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## **Health Preserving Educational Environment in the Condition for Information Technologies**

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### **Abstract**

Information technologies in institutions of higher education is suggested, which is explained as a holistic dynamic process of organizing and stimulating the independent cognitive activity of students for mastering the skills of active transformation of the information environment, which involves the optimal use of the triad "student-teacher-librarian" consolidated personnel, logistical, educational, methodological, financial and information resources. The effectiveness of the implementation of resource-based learning in a health preserving educational environment of institutions of higher education is analyzed. The transformation of the information environment is understood as the study, analytical and synthetic analysis of the content of educational information, regrouping and changing its values and form, preparation of its new way (secondary data), convenient for future use. The implementation of information technologies in higher educational institutions with the established health preserving educational environment enables: a purposeful system of conditions for scholarly activity, which not only does any harm to the health, but also ensures its formation, preservation and strengthening in all participants of the educational process; application of active forms and methods of education aimed at creating a comfortable health-saving psychological atmosphere during classes; awareness of teachers and students about ways to preserve health and respect for their health keeping behavior; developing in students, in future specialists of value attitudes towards their own health and the health of their peers.

**Keywords:** Information technologies, Health preserving education, High school, Resource-based approach, Higher education.

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## **Introduction**

In the context of global economic changes in Ukraine, as in the world as a whole, the search for the ways to modernize the content of education as the basis of intellectual, spiritual, cultural, social and economic development of the society is taking place. Modern educational trends place new demands on higher education, in particular: individualization of learning, the use of new pedagogical, information and communication technologies, the use of pedagogical innovations, strengthening the organic unity of education and self-education, integration of learning content, which involves creating the preconditions for the organization of knowledge throughout life. The last is intended to ensure the quality of education, namely, the comprehensive training of competent future professionals from different fields and specializations that will be competitive in the global labor market.

Teachers from different countries defend the position that the modernization of the content of higher education should ensure the formation of a student's productive knowledge, skills and competencies, that is, the professional competences that he will use both during studying and after the graduation of the institution of education, in life and professional activity. That is why the necessity arises in applying innovative approaches to learning, their implementation with the highest indicators of the quality of educational results.

We suggest introducing information technologies (IT) in institutions of higher education, which is explained as a holistic dynamic process of organizing and stimulating the independent cognitive activity of students for mastering the skills of active transformation of the information environment, which involves the optimal use of the triad "student-teacher-librarian" consolidated personnel, logistical, educational, methodological, financial and information resources.

## **Problem Statement**

The analysis of scientific-pedagogical literature shows that Information technology (resource-based approach) to education is being implemented in the educational systems of such countries as Australia, Austria, Great Britain, Ireland, Canada, China, Germany, Norway, Singapore, USA, Taiwan, Sweden, Switzerland, Finland, etc. Research of resource-based learning (RBL) is conducted by such scholars as C. Armatas et al. (2003), D. Bohnstedt (2010), Shu-Nu Chang (2007), F. Chetwynd (2011), S. Cox (1994), S. Dexter (2001), C. Dobbyn (2008), G. Gibbs (2004), E. Green (2006), C. Greenhow (2016), S. Hadjerrouit (2010), M. Hannafin (2008), J. Hill (2007), C. Laverty (2007), L. Moran (2003), P. Scholl (2008), E. Riedel (2002), C. Rensing (2005), R. Steinmetz (2017). In Ukraine – M. Anufriyev (2003), O. Bandurka (2016), N. Kononets (2016), M. Makarova (2010), L. Sukhovirska (2009), and O. Yarmish (2010).

The phenomenon of Information technologies in pedagogy is considered as a process that provides students with easier access to information and is based on the application of a variety of external resources, the main of which are information resources and e-learning found on modern network technologies using resource-based learning systems – electronic and online educational resources.

Today, IT is widely used in the training of law and economic specialists. Thus, distance education, online learning, the use of information and communication technologies, mixed learning in the information environment, etc. are commonplace in higher educational institutions.

The information environment in the institution of higher education is considered as a component of the student's information space, which forms the immediate environment and is a combination of conditions that provide him with productive activities. In the process of learning, the student continually transforms the information space.

The transformation of the information environment is understood as the study, analytical and synthetic analysis of the content of educational information, regrouping and changing its values and form, preparation of its new way (secondary data), convenient for future use.

Thus, the Information technologies is explained as a partnership between a teacher, a librarian and students, during which a stimulation and organization of active independent cognitive activity of students is carried out in order to master the system of professional competencies envisaged in the content of each particular discipline, as well as educational programs for the training of future specialists in higher education.

