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COMPARATIVE ANALYSIS OF E-LEARNING ENVIRONMENTS AT UKF AND DSTU

Introduction. Currently the importance of information and social media in education is growing. These media provide universal computerization of students and teachers at a level that allows to solve at least three main objectives [1]:

- to provide Internet access to each participant of the educational process, and preferably, at any time and from various locations;
- to develop a single e-learning environment and to make it available to all the participants of the educational and creative process in different time and independently one from the other;
- to create, develop and effectively use flexible e-learning environments, including personal user databases, data banks and knowledge of students and teachers with the possibility of universal access to work with them.

Statement of the problem. The objectives of this study may be stated as follows:

1. To identify positive and negative aspects of creating, updating, disseminating and using e-learning courses.
2. To investigate the means and tools of creating and supporting e-learning at the UKF and DSTU and present their comparative analysis.
3. To outline the ways to effectively apply the Slovak experience in DSTU.

Results. E-learning – is a system of electronic education, elaborated by means of information and electronic technologies. E-learning covers [2]:

- independent work with electronic materials, use of a personal computer, PDA, mobile phone, DVD-player, TV;
- advice and tips, evaluation from a remote (geographically) expert (teacher), the possibility of remote interaction;
- the creation of a distributed community of users (social networks), united by common virtual learning activities;
- timely round-the-clock delivery of electronic learning materials, distance learning means;
- the formation and improvement of information culture among all heads of departments and their mastery of modern information technologies, raising the efficiency of their normal activities;

- the adoption and popularization of innovative teaching technologies, dissemination among teaching staff;
- the possibility of developing educational web resources;
- the opportunity to get at any time and any place modern knowledge, developed in any part of the world;
- access to higher education for people with special needs.

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The Cooperation under this project will cover 4 years (01/01/2014 - 31/12/2017) and includes six European beneficiaries and four partners (Fig.1).

Participant number	Participant name	Short name	Country
Beneficiary **1** (**coordinator**)	**University of Silesia in Katowice**	US	Poland
Beneficiary **2**	**University of Twente**	UT	The Netherlands
Beneficiary **3**	**University of Extremadura**	UEx	Spain
Beneficiary **4**	**Constantine the Philosopher University in Nitra**	UKF	Slovak Republic
Beneficiary **5**	**Lisbon Lusíada University**	LU	Portugal
Beneficiary **6**	**University of Ostrava**	OU	Czech Republic
Partner **1**	**Curtin University in Perth**	CU	Australia
Partner **2**	**Borys Grinchenko Kyiv University**	BGKU	Ukraine
Partner **3**	**Dniprodzerzhinsk State Technical University**	DSTU	Ukraine
Partner **4**	**Herzen State Pedagogical University of Russia, St.Petersburg**	HSPU	Russian Federation

Figure 1 – Partners of the Project

The project aims to:

1. Set up a thematic multidisciplinary joint exchange program dedicated to development of new tools for advanced pedagogical science in the field of ICT instruments, distance learning and intercultural competences in EU, Australia, Ukraine and Russia.
2. Strengthen collaboration between the EU and third country institutions through mutual secondments of researchers.

Detailed objectives:

- to evaluate teaching competences and to suggest effective strategies of implementing new tools in educational activity;
- to explore indicators of educational effectiveness;
- to analyze teaching competences in the application of innovative forms of education and to suggest effective strategies of implementing innovative ICT tools;
- to analyze and evaluate social, economic, legal and ethical conditions, as well as methodologies and models of e-learning techniques;
- to evaluate the effectiveness of the existing models/methodologies designed to provide e-learning and to enhance intercultural awareness;

- to evaluate and present new models/methodologies for effective remote collaborative work and to improve ICT in the science of education;
- to transfer knowledge with a view to generate strategic impacts;
- to promote scientific discussion about the integrity of systems of education and work, focusing on competence issues in the context of globalization of higher education.

The Project is divided into 7 Working Packages (WP) (Fig.2).

