



QUALITY OF HIGHER EDUCATION AND STRUCTURE OF ICT COMPETENCE OF TEACHERS IN UKRAINIAN HIGH SCHOOLS

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Abstract

This article examines ways of improving the quality of higher education in Ukraine in context of European quality standards for University educational space. The European standards and guidelines are considered in relation to internal quality assurance. The paper describes interdependence between the education quality of the University and the ICT competence's level of its educators. It presents the indicators to achieve internal quality standards in educational process. There are results from the questionnaire of the Borys Grinchenko Kyiv University's educators about dependence between the level of educators' ICT competency formation and the quality of educational services. We describe the model of ICT competence corporate standards for the educators developed in the Borys Grinchenko Kyiv University. There are also presented the indicators and tools to measure the level of educators' formation in the corporate standards.

Keywords

quality of higher education; ICT competence; corporate standards; measurement tools

Introduction

Problem statement. European integration process, which is now taking place in Ukraine, accompanied by the formation of a unified educational and scientific space, which, in turn, on the necessity for the development of common standards and criteria for evaluating the quality

of educational services. The legislation of European integration processes in Ukraine secured certain laws and regulations. However, the issue of quality in higher education remains open, relevant and provides different ways to solve specified in the new Law on Higher Education (2014).

The European education system is focused on the skills of the 21st century and is labile under the influence of modern macro trends: globalization, demographic change and the emergence of new knowledge and competencies. Macro trends occur under the influence of the rapid development of technology that affect business development, labor market and, in turn, to a system of higher education should prepare graduates for today's conditions - graduates with new competences and new professions [2]. And therefore these competences and teachers should possess a modern university, which is currently in the competitive environment of the MOOC.

Analyzing the European standards of higher education and the impact of macro trends in the education system and its transformation can hypothesize about the dependence of the quality of educational services on the level of formation of the ICT competence of the teacher.

The purpose of this article is to describe the developed model of corporate standard of ICT competence of university lecturer, built with consideration an appropriate framework of ICT competence of UNESCO and the results of a survey of teachers of the Borys Grinchenko Kyiv University.

Analysis of recent research and publications. The issue of quality in higher education studied D. Green, K. Negri, J. Ojasalo, M. Kisil, H. Krasilnikova, N. Sukhova [28], N. Statinova [27]. John Bailey, Nathan Martin, V. Kuharenko note on the impact of macro trends in higher education system [2]. Monitoring the quality of higher education explore Carole Webb, Jim Finch, Malcolm Frazer, V. Luhovyi, Z. Taranova, I. Annenkova. Standardization of ICT in education investigating K. Aesaert, Kozma, Robert B., Wayan Surya Vota Yoshiki Sakurai, V. Bykov, M. Zhaldak, V.K uharenko.

Analysis of the Standards and Guidelines for Quality Assurance in the European Higher Education [11] noted that the main activities of teacher in the modern university should focus on creating high quality content and use educational environment, including electronic. The impact of technology [2] on the occurrence of macro-trends and reform of higher education in Ukraine supports the hypothesis urgent development and implementation of standards [15] information and communication competence of teachers in terms of European integration processes of modern higher education. The issue of monitoring these standards is important from the perspective of improving the quality of education and university achievement of European indicators of quality of higher education.

Result of research

The quality of higher education

Quality of education is the balanced line (as a result, the process of the educational system) identified needs, goals, requirements, rules (standards). The components of the quality of higher

education is to provide training, research and teaching staff, material and technical resources, educational environment, including electronic, educational achievement of students, the system of education management and research results [15]. Ukrainian system of quality assurance based on the day of the administrative-command methods [20]; consumer of such a system was the state. Therefore, the principles of management of higher education in Ukraine and its quality indicators today are administrative as university funding (excluding private) it was possible to adopt a new law on higher education with a budget.

The European education system - on the contrary, formed under natural choice when quality requirements of education put forward directly to consumers' educational services - sectors, employers, students. Standards and Guidelines for Quality Assurance in the European Higher Education consists of three aspects: European standards and guidelines for internal quality assurance in higher education, European standards and guidelines for external quality assurance of higher education and European standards and guidelines for agencies external quality assurance [11].