The use of Information technologies provides: formation of students' abilities to formulate the purpose of educational activity, to model and design their own educational activity; development of the desire to achieve the goal; formation of skills to evaluate and analyze the results of educational activities; mastering rational methods of working with educational materials, information resources, especially with Internet resources; formation of abilities to search for information and to process it qualitatively; development of effective cooperation of the "student-teacher-librarian" triad as an innovative form of interaction, in which the teacher helps the student to study independently.

Undoubtedly, if the emphasis in the application of the Information technologies is only on e-learning based on modern network technologies using resource-based learning systems – electronic and online educational resources, then in this context the issue of healthcare of the subjects of the educational process is actualized. Therefore, we believe that the effectiveness of the use of RBL in institutions of higher education will be qualitative only in a health preserving educational environment.

The implementation of Information technologies in higher educational institutions with the established health preserving educational environment enables:

- A purposeful system of conditions for scholarly activity, which not only does any harm to the health, but also ensures its formation, preservation and strengthening in all participants of the educational process;
- Application of active forms and methods of education aimed at creating a comfortable health-saving psychological atmosphere during classes;
- Awareness of teachers and students about ways to preserve health and respect for their health preserving behavior;
- Developing in students, in future specialists of value attitudes towards their health and the health of their peers.

*The purpose of the article* is to analyze the effectiveness of the implementation of Information technologies in a health preserving educational environment of higher educational institutions.

### **Research questions**

During the study, we seek to answer the following questions:

- What kind of educational environment is comfortable for students?
- What is a health preserving environment?
- What educational technologies are health preserving?
- Can mobile education be considered as a health preserving technology and why?
- What is the impact of resource-based learning on creating a health preserving environment of higher educational institutions?

### **Materials and methods**

The process of designing a health preserving environment is considered as a complex of changes to the traditional system of education, aimed at increasing the effectiveness of activities to preserve and enhance the viability of students and teachers in conjunction with the correction of their internal picture of health.

When forming a health preserving environment in institutions of higher education, special attention should be paid to:

- Patterns of development and self-development of a young person;
- The self-realization of the creative potential of students and development of readiness for the realization of health preserving technologies in professional activity;
- Subjective and objective factors contributing to the preservation of health, achievement of the peaks of professionalism;
- Self-education, self-organization, and self-control in the direction of formation and maintenance of health;
- Self-development, self-correction, and self-organization of students of their actions and actions under the influence of new requirements of the profession, society, development of science, culture, due to a healthy lifestyle;
- Awareness of students of their abilities and capabilities, advantages and disadvantages of their behavior regarding healthcare;
- Compliance with the requirements and rules for work at the computer, awareness of the legislation of Ukraine regarding the safety and health protection of workers during operation with on-screen devices;
- Compliance with the requirements of ergonomics in the development and use of electronic teaching aids (electronic textbooks and manuals, distance learning courses).

During the study the performance indicators of the development of a health preserving educational environment, which would be favorable in the context of the use of resource-based learning were defined and characterized (Dyachenko-Bohun, 2016):

- Dynamics of student morbidity (the dynamics decreases – the signal for improvement, worsens – there is a need to make corrections in the educational process);
- Comfort and level of anxiety of students as one of the main psychological aspects that play a significant role in ensuring the psychological health of future specialists;
- Students' ability to work (physical and mental) is the integral indicator that indicates the way of their life and their health preserving activity, which depends directly on the knowledge and skills of a balanced combination of mental work with physical, learning and recreation, understanding of their biological rhythms, etc.;
- Competence of teachers in the implementation of health preserving technologies is an integral part of the successful application of the RBL because for successful education the teacher must be a highly skilled professional;
- Compliance with the rules and regulations for work at a computer is an essential indicator of the efficiency of the health preserving educational environment of the institution of higher education, especially when it comes to introducing a distance learning form.

We believe that health preserving the educational environment of higher educational institution forms the foundation of health values of student youth, on which depends the effectiveness of developing a healthy lifestyle of those who study.

### **Pedagogical technology of health preserving the educational environment in the condition for information technologies**

Under health preserving technologies, we propose to understand: favorable conditions for the student's education in a higher educational institution (lack of stressful situations, adequacy of requirements, teaching methods) (Rybalko, 2018); optimal organization of the educational process (according to age, gender, individual characteristics and hygiene norms); complete and efficiently organized motor regime

(Diachenko-Bohun et al., 2019); systematic method of programming purposes, constructing content, practices, means of training and education aimed at increasing the level of individual health, the formation of health preserving and health developmental competencies and the creation of a health preserving educational environment in an educational institution in conditions of monitoring the state of health of subjects of the educational process (Lavrentieva et al., 2019).