WP N	Work package title	*Beneficiary*/partner	Start month	End month
1	**Project and Consortium Management**	US	1	48
2	**Analyses of legal, ethical, human, technical and social factors of ICT and e-learning development and te state of intercultural competences in every partner country**	US/UT/UEX/UKF/LU/OU/ CU/BGKU/DSTU/HSPU	1	8
3	**Analyses and evaluation of the level of ICT, e-learning and intercultural development in every partner country**	US/UT/UEX/UKF/LU/OU/ CU/BGKU/DSTU/HSPU	9	16
4	**Selecting and testing new IT tools**	US/UT/UEX/UKF/LU/OU/ CU/BGKU/DSTU/HSPU	17	24
5	**Pilot methodology development**	US/UT/UEX/UKF/LU/OU/ CU/BGKU/DSTU/HSPU	25	32
6	**Implementation of methodology**	US/UT/UEX/UKF/LU/OU/ CU/BGKU/DSTU/HSPU	33	40
7	**Dissemination of project results**	US/UT/UEX/UKF/LU/OU/ CU/BGKU/DSTU/HSPU	41	48

Figure 2 – The Structure of the Working Packages of the Project

The period 01.01.14 – 01.08.14 covers tasks of the WP2, which include:

- mapping and developing an account of factors involved in process of globalisation and regionalization in developing key competences, including their interests, scales of influence, and temporal horizons;
- examining the role of higher education policy in globalisation processes (e.g. shifts from;
- servicing to driving development of a knowledge society and from aid to e-learning as a means of competences' building) and the role played by higher education institutions and their projects as potential models for other world regions;
- identifying the role of key international higher education institutions in policy developing of key competences and in new forms of international cooperation. The CU (Australia) has the crucial role of continue the prominent tradition of offering Higher Education for students from Asia and Southern America. This is a fast trend in European countries as well. Earlier pilot projects between American and European organizations (Atlantis and Fipse) have learnt that incompatibility in technical and cultural aspects are still inhibiting a smooth further evolution of student exchange;
- analysis of processes of competences development – e.g. processes operating simultaneously on different scales, contemporary trends and previous research;
- researchers will engage in individual/joint-research in the visited institution. If it is in a city they happen to be researching they will be able to carry out fieldwork and/or archive research;
- analysis of legal, ethical, human, techniques, social factors of Development ICT, e-learning and intercultural development in every partners countries;
- researchers will be expected to take part in events, such as conferences, workshops and roundtables, particularly ones that deal specifically with their topic(s) of research, for example: Initial seminar in Poland remote form;
- meeting for all project participants in Spain. Videoconferences and roundtable debate;
- meeting and Workshop (HSPU, Russia);

- conference DIVAI 2014 (Distance Learning in Applied Informatics) UKF (Slovak Republic),
- conference “Innovations in higher education and dissemination of the initial results of the research on the law, ethical, human, technical, social factors of ICT developments, e-learning and intercultural developments in deferent countries” (DSTU, Ukraine).

Lecturers at UKF massively use Moodle system for e-learning [4] – it is a Modular Object-Oriented Dynamic Learning Environment, easily customizable for a variety of users.

Centralized e-learning portal of the university was launched in 2007. The Directive about the position of e-learning came into force in 2007. The responsibilities were defined, but they work only partially. The professors at UKF have experience with several versions of Moodle. The university e-learning portal uses the version 2.6. To fully realize e-learning at the university there was created a web-portal edu.ukf.sk (Fig.3) – e-learning portal of the university, which:

- assigns personalized accounts for students and teachers (they have single account for all information systems at the university);
- is structured according to the university structure (faculties → departments → own structure defined according to department’s needs) [5].

