

Public Information Environment of a Modern University

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Abstract. Processes of society globalization and technification require changes in training modern specialists and therefore involve changes of educational systems, including the creation of Information environments schools. The article is devoted to the topics of design, development and implementation of experience of Information environments in the educational process and scientific activities of universities. Developed by authors model of the environment has been implemented for constructing the information environment of the Kyiv Boris Grinchenko University and National University of Life and Environmental Sciences of Ukraine. The article describes approaches to the training of students and teaching staff of these universities for effective implementation and development of the resources of the Information environment. Conducted monitoring of resource usage of Information environment confirms the prospects of the authors' model and the methodology of its introduction.

Keywords. Information environment, experience, knowledge technology, learning platform, repository

Key terms. Environment, Academia, Development, Information Communication Technology

1 Conceptual Foundations of an Information Environment

Globalization of education leads to significant changes in the teaching systems: globalized learning goals, unified content and methods. New forms of technology and education focused on the integration of information and communication technologies (ICT) appear in the learning process. Especially significant changes occurred with the means of learning. From the concept of "learning tools" in the traditional model of education was made the transition to the educational environment in activity oriented teaching practice, then to the education space in the context of person-centered, individualized

approach, and finally to the Information environment (IE), which is realized in the process of development and ICT [1].

IE defined as a structured set of resources and technologies based on the consistent technological and educational standards which ensures free access of persons of the educational process to information resources, their effective communication and cooperation within such an environment for achieving educational goals that are known, understandable, achievable and concrete for them preliminarily.

IE of educational institution represents (has to represent) an adaptive model of global, national, information spaces and inherits their most characteristic functional properties, particularly in the communicative aspect of IE is a space of co-curricular activities based on ICT in the integration aspect provides the implementation of joint actions by establishing appropriate rules and the adoption of regulations that means that environment can emerge and develop only in accordance with the goals and objectives of the above-mentioned spaces, including the regulatory framework in the field of information policy at national and international levels, the state and prospects of development of information technology, the characteristics of learning process in educational establishment [2].

There is a list of computer technologies in annual reports of the International Media Consortium that will have (have) a significant impact on the organization of the educational process in the near future, namely: mobile technology and cloud computing (2009), open content, e-books, personal web (2010 - 2011 years), semantically compatible programs, Smart-objects, supplemented reality (2012 - 2014 years), educational games, sensor devices and interfaces, data visualization, training analyst (2015 - 2016 years.) [3].

In the world teaching practice Web 2.0 services are regarded as qualitatively new means of distribution and storage of teaching materials, effective tools of educational platforms [4, 5]. Wikis, blogs, social networks, websites and audio streaming, news channels allow users to collaborate - sharing information data store links and multimedia documents, create and edit content, solve practical problems, perform educational and research projects, etc.

That is why understanding the nature and objectives of the construction, using and developing of information protection, a clear understanding of its structure, components, systems development and selection of high quality resources, selection of effective service based on Web 2.0 technologies belongs to one of the main tasks of a modern University. With the current requirements of not only the operation but also the system of educational institutions, general management principles and principles of educational systems, as the leading principles of good design information and educational environment of the institution and of the overall architecture, should be allocated as follows:

1. *The principle of a systematic approach.* This means that build model should be based on systematic analysis of educational establishment. That means that structural elements, internal and external communications, which will consider the educational establishment as an open system, should be highlighted.

2. *The principle of modular structuring of information and data information.* The main purpose - to provide information and data needs in the most complete form, which allows to characterize the state of the system and provide adequate tools for the implementation of administrative functions and educational tasks.
3. *Principle of modification, addition and permanent renewal.* Implementation of this principle allows for expansion, upgrading and updating of the model with additional specific and understandable to persons indicators and measuring data. Thus, it can be changed or adjusted in accordance with the specific educational establishment, its traditions, mission and tasks.
4. *The principle of approximation,* which states that the system should be responsible for its complexity, structure, functions, etc. to those conditions in which it operates, and to those requirements that are set to it.
5. *The principle of giving the necessary and sufficient information* for the management of educational establishment.
6. *The principle of data sharing.* The same data can be used by several users. In addition, each user should receive this information in an easy to view it at any time and from any place.

