INDIVIDUAL EDUCATIONAL DIRECTION AS THE MAIN EDUCATIONAL TOOL IN THE INFORMATION SOCIETY

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***Abstract**: The article is devoted to the "customization" of the educational process in order to gain the possibility of creating their own trained educational directions, if student says: "I know that I do not know." Such an understanding of the educational process is well suited for "mobile" student fits into the concept of the information society and opens up new opportunities for universities in the future.*

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***Keywords**: information society, individual educational direction, decision support system; Electronic Performance Support Systems, knowledge management, information technology in education, "mobile" student*

Introduction

Development of information systems as a control of Russian economy is closely linked to changes in the various fields of application. Transition to a civilized market economy is characterized by changes occurring both at the macroeconomic level - in the economy as a whole, and at the microeconomic level - in enterprises, organizations and institutions. The result is the emergence of new educational technologies, focused on "mobile" student and web usage. In this context, information systems, which support the learning process and the learning process that becomes the tool to ensure business results, provide an opportunity to study the employee in the workplace. Thanks to scientific and technological progress, new hardware and software solutions , new approaches related to the use of e-learning as a base for management decision support , which is a necessary condition for competitiveness.

Technology remote learning landscape

Scientific and technical progress is influenced by major scientific and technological discoveries. Last affect all aspects of society and placing increasing demands on the level of education, skills, culture, organization, and accountability of employees. They cover along with industry and communications, and medicine, and life, and education.

From the perspective of globalization trends and the development of IT business environment, an effective way to organize knowledge, particularly in the context of virtual organizations is the "cloud." Virtualization, SaaS and cloud products and organize the data coincides with the trend of lower IT costs, the presence of interest in solutions that provide opportunities for business growth and offer obvious ways to save - now or in the future (Lean technology). A main channel of access to knowledge - internet network. Under the conditions of use of the web for learning, there is a rare opportunity to combine features of competition training organizations, both in cost and unique service for each student.

The organization uses the portal in the learning process, eases communication through computer networks. In this single point of access to knowledge must be capable of adaptation to different mobile platforms and

integration into the training to meet the requirements of information security (IS) on the basis of "thin" client. Therefore, remote educational processes and processes of distance learning affect the development of subject and information technology. This is due to the chain: the learner - channel - knowledge.

The student or learnt person. Its status affects the availability of Internet access Internet, the possibility of mobile computing, which is formulated now as BYOD - bring your own device (instead Bring your own bottle). Thus, the technologically important to have access to a trained network, and the mobile interface. The ideal option would be to use broadband. But it will change the situation in the telecommunications market. So mobile operators may be out of business because they replace Skype, prudently bought Microsoft or its equivalent. In this regard, the Russian mobile operators will shift today to ISPs. In Russia there is a problem of the digital divide in remote areas and areas of the far north, and today it can be partially solved by the GPRS within mobile telephony. It is important that the Russian Internet audience by the end of 2014 will grow by 30 million people, and the internet penetration among 25 -34 -year-olds and 35 -44 -year-old reaches the maximum value (97-99%) (Cybersecurity.ru March 18, 2011). The spread of mobile communications in Russia complies with international trends. By the end of 2013 the number of subscribers of mobile networks in the world will reach six billion people (Telecom 12. February 2009). It is expected that the growth in mobile data (the amount of information in mobile networks) in 2015 will grow by 26 times, while the video content will take about 60 % of all traffic (iplife.com.ua February 3, 2011), in the US [Nielsen, 2011], in 2011 the penetration of smart phones made up 40 % of all mobile devices. And if the western market of mobile technology fully matured, while in Russia it is not. Although trends speak for themselves : according to " Beeline " Business Vimpelcom, the penetration of Smartphones in the B2B segment in Russia today is about 18 % , but the gap from the western market can be overcome within two years. In general, among the mobile gadgets Smartphone segment is growing. It is expected that before the end of 2013 the penetration of Smartphones in B2B will grow and will reach 36-40 %. Height mobilization became an international trend in the IT sector, on equal terms with cloud computing [Gartner]. In 2016 about 60% of mobile workers will use Smartphones and tablets at the same time, mobile will be 40% of all workers. Another study - State of mobility survey [Symantec, 2012], seized 6257 companies from 43 countries (including 100 companies from Russia). It gave the following results: 71% of companies are planning projects for the introduction of mobile applications, 59 % of companies provide access to business applications from mobile devices and 41 % of companies believe mobile technology is one of the three key sources of risk.

Channel. There is a quality problem and the problem of channel transition to broadband access. Can not remember saying chairman of Google, a member of Council for Science and Technology under the President of the United States Eric Schmidt in 1993: "When the network becomes as fast as the processor, the computer hollows out and spreads across the network". And now Google's Chrome OS does not require HDD. The number of users of mobile broadband networks in the world in January 2009. There were 100 million people, compared with 1.1 billion broadband users on the fixed networks. It was about a sixth of the world's population.