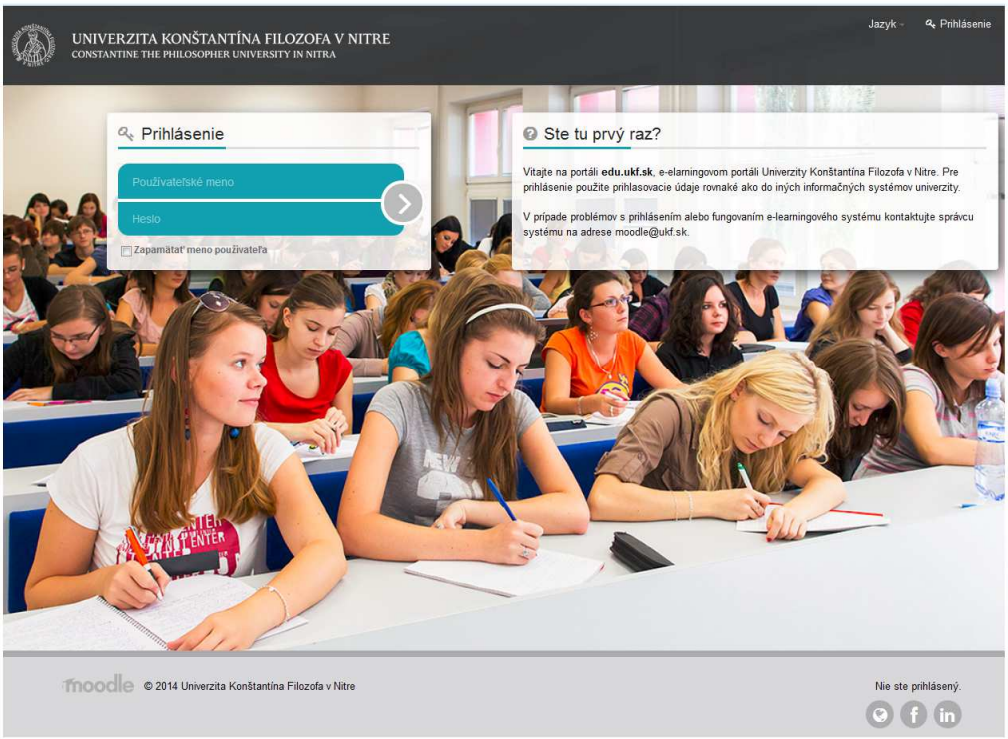

Figure 3 – Home page of the e-learning portal of the Constantine the Philosopher University

The implementation of the e-learning system at the university level, elaboration of e-courses in all disciplines for all departments of the university, the acquisition of technical equipment and organization of the technical infrastructure of the web portal were partially supported in the framework of EU-funded and national projects.

The specialized department, which should be responsible for solving tasks concerning the e-learning courses development and using, has not been yet established. Therefore, the Department of Computer Science of the Faculty of Natural Sciences has taken these responsibilities and tasks and provides the administration and development of e-learning courses for other departments of the university. The lecturers of this department with the aim to ensure

the uniformity of the electronic materials and e-courses provided by the e-learning portal have:

- defined rules for e-learning course structure and content;
- summarized recommendations based on their empirical experience;
- designed the new course template for other professors to elaborate their own electronic learning materials.

The academic staff of the department also trained other teachers of the university to create and manage e-courses in several projects.

We can describe the general process of creating e-learning course, which consists of the following steps:

1 having materials created in accordance with methodical references, teachers should apply to the system administrators (Faculty administrators or members of the Department of Computer Science) with a request to create a new e-learning course;

2 administrators create a new e-course using predefined template;

3 administrators check electronic materials in compliance with the prescribed rules of design and recommend other improvements of the e-learning course;

4 every student and every teacher has a password to access to the web portal. The main window of the portal contains fields for user authentication, if the user is not logged in - he does not have the opportunity to work with the materials of e-learning courses;

5 the students have access to materials in electronic form which include: lectures of the course, guidelines to practical exercises, tasks for each practice session, the recommended literature, multimedia support tools of the course, on-line tests,

6 the teacher has an opportunity to view in each group each student's activity, reference to the academic literature, to hold on-line testing, to receive the grades of the evaluation of knowledge.

The use of e-learning as a single information portal allowed the Constantine the Philosopher University:

- to effectively create different training e-courses;
- to embed interactive multimedia data (audio and video content) into the courses;
- to create a single storage centre of electronic versions of educational materials in order to distribute educational materials and send their contents in various formats;
- to track the access to courses, students' activity, their use of hyperlinks on the page, the count of downloaded files, the results of the tests passed and their grades;
- to create virtual classrooms or video conferencing; video and audio chats;
- to create an electronic portfolio - ordered and well-structured presentation of professor's achievements;
- to use data from an electronic portal to prepare documents for the accreditation of the University.

