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## NETWORK RESOURCES AND SERVICES AS MEANS OF INFORMATION AND COMMUNICATION BETWEEN SUBJECTS OF EDUCATIONAL ACTIVITY OF HIGHER EDUCATIONAL INSTITUTION

*In an article on the basis of the thorough analysis of the psychological, pedagogical and methodological scientific sources, the basic definition investigated problem and the peculiarities of the structure and use of cloud-oriented information and analytical network tools, including administrative, corporate, educational, university website to perform scientific, educational and international activities of the university. The expediency and the ability to use network resources and cloud services as a means of information and communication interaction of educational activity of higher education. Determined that the official websites related to open web-based corporate information systems that operate in scientific institutions and universities. Outlined the educational function of the university website as an important tool to guide students in information and educational space. The basic requirements for the substantive content of the educational website developed eligibility criteria website usability standards for its content including: evaluation criteria interface; criteria for assessing the business logic; evaluation criteria information; evaluation criteria navigation; evaluation criteria homepage. Investigated the importance of creating their own educational websites for higher education institutions that reflect the level of information and communications interaction of learning activities and play a significant role in the development of open educational content and scientific environment of the University. The development of educational and scientific environment of higher educational institutions using cloud-oriented services, network resources, enables the combination of science and practice, integrating the process of training and scientific research, improved results and the level of organization of scientific, educational and international activities, and is defining trend of scientific and educational information networks and systems of open education and science.*

**Key words:** website, administrative, corporate, educational, university website, network resources and services, information and communication technologies, co-operation.

### 1. INTRODUCTION

**Raising of problem.** Background research is conditioned by the inability to complete the development of the higher education system without the use of Internet technologies in education, which is an important factor of self-education of students. In recent years, tools and technologies of information and communication networks have been further developed, in particular, on the concept of cloud computing. This concept significantly alters the existing understandings of the organization of access and applications integration, so it becomes possible to control a large ICT- infrastructure that allow to create and use independently both individual and collective "clouds" within the overall cloud-based educational environment [1].

For orientation of students in the educational space universities create websites that contain information about the institution, its research activities, faculty, areas of training, entry requirements for applicants, educational materials for students, various events etc.

Research of the university websites as mean of information and communications co-operation of subjects of educational activity gives the opportunity to determine the form of input of information and its impact on the target audience, the main content of professional, regulatory and administrative communication of universities in a changing information environment.

Information and communication cooperation of subjects of educational activity due to socio-cultural changes in society is seen in organization of interaction between institutions of information to build a network of information infrastructures through the use of advanced communication and implementation of innovative technologies.

**Analysis of recent research and publications.** The notion of an administrative or corporate website was reviewed. Literature that deals with the problems of information and communications technologies, co-operation, educational media studies, building structures, functions of educational web site was analyzed. Such researches as V. Bykov, E. Pytel, V. Parnenko, L. Savenkova, J. Sikora, M. Shyshkina and others investigated and explored the impact of ICT on education process, analyzed content, design and optimization of educational websites, described methods and technologies of content management of university websites, highlighted modern forms of communication interaction of subjects of educational activities through web sites etc.

**Scientific novelty and practical value of research:** Traditionally, there was a mutual exchange of information between two subjects of the educational process (students and lecturers) who were able to exercise feedback. With the advent of interactive learning tools in information interaction a third subject is included (teaching tool that operates on the basis of information and communication technologies), and is able to feedback from the first two. At this time when there is the possibility of using distributed information resources (for example, educational sites), information interaction or co-operation (feedback) can be performed with multiple partners in different modes of the Internet and in the future - in the educational space.

Summary of information was limited by the exchange of educational information between the two subjects of the educational process. Information exchange was carried out with the specific portions of educational information from the lecturer to student and back. The lecturer explains, the student answers the questions of the lecturer and says what has learned. With the advent of interactive learning tools in information interaction there is included a third subject - learning tool that operates on the basis of ICT, which is able to feedback from the first two, and is not only informative interaction with the partner, but also a significant source of educational information volume and different levels of complexity as well as the content. The content of educational information student can choose according to needs and level of readiness. Information interaction is between the subjects of the educational process by the volume of information and educational content that is available both on the complexity of the student and of his choice (in terms of meaningful). Nowadays, when there was the possibility of using distributed information resources, educational information content in information interaction is the prerogative of choosing not only the lecturer but also a student. The content of educational information the student can draw from distributed information resources of local and global networks such as university websites.

We introduce the concept of technology education information and communication interaction or co-operation in the use of information and communication technology, by which we mean the set of deterministic tools and techniques, implemented on the basis of modern information and communication technologies for information interaction, which provides an implementation of a given result. In this case it is a pedagogical impact, aimed at achieving specific educational goals.