In the context of the purpose of this article we consider the structure of the European Standards and Guidelines for internal quality assurance in higher education institutions (European Standards and Guidelines, ESG) (Table 1), and we have developed indicators to measure them (30).

Standard	Guidelines	Indicators of measurement (30)
1.1. University policies and quality assurance procedures	Institutions should determine the policy and related procedures to ensure the quality and standards of their training programs and diplomas. To achieve this goal, they should develop and implement a strategy for the continuous improvement of quality. The strategy, policy and procedures should have a formal status and be available to the public	<ul style="list-style-type: none"> • I11: availability of educational policy • I12: internal ratings University to implement research activities • I13: open scientific resources • I14: results of the survey of students • I15: corporate standards • I16: implementation of quality management system of ISO 9001
1.2. Position to approve, evaluation and monitoring of programs and qualifications	Institutions should have formal mechanisms approval, periodic review and monitoring of their training programs and diplomas	<ul style="list-style-type: none"> • I21: description of the expected learning outcomes • I22: availability of curriculum • I23: availability of training programs • I24: availability of different forms of learning • I25: educational materials for training courses • I26: availability of electronic register • I27: existence of a special (external) quality evaluation commission

1.3. Assessing students' knowledge	Attendance requires consistent use of published criteria, regulations and procedures	<ul style="list-style-type: none"> • I31: existence of a special structural unit dealing quality • I32: systematic monitoring of student learning outcomes •
1.4. Quality assurance of teaching staff	Institutions should have the specific procedures and criteria to certify that teachers who work with students with appropriate qualifications and high professional level to carry out their duties	<ul style="list-style-type: none"> • I41: survey of teachers • I42: availability of ICT competency standards for teachers • I43: open portfolio of teachers • I44: open portfolio of teachers • I45: system of teacher training • I46: system of rating the performance of teachers
1.5. Learning resources and student support	Institutions should ensure that available resources that provide training process are adequate and correspond to the content of the programs offered by the institution	<ul style="list-style-type: none"> • I51: the availability of educational materials at anytime and anywhere placing material on the Internet (centralized or decentralized components of ITS) • I52: accounting student learning styles: presentation training materials in various forms (audio, video, tables, plain text, diagrams, etc.) • I53: the needs of students in the use of electronic resources and services included in personal electronic educational environment of students • I54: monitoring the quality of electronic educational resources • I55: monitoring the level of satisfaction of students providing electronic learning materials
1.6. Information Resources	Institutions should ensure that they collect, analyze and use relevant information to effectively manage their training programs and other activities	<ul style="list-style-type: none"> • I61: records of all activities of students • I62: accounting student learning outcomes • I63: availability of special structural unit on employment of graduates • I64: availability of public information about the teachers • I65: availability of public information about accreditation and its performance

		<ul style="list-style-type: none"> • I66: availability and openness of e-performance qualitative and quantitative indicators of accreditation of all specialties
1.7. Publicity information	Institutions should regularly publish the latest, unbiased, objective information - both quantitative and qualitative - of curricula and qualifications they offer	<ul style="list-style-type: none"> • I71: Openness of key performance indicators of the University • I72: Openness of research results • I73: Openness indicators accreditation University Online • I74: Openness of University rating indicators at the state level

Tab.1: Summary of the European Standards and Guidelines for Internal Quality Assurance in Higher Education

Analyzing the European standards of higher education and the impact of macro trends in the educational system and its transformation can hypothesize about the need for quality content, component of the educational environment of the University, which includes electronic components. Consistency and integrity of its allowing modern university to reach the performance level of European standards.