The present state of e-learning implementation at the Constantine the Philosopher University has also their weaknesses:

- the independence of the faculties in the tasks regarding to education partially limits the further and systematic development of the e-learning portal;
- the absence of the vision or potential of the e-learning at the faculty (departments) level restricts the wider using of e-learning courses in the blended form;
- the lack of interest and motivation of the teachers, which is caused by the optionality to have e-learning courses;
- the professors (authors of the course) hold all the responsibility, they are not motivated to create and use e-courses. A few years ago professors were financially motivated to create courses, but the money was paid only for a new course and it was not concerned with the use or modification of an existing course;

- the lack of any technical support for creation of electronic study materials, recording lectures and animation;
- the lack of a legislative base. There are no laws about e-learning in Slovakia. It is not a separate form of education as a full-time or part-time one. It is a special kind of passive learning support for students. E-courses are not presented in the specialties curriculum, so the creation of e-courses is not the teachers' duty, it is an initiative, voluntary and unpaid activity. E-learning courses are actually used mainly in the course of the training of students of Department of Computers Science, because exactly the teachers of Department of Computer Science were the executors of e-learning projects;
- the data of the electronic portal are not integrated into other information systems that are used in the university.

Regarding the experience of creation and use of e-learning in DSTU the following can be stated. In 2009, there was an attempt to create a system of distance education for IT students at the Department of Software Systems (Fig.4). Distance education system was created with the use of web-oriented architecture, by the means of programming language PHP and open-source relational database management system MySQL.

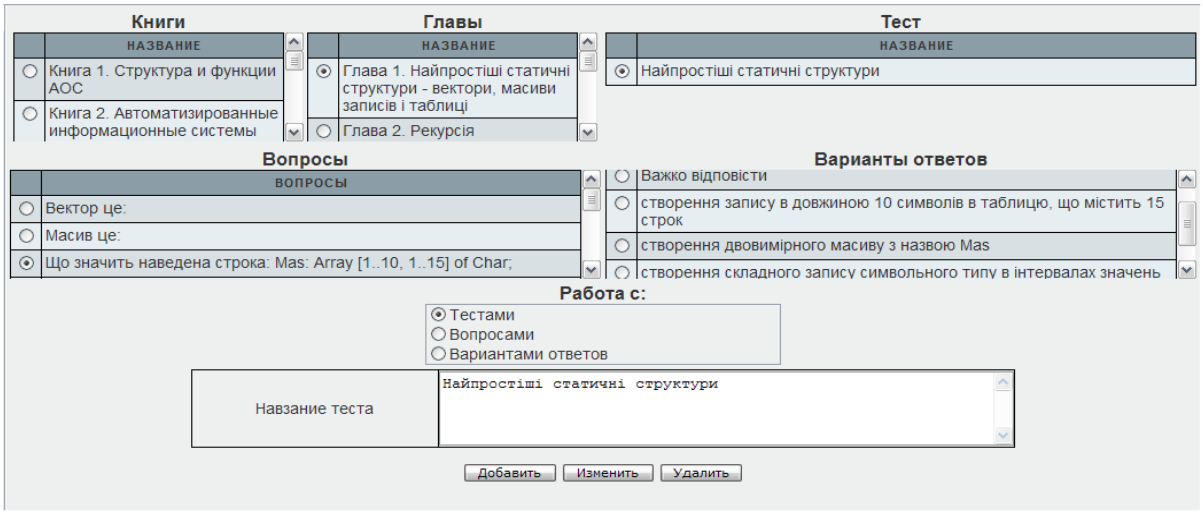

Figure 4 – The Structure of data within a system of distance learning

Distance education – is the interaction between teacher and students at a distance, which reflects all the typical components of the educational process (objectives, content, methods, organizational forms, learning tools) and is realized by means of specific Internet technologies or other means which provide interactivity [6]. Distance education and e-learning are not synonymous terms, as distance education means the distance between teachers and students, while e-learning is possible within full-time education. On the one hand - the system of distance education was to allow the teacher to create an electronic version of educational materials, distribute it via the Internet and receive the student achievement data, on the other hand - the students had an opportunity of self-education at any convenient time for them, which is especially valuable for extramural students [7].

The positive aspects of distance education creation are the next. The system of distance education allows:

- to provide access to electronic versions of teaching guides created by the department for disciplines of different cycles;
- to add, edit, delete textbooks and their authors;
- to provide tools for creating electronic test to evaluate students' obtained knowledge with possibility to configure test parameters;

- to get statistics of the activity of students and the number of addresses to theoretical material, the results of training and exam test;
- to use a means of distance education with friendly, understandable interface which is created in accordance with principles of harmonization and standardization;
- to run separate training, self-control and evaluation blocks.

