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Status and trends in the world of online education

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Abstract. The article is devoted to one of the topical problems nowadays- that of assessing the quality of foreign language training at a technical university. Language policy is an essential part for development of any state and in Russian Federation. This article for students of computer science and technical English in universities. The article focuses to the importance of the IT technologies in the process of learning and training in the Technical University. It is for universities where English has become a requisite for working with computers (engineers, desktop publishers) The aim of the article is intended to help professional using computers. The gives a review of the basic issues related to common structure of higher education systems across Europe modern objectives, organization and principles of education. The content of this article deals with the critical and reflective use of IT technologies and with the effort of teachers to identify proper multimedia materials online series according to the overall objectives on the learning activities and also deals with how to use their knowledge effectively and to decide what strategy they use when working with IT technologies. The authors choose the peculiarity of teaching technical students to learn to professionally oriented texts that could be found in the internet resources. We can find some requirements to the works of texts recommended to students and results of experimental training are provided. The article describes an overview of technologies and now they are used to support the different aspects of Educational Institutions. The authors suggest some recommendations how to use it.

Keywords: IT technologies, ICT (Information and Communication Technologies), diversification, learning platforms, assessment, digital literacy, open access.

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СОСТОЯНИЕ И ТЕНДЕНЦИИ ОНЛАЙН-ОБРАЗОВАНИЯ В МИРЕ

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Аннотация. Статья посвящена одной из актуальных проблем на сегодняшний день - оценке качества онлайн-обучения иностранному языку в техническом университете. Языковая политика является неотъемлемой частью развития любого государства и в Российской Федерации также. В статье акцентируется внимание на важности IT-технологий в процессе профессиональной подготовки в техническом вузе, где английский язык стал обязательным для работы с компьютерами. В статье дается обзор основных проблемных вопросов, связанных с общей структурой современной европейской системы высшего образования. Содержание данной статьи касается критического и рефлексивного

использования IT-технологий преподавателями для выявления соответствующих мультимедийных онлайн-материалов в учебной деятельности. В статье приводится обзор разных аспектов безопасности информационных образовательных онлайн-технологий и предлагается ряд рекомендаций по их использованию.

Ключевые слова: IT-технологии, ИКТ (Информационные Коммуникационные Технологии), диверсификация, учебные платформы, оценка, цифровая грамотность, открытый доступ.

Для цитирования. ЛАСКОВЕЦ, Марина А. СОСТОЯНИЕ И ТЕНДЕНЦИИ ОНЛАЙН-ОБРАЗОВАНИЯ В МИРЕ. Безопасность информационных технологий, [S.l.], v. 24, n. 3, p. 50-59, July 2017. ISSN 2074-7136. Доступно на: <<https://bit.mephi.ru/index.php/bit/article/view/264>>. Дата доступа: 01 dec. 2017. doi:<http://dx.doi.org/10.26583/bit.2017.3.06>.

Introduction.

Science in Russian Federation is the main factor of the development of our society. We have created a unique research and development framework in terms of its scale and the scope of its tasks that comprises tens of research centers, institutions, design offices and industrial business. Certainly, we are using the World's best enrichment technologies.

Researchers, designers and engineers continue their highly efficient work and make an invaluable contribution for the good of our science and country. We are extremely well positioned today to implement new ideas and achieve new heights.

Our system of education flows into the World educational system. We live in the epoch when IT technologies are widely used in modern life and we stress the importance of using IT technologies in the process of learning and training in the universities.

1. The technological revolution in education.

ICT is both a driver and a facilitator of this increasing globalization of education. It is a driver because educators realize that the combination of digitally based ICTs gives more powerful possibilities for extending and improving learning, teaching and training than all previous educational technologies from the blackboard to television.

It is a facilitator because the Internet is an extraordinary means for the wide, low-cost distribution of educational material. As the Internet has also become a vehicle for interaction, its potential for teaching and learning has become even more significant.

The intelligent use of ICT can bring similar revolutions to learning, teaching and training.

The trajectories of the application of ICT in education are diverging across the world.

Today the digital divide is more revealing of the growing wealth gap within countries than of an absolute lack of access to digital communication. The developing countries have taken massively to mobile technology and networks are growing to meet their rising demand for connectivity.

The centrality of ICT in higher education is in contrast to the somewhat hesitant role that it has played so far in schools. ICT is so pervasive in the administrative and research activities of universities that they have come to take it for granted. Students are opting for online learning in large numbers.