As researcher V. Bykov noted, the emergence of ICT, the rapid development of tools and technologies, including digital and optical fiber, their widespread adoption in all spheres of public life accelerated integration and communication processes, have provided new, more productive possibilities of electronic data processing. These technologies are rapidly pushing towards the information society to the knowledge society of the future [2].

Website of a university as a kind of a "visiting card" of a university today carries a sufficiently large number of tasks for placing various kinds of information to visitors. They should not only display information relating to key areas of education, to provide formal, educational, methodological, regulatory and other information aimed at both external and internal user, but also meet the requirements for modern educational Resources on European level: have an appropriate design, content, completeness, and Search Engine Optimization pages. This conducted research allows identifying and describing the relevance of university websites as mean of information and communication, co-operation of subjects of educational activity.

**Purpose of article:** to determine and analyze the relevance of using university websites as mean of information and communication co-operation of subjects of educational activity.

## 2. METHODS OF RESEARCH

Analysis and synthesis, comparison of educational university websites data as mean of information and communication co-operation of subjects of educational activity, thematic study of literature on creating and maintaining of websites, summarizing the results of consideration of functionality and relevance of educational websites.

## 3. RESULTS OF RESEARCH

The current paradigm of the national higher education focuses on the variability of educational systems and institutions, flexibility and dynamism of the educational process, its adaptation to the social conditions of the population and employers' requests, the widespread implementation of the learning process of universities with the help of modern educational technologies, continuation to change the nature of development, accumulation of training information and mastering it. In the relevant standard ISO/IEC cloud computing is defined as a paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with self-service provisioning and administration on-demand. In this context the cloud-based environment of the

university is treated as environment of learning and research processes participants established in the university where specifically designed virtualized computer-technological corporate or hybrid infrastructure is created so as to implement computer-processing functions (such as content and technological, information and communicative [1].

In order to understand the object of our study, it is necessary to consider the concept of website and its classification.

A website, also written as Web site or simply site, is a set of related web pages served from a single web domain. A website is hosted on at least one web server, accessible via a network such as the Internet or a private local area network through an Internet address known as a Uniform Resource Locator. All publicly accessible websites collectively constitute the World Wide Web.

Under the classification of website there are such kinds: affiliate, affiliate agency, archive site, attack site, blog, brand building site, celebrity website, community site, content site, corporate website, information site, administrative site, university site etc.

We are interested in administrative or corporate sites, informative, university site that has the same features as:

- Building and strengthening the university's image;
- Informing customers and partners;
- Internal effective interaction.

In our research we emphasize attention to the notion of university website - that is a site on which teachers, students, or administrators can post information about current events or be involved in activities of their institution.

According to the definition, submitted by researcher E. Pytel, educational web site is a collection of web pages with a single design, providing a focused learning and education for the benefit of the individual, society and state, combined with the content, navigation and physical location on the same server, use which may be accompanied by certification of pupils / students. The main characteristics of the educational website are content, design, technical implementation and easy operation [3].

Researcher L. Savenkova noted that university website is a corporate information portal that intergrates information systems of the university and provides personalized and customizable interface that allows users to interact with each other, find and use relevant applications and information resources in the information educational environment of the university in accordance with the interests, objectives, functional responsibilities of members [4].

First of all it is necessary to clarify that the university is a big company, a virtual representation of which is required to produce the same high standards as to the corporate site of any organization that uses this tool to assist in the conduct of business. With the right approach, the tool plays an important role in achieving positive results in solving a variety of corporate objectives. But first we need to determine why university needs such a tool. And to be involved to the virtual representation of the university the following goals and objectives are pursued.

**The main functions of university site are:**

- Informing students about the services, technology, education, prospects after graduation.
- Informing young people about student life, culture, sports and public events.
- Coverage of advanced technologies and scientific achievements, the results of participation in conferences and exhibitions.
- Facilitating collaboration of lecturers and students, for example, access to documents and document templates.
- Facilitating access to organizational information, such as the publication timetable.
- Organization of intra-corporate media about events and activities.
- Reduces the cost of public relations through shift emphasis from traditional means, such as, printed materials, information on the way it is on the Internet and requires additional service support.
- It is an important part of the selection committee, which may run in the section about the specialty set.
- It is a convenient tool for creating thematic specialized forums for scientific subject areas of the department.
- Placement and storage of teaching resources in the disciplines.
- Information search by keywords, subjects, categories and teachers.

Providing a variety of information about the university for different groups of users. For potential applicants there have to be information about the services in the field of education, new technologies, education, prospects that are open for those who finished university. An important role is also played by lighting on all sides of this life of the University as a student life, and science life. Informing about the academic life, conferences and exhibitions will promote the formation of interest among outside organizations to attract the scientific capacity of the University for various tasks, establish new business contacts and, therefore, will also contribute to the flow of income from research activities. Informing about the student, cultural and sporting life of the University, as well

as various public events will contribute to the formation and strengthening in mind that the University is not only a research center, but also one of the cultural centers of the region.