Knowledge. Development of a society is characterized by increased amount of new information and knowledge that is good and there is no matter to disturb it. So James Martin, a veteran of IBM, once pointed out that humanity has reached a level of knowledge, when the amount of information coming into the industry, administration and the scientific world, comes to alarming proportions. It cannot be called an information explosion, for the explosion is of short duration. But the growth of information in principle has no end. Here, in our opinion, there is a vicious feedback, as expressed in the fact that the information growth generates growth performance of computers and their total capacity, which makes it possible to increase the amount of information. Etc. It came to what the actual problem of computer science has become a necessity of processing large volumes of information in real time (BigData). And it is not just in large quantities, and that they cannot be processed on time in traditional ways. So telecom companies' petabytes of information generates approximately

five ten minutes. And according to (GR Gromov 1993), the total sum of human knowledge in 1970 became double every 5 years. If this recalls Moore's Law, the picture is apocalyptic, given that Moore himself noted that the physical boundaries of performance and miniaturization will be achieved very soon.

Placing knowledge which is technically performed today through educational portals and databases and knowledge can characterize as a heterogeneous (Dik BB Odintsov BE, Prikazchikov AA, 2010). Enterprise, standing on the threshold of joining the club " petabytes " began to think about whether to spend money on storage often useless information that nobody has culled (because it also costs money , and this profession and positions so far). This changes the structure of total cost of ownership information system. There are other ideas: Do not sell this information, if you really have it?

The question of access to the knowledge on the one hand is a technological nature, and, on the other hand, sense. After all, global trends are: increasing specialization of workers, which leads to narrowing and deepening of competencies and the need to integrate operations. Business processes are "smeared" by countries (so-called virtual enterprise) and globalization increases, giving rise to new and emerging risks. And what about the student? A person who wants to gain new knowledge in different ways related to their ignorance. Someone might say, "I do not know, I do not know. Therefore define themselves that I need to frame the desired profession, specialization". But someone will say, "I know that I do not know, so I'm interested in very specific things."

The individual learning paths formation

The current status of the education sector in Russia is currently characterized by remainder effect within the last actions of the command system and the principles of a planned economy.

The bureaucratization, which is collected for years at all, levels of management in scientific and educational spheres, significantly reduced their flexibility and responsiveness.

Education is still done mostly in the context of a planned doctrine proposed back in 1934, by Bukharin N.I. and led to reproductive specialists, which are mostly addicted to secondary, imitation and low productivity. In high school, it is not sufficiently inculcated and instills the skills of independent learning, which makes the listeners' formation of skills knowledge adoption at low level.

The process of individual learning needs the expedient development of a prototype scheme of self-education on the basis of the study and research of the subject area, which is a kind of comprehensive management tool designed to promote the listener in the process of planning his training at the expense of partial formalization of the upcoming activities.

In the development of an individualized education scenario in the framework of this scheme it is advisable to use the principles of project management, according to which the control is functional, and the activities carried out by students, systematized in the management of operations.

The rational combination takes place within the work function of time management. Quality control function ensures that the learning outcomes of the listeners to all the necessary requirements and standards. As part of an individualized education any student is working alternately on the empirical and theoretical level of knowledge. At the same time plays a vital role intuitive thinking of the latter, which is essential for a qualitative study of the domain and the formation of certain inferences in the self-study.

G.Selje compares the work of the subconscious at birth with thinking about ideas to the process of birth and breaks the cycle into seven stages: I - love (the emergence of interest in the problem), II - fertilization (the study of the required information), III - maturation (treatment of the facts in the subconscious), IV - the birth pangs, V -

labor (the formulation of ideas), VI - inspection (proof of legitimacy of the idea), VII - life (to introduce the idea to light).

This scheme can be considered as a standard, but in practice most of the stages have no clear boundaries. The subconscious mind can get down to work until the end of the collection of factual material and the collection can take place continuously. The transition to the knowledge from level to level is only an approximation to the hypothetical extremes of a more continuous process. Such processes in the self-study include: collecting evidence, theoretical work, experimental work (which may be absent), the control of the results.

As a result of constant detailing the events of the scenario provided for the student by teachers from different departments, the latter forms a schedule of works, in which the activity alternates the most effective way. But in practice, this process is quite complicated. In the ten directions for 3-4 years of work is of the order of 100 events, with their ordering is necessary to solve math problems, even though the optimization of course, is impossible. Mass application of a new approach to the planning processes of individual education will help the use of computer information technology. Typical tools for working with network models of the projects have been around for a long time, one of the most popular - Microsoft Project. The use of common tools preferred in view of their high prevalence, however, does not fully reflect the specifics of vocational education.