2 Information Environment of a University – Concept Realization

Information environment of the institution at the present stage should include:

- Personal computing devices - a means of educational, researching and administrative activities of the institution
- Environment supporting collective and individual communication and cooperation
- Open educational resources - objects of educational activities and interactions
- Centralized and decentralized training platforms
- Means of information security and centralized filtration incompatible with the educational process content and more

The overall architecture (organizational structure and the associated operation of technological systems in education) is the basis of the process of creating educational technology systems adequate to the conditions of their use, in particular, an unlimited amount of resources that can be integrated into the educational process, a large number of users that can use the tools and technologies of technological systems, the number of students who may be involved in the joint solution of one educational task. Educational environment for such systems provides by international technological standards for interfaces, formats, communication protocols to provide mobility, interoperability, stability, efficiency and so on.

In this approach Internet is considered as a global platform of creation and dissemination of collective knowledge. Information environment is a mean and a place for creation, accumulation and harmonization of educational resources of efficient communication and cooperation, education and training of both students, teachers and administrators. The proposed model allows us to implement a set of technological principles

of open Information environment of the university such as adaptability, integrity, complexity, interoperability.

Construction of such Information environment provides a clear projection of its objectives, functional, access channels, organization of communication of students, teachers and researchers; system of continuous monitoring. The main features of the educational process in an open Information environment are:

- *Openness of environment* - students and teachers are actively participating in the development of educational resources and Information environment
- *Willingness of participants* - formation of need for building individual learning trajectories, positive motivation to cooperate and work in a team, willingness to disseminate the results of their own educational activities in the public access
- *Monitoring of objects and subjects of environment* - monitoring the quality of created resources, providing access to them and their efficiency of usage, observing the activities of the subjects of the educational process, organizing the feedback and assessment

Implementation of the proposed model in a particular educational institution involves the selection of platforms (Fig. 1) and resources:

- Scientific articles of educational-research and Masters members of National University of Life and Environmental Sciences of Ukraine <http://elibrary.nubip.edu.ua>
- Abstracts of theses defended in National University of Life and Environmental Sciences of Ukraine <http://elibrary.nubip.edu.ua>
- Conference proceedings of National University of Life and Environmental Sciences of Ukraine <http://elibrary.nubip.edu.ua>
- Works of magisters of National University of Life and Environmental Sciences of Ukraine <http://elibrary.nubip.edu.ua>
- Training materials to support the educational process of National University of Life and Environmental Sciences of Ukraine <http://elibrary.nubip.edu.ua>
- e-Learning of National University of Life and Environmental Sciences of Ukraine <http://moodle.nauu.kiev.ua>
- Distance learning <http://agrowiki.nubip.edu.ua>
- Harmonized (supplemented by expert comments of National University of Life and Environmental Sciences of Ukraine and links to internal and external resources) standards <http://agrowiki.nubip.edu.ua>
- Regulations of National University of Life and Environmental Sciences of Ukraine <http://elibrary.nubip.edu.ua>
- Thematic practice-oriented information articles <http://agroua.net>

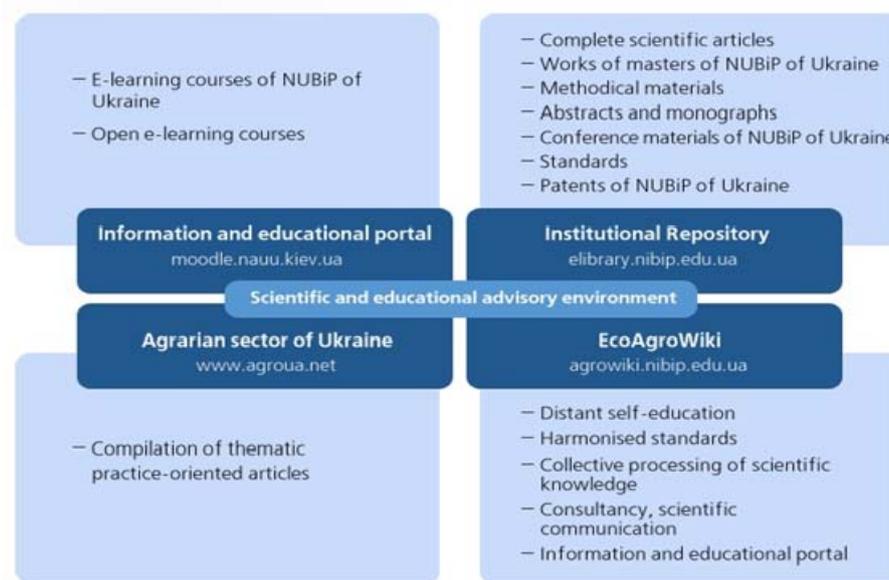


Fig. 1. Open Information Environment of National University of Life and Environmental Sciences of Ukraine

Effective usage of resources of the Information environment is largely dependent on the willingness of teaching staff to implement innovative pedagogical and information technologies and work with students in IE.

