


OPEN EDUCATIONAL E-ENVIRONMENT OF MODERN UNIVERSITY

Collected Scientific Works



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of the international project IRNET

ВІДКРИТЕ ОСВІТНЄ Е-СЕРЕДОВИЩЕ СУЧАСНОГО УНІВЕРСИТЕТУ

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**USE OF WIKI-TECHNOLOGY FOR MODERN
UNIVERSITY LEARNING ENVIRONMENT**

The article defines the advantages of the use of wiki-technology for the management of the learning environment, presents the structure of wiki-based educational environment.

Key words: *learning environment, Wiki-technology, wiki portal.*

Today's job market requires new generations of students who have new innovative and learning skills, ability to work with large amounts of data, collaboration and communication skills, critical thinking skills, life and career skills. The main function of modern education today is to develop the following skills, and the main goal of higher educational institution is to form an effective learning environment.

Analysis of recent research and publications

The concepts of "learning environment" and "educational environment" were studied by such scientists as V. Bykov, Yu. Zhuk, S. Shatskyi, K. Ushynskyi, M. Pyrohov, O. Lazurskyi, O. Leshaft, O. Pinkevych,

L. Vyhotskyi, H. Kostiuk, V. Bocharov, Yu. Brodskyi, Yu. Manuilov, L. Novikova, V. Semenov, O. Rakitina and V. Lyskova, I. Shalaiev, O. Veriaiev, Y. Shreider, O. Kalmykov and L. Khacharutov, O. Kriukova, S. Paniukova, O. Okolielov, V. Lapinskyi and others.

The problem of education informatization is studied in the works of the following leading scientists: V. Bykov, N. Morze, O. Spirina, A. Hurzhii, M. Zhaldak, A. Manako, V. Kukhareenko, Ye. Polat, V. Oliinyk, S. Rakov, V. Soldatkin, O. Spivakovskiy, S. Semerikov, O. Kuzminska, V. Vember, N. Protsenko and other researchers.

There is *a contradiction between modern education tendencies* (globalization, majority, access to technology and means of communication, openness) *and tendencies in universities* (closed access to the university activity, closed learning environment, absence of systematic approach to the use of technology for the management of modern open learning environment. There is a shift from knowledge paradigm of education to individual student learning trajectories aimed at formation of practical skills and motivation for learning.

The purpose of the article is to develop a model of effective university learning environment using wiki-technologies which will be oriented towards the development of students' competences which allow them to be successful in today's world.

The 21st century is the era of knowledge, information and communication. The open information society with a vast system of interaction between people in all areas of their activities is developed. Information and communication technologies are widely used in all spheres of life in the information society, communication occurs between things, robots help to perform various types of work. Educational crisis of the late 20th century was caused by difference between educational environment and new worldview and lifestyle of people which became the leading in the last century, education is not proactive any more, providing knowledge at schools are not relevant and cannot be used in the future. Modern technologies bring people together over the Internet through the use of such services as e-mail, social networks, blogs, wiki, shared documents, mental maps, forums, etc. People increasingly learn through creating and maintaining ties with "knowledgeable" people, so various implicit learning activities are implemented outside schools — through informal education.

The new paradigm of modern education opens up opportunities for the exchange of ideas, collaboration between institutions, faculties

and students, creation of open educational electronic environment. In technological society learning environment is created with the use of electronic resources, access to which is open, and the content is formed according to the requirements of all the participants of educational process. Traditional closed educational environment is not always, and sometimes not often effective in the educational process according to the modern tendencies of education development. Modern technologies have changed the communication, collaboration, training and such concepts as e-communication, e-collaboration, e-learning have appeared and allow the users to communicate and solve common tasks in convenient way for them. Students and teachers from different places can exchange data and information, work on joint projects, study together, make decisions and solve different problems. Knowledge can be found in the network, communities, MOOCs, people and devices exchange data, paper storage media are no longer relevant. Access to knowledge is carried out with any device (PC, laptop, tablet, phone, smart-watches, etc.) connected to the Internet.

The current education system should be proactive according to global changes around the world, emphasis is made on comprehensive human development, preparing for life in the open information environment, providing lifelong learning, and tolerant outlook. Open education plays an important role in ensuring access to education for everybody, a modern university learning environment should comply to these tendencies.

