

## Implementation of electronic health control technologies in higher education institutions

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### Abstract

**Background.** The study of historical and pedagogical sources, as well as issues of formation, strengthening and preserving the health of the child became the object of scientific analysis for many representatives of the pedagogical science for a long time. Scientists of the past tried to substantiate the theoretical and methodological features of preserving the health of the child in a combination of mental development and physical education, emphasized the importance of training young people in accordance with her age, mental, physical abilities and abilities. In these circumstances, the problem of qualitative training of future specialists who are ready for education and formation of a healthy lifestyle, which will ensure the harmonious development of the individual of each child, as well as outline the main approaches to the implementation of healthcare-saving technologies in education, becomes of special urgency. **Methods.** Regarding the genesis of historical approaches and the analysis of the main trends in the development of scientific views on the preservation of health, a set of methods was used: theoretical methods: a comparative analysis of psycho-pedagogical, philosophical and health-saving literature for the synthesis of scientific facts regarding the development of healthcare-saving activity in society; retrospective analysis, scientific reflection to form a holistic view of the phenomenon of health preservation; empirical methods: diagnostic (sociological observations). **Results.** It is the study and analysis of the main trends in the development of scientific views on the preservation of health and health-saving activities, which became the basis for theoretical and practical developments, as well as the introduction of more advanced healthcare technologies in educational institutions. **Conclusions.** The main tendencies in development and modern development of scientific views on health preservation and health-saving activity are studied and analyzed. This article does not exhaust all aspects of the problem under consideration and updates the need for increased attention in relation to further fundamental research, theoretical and practical developments, and the introduction of the most advanced health-saving technologies in education.

**Key words:** health, health-saving technologies, health-preserving activity, electronic educational-methodical support, electronic teaching aids, educational and methodical materials.

### Introduction

The modern stage of society's formation is characterized by increased attention of researchers to all aspects of the preservation of human health. Actualization of the problem of formation and preservation of young people's health is of paramount importance for modern society, requires a historical analysis of the views on the aspects of health preservation, the allocation of the main stages of its development, the definition of methodological and scientific content (Models, 2002).

The question of the formation, strengthening and preservation of health have become the subject of scientific analysis for many representatives of the pedagogical science for a long time. The formation of theoretical concepts of healthcare preserved were long-lasting, and became the basis for the formation of basic

approaches to the implementation of health protecting technologies in education (Diachenko-Bohun, Hrytsai, Grynova, Grygus, Skaliy, Hagner-Derengowska, Napierała, Muszkieta, Zukow, 2020). Researchers of the ancient experience of health-saving activity note that the main idea of health systems, formulated in the writings of the great doctors of the Ancient World, is the prevalence of issues of the formation, preservation and strengthening of health, rather than the treatment of diseases that people have already fallen ill with. As a result, in case of a health problem, a person should concentrate on the restoration of the resources that are inherent in its genetic nature, which will ensure the regeneration of the functional state, the harmonious combination of physical, mental and spiritual health (Larionova, 2007, p. 21). Restoration of interest in the knowledge of the laws of nature and man and the admiration of the works of ancient Greeks begins in the Renaissance. This historical period was characterized by radical changes that occurred in the demands of society to man: harmonious development of man, the combination of physical and spiritual health – is the key to its active civic position and optimism of life. The aforementioned approaches became the ideological basis for the humanistic conceptions of personal development, the purpose of which was to ensure the comprehensive and harmonious development of the natural abilities of the child. The outstanding thinkers of the Renaissance (T. Campanella, M. Montaigne, T. Mor, F. Rabelais) for the first time point to the dependence of the child's development on the pedagogical influence on it, on the need for a harmonious combination of physical activity and mental work in the process of physical, intellectual, moral formation personality (Larionova, 2007, p. 113).

A powerful impetus to the development of pedagogical developments in the direction of healthcare was the transition of society in the industrial era. This is due to the development of humanistic views on social relations, the increase of the role of man in the production processes of that time, the need to find new ideas for updating the problems of the time: low level of physical health of young people, high rates of morbidity and mortality. Outstanding Teachers of the New Era (J. Comenius, J. Locke, J.-J. Russo, J. Pestalozzi, etc.), by their scientific works, made a significant theoretical and practical contribution to the formation of healthcare-saving pedagogy as a foundation for the education of young people.