In our opinion, mobile learning as one of the forms of Information technologies can be considered as such a technology. Mobile learning is an innovative educational approach that creates a new learning environment in a higher educational institution where students can access educational materials at a time and anywhere, making the learning process more attractive, democratic, and comfortable. Stimulates the student to self-education and education throughout his life. Mobile learning of students is a kind of creative learning strategy that focuses on the ability of modern smartphones, tablets; laptops become full-featured student's assistants in education when they need it (Ibrahim Suleiman, 2014).

So, in order to organize mobile learning as an Information technologies, the teacher should: have (develop) electronic educational resources in PDF format (from separate lectures, practical, individual tasks to complete electronic textbooks, manuals, and ENMK); provide access to these materials for students: post on their own site, social networking page, or college website (but this requires the help of the site administrator of the educational institution); communicate with students in the process of mobile learning (correspondence, file sharing, question-answer, control and evaluation, etc.).

For capable mobile learning the student should: download electronic educational materials (download from the teacher's site, social networking pages, or from any computer, etc.) to his mobile device; communicate with a teacher in the process of mobile learning (correspondence, messages, file sharing, question-answer, etc.); have a desire to study.

Therefore, resource-based student education in higher educational institutions will be implemented effectively if (Rybalko & Rozhenko, 2017): the content component of the educational process implements the pedagogical and physical aspects of the technology of health preservation; the procedural part of the educational process is designed in accordance with educational health preserving technologies and in the conditions of health maintaining educational environment; the use of diagnostic tools (criteria, indicators and levels) for monitoring and assessing the formation of health preserving and health developmental competencies in students and the development of their physical qualities.

## **Results**

The following sites of higher education in Ukraine were the experimental platform for Information technologies learning in the conditions of health preserving the educational environment: Poltava National Technical University named after Yuri Kondratyuk, Poltava National Pedagogical University named after V.G. Korolenko. Implementation was carried out on the example of the discipline "Information Systems and Technologies in the Fields."

An analysis of the experimental results showed positive changes in the mobility of those students who were involved in the experiment.

Thus, students of the experimental group (EG) were asked to perform network projects such as "Students of Ukraine – for a healthy lifestyle," "Healthy food recipes," "No - Alcohol and Drugs," "AIDS Prevention" and so on. The organization of mobile education provided the creation of comfortable conditions for students: 1) the tasks were carried out not only in the auditorium of the university and the library but also in the cafe, in the park, in the student's dorm, in the nature; 2) the use of any information resources; 3) organization of feedback between the teacher and the student with the help of the Viber application.

Control group students (CG) did not implement network projects; they worked on current projects under traditional educational conditions.

It should be noted that the project activity of students was carried out in small groups – 5-8 students were involved in one project. The experience of using project methods proves its high efficiency in raising the level of professional socialization of future specialists, their health preserving competence, as well as the level of information culture. Joint collective work on a network project enables students to develop the following skills and abilities: to use computer technology (laptops, smartphones, etc.) for educational purposes; to cooperate, to bear responsibility; enter a group or team and make a contribution; to prove solidarity; be able to organize their work in interaction with other people; be able to co-operate and work in a group; to make decisions – to settle disagreements and conflicts; be able to negotiate; be able to design and perform various types of work.

The organizational pedagogical conditions that ensure the effectiveness of the project activity of students are of particular importance: an independent choice of the target group for which the project is being developed; proof of the fact that the content and form of the project are fully in line with the requirements of the target audience; selection of sources that meets the needs and characteristics of the perception of the target group.

The assessment of the project implementation takes into account the relevance of the results obtained to the needs of the target group. All project results are publicly tested, which is an essential part of the future professional growth of a specialist and educating a genuine citizen who promotes a healthy lifestyle.

It should be noted that the pedagogical experiment on the introduction of mobile learning as a kind of Information technologies was carried out during 2017-2018. Before the submission of mobile education, the effectiveness of educational activities of students of EG and CG was determined by the methodology of I. Todorova and V. Pavlenko (2011). The results are shown in Table 1:

**Table 1.** Effectiveness of students' educational activity (before the introduction of mobile learning)

Levels of formation	Control group (%)	Experimental group (%)
High	3,41±0,35	17,47±0,05
Average	28,15±0,44	29,31±0,08
Low	68,44±0,28	53,22±0,12

The analysis of data in Table 1 shows that as a result of the molding experiment, students of the experimental group showed higher indicators of the level of readiness for the implementation of Information technologies in professional activities than the control group students. In particular, in the experimental groups, the high level of preparation increased to 17.47%; average to 29.31%; the low decreased to 53.22% after the molding experiment. In control groups the high level of formation increased to 3.41%; the average was 28.15%, the low dropped to 68.44%. This is understandable because specific knowledge and skills to work independently, use of electronic educational resources, and Internet resources for students are due to the IT direction of the discipline and the knowledge acquired in the school of computer science.