Bates identified four main trends in US higher education. The first is the rapid growth of online learning. Second, this growth is accelerating. His third finding is that the US for-profit sector has a much higher proportion of the total online market than its share of the overall higher education market. Fourth, Bates found that public sector of higher education did not have ambitious goals for online learning. [1]

The intelligent use of technology could help higher education to accommodate more students, improve learning outcomes, provide more flexible access and do all this at less cost.

The profits in online learning is that they operate their organizations as systems and use a team approach to course development and student support.

For e.g. the UK Open University has tens of millions of visitors to its Open Learn website and tens of thousands of downloads from iTunes U, where it is the biggest player.

2. ICTs. The teacher competencies.

Technology is a critical component of education in the 21st century; today's students live in a global World and need to compete intellectually with peers worldwide.

The goal of information and communication technology (ICT) initiatives in universities is to impact and improve economic development at many levels through the use of ICTs. Learners around the world are comfortable using technology for daily connecting, creating, and sharing. The students are the first to have grown up with digital tools at their fingertips; using those tools, students interact with information, create knowledge, and communicate their results to a real audience.

New conditions exist that make it possible for technology to impact education for all. Technology is more readily available everywhere. The students are interconnected and ready. The teachers require support for understanding when and how to use ICTs in teaching and learning in order to engage with and enrich students' experiences.

The organizations have identified goals for lessons deployment of ICTs and frameworks and standards for educators in the use of these tools. According to the International Society for Technology in Education

(ISTE). There are some factors include a growing need for instruction in new skills (information, technological, and visual literacies), awareness that students have changed but educational practices have not.

The existence of ICT frameworks and standards for teachers is not enough to facilitate the change needed. The preparation and continuing professional development of educators is a major element that is required for university transformation and appropriate use of ICTs.

Fullan warns that technology alone will not be an effective driver of whole system reform; we also need the policy and strategy levers that have the best chance of having an effect on student learning. A key driver for successful reform is capacity building of educators through professional development.

Fullan asserts, "There is no evidence that technology is a particularly good entry point for whole system reform, but it will be a dramatic accelerator if we can put instruction, and skilled motivated teachers and students in the lead" [5].

The technology-based innovations to come to fruition in universities, guiding frameworks, standards, and strategies need to be disseminated and ultimately adopted by districts and the educators within them. The key attribute that increases the rate of adoption of a new approach or method is its perceived relative advantage – a clear sense by users that the innovation in question is better than the tool or practice that it replaced. Teachers will adopt new approaches that are proven to effect student learning. The ICT integration is aligned with current curriculum and assessments. This would inform and support the dissemination and adoption of ICT standards.

The UNESCO ICT-Competency Framework for Teachers (ICT-CFT) was developed in 2008 through collaboration among Microsoft, Intel, Cisco, ISTE, and the Virginia Polytechnic Institute and State University (Virginia Tech). The creation of this framework marked the first international effort in this area. The UNESCO recognize the complexity of change in educational programs, and the framework and standards combine ICT skills with emergent views in pedagogy, curriculum, and university organization. The goal of the UNESCO project is to improve teacher practice in a way that contributes to a better informed citizenry that will impact a country's economic and social development.

All countries must focus on teacher education in ICTs, countries will begin their work at different levels, defined as technology literacy, technology knowledge deepening, and knowledge creation.

The objectives of the UNESCO ICT-CFT project are to:

- constitute a common core syllabus (defining various ICT competency skills for teachers) that professional development providers can use to develop learning materials sharable at a global level;
- provide a basic set of qualifications that allows teachers to integrate ICTs into their teaching;
- extend professional development of teachers, advancing their skills in pedagogy, collaboration, and school innovation using ICTs;
- harmonize different views and vocabulary regarding the uses of ICTs in teacher education [11].

Policies that support effective professional development for educators' use of ICTs can be found at national and local levels, and these policies must be implemented in ways that allow educators to gain skills, experience, and ease in using ICTs.

The approaches to professional development all address the individual needs of teachers and focus their energy on creating a culture that supports technology integration, peer-to-peer interaction, and risk-taking. Using ICTs is definitely possible.

Research by Robert Kozma makes it clear that several nations are currently at the vanguard in terms of national ICT policies. According to Kozma, national policies tend to be established based on four major rationales:

- Support for economic growth.
- Promotion of social interaction and development.
- Advancement of education reform.
- Support for education management.

The work of countries that have established successful policies can serve as a model to others working to implement such policies.[6]

Several countries have included policies based on the use of ICTs for management issues such as assessment and student attendance data. Malaysia is one country taking the lead in this area.