Despite the fairly extensive positive aspects of use of distance education system there have been revealed a number of problems at the stage of its running, namely:

- the environment lacks motivation. Significant labor-intensive efforts are required of the teacher at the initial stage of development of distance learning system, namely to create an electronic version of educational materials and place them in the system. The work of the teacher was neither paid nor encouraged, leading to low rate of filling the content;
- the lack of a regulatory framework. The teacher`s actions within the distance education are proactive, because there is no corresponding item in methodical work, which could be indicated in the individual plan of the teacher. As a result, there is no possibility to control the process of filling the content of e-courses of distance education system;
- the question of copyright. The lack of existing legislative framework protecting the copyright leads to reluctance of teachers to spread in the open access developed teaching and learning materials;
- the low level of students` independence, not readiness of students for self education by means of distance education;
- the difficulty in obtaining practical skills. Despite the possibility of extending the educational materials and possibility of testing the results of their study, the module of acquirement of practical skills was not presented. At the moment the means and tools to create a block for obtaining professional practical skills of students are being chosen;
- the knowledge evaluation block is not perfect. The efficiency of testing as the primary type of knowledge assessment is doubtful enough. Some students managed to obtain unreasonably high score, answering the questions "at random".

Currently there was created and is used an information web portal in DSTU [8]. It has partially the properties of e-learning, because it provides access to electronic versions of educational materials. Portal data are structured in such a way that it is possible to get acquainted with the structure of faculties, methodical guides of teachers or choose a specialty and get a list of all the disciplines in a semester with their methodical guides (Fig.5).

Despite the current functioning of the portal attention should be paid to a number of significant shortcomings that impede the effective development and operation of e-learning system, namely:

- the lack of mechanisms for granting access rights to information portal. All electronic materials of all the courses are in full open access to any user, which inevitably leads to the reluctance of teachers to submit their work to the portal;
- the lack of teachers` motivation;
- the inability to obtain information about prepared materials of a particular teacher within a particular academic year, semester, discipline. It is only possible to view the total list of educational materials;
- no instrument to add multimedia support to the educational process;
- no forms or guidelines to create electronic versions of methodical guides;
- the web-portal only acts as a passive repository of electronic versions of educational materials where it is not possible to organize all kinds of e-learning activities: the students` participation record, evaluation of students' knowledge, the calculation of students` rating marks etc.

Conclusions. Evidently, all advantages of e-learning revolve around the key competences of the 21st century, outlined by UNESCO. Efficient e-courses, developed in a university