The results of analysis of international experience show key indicators measuring tools of internal quality standards of modern university education:

- 1) University website
- 2) Structural units website
- 3) Teacher's ranking website
- 4) Website of electronic teacher's portfolio
- 5) Website for advanced distance teachers learning
- 6) Institutional repository
- 7) Electronic library resources
- 8) Wiki-portal
- 9) Educational portal LMS based on MOODLE
- 10) Specials sections in LMS: e-dean, e-journal, means to assess learning activities of students
- 11) A resource for assessing the quality of training content (external experts and employers)
- 12) A resource for analyzing the results of questioning of students
- 13) A resource with information about implementation of ISO 9001

Due to the transformation of education in the new environment and market requirements to prepare competitive specialists, traditional role of the teacher (broadcasting and reproduction of training materials) is replaced by a number of new roles. The modern teacher is able to select and use electronic resources for student learning; organize cooperation and communication between the participants of the educational process; design, electronic resources and electronic educational environment to be a facilitator and an assistant for students well understood and taken into account in the learning process of their needs and characteristics, cognitive learning styles, new services and tools for effective collaboration, communication, possess the skills 21st century. And therefore is qualitatively change the educational environment of the modern university.

In view of the above it can be argued that the development component of the educational environment in accordance with the requirements of quality and transparency, the use of specific indicators and tools to measure allows university to reach the level of European standards of higher education.

Monitoring of internal quality assurance

The term “monitoring” [14], we understand as the constant monitoring of certain process to determine its compliance with the desired result or starting bid - monitoring, assessment and prediction. To determine the internal quality assurance we were based on the following provisions:

- Monitoring is implemented through a set of methods and clearly established procedures. In contrast to controls, which each year is aimed at new sites, monitoring is aimed at those same objects and periodically repeated.
- In contrast to the conventional understanding of the control of education is a form of monitoring, collection, storage, processing and dissemination of data, providing continuous surveillance of their dynamics.
- Monitoring is not expertise. Examination has mechanisms for deeper and more detailed analysis of the research object.

Monitoring described in this article was conducted at the Borys Grinchenko Kyiv University during June - September 2014 questionnaires developed by the international project IRNet (29, 32).

Target group of respondents – teachers. Monitoring tool - an anonymous online survey.

The questionnaire consisted of six parts (units):

- Determining the level of awareness of the policy establishment and assurance procedures.
- Confirmation (not confirmed) form of review of curricula; use of modern ICT in the classroom.
- Determining the level of formation of e-learning environment of institution
- Monitoring the implementation of distance learning for students

- Determining the level of involvement of students in evaluating the quality of educational services
- Determining the level of formation of citizenship resident knowledge society.

Here is the summary of the results.

1st set of questions. Determining the level of awareness of the policy establishment and assurance procedures.

51% confirmed their awareness of the presence of the University of Documents regulating the activities of teachers in the use of electronic technology and distance learning. 41% were neither confirm nor deny the presence of these documents.

65% are familiar with the contents of the University regulations governing activities in the field of distance learning.

64% are familiar with the procedures for assessing the University as electronic resources and distance learning resources created by teachers. 95% of acquainted data procedures could name specific criteria for assessing the quality of electronic resources and distance learning resources created by teachers.

63% are familiar with the procedures for using public resources.

45% are not familiar with the procedure motivate teachers to create open educational resources.

Summing up the first block we can note the overwhelming awareness of teachers of institutions policies and procedures of quality assurance in the context of the use of ICT.

2nd set of questions. Confirmation (not confirmed) review procedure curricula; use of modern ICT in the classroom.

Only 18% of teachers believe in controlling and monitoring the educational part of school level and efficiency of teacher created e-learning resources. 97% of the number of knowledgeable called specific performance control and monitoring, which analyzes the use of these resources. At the same time, 73% were not aware of the results of this monitoring (promotion, monitoring results, recommendations for monitoring results). 52% of the respondents were unable to neither confirm nor deny the existence of this control.

95% confirmed the establishment and functioning of the university established electronic resources (repositories, electronic research and teaching journals, wikis portals open courses, etc.).

57% confirmed acceptance at the facility level corporate standards of ICT competence of teachers. 52% of all teachers are familiar with the structure of the standards and criteria of assessment.

85% reported active participation of students in quality assessment procedure established open electronic resources and quality control of education.

Consequently, the vast majority of teachers use modern ICT in their work; aware of their role and importance in the learning process. At the same time, most teachers are not familiar with the procedure of monitoring the use of modern ICT in their work.

3rd set of questions. Determining the level of formation of e-learning environment of institution.