3. Realization of ICTs to enhance teaching and learning.

It is necessary for students to master ICT literacy to become full-fledged members of society. The development of computer technology from processing information to also supporting communication augmented its potential for education. The immersion of computers in everyday life, (e.g. tablets, smart phones, robots) require researchers, policy-makers and professionals to rethink the potential of ICTs for education.

ICTs in the compulsory curriculum often emphasize the perceived need that students have to learn about ICTs in education. The term literacy is often connected with this use of ICTs: computer literacy, information literacy, media literacy and digital literacy are common terms used for learning about ICTs. Students have to become literate users of ICTs [13, 7].

Policy about ICTs in education fulfill three roles of ICTs in the curriculum:

- ICTs as an object of study (at the level of ICT literacy, and at the level of specialized courses);
- ICTs as an aspect of education, as is the case in vocational education;
- ICTs as a medium to enhance teaching and learning [9].

A broad range of ICT applications can be incorporated in learning environments that support constructivist learning, such as general productivity tools (e.g. wikis, blogs, spreadsheets, websites). ICT applications can support collaborative learning (e.g. discussion forums, shared workspaces, virtual worlds).

Dede provided an overview on how ICT applications may contribute to curriculum enhancement, which is still relevant and challenging today:

- Realize a curriculum that is centered on real world problems.
- Have students involved in virtual communities of practice.

- Use advanced tools similar to those in today's high-tech workplaces.
- Facilitate guided, reflective inquiry through extended projects.
- Utilize modeling and visualization as powerful means of bridging between experience and abstraction.
- Enhance students' collaborative construction of meaning via different perspectives on shared experiences.
- Include pupils as partners in developing learning experiences and generating knowledge.
- Foster success for disabled and disenfranchised students [4].

ICTs can also be a means to realize social inclusion in education through assistive technologies as a response to the needs of disabled students and by providing culturally responsive education for minority students [8].

Some teachers worldwide incorporate teaching and learning practices that support innovative pedagogies with a clear and indisputable role for ICTs. The three SITES studies provide a rich international database for understanding the characteristics of these ICT-supported pedagogical practices that try to comply with changing requirements for education in the knowledge society.

The students are actively involved in their learning in (research) projects through searching for information and through creating and presenting/publishing products. Students have more opportunity to plan their own learning and increasingly play a role in the assessment of their own performances.

Commonly available ICT applications, such as the Internet, word processing and presentation software support the realization of these innovative pedagogical practices more than ICT applications specifically designed for educational purposes. Although ICT-using teachers still report that their students are more frequently involved in activities that comply with traditional education, they consider practices that align with the knowledge society as important [12].

The integration of ICTs in education offers possibilities to develop curricula that align with the challenges of the knowledge society.

4. Diversification of learning platforms.

The application of the Internet for the support of educational experiences has skyrocketed, and the initial formula of success has emerged in terms of the technologies required which include the following items:

- Instructor-developed content, such as syllabi, notes, presentations, etc.
- Pre-packaged digital content, such as publisher produced digital assets
- Online assessments, tests, quizzes, etc.
- Online asynchronous discussion forums for student participation and collaboration
- Launch and exchange of information with separate learning applications and tools, such as assessment systems, adaptive tutors, wikis, etc.
- Authorization to access all of the above based on licensing scheme [1].

This combination and diversification phenomenon will be accelerated with the advent of a variety of mobile devices getting known collectively as Smart Media (e.g. iPhone, Android machine, Tablet PC, network computer, and (3D) Internet TV, etc.).

The learning platforms can include:

- An open source platform is usually free from onerous licensing restrictions. The institutions can use these learning platforms to deliver learning experiences, resources and tools without paying license fees and can also customize the software (e.g. Moodle).
- A commercial platform (based on restricted licensing). These commercial platforms may provide, however, open architecture and/or link with the third party software to extend its functionality.

- A web-based platform means that all functions and resources are located on the web and delivered through a web browser.

- A mobile platform has lightweight functions rather than a web-based platform. Some of the resources or parts of content have to be saved in a mobile device because of potential disconnecting from the network due to the mobility of the users.

One of the main functions of a learning platform is to deliver content and resources as a part of managed teaching and learning activity. The changes in the types of learning content have caused changes in learning platforms. In the past, learning platforms were focused on simple delivery of legacy content as well as on managing class activities, such as assignments, discussion forums.

Now we have:

- The improvement of organizational learning in using ICT skills [e.g. a learning platform can easier provide creation, exchange of information among teachers, learners, administrators and parents].

- The expanding learning opportunities and participation at home [e.g. the teachers and students can overcome time and place restrictions using digital content and learning platforms].

- The increasing opportunities for a personalized learning environment [e.g. the effective usage of learning platforms provides a number of methods of encouraging and developing opportunities for learners' independent and personalized learning].