Different scientists have different views according to concepts of learning environment, paying attention to different aspects, to the role of learning environment in educational process development, determining the optimal structure. According to V. Bykov's definition [1, 2], "learning environment is artificially constructed system, structure and components of which create conditions necessary to achieve the objectives of the educational process". Yu. Zhuk notes that the learning environment is most often seen as a learning environment and (more commonly) as a campus environment. The learning environment includes training classrooms (studies), libraries, laboratories, sports facilities etc. At this level, it is the design of the environment, its furnishings, substantial compliance and other components of the environment. The learning environment is the part of campus learning environment. It includes all the types of learning environments where students and teachers work and have an important influence on the processes of teaching and learning. Learning environment can also include physical environment

and geographical space which can be quite varied. It follows that the learning environment is a part of a system of mutual subordinate environments, which are inherent features of a certain hierarchy [3]. Learning environment (LE), is an environment in which learning takes place and can be viewed as an information environment (IE), and sources of information as components of the environment [4, 5].

What should be the structure of a quality learning environment? This issue was defined by Morze N., Protsenko H. and Kuzminska O. and has become the basis of our research. The structure of a quality learning environment should be the following (*Figure 1*):

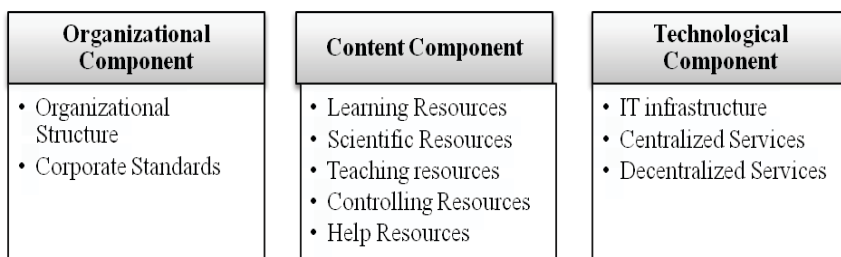


Fig. 1. Structure of a quality learning environment

Additionally, we have determined that the organizational component provides: approval to regulations, determining responsibility, coordination and moderation, learning the basis of work; component content of education is content, implementation of collaboration, communication; technological component is determining of the platform, comparing technologies, function support.

The formation of university educational environment is involved:

- *Teachers*, who provide materials for the comprehensive development of students, interact with colleagues, highlight the results of their activity;
- *Students*, who are active participants of projects, discussions, are “catalysts” of learning environment improvement;
- *Coordinators*, who manage project activity, collaboration and communication among the all participants.
- *Administration*.

Based on the analysis of European standards to ensure the quality of higher education, the Law of Ukraine on Higher Education, research results on the problem devoted to creation and development of university educational electronic environment, we came to the conclusion that the current education system is under the global change, it focuses on the comprehensive development of a person, prepares for life in open information environment, provides lifelong learning, tolerant outlook development. There is interaction between various social, economic and technological developments in the field of education in a global context.

Educational environment of today's institutions should be effective, open, easily updated, allow students to form their own trajectory of learning, meet the requirements of modern education system, and develop skills according to the 21st century requirements.

The model of modern e-learning environment, to our mind, should be the following (Figure 2):

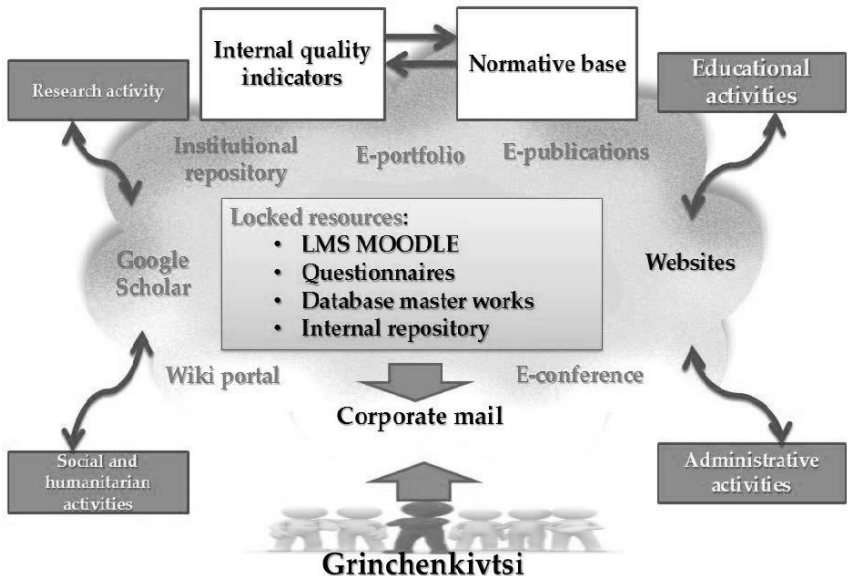


Fig. 2. Model of electronic learning environment

Providing the following requirements to the educational environment is implemented with the use of wiki-technology. It should be noted the following ways of the wiki-technology use to improve educational process:

- writing essays (abstract to essay, essay analysis, evaluation);
- creating a bibliography on the theme;
- preparing an annotated bibliography;
- creating glossary of terms on a specific subject;
- implementation of research;
- discussion and debate in groups or specialties;
- comparative analysis of different definitions;
- classification systems design according to the identified classification features;
- defining criteria for evaluation of events, phenomena and processes;
- defending the projects;
- creating ontologies;
- creation of evaluation forms, etc.

Another important aspect is the fact that every day the amount of data, which are operated by the people, is growing, the student has to learn what is already known to science, and only for a very short period it can operate efficiently, i.e. to create new knowledge. If knowledge is presented in the form of ontologies — an explicit specification of a conceptualization of certain area of knowledge that includes the basis for modeling of this area of knowledge and defines the rules for their interaction, the data becomes more effective, it is possible to operate them in a great amount. Wiki-technology can create ontologies for the use in educational environment. They usually consist of issues, concepts, attributes and relations. Wiki-technology means for creating ontologies are the following:

- data in the form of articles;
- automatic creation of content;
- working with categories;
- links to other articles in the wiki;
- external links.

It should be noted the advantages of wiki-technology in creating a learning environment:

- an open platform for the implementation of educational technologies targeted at active participants of the educational process;

- possibility to put a variety of educational web resources to communicate, to collaborate for creation joint materials, to discuss;
- opportunity for multi-editing brings different users to create articles and makes it possible to continuously update and improve them;
- history of changes accounting that have been made to the content of the page and opportunity to return to a previous version;
- availability of talk pages for each article, where anyone can post their comments, will take into account the views of other users about the following theme.

Using wiki-resource in education makes it possible:

- to create a unique learning environment to the specific requirements of participants of the educational process;
- to step up the use and creation of electronic educational resources;
- to organize individual and joint work of students;
- to implement an active communication and cooperation between teachers and students through open electronic environment;
- to reduce training time and increase the level of students;
- to have access to educational resources in a convenient place and time.

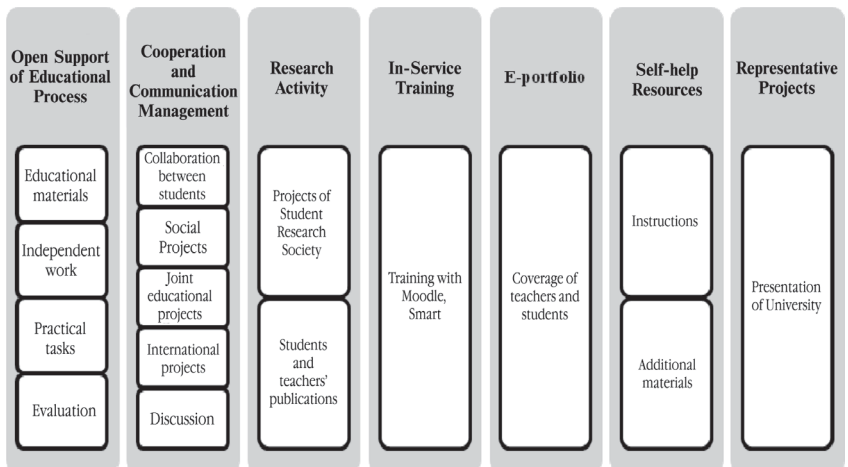


Fig. 3. Model of management of wiki-based learning environment at Borys Grinchenko Kyiv University

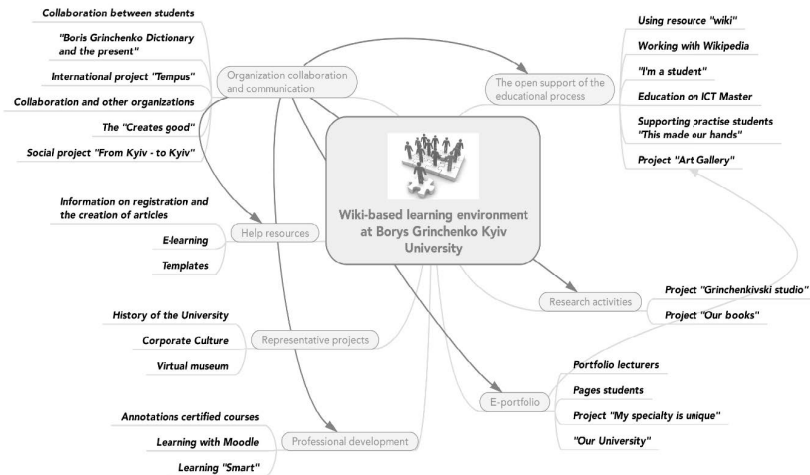


Fig. 4. Structure of wiki-based learning environment at Borys Grinchenko Kyiv University