95% of respondents confirmed the existence of the University e-learning system LMS Moodle and are aware with its structure. At the same time the level of student use of the system in the opinion of teachers is only 60%.

57% are not familiar with the system of motivation of teachers in the development of e-education space facility. 95% believe that there is no financial motivation.

38% said students contribute actively to the development of e-education space facility.

Generalizing the answers to this set of questions can be noted that almost all the teachers involved in the formation of electronic educational institution environment, although much of unmotivated by such activities. Some teachers actively involve students in the process of filling the electronic learning environment.

4th set of questions. Monitoring of the implementation of distance learning for students.

30% are aware of the existence of an internal ranking of Webometrics the University. 62% aware of its existence.

Only 13% believe in the existence of regulations evaluation of internal ranking of Webometrics for teachers. 75% believe that such documents may exist.

79% of respondents gave an affirmative response to the use of the institution of anti-plagiarism system to check students' scientific works.

At the same time, 85% did not have any tools use the name of the institution to monitor and discuss the quality of distance education.

Thus, all teachers are aware of the need for the use of distance learning, but are not aware of the need of internal ranking of Webometrics.

5th set of questions. Determining the level of involvement of students in evaluating the quality of educational services.

39% of teachers believe in setting database curricula for all subjects.

Only 44% are aware and 43% aware of the existence of a database with information about students. At the same time, 59% are familiar and 31% aware of the existence of a database with information on teachers.

26% of teachers believe in the existence of the institution of tools implementing individual learning paths of students. 54% believe that perhaps these tools implemented in the institution.

84% of respondents claim on existing social interaction between teachers, 84% - between students and 90% between teachers and students, 82% between faculty and students of the institution and other institutions.

44% believe that students enjoy using e-learning courses. 23% believe in the need to use traditional forms and methods.

75% of teachers believe that students use e-learning resources only to perform required tasks with the online versions of courses; 28% - to implement their own learning paths and 62% believe that students use e-learning courses fragmentary.

59% believe that the educational initiative on the use of e-learning resources reveal only some students.

59% of teachers believe that e-learning environment requires school improvement.

The existence of specific courses of training confirmed 87%.

Thus, some teachers continue to follow traditional forms of teaching, aware of the need to use e-Learning space. We can speculate that having every opportunity to improve their own ICT skills of teachers are still slow to implement distance learning because of missing motivation system, or by reason of ignorance of the existence of such a system.

6th set of questions. Determining the level of formation of citizenship resident knowledge society.

69% of respondents recognized Russia as a country they know best. Next in the ranking is Poland, then the Netherlands, Australia and Slovakia. Comfortable level of communication in the selected country noted as a very high 51% (understanding of language and the ability to maintain a conversation). 46% reported having a high level of establishing business contacts. Only 26% reported a high level of knowledge of the culture of the chosen country. At the same time, 43% reported a high level of cultural knowledge and 23% of religious differences between Ukraine and Selected Countries.

34% consider themselves a citizen of the world, 39% of the inhabitants of the continent, 84% of its people, 62% - of the region.

For information about other countries and cultures teachers receive from my own experience - 80% of educational institutions - 39% Media - 67% Internet - 90%.

16% believe that the University creates conditions for the development of intercultural competence, 28% answered that question “probably yes”. 87% believe that in the near future they will develop intercultural competence; 90% reported both forms and methods of development that are implemented in the institution.

72% agree with the statement that globalization and standardization of the learning environment of the system of formal education is a positive trend in the world of higher education; 20% - think negative. At the same time, 67% agree with the statement that globalization and standardization of the learning environment of the system of formal education is a positive development of the national system of higher education.

66% support the policy of e-learning at the state level and 56% at the outset of the absence of such policies at the state level at the time of the survey.

Results of the survey on the block indicate a level of development in teacher’s citizenship resident knowledge society. The majority considers the impact of globalization on education a good thing. Teachers are aware of the need for public policies on e-learning.

Analysis of the European Standards and Guidelines for Quality Assurance in Higher Education [11] noted that the main activities of the modern university teacher should focus on creating high quality content and use learning environment. The results of our survey confirm the relationship between the quality of e-learning space created by university and levels of ICT competence of the teacher.