Facilitating collaboration of lecturers and students of the University. This refers to the use of the site as a means of access to university information and communicating with lecturers and students about various general organizational aspects of university life, such as class schedules, general orders, regulations, etc. A significant part of the time is spent trying to find a template or form of any internal university document. The site should allow a certain degree of optimizing a part of such documents within the University by publishing a variety of forms and templates of frequently used documents and the rules for their execution and completion.

Researcher E. Pytel carried out another functions of university websites such as:

- Provision of reference (information on the faculty, department, lecturer, containing contact details and links to their websites) and institutional (regulations, the provisions of the basic educational programs, training programs, work programs and training methodical complex, schedule) information about educational process at the university.

- Storage of learning and teaching resources of disciplines.
- Information search for learning and teaching resources for keywords, subjects, grade and teacher.
- The creation and filling of learning and teaching resources by teachers of elective courses.
- Indirect information interaction between the subjects of the educational process (teachers or lecturers and students) [3].

As researcher J. Sikora noted, use of Internet resources strengthens the role of independent student work and allows them radically change the methods of teaching. A student can receive all tasks and guidance through a server that allows them to reconcile the individual with the necessary capabilities to perform work labor costs. The student has the opportunity to do work at home or in the classroom. One of the didactic possibilities of hypertext systems – implementation of individualizing instruction. In this case, the student can choose the path and pace of learning material based on existing knowledge, techniques and psychological characteristics of personality [4].

**The main objectives of websites developers and those who fill in its content are:**

- Search and development of information flows.
- Automation of management and site maintenance.
- The organization of feedback for visitors.
- Publication of material that was received by e-mail or otherwise.
- Independent search and information gathering, photo coverage.
- Change in the approach to the formation of the site from static to dynamic.
- Separation of presentation and content, the formation of template-based pages.
- Creation of a database and storing there information from the site.
- Publication on the website of information to warn potential visitors' questions.
- Creating a new major information sections.
- Create a partition - a database on graduates.
- Integration with other information systems.
- Distribution of event-university news feed on other similar topics and content resources
- Integration of search engine web site, document server, a database on graduates in a single portal.
- Publication of schedules that are formed in the control room or in the system for scheduling classes.

We would like to note that all of the tasks depend on the individual approach of the customer-university, which determines the amount of work, the availability of certain information on the website, as well as structural elements.

Educational or university site has the similar purpose as information site to inform and provide detailed comprehensive information to the user that is why there are special properties under classification of researcher L. Savenkova that characterize it such as:

- General purpose of the site – providing the necessary information to users.
- Characteristics and main elements – a large amount of services designed to make the site interactive.
- Number of pages - varies depending on the content, typically 50 pages.
- The navigation system – developed.
- The frequency and need to update - permanent, usually by team of experts.
- Customers - target audience (teachers, students, prospective students), casual visitors.
- Having banners and advertisements (content - education) [5].

Researcher V. Bykov offers another classification of properties that are in information educational resources such as:

- Curricula and Programs.
- Educational methodical materials.
- Regulating documents.

- The base of tests.
- Financial and organizational reports.
- Information materials.
- Archives of educational and special materials.
- Teachers research portfolio [2].

In our opinion, an educational website has to be functional, easy useable and serve the purpose, that is why developers and system administrators, content managers must comply with certain requirements that were articulated by researcher V. Parnenko. Thus, in his view the basic requirements to educational websites are: scientific, accessibility, problematic, visibility, increased activity, adaptability, interactivity. The scientific is to provide sufficient depth, correctness and authenticity of the content of teaching material. Accessibility means the inadmissibility of excessive complexity and congestion of educational material, in which his mastery is difficult for students. Problems with setting are relevant educational issues that require resolution. Visibility and polisensornist occur when using of perceptual objects is under study. Adaptability describes the adjustment of an educational resource to the individual characteristics of the student. Interactivity reflects interoperability student who learns valuable information with the website of university [6].

#### 4. CONCLUSIONS AND PROSPECT FOR FURTHER RESEARCH

New information and communication technologies offer unlimited possibilities for their use in teaching educational activities. One kind of information communication technologies are web sites of universities that provide access to information and analytical systems in order to satisfy the needs of all participants in the educational process (teachers, graduate students, potential students).

Education or university web site is a convenient way of efficient information and communication cooperation of all participants of educational activities, provided thoughtful and true functioning of all its elements and components (content, design, optimization and support, management).

The university web site should be maximum dynamic, deeply informative, user-friendly and easy to use, quickly updated information resource aimed not only to create the image of the University, but also conduct to the effective operation and interaction of employees, students, applicants, potential customers, research projects, research partners, and others.