Revolutionary changes in relation to youth health issues in Western Europe and the United States take place at the end of the nineteenth and early twentieth centuries. This happened in the transition to an industrial society, which greatly increased the need for healthy and intelligent workers. The embodiment of these social transformations was the emergence of ideas of pedocentrism, or free education, represented by F. Hansberg, J. Dewey, M. Montessori, A. Ferrier et al. A new phenomenon in pedagogy was the emergence of "new schools", the main thing in their activities was the creation of pedagogical conditions for the disclosure of natural beauty and uniqueness of each person. The leading idea of the pedagogy of "new schools" was the provision on the mutual influence of mental and physical development, which was based on the principles of humanization of the content of education. Changes to the content content of the knowledge system included:

- formation of high value of the received knowledge;
- a combination of intellectually, intellectually, creatively, aesthetically and emotionally-shaped learning components;
- Priority of search-research forms of knowledge acquisition;
- practicality and high quality of received knowledge;
- development of creative abilities in children during the teaching of disciplines (Larionova, 2007, p. 118).

The upbringing of a healthy person as a basic category of native pedagogical thought dates back to the time of Kyivan Rus, since it was the health of the ancient Slavs that was one of the most important values. The system of education was directed at the formation of courage, endurance, mental stability, physical strength. This was necessary to ensure the protection of their own territories from enemies, social and natural disasters, and increased the value of pedagogical influence on the formation, strengthening and preservation of health from an early age (Savina, 2007, p. 114).

Theoretical and practical developments of world educators in the field of healthcare have opened a new page in solving problems of implementation of healthcare-saving technologies in educational institutions. The problem of creating the newest educational institutions, which would be aimed at ensuring the harmonious development of the child and preserving her health, became relevant at the end of the twentieth century. The globalization of all aspects of human life and the changes associated with these processes, led to the deepening of scientific and pedagogical research in the direction of new health care strategies in educational institutions (Diachenko-Bohun, Hrytsai, Grynova, Grygus, Muszkieta, Napierała, Zukow, 2019).

Today, before society, there are qualitatively new requirements to the level and health of each person, which, first of all, reflected in the requests to the education system in the organization of healthcare work. New approaches to the formation, preservation and strengthening of youth's health in educational institutions were based on the principles of harmonious combination of physical, intellectual, mental, social and spiritual development of the child. The theoretical and practical experiences of teachers in the field of healthcare have opened a new page in addressing the problems of implementation of healthcare-saving technologies in educational institutions, based on the principles of informatization of public life, and play an important role in the development of modern approaches to healthcare in educational institutions.

## Material and methods

Historical and pedagogical analysis of the emergence and development of the concept of «healthcare» in the field of education allows to distinguish the main approaches to the problems of preserving the health of the child, which were characteristic of preindustrial and industrial societies. The main characteristic of these models is the lack of educational institutions at that time, systemic healthprotective activities and the purposeful formation of health-friendly young people with the means of healthprotecting technologies (Diachenko-Bohun, Hrytsai, Grynova, Grygus, Zukow, 2019). The cardinal changes in society, characteristic of post-industrial society, affect the general indicators of physical, mental and social health of young people. This requires the development of new approaches to healthcare as the basis of healthcare-saving technologies. A detailed analysis of the peculiarities of healthcare in modern educational institutions makes it necessary to study the state of development in the scientific literature of the problem of forming the readiness of future specialists for the implementation of healthcare-saving technologies. In our opinion, one of the pedagogical conditions **is the development of a special e-learning methodical support (NMS)**. This process involves shifting the emphasis on creating e-learning tools, distance learning courses, personalized websites.