Distance education is characterized as compared to traditional education change in the ratio of independent work and work with the teacher. The consequence of this is the increased requirements for quality computer training programs, one of the elements of distance education. Existing training schemes are divided into sequential and hierarchical, but they both are rigid. Thus, any tough training scheme is doomed to failure. Since each student has their individual areas of knowledge and ignorance, their absorption characteristics of the new material, intermediate, and detailed questions that arise in the course of training, to be materially different, both in form and in content.

To create an effective system of individual training at first sight more than any other appropriate expert systems-oriented discipline and providing individual bind to the user. But this solution is unrealistic, since the creation of even a simple expert system laborious process. However, entirely give up intellectual resources within the training system cannot, so here is the most successful hybrid approach in which training systems that are part of a class of information systems, can also be divided into a system of rigid and flexible technology of a particular subject (in this case - the technology training and the inflatable shell). In the final case, the technology itself determines student learning, and the system it is possible: for information about their chosen technology. In other words, the student has the choice of the necessary information and convenient tools.

The training program is designed for individual use to transfer the necessary knowledge and skills in the discipline of study. Getting the skills associated with the development of practical skills to apply the knowledge in specific cases. For this purpose, the training system should be a block of training on decision-making for any problem situation and to assess the knowledge, principles to a specific class of a given subject area and the ability to apply them in practice.

The presence within a learning system, which is built on the basis of the classical DSS (Decision support system), advanced modeling and advising means of a qualitative change in the download of the decision maker (DM) in the direction of the intellectualization of their activities. This is achieved by increasing the flow of information passing through the learning system, which can be regarded as a kind of information system (IS). This increase is associated with the development of information technology, which currently provides all the capabilities of processing for more hard formalizing information. Development in mathematics and computer science areas such as fuzzy sets, multi-valued logic, and others, improving programming and hardware allows such treatment.

The based DSS systems implementation in practice is characterized by a variety of problems, including poor integration of software tools that provide specific capabilities DSS. This can be explained by the relatively small experience of creating and using truly advanced DSS-systems and a large amount of their development. The last factor is the need to ensure the adequacy lay down in the DSS model for the complete management, as well as the excessive complexity of the system and at the same time the need for the development of friendly systems, which coincides with the capabilities of computer equipment.

Desired qualities of flexibility and adaptability of the learning system require it deep parameterization, which makes it extremely difficult. Therefore needed a solution that would allow keeping the basic learning algorithm to ensure its individual character. You can use the approach of the Markov Chain process. At any time, the amount of ignorance does not depend on prior learning. Then for the elimination of ignorance there is no need to go back a step, but the student should have a convenient tool and information they need to deal with the lack of knowledge of their own. This decision could not be more appropriate approach EPSS (Electronic performance support system), which provides for basic knowledge and implementing decision support for the development of skills and abilities.

The EPSS is characterized by the following trends (compared to DSS):

1. The increasing amount of hard formalized information gone through the IS;
2. Clear and friendly user interface;
3. More completed recording of the user's requirements, his psychological characteristics, mentality;
4. More flexible system of technological options;
5. More flexible and more completed system of training of new functional information technology for its user.

The EPSS makes DSS better; it makes DSS more comfortable for the learner by improving the tools and allows the user to continuously improve the knowledge. The EPSS is characterized by the overall amount of functional information technology and technology, which we call as an education. Any functional information technology in EPSS is unthinkable without additives, which in our case is an educational technology. The synthesis of functional information and educational technologies forms an educational information technology, which forms the basis of automated system of distance education.

A particularly important feature is the EPSS system integration notes modeling, training and advising technologies into a common system.

Inside the training system should be present built-in EPSS unit, which estimated a principal possibility of the decision taken by the trainees and their effectiveness, as well as to recognize the mistakes made and it would provide for the whole system how to solve their sources, i.e. the method and form of swap knowledge, the most successful for the student (see Picture 1).

Detailing should be carried out with a specific focus on the student's area of ignorance. That’s why the learning strategy may be constantly changing, as a function of psychological characteristics of the student (imaginative, logical thinking) and the amount of knowledge about the object of knowledge possessed by the learner.

Appealing to complete vertical adaptability approach to the EPSS student, which defines what type of perception prevails, imaginative, logical or step-by-step, the system changes the strategy of training, given the level of immersion in the details, choosing the most effective option. The introduction of learning technologies in the teaching system is a necessary attribute of it, but it is easier to provide the student the necessary software tools and information so that it can formulate what he cannot understand and get answers to their questions.