Taking into account these advantages, we developed a model of wiki-based electronic educational environment of the university (Figure 3):

According to this model, it is defined the structure of wiki-based environment (Figure 4), which was used in the creation of educational electronic environment of Borys Grinchenko Kyiv University:

The types of students and teachers' activities in wiki-based learning environment:

Passive activities:

- introduction to educational materials, instructions, presentations, videos, etc.

Active activities:

- collaboration (co-creating materials, participation in projects etc);
- discussion (projects, issues, reflection);
- development of critical thinking (analysis of assessment materials for filling projects);
- E-portfolio.

During the educational process it is possible to use various types of wiki-technology. According to the goal, it should be noted the following wiki-technology types for the use in the educational process (Figure 5):

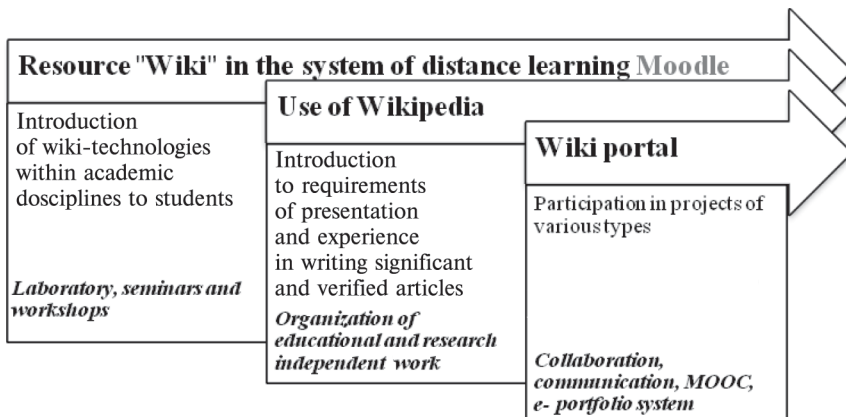


Fig. 5. Use of different wiki-technology types for various forms of educational process

“Wiki” resource for the e-learning system to Moodle is used for:

- establishment of joint students and teachers lectures;
- joint students authorship in the online book,
- content creation on the theme proposed by the project manager;
- personal students’ register for notes on discipline, etc.

Wikipedia is used in educational process for:

- integration of modern information and communication technologies into educational process;
- extension of practical skills in the discipline that students get in the learning process;
- providing public importance to student’s learning activities.
- improvement of access to modern scientific knowledge.





This resource type of wiki-based technology gives teachers opportunity to introduce wiki-technology and wiki markup to students, to teach students to work together, analyze and evaluate materials, work with materials on the rules that are necessary to participate in open projects and independent research.






According to the survey analysis, in 2011 it was created Borys Grinchenko Kyiv University’s Wiki portal (<http://wiki.kubg.edu.ua>) as a platform for implementation of educational initiatives of active participants of the educational process.







According to the developed model and participants requirements, Wiki portal operates various types of projects (*Table 1*).

Table 1

Wiki portal projects at Borys Grinchenko Kyiv University

Project	Description
 <p data-bbox="96 621 263 644">Грінченківські студії</p>	<p data-bbox="299 435 918 560">Open resource for the submission and review of students' scientific works: scientific articles and their reviews that everyone can post for discussion and improvement.</p> <p data-bbox="299 565 918 659">The resource covers the activities of student scientific society, which successfully operates at Borys Grinchenko Kyiv University.</p>
 <p data-bbox="102 860 259 878">Це зробили наші руки</p>	<p data-bbox="299 700 918 889">The project is designed for talented people who can display their works and for those who endeavour to develop their creativity following their colleagues. Students post instructions for creating various handmade items to share their experience on this website.</p>
 <p data-bbox="117 1078 247 1096">Віртуальний музей</p>	<p data-bbox="299 931 918 1025">The project, dedicated to Borys Grinchenko's life and activity, displays interesting information and online versions of his works.</p>
 <p data-bbox="135 1297 223 1312">Творимо добро</p>	<p data-bbox="299 1140 918 1332">The project highlights charity events held by university students and staff. Students know that to do good and great things, it is not necessary to have great money and opportunities, it is necessary to be thoughtful. To do good things is easy if heart's desire is to be generous.</p>