The problem of developing and introducing electronic teaching aids in the educational process is devoted to a large number of scientific works and researches of such scientists as V. Bazurin (Bazurin, 2018), V. Bykov, M. Shyshkina (Bykov, & Shyshkina, 2014, 2018) Y. Bogachkov, J. Feldman (Bogachkov, & Feldman, 2015), V. Mylashenko, P. Ukhan, O. Sagadina (Bogachkov, Mylashenko, Ukhan, Sagadina, 2018), L. Filenko, V. Ashanin, O. Basenko, Y. Petrenko (Filenko, Ashanin, Basenko, Petrenko, 2017), S. Burtovy, O. Vyshtak, V. Volynsky, V. Gur, Yu. Zhuk (Zhuk, 2007), M. Bulatova, O. Kucheriavyi, V. Ermolova, O. Yarmoliuk (Bulatova, Kucheriavyi, Ermolova, Yarmoliuk, 2019), L. Denysova, O. Shynkaruk, V. Usychenko (Denysova, Shynkaruk, Usychenko, 2018). V. Ashanin, L. Filenko, V. Pasko, A. Poltoratskaya, O. Tserkovna (Ashanin, Filenko, Pasko, Poltoratskaya, Tserkovna, 2017), A. Shevchenko (Shevchenko, 2016), Y. Trach (Trach, 2017), I. Doherty, N. Sharma, D. Harbutt (Doherty, Sharma, Harbutt, 2015).

## Results

V. Gritsenko notes that EZN (electronic teaching aid) is a special purpose teaching software, the main role of which is to provide more detailed and visual teaching material and direct interaction with the applicant (Gritsenko, 2007, p. 25).

EZN researchers include electronic textbooks and manuals, electronic teaching and learning complexes, computer tests, distance learning courses, etc. The ability to develop EZN is the information and communication competence of future teachers, which is why in the process of teaching in the pedagogical ZOO it is expedient to orient students to form skills development of various EZN, which in future professional activities will enable diversify and optimize the educational process. The development of a special electronic NMS in our study is a process of creation of EZN, distance courses, personal websites and is a joint creative activity of students and scientific and pedagogical staff of ZOO. According to E. Luzik, the joint creative activity is a condition for the formation of the professional competence of future teachers, since only a creative, free personality capable of self-realization is able to engage in social co-creation, to predict and influence changes in society (Luzik, 2006, p. 77). According to Ye. Megem, **joint creative activity** is the driving force behind the development of the personality of teachers and students. Collaboration with students in the educational process enables teachers to redefine their professional activities in the transition from a personally alienated to personally oriented paradigm of education and provide conditions for the formation of the professional competence of future teachers (Megem, 2005, p. 91).

V. Buryak expresses the opinion that the result of joint activity is the realization of cognitive needs of both students and teachers, their education takes place simultaneously and in parallel; The teacher's ability to go for a review and change their ideas and plans, to overcome the stereotypes of the existence of objectively «correct» and «wrong» answers is evidence of professionalism (Buryak, 2007, p. 28).

Scientists emphasize the fact that the joint creative activity does not allow the teacher to close in the space of purely subject knowledge; creative teachers never solve only didactic tasks, for them the discipline being studied is part of the general culture of a person that goes far beyond the educational material.

In our study, we consider it worthwhile to focus on the development of such types of electronic NMS: electronic LMIC, distance course, personal teacher's website. According to H. Perraton, B. Robinson, C. Creed, the preparation of the MOH for the use of ICT must be carried out in two directions:

1) «*learning-to-use*» refers to the acquisition of skills for the use of ICT for personal needs and professional activities,

2) «*use-to-learn*» – focuses on ways to integrate ICT into the learning process and increase the efficiency of assimilating basic concepts through the use of ICT (Perraton, 2001, p. 33).

