was a natural connection between the implementation of innovative health-preserving technologies in educational institutions and students' readiness to implement health-preserving systems in the process of life and their interest in physical activity. As a result of the study, we noted the weaknesses of the use of health-preserving technologies in educational institutions, in particular, we noted the issues and isolated difficulties experienced by students who could not clearly name the rules, methods, factors, means and ways that promote interest in physical exertion and the implementation of health care systems in the process of life. Therefore, the majority of students enrolled in institutions of higher education are not sufficiently motivated to use health-preserving technologies and are not ready to implement health-preserving systems in the process of life and are not interested in physical exertion; have limited knowledge of methods and technologies for using health-preserving technologies; poorly equipped with health-saving technologies; show little interest in physical improvement; do not have a good command of special methods, methods of using health-preserving technologies; weakly possess skills and knowledge under the condition of the initiative of the individual himself.

Having analyzed the results obtained, the conclusions drawn and their significance for educational practice, we note that the practical significance of the study consists in revealing the main approaches to the content of health-saving technologies and factors that affect the state of human health; components of the educational environment, functions performed by innovative health-saving technologies in the educational process; the development of methodological tips that are important when using art therapy in classes in educational institutions and the identification of the main web-oriented technologies for supporting the health-preserving training of education seekers; elucidation of effective types of Web 2.0 technologies in foreign practices of health-preserving education, which are important in the formation of health-preserving competence of student youth.

Conclusions

The main approaches to the interpretation of the definition of "health-preserving technologies" are revealed; the health-preserving components of the educational environment, which determine the content of health-preserving technologies and factors that affect the state of human health, are substantiated; the functions performed by innovative health-preserving technologies in the educational process are highlighted. The effectiveness of the implementation of innovative health-preserving technologies in educational institutions is shown; methodical advice is prescribed, which is important when using art therapy in classes in educational institutions. The main web orientations of technology support for health-preserving training of education seekers are described; the concept of digital health phenomenon is revealed. The main segments of web-oriented technologies for supporting health-preserving education of education seekers are described.

Emphasis is placed on effective types of Web 2.0 technologies in foreign practices of health care education, which are important in the formation of health care competence of student youth.

As shown by the results of the ascertaining stage of the pedagogical experiment, students do not pay much attention to health-preserving technologies in educational institutions and have a weak readiness to implement health-preserving systems in the process of life activities and a lack of interest in physical activity.

According to the results of the ascertainment stage of the study, it was determined that most respondents are not sufficiently motivated to use health-preserving technologies, are not ready to implement health-preserving systems in the process of life, and are not interested in physical exertion. According to the results of the formative stage of the study, we can see that in the experimental group, the number of respondents with a high level and an average level has significantly increased according to the motivational-target criterion, while in the control group, this increase is not significant. The number of respondents with a low level significantly decreased in the experimental group according to the motivational-target criterion, while in the control group, the changes were not significant.

A comparative analysis of the levels of readiness to use health-preserving technologies, students' readiness to implement a health-preserving system in the process of life, and their interest in physical exertion at the beginning and end of the experiment in the experimental group show positive changes. As the results of the conducted experiment showed, there was a natural connection between the implementation of innovative health-preserving technologies in educational institutions and students' readiness to implement health-preserving systems in the process of life and their interest in physical activity.

Consideration of the ways of applying innovative approaches to the formation of health-preserving competence of students of higher education requires further research.

The development of innovative technologies of health-preserving education in the education system will be more effective if it is based on a structural-functional model, the effectiveness of which will be ensured by pedagogical conditions: ensuring sustainable motivation for the development of health-preserving education of teachers; creation of a health-preserving environment for the continuous development of health-preserving education in the system of postgraduate pedagogical education; formation of subject-subject interaction between teacher and student by means of training technologies; ensuring the connection between theoretical knowledge and practical skills for their implementation in professional activity.

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