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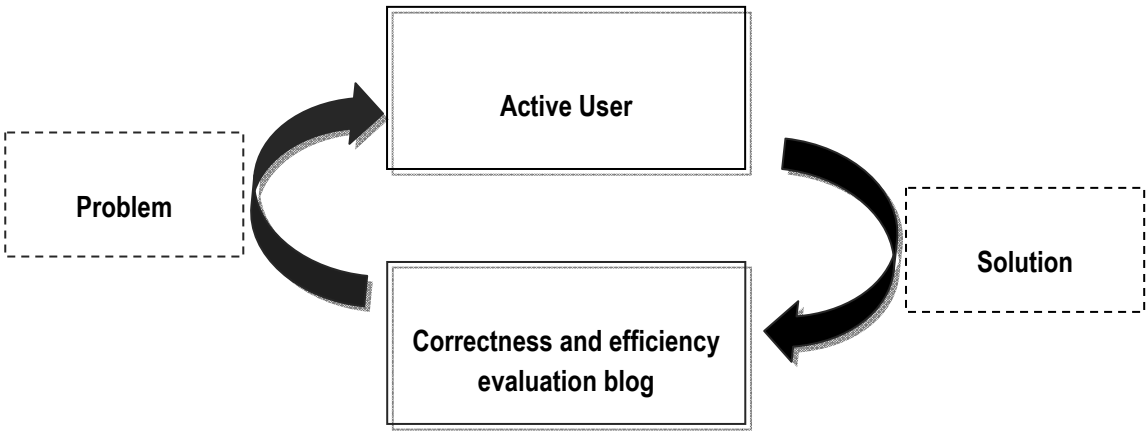


Picture 1. Solving the problems

That's why an EPSS must contain:

Declared software with relevant data. For example, training material, examples, cases, etc.

The simulation software that prepares the answer to the question - "What will happen if ... ?"

The tip software, which can provide an answer to the question "How do I make ... ?"

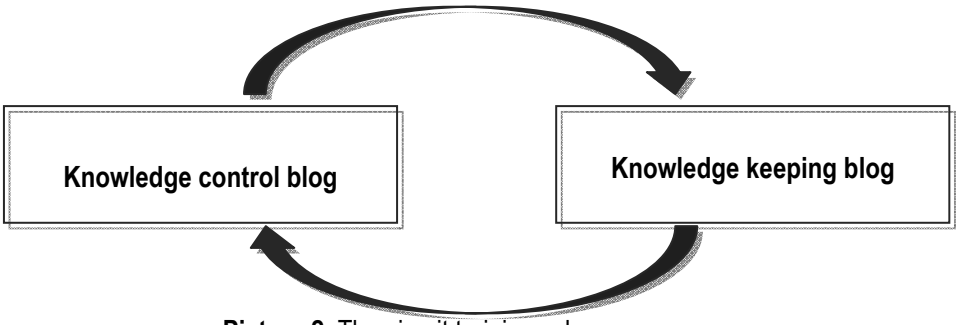
Usually good quality training system changes the strategy of training depending on the context of the answers to test questions. In this case, the student should be learning a specific algorithm, which provides a number of trajectory targets for the implementation of which is always the same, the system should display any students and recognizing the ignorance of his attempt to locate and eliminate pumping the necessary knowledge and their attachment. If this cannot be done on the system rises above concept and works on the same algorithm.

Localization of a lack of knowledge is reduced to its detail. However, the direction of detail can be different, and this difference depends primarily on the characteristics of classification concepts that we build into the system. Simplified circuit training consists of two blocks. This is a block of teach knowledge and control unit (see Picture 2).

Using any strategy the first block provides metered student representation of knowledge. This representation can occur in a linear or a network diagram. As an advancement graph training system periodically switches on the control unit, which can be built in different ways:

1. Teaching strategy does not change depending on the answers, but the correct answer and checked. In traditional learning systems use such a scheme and for each question are offered alternative answers, one or more. The disadvantage of this solution is that you need very clearly and without ambiguity to formulate questions and to determine the answers. Of alternative answers is difficult to distinguish the meaning of misunderstanding, although in principle this deficiency is surmountable by increasing the number of test questions.

2. If the teaching strategy changes, then we can talk about the learning process control, which functions are the same as managing any other object: accounting - the answer to security questions, and analysis - content recognition responses, action planning system to adapt teaching strategies, regulation - presentation of the next portion of the knowledge and the required level of meaning.



Picture 2. The circuit training scheme

Conclusion

Using the network by mobile gadget becomes the important direction in splicing trends over an Internet and mobile communications. This phenomenon has a large scale character. For example, in October 2013 the number of mobile Internet users reached 41 % of the population of Moscow (Kommersant November 2013). "Mobile" learner - and a classic student needs system training , and company employee having remote access to the corporate portal of its institutions , and also needs " additional training " in the workplace (now mobile) for adaptation to a specific management situation may build their own navigation gain knowledge and to use the information system class EPSS.

An EPSS additionally provides the mechanical support of decision-making, which is a powerful tool for improving the efficiency of the automated systems of distance education, providing learning without a teacher, improved system management by strengthening support functions and improving the adaptive properties of the system to the requirements of a particular user.

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