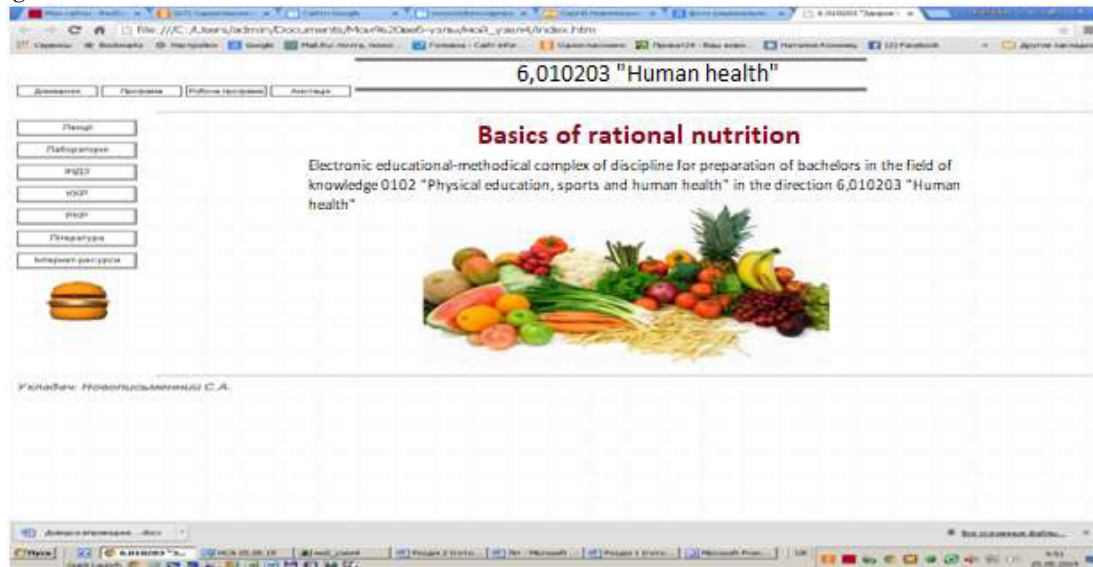
**Electronic VMKD (ENMKD)** is a complex of specially developed materials, presented in the form of a hypertext environment, which is a holistic formation and provides students with mastering a certain discipline. Such ENMKD's scientific-pedagogical staff developed together with students: teachers were preparing the

information filling of the complex, developed lecture, laboratory and practical materials, and students helped to format documents, develop presentations, place materials in a computer shell.

To create the ENMKD, we chose the *Microsoft FrontPage* shell is optimal for the development of electronic textbooks, manuals, teaching and learning complexes due to their accessibility and ease of use.

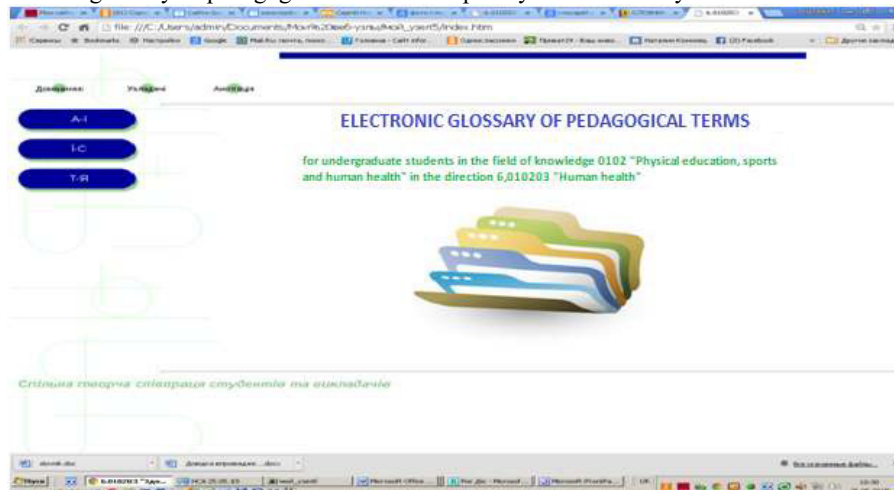
Note that for the creation of the ENMKD it is expedient to use the «Corporate Web Master», which allows the automatic creation of the ENMKD structure, interactive buttons, navigation panels.