After the introduction of mobile education, the results of the diagnosis of the effectiveness of student learning activities have changed significantly, as shown in Table 2.

**Table 2.** Effectiveness of students' educational activity (after the introduction of mobile learning)

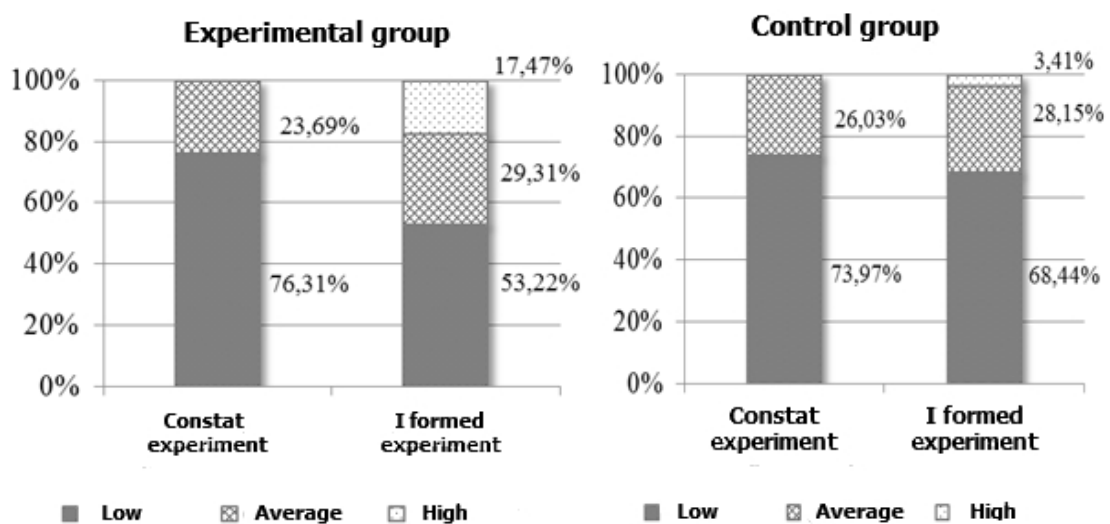
Levels	Constant experiment	I formed the investigation	Increase	Constant experiment	I assembled the investigation	Increase
	Control group			Experimental group		
High		3,41%	3,41%		17,47%	17,47%
Average	26,03%	28,15%	2,12%	23,69%	29,31%	5,62%
Low	73,97%	68,44%	-5,53%	76,31%	53,22%	23,09%

Table 2 shows that the levels of students' educational efficiency after the implementation of mobile learning were distributed as follows; students of the EG with a high level – 17,47%, while in the CG – 3,41%. The average level was for students of EG – 29,3%, in CG – 28,15%. The low level was for most students of CG – 53,22%, compared with EG – 68,44%.

Analysis of data in Table 2 shows that as a result of experimental and experimental work students of the experimental group showed higher indicators of the level of readiness of mobile education to the implementation of Information technologies in professional activities.

The analysis of the results of the formative stage of the pedagogical experiment shows that as a result of experimental and experimental work students of the experimental group showed higher indicators of the level to the implementation of Information technologies in professional activities. Thus, in experimental groups, the high level of readiness of future biology teachers to implement health-saving technologies in the professional event of students increased, compared with the record stage of 17.47%; average - 5.62%; the low decreased by 23.09% after the molding experiment. In control groups, the high level of students for the implementation of Information technologies in professional activities of students increased by 3.41%; average - by 2,12%; the low decreased by 5.53%.

The dynamics of changes in the levels of students' educational efficiency in the implementation of mobile learning is visualized in Figure 1.



**Fig. 1.** Dynamics of changes in the effectiveness of mobile learning in a health preserving educational environment

## Conclusions

Consequently, a pedagogical experiment on the study of the effectiveness of the implementation of mobile learning in conditions of health preserving educational environment made it possible to formulate several conclusions:

- 1) Creating a comfortable environment for students – this is, first of all, the lack of stressful situations, taking into account the individual characteristics of students, as well as full and rationally organized motional regime;
- 2) Stimulation of the independent cognitive activity of students, trust in them, contributed to increasing responsibility for the results of learning and the effectiveness of educational activities of students;
- 3) Mobile learning can be considered as a health preserving technology for students in higher education;
- 4) The use of such an Information technologies form, as a portable, will facilitate the establishment of health preserving the educational environment for an educational institution.

Thus, the results of the study provide grounds for asserting the effectiveness of the implementation of resource-based learning in higher educational institutions.

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