- The enhancing accessibility for learners and learning resources [e.g. resources can have metadata including pointers to alternative audio and text formats, while learners can declare their preferred media types]. The important feature of innovative learning platforms is to support diverse devices and environments of teachers and learners.

- The increasing opportunities for collaboration and interaction [e.g. learning platforms can support collaboration and interaction between teachers and learners].

It's very important to use the learning platforms:

In learning we are:

- Use technologies provided on a learning platform to improve digital literacy.
- Use the whole learning platform with school activities such as lessons, assessments and discussions.

- Improve collaboration and interaction within learning, and trace progress on the curriculum

- Use diverse devices to find the best personalized learning interface and improve effectiveness of learning.

In teaching we are:

- Prepare interesting resources beyond those commonly used in class through providing access to additional content on the distributed learning platforms.

- Save time for immediate feedback to learners' questions and ask on learning experience using multiple devices.

- Revitalize curriculum and change teaching methods.

- Spread context and activities beyond the class via a learning platform.

Thus, we support effective learning in a variety of ways through providing a wider range of resources which can support individual learning needs.

5. "Openness" in higher education.

We are seeing the release of information and knowledge under open licences, ranging from governments releasing open content to publishers releasing open articles; which demonstrate a growing interest in and commitment to increased openness in higher education.

The teachers use contact time with students to support engagement and to discussion, debate, and practical application, or to support student research activities, thereby providing

students with tools to advance their own understandings. It can also enable better personalization of instruction by focusing less on the content and more on the facilitation of learning interaction [14].

Openness facilitates the integration of research functions into course activities [for e.g. if academics no longer need to focus on lecturing, then students can spend more time doing research, much of which might be advancing a broader research agenda being coordinated by an academic].

Such approach can create a new policies to address the changes occurring, which may reduce the strategic focus of institutions around a choice at a time when the choices are unclear.

It is clear that openness is here to stay and is changing the nature of higher education and therefore it is essential for institutions to engage with openness as a potential core organizational value if they wish to remain relevant and contribute to the positive advancement of the field of higher education.

6. The importance of the digital literacy in education.

We'd like to stress the importance of digital literacy in education. Information and communication technologies (ICTs) have spread all areas of contemporary life. In this context, digital literacy has become more than the ability to handle computers – it comprises a set of basic skills which include the use and production of digital media.

According to the working definition, agreed at the UNESCO June 2003 Expert Meeting in Paris, “literacy is the ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society.” [10].

Digital literacy becomes a component of life skills. The populations where digital literacy is most important are ICT users, they must:

- select and apply ICT systems and devices effectively;
- utilize common generic software tools in their private lives;
- use specialized tools for work;
- adapt to changes in infrastructure and applications.
- need to exploit business opportunities provided by Internet based applications [to

promote more efficient performance of organizations, to explore new ways of conducting established businesses.

ICT professionals use it for:

- researching, developing, and designing ICT tools;
- producing, marketing, and selling tools and services;
- integrating ICT supported applications;

The digital literacy has to be defined and developed in relation to general educational objectives. If ICT use is a basic skill, it must be included in all areas of higher universities instruction.

Digital literacy has positive effects on skills important for the successful learning of the subject. Students can access information more easily. Integrating and evaluating information are skills that have to be taught in the classroom, with the teacher acting as an expert in evaluating information, showing students the differences between reliable and useless digital resources.

The most important components of digital literacy are common for future computer users and ICT professionals: accessing, managing, integrating, creating, and communicating information.

Accessing information, defined as identifying information sources is a basic component of all literacies. Digital literacy significantly broadens the scope of potential sources of knowledge.

Digital literacy education also has to prepare for new challenges of the 21st century: the use of Social Web applications, ecosystems of participation that enable collaborative knowledge construction and creativity.

Creating and communicating information are skills of growing importance as digital tools develop and make high-quality creative experiences available for increasingly broader user groups, [young learners, adult learners, and teachers].

7. Uses of assessment.

Assessment is a large topic for Information and Communication Technology (ICT), with important issues ranging from how to evaluate the effectiveness of an ICT to how to ensure that someone receiving certification through an online course has proven mastery.

The technology can change the way we think about assessment, addressing two specific issues, how can technology more effectively enable assessments to be used as a tool to improve student learning in ICTs? Educational researchers and policy makers have recommended increased formative assessment in classrooms and learning environments [3].

Formative assessment allows the environment to estimate the student's current knowledge state to determine what problems and instruction to present next. Our aim is to provide information about the end product of learning – did the student learn to a standard or not? The goal of the assessment is not to improve the learning environment; but the goal is to determine whether the learning environment increased gains compared to no instruction or a different form of instruction.