Domain management in *Microsoft FrontPage*, as well as the search for information on the World Wide Web, provided the formation of information and communication competences of future teachers, namely the ability to navigate the information space; the ability to use ICTs and create text documents, tables, presentations, drawings, mental maps, web quests; ability to use Internet technologies, databases, teleconferences, social services, etc.; the ability to develop their own electronic teaching materials, distance learning courses, the ability to combine ready-made electronic teaching materials in their professional activities; Ability to communicate with students and colleagues by means of the Internet; the ability to monitor, diagnose, test computer equipment and the Internet. Figure 1. Depicts ENMKD in the discipline «Basics of Rational Food», created by *Microsoft Front Page*:



**Fig. 1. ENMKD on discipline «Fundamentals of rational nutrition»**

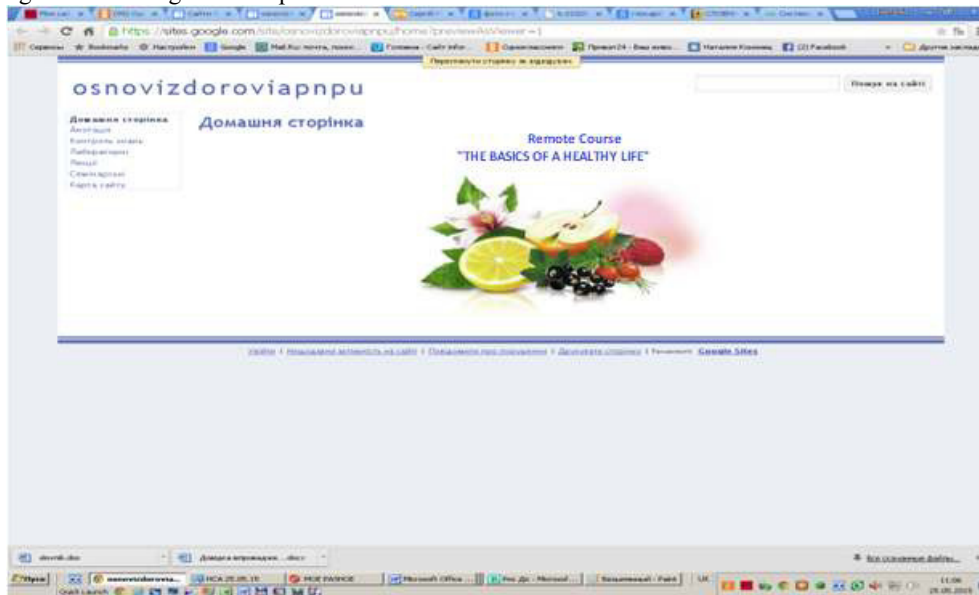
ENMKD is a hypertext environment and consists of 11 pages: Home Page, Program, Work Program, Annotation, Lectures, Laboratory, INDS, RCT, RCA, Literature and Internet resources covering all necessary components of LMIC. The next step for a teacher is to help the student create his own product. In this case, the teacher can be not only a consultant, an expert, but also a co-author. Due to this approach, NMZ was replenished with a variety of EZNs: electronic manuals, electronic packages of visual support, electronic reference books, etc., which students created independently, and scientific and pedagogical staff only advised them. Figure 2 shows an electronic glossary of pedagogical terms developed by students led by teachers.



**Fig. 2. Electronic Glossary of Pedagogical Terms**

The proposed method of creating ENMKD with *Microsoft FrontPage* enables the creation of such materials that can be written to a CD and replenish the electronic libraries of the departments and the ZOO in general. Students can receive such electronic materials on a flash drive and use them on their own computers.

We used the service <https://sites.google.com> to develop **distance courses (DK)**. For the creation of DC, a teacher needs to have an account with Google. To create a DK, you must log in to the GoogleSites service and click on the Create button. The next steps in setting up a DK is the choice of a site template, site name, topic, and code entry. After that, just click the Create button and the platform for the DK will be created. All that remains is to fill it with teaching materials. In this way, we developed a course on «Healthy Lifestyle Basics» <https://sites.google.com/site/osnovizdoroviapnpu/> (Fig. 3), which contains annotations, lectures, laboratory, seminar, knowledge control and general map of DC.