Model of corporate standard of ICT competence of teaching staff

Information and communication competence is known as proven ability to understand individual autonomy and responsibility in practice ICT to meet their individual needs and solving socially important, in particular professional tasks in a particular subject area or field of activity.

Framework structure of ICT competence of teachers described in the recommendations of UNESCO, which includes six modules: understanding the role of ICT in education, curriculum and assessment, pedagogical practices, hardware and software ICT, organization and learning management, professional development, considered as the basis for creating an appropriate model for high school teachers.

Another document, which must be taken into account in the establishment of this model, is the European ICT competency framework 2.0 (2011).

Framework of ICT competences (The European e-Competence Framework, then e-CF) is a framework describing ICT competencies to be used in business organizations and educational institutions in determining the areas of training professionals to the modern labor market and the content of their training. e-CF serves as a tool for international schools in the following tasks:

- Development, implementation and management of IT projects and processes in the school;
- The use of ICT;
- Decision-making, development strategies;
- Prediction of new learning scenarios and more.

The structure of the ICT competences 2.0 framework consists of 4 descriptors that reflect the different requirements for management staff, and is in addition to the management of the duties of employees (see. Fig. 1).

Descriptor 1

- ICT-competencies that meet the business processes (planning, implementation, commissioning, adjustment, control)

Descriptor 2

- A set of competencies for each area of ICT competencies

Descriptor 3

- Professional level of each competence

Descriptor 4

- Examples of knowledge and skills for each competency

Fig. 1: Structure of the ICT competence 2.0 framework

The model of corporate standard of ICT competence of teaching staff of the modern university is based on the relevant recommendations of UNESCO and the European frame ICT competence 2.0 into account the peculiarities of scientific-pedagogical employee in the context of the Standards and Guidelines for Quality Assurance in the European Higher Education Area, namely: understanding of the role of ICT in education and their use of ICT use, educational activities, research activities and training.

During the determination of the formation level of ICT competence of teachers is expedient to take as a basis the standard quality of higher education in the European and according to them to determine the appropriate tools and evaluation criteria. In addition to the basic documents of this issue include of ISO 9000: 2007 and ENQA (European Association for Quality Assurance in Higher Education), which contain commonly required or needs or expectation.

The standard ENQA special emphasis calls on the following indicators: teaching (learning process, teaching activities); scientific and teaching staff; educational programs; material base, information and educational environment; students (students, prospective students); educational management; research.

Considering above and the results of a survey of teachers of Borys Grinchenko Kyiv University, the model of corporate standard of ICT competence can be presented according to the main types of university lecturer, highlighting three levels: basic, professional and advanced (Table. 2).

Activity	Base level	Advanced level	Professional level
Understanding the role of ICT in education and their use	Basic knowledge	Participation in group initiatives of regional and national levels	Development strategy of informatization of education at the University
ICT	Basic tools	Creating e-learning courses	Continuous update of e-portfolio
Educational work	Application of knowledge and skills	System using of ICT	Creation and support of open educational resources
Scientific activities	Using ICT to find information	Presentation of the scientific community the results of their own research activities through the use of ICT	Coordination and participation in international research projects
Advanced training	Access to resources for professional development	Creating an own e-portfolio	Participation in MOOC (massive open online courses)

Tab. 2: Model of corporate standard of ICT competence for the teaching staff

According to the model developed by us, there are following measurement tools of the level of formation of the ICT competence Standard of teachers at university:

	Base level	Advanced level	Professional level
Understanding the role of ICT in education and their use			
Measurement tools	<ol style="list-style-type: none"> 1. Online survey to determine the level of awareness of teachers about the availability of documents on education policy at the University or the State and their role in the activities of the university. 2. Participation in seminars (full-time or remote) on educational policy of the University 	<ol style="list-style-type: none"> 1. Survey of students for use in the profession of innovative educational policy. 2. The survey of teachers in understanding ways to use innovation in the profession of education policy. 3. Survey of students to determine the role of ICT in education and identify requests students to enrich the e-university environment. 4. Teacher's e-portfolio: availability of data on participation in some group of educational initiatives 	<ol style="list-style-type: none"> 1. E-portfolio: availability of information on participation in the group to create new educational development, a strategy for ICT and their use.
ICT			
Measurement tools	<ol style="list-style-type: none"> 1. Tests for independent verification of levels of basic tools (created by the University, IT-Academy). 	<ol style="list-style-type: none"> 1. Certified electronic educational course, which is a necessary condition for the use of complex ICT tools. 3. Teaching materials are based on the use of e-tools 	<ol style="list-style-type: none"> 1. Usage of Wiki portal. 2. Own blog of the teacher. 3. Usage of social networks for education.

	2. Some components of e-learning courses (electronic educational course)		4. Teacher's e-portfolio.
Educational Activities			
Measurement tools	<p>1.Survey of students about the quality of fragmented use of ICT.</p> <p>2.E-testing students' educational achievements.</p> <p>3.Availability of electronic course in LMS Moodle.</p> <p>4.Questioning teachers in understanding the effectiveness the use of ICT in practice.</p>	<p>1.Statistics of usage by students of electronic course, placed on LMS Moodle.</p> <p>2.Links in electronic course on Institutional repository resources.</p> <p>3.Links on open e-resources.</p> <p>4.Links on open learning courses (MOOC).</p> <p>5.E-science publications.</p> <p>6. Survey of students on teacher satisfaction with the proposed e-resources.</p> <p>7.Evaluation of training programs: a list of recommended resources.</p> <p>8.Availability of certified electronic courses on each disciplines that teacher teaches.</p> <p>9.Assessment of systematic use of electronic course resources: reports on e-dean and electronic gradebook of specific electronic course.</p> <p>10.Availability on the Wiki portal annotations to certified electronic course.</p> <p>11.Assessment of systematic use of resources in the university environment</p>	<p>1.Creation an open electronic courses (MOOC) and statistics of their members.</p> <p>2.Organization of email communication and collaboration (including educational projects) in soc. networks and on the basis of virtual communication (skype, video conferences, webinars, etc.).</p> <p>3. Joint projects on the Wiki portal.</p> <p>4. Teacher's e-portfolio.</p> <p>5.The use of ICT for administration of the educational process</p>
Scientific activities			
Measurement tools	1.Survey for teachers awareness on the use of scientific communication: repositories, scientometric databases, e-libraries, e-journals, as well as opportunities and	<p>1. Number of international publications.</p> <p>2. Number of appearances at international conferences</p>	<p>1.Participation in Intercollegiate and international research projects.</p> <p>2. Teacher's e-portfolio.</p> <p>3.Number of joint international publications with scientists from other universities.</p>

	participate in online conferences. 2.Number of publication in Institutional repository. 3.Citations index in Google Scholar.		4.Citations index in international scientometric databases. 5.Organization and conduct online conferences, seminars.
Advanced teachers training			
Measurement tools	The certificate of training for ICT	1.E-portfolio. 2.Participation in distance training courses in Ukraine. 3.List of graduated non-formal learning.	1.E-portfolio. 2.The list of graduated open professional online learning courses (MOOC). 3.Training for colleagues on the use of ICT. 5.Online consultations, conducting webinars out of the experience.

Tab. 3: Tools to measure the level of educators' formation in the ICT competence standards.

Conclusion

The impact of technology [2] on the occurrence of macro-trends and reform of higher education in Ukraine supports the hypothesis urgent development and implementation of standards for information and communication competence of teaching staff in terms of European integration processes of modern higher education.

Due to the transformation of education in the new environment and market requirements to prepare competitive specialists traditional role of the teacher (broadcasting and reproduction of training materials) is replaced by a number of new roles. The modern teacher is able to select and use electronic resources for student learning; organize cooperation and communication between the participants of the educational process; design electronic resources and electronic educational environment; to be a facilitator and an assistant for students; well understood and taken into account in the learning process of their needs and characteristics, cognitive learning styles, new services and tools for effective collaboration, communication, possess the skills of 21st century. And therefore must meet a certain level of ICT competence of teachers.