Project	Description
 <p data-bbox="183 458 336 473">З Києвом - для Києва</p>	<p data-bbox="385 223 1002 352">Social project started in 2010 on initiative of students and teachers of Borys Grinchenko Kyiv University. After the successful implementation of the project, it was decided to continue its activity.</p> <p data-bbox="385 352 1002 579">The goal of the project is to create a positive image of the university through the development of holistic socio-cultural environment, able to improve Kyivates' educational, developmental, sporting, artistic and aesthetic needs and interests. The task of the project is to highlight students and teachers' activity in the content of this social project.</p>
 <p data-bbox="183 700 352 715">Моя спеціальність – неповторна</p>	<p data-bbox="385 601 1002 730">The project goal is to familiarize the university with majors for career counseling. Each student or university professor can add to the description of specialty a special “flavour” to interest others.</p>
 <p data-bbox="199 873 330 889">Історія університету</p>	<p data-bbox="385 752 1002 881">The project is designed to explore the history of the university and impressions of the years of study there, thus each university person should know the history of his university.</p>
 <p data-bbox="194 1108 330 1123">Навчання зі SMART</p>	<p data-bbox="385 922 1002 1176">Most university classrooms are equipped with interactive whiteboards, multimedia, digital projectors, audio-visual reproduction system of educational materials, computers, etc. Smart-centre operates at Borys Grinchenko Kyiv University as the project to highlight training activity there. Students and teachers' advances are introduced on this portal to demonstrate the power of smart technologies.</p>
 <p data-bbox="194 1342 341 1357">Спорт протягом життя</p>	<p data-bbox="385 1199 1002 1297">The purpose of the project is to highlight university sport life, present interesting warm-ups, physical training minutes and technology of healthy lifestyle.</p>

Project	Description
 <p data-bbox="107 359 252 394">Анотації до сертифікованих курсів</p>	<p data-bbox="299 223 918 417">The project aims to share experience in implementation of distance learning technologies at Borys Grinchenko Kyiv University and best practices of sharing abstracts and other components of e-learning courses designed by teachers, innovative methods of distance learning technologies implementation.</p>
 <p data-bbox="113 565 248 600">Словник Грінченка та сучасність</p>	<p data-bbox="299 459 918 583">The project is designed to attract as many students as possible to introduce to them the unique Borys Grinchenko's dictionary, which consists of definitions of 60 000 words.</p>
 <p data-bbox="121 746 243 813">Навчання магістрів з питань використання ІКТ при створенні магістерської роботи</p>	<p data-bbox="299 677 918 772">The project aims to give open support to masters' training in the use of information and communication technologies for creation of master's works.</p>
 <p data-bbox="128 973 232 991">Навчальні курси</p>	<p data-bbox="299 908 779 938">It is a project of open e-learning courses.</p>
 <p data-bbox="153 1161 205 1179">Tempus</p>	<p data-bbox="299 1029 918 1188">The goal of the project is to support the international project Tempus "Development of Embedded System Courses with Implementation of Innovative Virtual Approaches for Research, Education and Production in Ukraine, Georgia, Armenia".</p>
 <p data-bbox="99 1362 266 1380">Портфоліо викладачів</p>	<p data-bbox="299 1256 918 1351">It's a project on data integration on university teachers' research and teaching activity, and their professional development.</p>

Wiki portal projects are constantly supplemented according to the educational process participants' requirements at Borys Grinchenko Kyiv University, which are identified through surveys. Currently wiki portal includes 66 thousand articles and about 2.5 thousand of registered users.

Thus, the use of wiki-technology allows participants to share knowledge and add their contribution to the collective knowledge.

Conclusion

The wiki-technology use for creating a learning environment provides an opportunity: to create an open learning environment taking into account the specific requirements of participants in the educational process; to intensify the use and creation of educational web resources; organize individual or joint work of students; implement an active communication and cooperation between teachers and students through an open web space; to reduce training time and increase the training level of students; to access to educational resources at any convenient time and location.

Wiki-oriented environment is an effective platform for educational technologies targeted at active students and faculty, all members of the educational process allows to create projects of different types (training, practice, collaboration, communication, presentation materials, design methodology, critical thinking, etc.). This environment has a positive effect on the formation of students' skills in cooperation, communication and critical thinking.

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