Technology makes it possible to use large-scale testing in a more formative way to help shape and improve the effectiveness of ICTs for learning.

The ability of ICTs to reach a broad range of students, collect data, and present different variants of the same material makes for a powerful research tool. The students can be assigned to conditions, but the goal of assessment is the continual improvement of the ICT. By using A/B testing, the system can determine the optimal sequencing of the curriculum.

Many decisions in the design of ICTs can be informed by existing data and learning theory, there are countless decisions to be made that will influence learning.

Formative assessment can be an important tool for making instructional decisions. Formative assessment is considered assessment “for learning,” where the primary goal is to inform the learning process. Formative assessment can be used at an individual level to decide what information or problems to present to a student given their current level of understanding. It can also be used at the level of ICT development to determine which design choices are most effective for learning in a virtuous cycle of testing and improvement.

ICTs can leverage assessments to inform the continual improvement and refinement of the ICT by taking advantage of the internet, using A/B testing.

ICTs can measure process data about how students go about learning and solving problems in the ICT. This allows for assessment of student inquiry skills and students' preparation to continue learning outside of the ICT.

Assessment has a powerful effect on education- what is considered important for students to know. Expanding the scope of assessments from evaluating only end-state knowledge to evaluating learning processes themselves has the potential to transform what is taught and how.

8. Conclusion.

Our aim in the process of education is to provide the policy makers with an overview of technologies and how they are used to support the different aspects of educational institutions. The education business covers three areas of activity: learning, teaching and research.

ICT are now to support the business of educational institutions, and support the full academic lifecycle, in terms of learning and teaching from initial students enquiries through to accreditation and graduation[this includes managing of a student's initial enquiry about courses,

application, module selection, monitoring and support for the delivery of a course, assignment handling, examinations].

The research activities are supported through systems for managing and monitoring research applications, research grants and contracts, research finance, publications recording and patents and intellectual property recording.

The interactive technologies are the main part of the process of training in the technical university.

It can improve administrative efficiency and provide a pan-institutional IT infrastructure for managing the different aspects of learning, teaching and research.

ICT can be used to disseminate teaching and learning materials to teachers and students, usually through an institutionally supported. Many institutions now have Learning Object or Open Educational Resource repositories. They can be used to improve the ICT skills of teachers and students and their digital literacies and competences. Most institutions have a range of online resources to help teachers and students to develop their digital literacy skills and for students to develop good practices in terms of study skills.

IT systems allow teachers and students access to sources of information from around the world. Teachers and students are augmenting institutional IT systems and resources, with tools and resources freely available on the web.

The academics want examples of good practice and mechanisms for sharing ideas on education and learning. IT systems can enable this in two ways: through repositories of learning materials and designs, and by providing mechanisms for academics to share and discuss learning and teaching. IT systems can provide spaces for academics and students to collaborate on joint projects. IT can be used to conduct lessons from remote locations and support distance learning. IT systems are being used in educational institutions to support learning, teaching and research activities.

The students are expecting to have information and materials about their course available online. The students want to be able to work on and off campus and to be able to access materials to support their learning.

The universities and institutions need to have in place institutional strategies on all aspects of ICT provision. Both academics and students need to develop a new set of digital literacies to harness the potential of technologies to support learning, teaching and research.

Many institutions have legacy systems that are not well integrated. Further work needs to be undertaken to provide a more linking between the different IT systems.

Rationales for ICTs in education provide policy-makers and other stakeholders (e.g. industry, academia, professionals in education) with arguments for the utilization of ICTs in education.

The purposes of ICTs in education:

- to teach with basic ICT skills in order to prepare students for their place in society;
- to give students appropriate skills for future jobs;
- to teach and to learn with the help of ICTs.

Although all these rationales could be recognized in many ICT related policies around the world, they are very prominent in the reasoning for the integration of ICTs in the curriculum (the social rationale, the pedagogical rationale, the vocational rationale).

Modern educational technologies stimulate the development of creative components of pedagogical activity and transformation of the role of a teacher provided full-scale and highly efficient active self-study under student-centered approach. New educational tools create virtual laboratories and workrooms. They encourage collective educational activity of a distributed group of students, which broadens the educational space of university.

Interactive multimedia Internet-resources open a lot of opportunities for individual educational activity. Technological achievements provide new prospects for increasing accessibility, effectiveness and quality of education. Progress sets new tasks in allied spheres: only systematic

and coordinated advancement of technology, pedagogy and education administration can guarantee success.

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