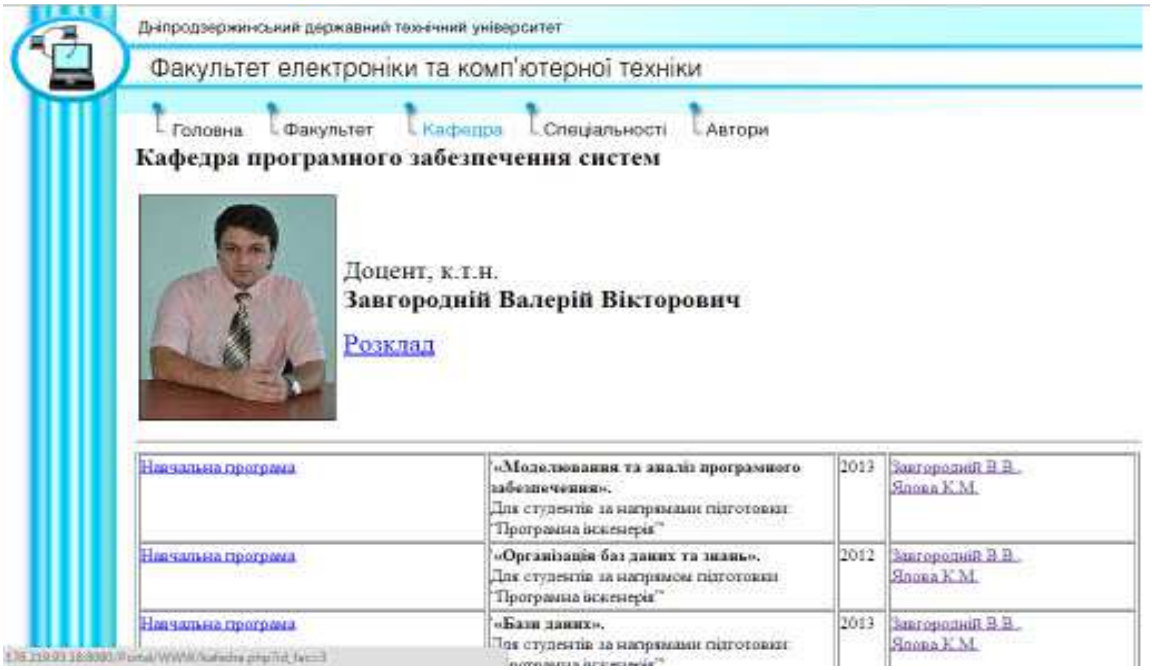

Figure 5 – An example of a professor's web-page with e-versions of materials in DSTU

have a stronger impact on potential students and raise the institution's prestige. Some of the negative aspects are legal ones, connected with dissemination of scientists' work. Apart from it, lack of motivation still presents a serious barrier in some institutions.

UKF is in a more privileged position in terms of ICT than DSTU, professors in UKF massively use MOODLE (Modular Object-Oriented Dynamic Learning Environment), which enables them to embed interactive multimedia data (audio and video content) into the courses; to create a single storage centre of electronic versions of educational materials in various formats; to track access to courses, students' activity, their use of hyperlinks on the page, the count of downloaded files, the results of the tests passed and their grades; to create virtual classrooms or video conferencing; video and audio chats; to create an electronic portfolio - ordered and well-structured presentation of professor's achievements; to use data from an electronic portal to prepare documents for the accreditation of the University, to name just a few.

Nevertheless, UKF and DSTU share some barriers to progress of their e-environments. They are the independence of faculties in the tasks regarding to education; the lack of motivation of teachers and the lack of legislation or institutional norms as to e-learning, the lack of infrastructure for creation of electronic study materials, recording lectures and animation; and, most importantly, lack of staff , developing and supporting e-learning.

Hopefully, with the new legislation on education DSTU will follow the example of UKF, where teachers with professional background knowledge in digital technologies were motivated in their workplace to create, support e-environment and hold practical seminars for other professors.

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REGULATORY AND LEGAL ASPECTS OF DISTANCE LEARNING IN HIGHER EDUCATION OF UKRAINE

Introduction. At the current stage of development of Ukrainian society the necessity to develop and introduce new forms, methods and means of higher education becomes more and more urgent. The development of information and communication technologies, social demand for new educational forms urge the introduction and development of distance learning to provide the required level of training. It is distance learning that creates conditions for obtaining high-quality knowledge in the context of the principle of "life-long learning" on the job, in convenient time in the necessary field of study. However, not all modern universities are capable to create and implement distance learning due to lack of financial and material resources, lack of desire and teacher's time to master new technologies. Also we should stress imperfect and contradictory legal framework of the implementation of distance learning in Ukraine.

The relevance of research is due to: in theoretical perspective - the need to further develop aspects of distance learning, concepts and categorical apparatus in the context of modern institutions of higher education; in practical perspective - the demand for social practice in specific areas of distance learning among students of modern youth and the general population.

The setting of the task. Different aspects and trends of distance learning in Ukraine and abroad are discussed in scientific publications by such scholars as V.Brustinov, P.Dimitrenko, A.Zaritsky, J.Ivanyuk, I.Kuzmin, J.Napryeyev, V.Oleinik, T.Petrenko, P.Ryzhko, R.Sobko, R.Sharan, A.Shpagina, V.Yanushevskyy et al. At the same time, M.Ishchenko and L.Ishchenko are investigating the legislation behind the launch of distance learning, uncovering in current legislation on education from 1991 to 2010 some lack of unified definitions and a clear statement of legislative acts on the regulation of distance learning [1]. Analysis of legal framework that is governs the development and implementation of distance learning in higher, vocational, general and postgraduate education was made in an article by V.Kuharenko [4]. Analysis of electronic systems to support regulatory framework in distance learning is presented in the publication Petukhova L. and N.Osipova [5]. However, despite the wide range of research in the field of distance learning, scientists tend to focus mainly on scientific and technological aspects of meaningful use of distance learning in modern Ukrainian universities. The papers analyzing legal and normative basis for implementa-