Question of training faculty can be solved on the basis of properly designed training system focused not so much on the study of specific technologies as on:

- Formation among the teachers methodical approach to the selection and usage in their professional activities IE resources to achieve educationally meaningful results in the context of ensuring the availability of educational materials, improving the quality and effectiveness of the educational process
- Developing skills of the educational process with the use of IE resources and managing innovative educational projects
- Logical design and creation of ICT-oriented learning tools

While building a training system for teaching staff to use IE resources in educational activities it is necessary to take into account the necessity:

- Modular structuring of content that reflects the technological and didactic possibilities of the usage of specific resources IE
- Malancing and harmonizing individual content modules training program for teachers

In the process of training teachers act as students (<http://lilia.moyblog.net/category/>) and this allows to simulate educational situations, identify problems and use of IE components to create training courses of new sample

(<http://moodle.kmpu.edu.ua/dn/course/view.php?id=144¬ifieditingon=1>). Topics of workshops:

- Institutional repository and its role in the creation of electronic educational and researching environment of the University
- Platform of e-learning Moodle
- Safe work in the Internet
- Creating of modern ontology on a base of wiki-portals
- Role of ICT in usage of formative assessment
- Usage of Web 2.0 for the students individual work
- Blogs and their usage patterns in the educational process
- Podcasts usage in educational process
- Role of ICT in the organization of cooperation and communication

Creation of Information environment will provide flexible formation of educational and methodical complexes according to the different models of learning, make teaching materials cheaper and more accessible, improve learning efficiency by providing sharing of experiences and a variety of educational materials between students and teachers. Organization of educational and research activities in the Informational environment determine what skills a student should possess, namely:

- Access to information data and resources – the ability to search, collect and store information data
- Management of information data resources – the ability to choose existing resources for categorizing and structuring information data
- Critical evaluation of information data and resources – the ability to make judgments about the data quality, importance, usefulness or effectiveness as well as the reliability, specific and address orientation
- Creation of information data - the ability to interpret and present data, generate data and knowledge
- Exchange of information data – the ability to transmit information data by means of information environment in a proper way

Acquiring of the mentioned skills and abilities is developed in the process of independent activity of students, such as the preparation and defense of Master's Thesis. The wiki-portal EcoAgroWiki is chosen as a technological platform of the informational support for Master's educational activity. Considering the functionality of wiki technology article authors managed to organize a community of masters, teachers, academic advisors practice (see Table 1). In order to simplify page layout on the EcoAgroWiki portal according to the standard IMS ePortfolio Information Model (http://www.imsglobal.org/ep/epv1p0/imsep_bestv1p0.html), it was designed templates of teachers and students portfolio. The results of network cooperation of its members is collections of useful links, digital electronic resources, target selection and description of the use of modern software tools, organization of project activities and collaboration, system of effective communication, consultation and expert evaluation.

Table 1. Subject of seminars series “Presenting of Masters’ scientific researches’ results using ICT”

Annotation	Resources
Topic 1. Electronic publishing	
Scientometrical bases (EBSCO). FAO- resources: AGORA.	http://web.ebscohost.com/ehost/search http://www.fao.org/index_en.htm
Topic 2. Institutional repository	
Institutional repository of NUBiP of Ukraine. OAI harvester of Ukraine. International repository.	http://elibrary.nubip.edu.ua http://oai.org.ua http://arxiv.org/
Topic 3. Bibliography	
Resources description variants. Personal bibliographic managers.	http://agrowiki.nubip.edu.ua/wiki/index.php/Zotero
Topic 4. Research results publication in the Internet	
Google documents, blogs, forums, conferences.	http://apctt.blogspot.com
Topic 5. Cooperation organization	
Google groups.Wiki-portal. University portal. LMS.	http://agrowiki.nubip.edu.ua http://it.nubip.edu.ua/ http://nubip.edu.ua

3 Experience of Resources of the Open Information Environment’s Usage by Students and Teachers

The real impact of the Open Informational environment into educational activities organization of the university was determined by on-line poll on wiki portal EcoAgroWiki and on-site discussions of the educational process. Master’s programme students of the NUBiP of Ukraine faculty of Computer Sciences and of the faculty of Ecology took part in the poll.