**Fig. 3. Distance course «Fundamentals of a healthy lifestyle»**

The advantage of using *the GoogleSites* service is the ability to share the materials of the DK for both students and teachers. *The Special Sharing button* can, if necessary, provide full access to the creation and editing of materials for the DK (for teachers), and for students of the DK it opens only for the period of studying discipline and only with the ability to view or download material.

You can add files of any type (text, graphics, computer presentations, videos, etc.) to the viewing and downloading of the file, add links, add files from Google Drive, move existing files and delete them. The DK provides a search system for information content.

Now effective is the creation of ENMKD with the further placement of instructional materials, tasks for independent work, recommendations for the implementation of laboratory and practical work, questions for self-testing in the World Wide Web. That is why the presence of **a personal teacher's website**, which will cover all of these materials, as well as a reference to the DC, is a time requirement. On this site, feedback is established with the students for close communication with the teacher. The personal site of the teacher will be an assistant for scientific and pedagogical staff and students, namely: for students to approve the curriculum (if the student for some reason did not attend classes); for teachers from different ZOOs – in the exchange of experience; as well as for parents – in controlling the achievements of their own children.

A website (web site) or website (the English web site, from the web, web, and site) is one or a set of web pages available on the Internet through *HTTP / HTTPS* protocols; this place on the Internet, which is determined by its address, has its owner and consists of web pages that are perceived as a whole.

In our study, **the personal teacher's website** is a site designed to accompany the learning process and distance communication (interactivity) between the teacher and the students.

The ability of students to develop and maintain their own website implements one of the principles of forming the professional competence of future teachers - the principle of interactivity. To the teacher, even having a low level of computer training, will create a personal website, it is expedient to use modern Web 2.0 technologies, thanks to which that be able to create and maintain a personal website. The use of Web 2.0 tools that are installed on a remote server, not on the user's own computer, has real benefits for both users and the developers of such tools: the user is relieved of such worries as timely updating of the program, adjusting its work in the operating system; for developers, the need for the costs of distributing their development and the organization of support services, etc., disappears. The main advantage is that the site's location and its support are free.



The analysis of existing free hosting (service for hosting websites on specialized servers and providing access to them via the Internet) made it possible to dwell on the most convenient, from our point of view, service: <http://www.webnode.com.ua/>, which allows It is quick, convenient to create a personal website and fill it with content. *Webnode* service is one of the most popular Web portals in the World Wide Web and can be called "ready-made sites" service, which contains a large number of ready-made and convenient templates suitable for creating an educational website. Webnode service developers regularly improve existing content and create new content. For example: Forum, News, Blog, Article Directory, Frequently Asked Questions, Photo Gallery, Polls, Guestbook, Google Maps, Widgets, Social Networks, "Registration forms", etc. Yes, we created the Personal Website of Sergey Novopismenny "Health Source" <http://san26.webnode.com.ua/> (Fig. 4).

As can be seen from Figure 5, the site consists of 14 pages that contain personal information about the owner, his teaching and methodological and scientific activities, teaching materials for professionally oriented disciplines for the preparation of future teachers, a photo gallery, distance courses, organized interactive with a teacher (Novopysmennyi, 2016).