Prospects for further research in this area we see in the research related to the information and communication co-operation of subjects of educational activity by means of Internet resources, as well as theoretical and practical study of university sites for the needs of the target audience, internal communication, establishment of interdepartmental and interdisciplinary links in order to have new creative content and solutions.

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**Коневщинская О. Э., Кравченко А. А. Сетевые ресурсы и сервисы как средства информационно-коммуникационного взаимодействия субъектов учебной деятельности высшего учебного заведения.**

*В статье, на основе проведенного детального анализа психолого-педагогических и методических научных источников, раскрыты основные дефиниции исследуемой проблемы, а также рассмотрены особенности строения и использования облачно ориентированных информационно-аналитических сетевых инструментов, в частности административного, корпоративного, образовательного, университетского сайта для осуществления научно-образовательной и международной деятельности университета. Обоснована целесообразность и возможность использования сетевых ресурсов и облачных сервисов как средств информационно-коммуникационного взаимодействия субъектов учебной деятельности высшего учебного заведения. Определено, что официальные веб-сайты относятся к открытым веб-ориентированным корпоративным информационным системам, функционирующим в научных учреждениях и высших учебных заведениях. Определены функции образовательного университетского сайта, как важного средства для ориентирования студенческой молодежи в информационно-образовательном пространстве. Определены основные требования к содержательному контенту образовательного веб-сайта, разработаны критерии соответствия сайта стандартам юзабилити по его наполнению среди которых: критерии оценки интерфейса; критерии оценки бизнес-логики; критерии оценки информации; критерии оценки навигации; критерии оценки главной страницы. Исследовано важность создания собственных учебных веб-сайтов для высших учебных заведений, которые отражают уровень информационно-коммуникационного взаимодействия субъектов учебной деятельности, а также играют заметную роль в развитии информационного наполнения открытой образовательно-научной среды университета. Развитие научно-образовательной среды высшего учебного заведения с использованием облачно ориентированных сервисов, сетевых ресурсов, дает возможность сочетания науки и практики, интеграции процесса подготовки специалистов и проведения научных исследований, улучшения результатов и уровня организации научно-педагогической и международной деятельности, и является определяющей тенденцией развития научно-образовательных информационных сетей и систем открытого образования и науки.*

**Ключевые слова:** веб-сайт, административный, корпоративный, образовательный, университетский веб-сайт, информационно-коммуникационное взаимодействие.

**Коневщинська О. Е., Кравченко А. А. Мережні ресурси і сервіси як засоби інформаційно-комунікаційної взаємодії суб'єктів навчальної діяльності вищого навчального закладу.**

*У статті, на основі здійсненого ґрунтовного аналізу психолого-педагогічних та методичних наукових джерел, розкрито основні дефініції досліджуваної проблеми, а також розглянуто особливості будови і використання хмаро орієнтованих інформаційно-аналітичних мережних інструментів, зокрема адміністративного, корпоративного, освітнього, університетського веб-сайту для здійснення науково-освітньої та міжнародної діяльності університету. Обґрунтовано доцільність та можливість використання мережних ресурсів і хмарних сервісів як засобів інформаційно-комунікаційної взаємодії суб'єктів навчальної діяльності вищого навчального закладу. Визначено, що офіційні веб-сайти відносяться до відкритих веб-орієнтованих корпоративних інформаційних систем, що функціонують у наукових установах та вищих навчальних закладах. Окреслено функції освітнього університетського веб-сайту, як важливого засобу для орієнтування студентської молоді в інформаційно-освітньому просторі. Визначено основні вимоги до змістовного контенту освітнього веб-сайту, розроблено*

критерії відповідності сайту стандартам юзабіліті щодо його наповнення, серед яких: критерії оцінки інтерфейсу; критерії оцінки бізнес-логіки; критерії оцінки інформації; критерії оцінки навігації; критерії оцінки головної сторінки. Досліджено важливість створення власних навчальних веб-сайтів для вищих навчальних закладів, які відображають рівень інформаційно-комунікаційної взаємодії суб'єктів навчальної діяльності, а також відіграють помітну роль у розвитку інформаційного наповнення відкритого освітньо-наукового середовища університету. Розвиток освітньо-наукового середовища вищого навчального закладу із використанням хмаро орієнтованих сервісів, мережних ресурсів, дає можливість поєднання науки і практики, інтеграції процесу підготовки спеціалістів і здійснення наукових досліджень, поліпшення результатів і рівня організації науково-педагогічної та міжнародної діяльності, та є визначальною тенденцією розвитку науково-освітніх інформаційних мереж і систем відкритої освіти і науки.

**Ключові слова:** веб-сайт, адміністративний, корпоративний, освітній, університетський веб-сайт, інформаційно-комунікаційна взаємодія.