Terms of successful formation of the ICT competence of teaching staff universities include:

- Development and adoption of corporate standards of teaching staff of the University, including information and communication competence. Should be set the same standards, criteria, indicators and measurement tools of their formation.
- Implementation of training of teaching staff in the field of information and communication technology competence and their effective use in the classroom.

- The creation and ongoing development of personal educational environments of students and teachers.

References

1. *A common European framework for ICT Professionals in all industry sector* [online]. In English. Available from: <http://www.ecompetences.eu>
2. *Blended learning* [online]. In English. Available from: <http://www.scoop.it/t/blended-learning-by-v-kukharenko>
3. CULLEN, John, et al. Quality in higher education: from monitoring to management. *Quality Assurance in Education*. 2003, 11(1), 5 - 14. ISSN 09684883
4. *Data analysis for the 2014 State of the Industry has begun* [online]. In English. Available from: <http://www.astd.org/Professional-Resources/State-Of-The-Industry-Report>
5. *Digital Science* [online]. In English. Available from: <http://ec.europa.eu/digital-agenda/digital-science>
6. *What Is Quality in Higher Education?* [online]. In English. Available from: <http://repositorio.ub.edu.ar:8080/xmlui/handle/123456789/2124>
7. LIU, Shuiyun. *Higher Education Quality Assessment in China: An Impact Study*. Higher Education Policy. 2014.
8. Making the Most of Our Potential: Consolidating the European Higher Education Area Bucharest: communique. Final Version (Bucharest, 26-27 April 2012) [online]. In English. Available from: <http://www.ehea.info/Uploads/%281%29/Bucharest%20Communique%202012%282%29.pdf>
9. *ICT in education* [online]. In English. Available from: <http://www.uis.unesco.org/Communication/Pages/ict-education.aspx>
10. *Report on web skills survey* [online]. In English. Available from: <http://www.openeducationeuropa.eu/sites/default/files/news/MOOCs-for-web-skills-survey-report.pdf>
11. *The Standards and Guidelines for Quality Assurance in the European Higher Education Area - ESG* [online]. In English. Available from: <http://www.enqa.eu/index.php/home/esg/science>
12. *The Bologna Process 2020 – The European Higher Education Area in the new decade: communiqué of the Conference of European Ministers Responsible for Higher Education (Leuven and Louvain-la-Neuve, 28-29 April 2009)*[online]. In English. Available from: http://www.ond.vlaanderen.be/hogeronderwijs/bologna/conference/documents/leuven_louvain-la-neuve_communique%C3%A9_april_2009.pdf

13. *What is the ICT CFT?* [online]. In English. Available from: <http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/unesco-ict-competency-framework-for-teachers/what-is-the-ict-cft> - Dividers. from title screen.
14. ANNIENKOVA, Iryna. *Monitoring the quality of education in universities*. [online]. In Ukrainian. Available from: <http://e-learning.onu.edu.ua/stati/pedagog-ka-visho-shkoli/annikova-p-mon-toring-jakost-osv-ti-u-vnz.html>
15. BAKHRUSHYN, Volodymyr and Oleksander HORBAN. *The quality of higher education and contemporary approaches to its measurement*. [online]. In Ukrainian. Available from: <http://www.slideshare.net/VladimirBakhrushin/1-2013-16785106>
16. VEMEBR, V. and G. YELNIKOVA, N. MORZE, O. KUZMYNSKA, A. OVCHARUK, L. PETUKHOV, E. HVILONA. *Using EPRINTS for information and communication support research activities*. National Academy of Pedagogical Sciences of Ukraine Institute of Information technology and training. 2014. 100. In Ukrainian.
17. ZAHORODNY, A. *European Quality Assurance System of Higher Education*. In Ukrainian. High School. 2006, 4, 15-22
18. KALINICHEVA, G. *Implementation of the European Quality Assurance in Higher Education in Ukraine: Experience and Prospects*. In Ukrainian. Scientific Bulletin of Chernivtsi University. 2009, 2, 66-70
19. *Set of measures to stimulate the publication activity of the Borys Grinchenko Kyiv University* [online]. In Ukrainian. Available from: <http://kubg.edu.ua/informatsiya/naukovtsyam/dokumenti/kompleks-zakhodiv-dlia-stymuliuvannia-publikatsiinoi-aktyvnosti-spivrobitnykiv-kyivskoho-universytetu-imeni-borysa-hrinchenka.html>
20. *The concept of quality assurance Ukraine* [online]. In Ukrainian. Available from: http://dovira.eu/images/QA_concept_Final.pdf
21. KOCHARYAN, Artur. *E-Learning environment of the contemporary University*. In Ukrainian. Science and information technology in schools. 2014, 2(50), 20-24.
22. MORZE, Natalia. *Organization of independent work of students in the context of the formation of research competence* [online]. In Russian. Available from: http://ifets.ieee.org/russian/depository/v16_i1/html/8.htm
23. MORZE, Natalia. *Major trends using information and communication technologies in education* [online]. In Ukrainian. Available from: <http://leader.ciit.zp.ua/files/plan/2013/prez30.11.13.pdf>
24. POLOVIN, Borys. *Personal learning environment as a basic structural element of modern education* [online]. In Ukrainian. Available from: http://essuir.sumdu.edu.ua/bitstream/123456789/33348/1/Polovin_information_society.pdf f - dividers. from title screen.