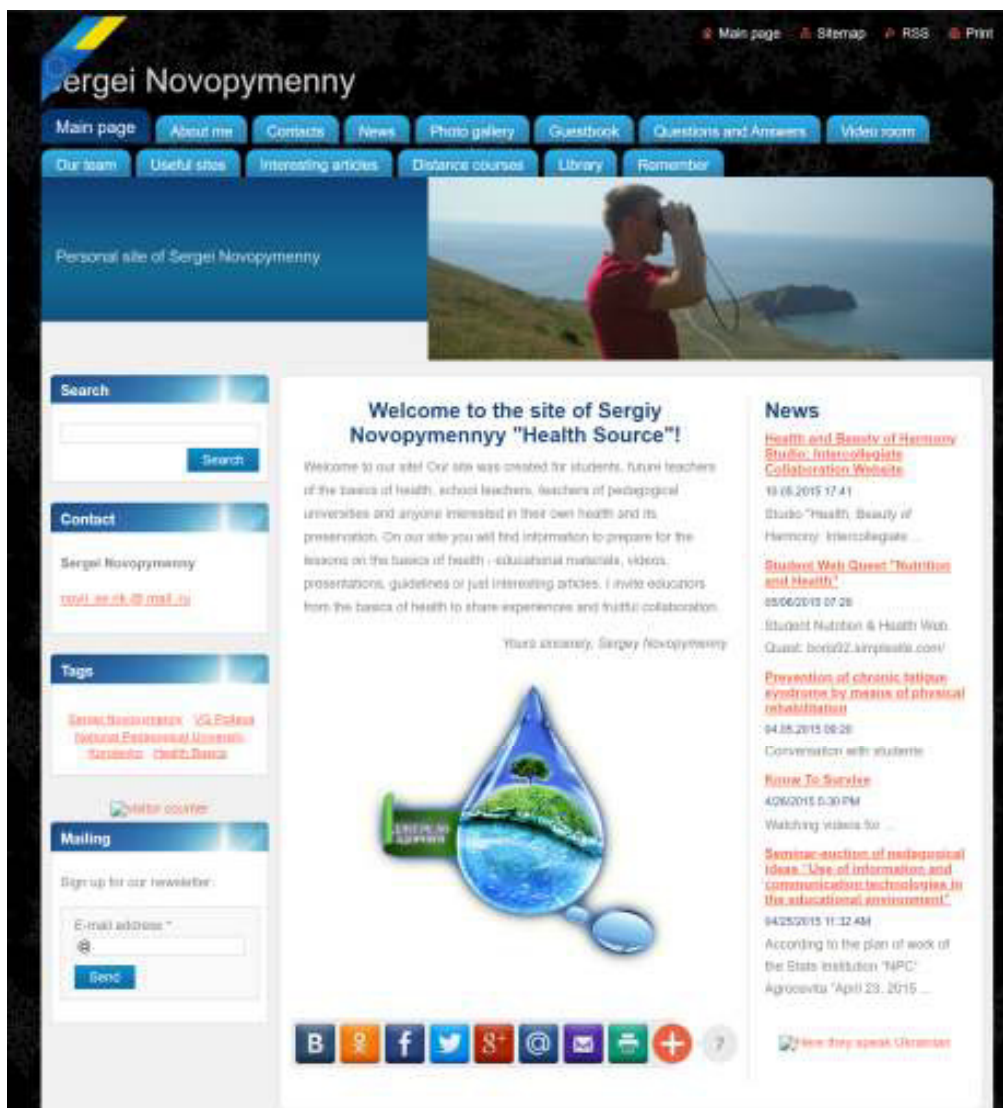


Fig. 4. Personal site of Sergey Novopysmennyi "Source of Health"

- A personal website enables the following tasks to be performed:
1. Search, selection and placement of materials necessary for the organization and improvement of the educational process.
  2. Placement of useful links to existing Internet resources.
  3. Formation of the multimedia base of NMS (presentations, audio and video materials).
  4. Creation and placement of ENMK and DK.

5. Improvement of the teacher's qualifications and his pedagogical skills through the use of ICT (to be closer to students, to the world educational community and to keep pace with time).
6. Formation of the BC MOU in the process of studying professionally oriented disciplines.
7. Promote a healthy lifestyle through the Internet community.

### Conclusions

Undoubtedly, the use of websites has a serious administrative, scientific-pedagogical and advertising potential, which can be considered by the professional community and implemented in practical activities. According to the researcher, the website is still something more than just the sum of its constituent parts: besides the information content, structure and navigation capabilities, design, functionality and interactivity, the overall impression takes into account those elusive subtleties that make the user stay or go from it. The formation of theoretical concepts of healthcare is long-lasting, and become the basis for the formation of basic approaches to theoretical and practical developments, as well as the introduction of more advanced health-saving technologies in education.

### Conflicts of interest

The authors declare that there are no conflicts of interest.

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