Before series of seminars authors examined the attitude of students towards implementation of the Information environment resources in teaching and research activities. The vast majority of students (189 of 200 respondents) believe that creation of Open Information environment significantly enhance the information support of education activities. However, 60% masters in computer sciences (hereinafter referred to as Group 1) and 20% of ecologists (hereinafter referred to as Group 2) consider effective the use of e-learning courses developed on the platform LMS Moodle, 50% of Group 1 and 30% of Group 2 use the institutional repository for viewing topics and presentations of Masters’ Thesis of previous years. The question with which search engines are students required information, including these with a scientific character, the overwhelming number of respondents named Google, and to save search results 70% of Group 1 and 50% of Group 2 use personal folders and file cards on personal computers. As of communication between students, most of them called social networks, and as of

communication with teachers (Academic Advisors) – personal correspondence via e-mail.

There are three the most important students' opinion, directions of the Information environment use. Students argued their choices from the position of information literacy [6]. 80% of Group 2 and 60% of Group 1 noted acquiring skills for analyzing the obtained data, sites, resources actively and productively; planning and managing their studying; establishing effective communication and cooperation; solving problems together, selecting the most effective resources and technologies to solve specific tasks.

Interviewed teachers (42 educational research worker of NUBiP of Ukraine) noted the stiffening of Masters' Thesis, especially in a part of analysis of research problem development, usage of modern resources, in particular materials of open scientific journals and bibliography description. In addition, Academic Advisors, who have joined the experiment, noted the increase of their own computer literacy through the usage of scientific communication means and cooperation in the process of joined work together with students. And creation of teachers' portfolio also make for promoting University activities, searching for partners in joint projects etc.

4 Conclusions

Experience of Information environment creation and usage of its resources in the Kyiv Borys Hrinchenko University and NUBiP of Ukraine suggests the following arguments in favor of the proposed model: individualization and personalization of the academic activity, quality, flexibility, ability to meet the educational requirements, timeliness, self and mutual control, cooperation. Open Information environment have to be built as a system of functionally and structurally interconnected information and technological elements, skillful usage of which allows a teacher in practice solve didactic tasks on the technological basis with a guaranteed quality in the age of education informatization.

Information environment creation at the level of educational institution leads to that educational materials and services will be available to every subject of the educational process. As a result, conditions for equal access to a quality education will be formed – an opportunity for everyone to learn at any place and at any time become a reality. Under these conditions, the Information environment is potentially unlimited as to the available quantitative and qualitative number of educational resources (can be used in the education process), number of users (can use its resources and technologies) and number of subjects of educational activities that can work together for solving educational tasks.

References

1. Manako, A. F.: Evolyutsiya ta Konvergentsiya Informatsiynyh Tehnologiy Pidtrymky Osvity ta Navchannya. In: Proc. ITEA-2011, pp. 3–19, IRTC, Kyiv (2011) (in Ukrainian)
2. Bykov, V. Yu.: Avtomatyzovani Informatsiyni Systemy Yedynoho Informatsiynogo Prostory Osvity i Nauky. Zbirnyk Naukovyh Prats Umanskoho Derzhavnoho Pedahohichnoho Universytetu im. Pavla Tychyny, Ch. 2, 47–56 (2008) (in Ukrainian)

3. The Horizon Report: 2011 K-12 Edition, New Media Consortium, <http://www.nmc.org/pdf/2011-Horizon-Report-K12.pdf> (2011)
4. Brees, I.: Web 2.0 Learning Environment: Concept, Implementation, Evaluation. eLearning Papers, 15, 18, <http://www.elearningeuropa.info/en/article/Web-2.0-Learning-Environment%3A-Concept%2C-Implementation%2C-Evaluation> (2009)
5. Malinka, I.: Involving Students in Managing their Own Learning. eLearning Papers, 21, 13, <http://www.elearningeuropa.info/en/article/Involving-students-in-managing-their-own-learning> (2010)
6. Information Literacy at Otterbein College. Otterbein University, http://www.otterbein.edu/resources/library/information_literacy/index.htm