25. MORZE, Natalia and Halyna PROTSENKO. *Creating an information educational environment in the region as a catalyst for the formation of ICT competencies of the teachers* [online]. In Russian. Available from:
http://ifets.ieee.org/russian/depository/v16_i1/html/25.htm
26. *Standards and Guidelines for Quality Assurance in the European Higher Education* [online]. In Ukrainian. Available from:
<http://www.enqa.eu/indirme/esg/ESG%20in%20Ukrainian.pdf>
27. STATINOVA, N. *The quality of education in the context of the integration of higher education in world spac.* In Russian. Petro Mohyla Black Sea State University: Research Journal. 2010, 123, 9-14
28. SUKHOVA, N. *Quality of higher education as one of philosophical foundations for transformation of the 20th-century education: European context.* In Russian. Proceedings of the National Aviation University. 2009, 1, 170-174.
29. SMYRNOVA-TRYBULSKA E. and E. OGRODZKA-MAZUR, A. GAJDZICA, T. NOSKOVA, T. PAVLOVA, O. YAKOVLEVA, N. MORZE, P. KOMMERS, I. SEKRET. *Research Instrument to Study Students' Beliefs about eLearning, ICT, and Intercultural Development in their Educational Environment in the framework of the IRNet project, In: Information and Communication Technology in Education (ICTE-2014).* Conferene Proceedings, Ed. Katerina Kostolanyova and Jana Kapounova. University of Ostrava: Roznov-pod-Radnoszem. 2014, 254-263. ISBN: 978-80-7464-561-7
30. NOSKOVA, Tatyana and Tatyana PAVLOVA, Olga YAKOVLEVA, Natalia MORZE, Martin DRLIK. *2014 Information environment of blended learning aspects of teaching and quality.* In: E-learning and intercultural competences development in different countries. Monograph Sc. Editor Eugenia Smyrnova-Trybulska, University of Silesia, Katowice-Cieszyn, Studio-Noa, 2014 (In publishing)
31. MORZE, Natalia and Eugenia SMYRNOVA-TRYBALSKA. *Ways of forming and estimation of formation of ICT competence of future teachers.* In: Edukacja humanistyczna, Red. Kazimierz Wenta, Szczecin (In publishing)
32. KOMMERS, P. and E. SMYRNOVA-TRYBULSKA, N. MORZE, T. NOSKOVA, T. PAVLOVA, O. YAKOVLEVA. *First Outcomes of WP2 Research Carried Out Within the Framework of the IRNet Project. International Research Network.* In: DIVAI 2014. Distance Learning in Applied Informatics. Conference Proceedings. May 2014, 5-7. Editors: Milan Turčáni, Martin Drlík, Jozef Kapusta, Peter Švec, Constantine the Philosopher University in Nitra, Faculty of Natural Sciences, Department of Informatics, Editors Nitra, p 357-372. ISBN 978-80-8094-691-3.