International Review of Management and Marketing

ISSN: 2146-4405

available at http: www.econjournals.com

International Review of Management and Marketing, 2016, 6(S1) 135-141.

Special Issue for "Socio-Economic and Humanity-Philosophical Problems of Modern Sciences"

Technological and Methodological Approaches to the Design of Information and Educational Space of Modern High School

Elena Eliseeva[1], Irina Shcherba[2], Svetlana Morozova[3], Elena Shadoba[4]*, Larisa Petukhova[5], Natalia Seregina[6]

[1]Bryansk State University named after Academician I.G. Petrovsky, Bryansk, Russia, [2]Bryansk State University named after Academician I.G. Petrovsky, Bryansk, Russia, [3]Moscow Psycho-Social University, Bryansk, Russia, [4]Moscow Psycho-Social University, Bryansk, Russia, [5]Bryansk State University named after Academician I.G. Petrovsky, Bryansk, Russia, [6]Bryansk State University named after Academician I.G. Petrovsky, Bryansk, Russia *Email: emsh2007@mail.ru

ABSTRACT

The paper discusses the technological and methodological approaches to the design of information and educational space of the modern university in the widespread use of new information and communication technologies to significantly improve the quality of training, learning to make personalized, intense, advancing and developing. The authors have given detailed interpretation of the concept of "information and educational space" considered its main elements and functions. It revealed the most important advantages offered by the modern university properly formed educational space. Reflect technological and methodological foundations of design information and educational space of the university, as well as the implementation phases of the project. Particular attention is paid to the means of information and educational space, which provide its constituencies to perform a number of important functions, including the development of innovative solutions for the automation and informatization of educational process. It is shown that an important component of design information and educational space of the university is the development and standardization of information resources. The submissions have applied value for specialists in the field of design information and educational environments and spaces, as well as teachers seeking to integrate successfully into the modern system of vocational training.

Keywords: Informational and Educational Space, Infrastructure, Education
JEL Classifications: H75, I2

1. INTRODUCTION

The system of higher vocational education in Russia is at the stage of active reform: Changing the organization of the learning process, develop new educational services, developing innovative teaching methods and directions, forming a system of continuing professional education, a new type of interaction between teachers and students, designed a single information-educational space.

The intensive computerization enables the possibility of an open education system with the choice of each student individual learning paths, high variability and adaptability of training courses, implementing, thereby, student-centered approach to learning.

The system of open education with a high degree of informatization different substantive content and depth, comprehensive and systematic, the integration of all elements in the learning process. It has a high capacity handling with continuous planning, monitoring and adjustment of the educational process.

New information and communication technologies in education permit (Godina, 2005; Domansky, 2008; Eremenko, 2002; Pankova, 2007):

- Generate sophisticated educational content using modern media.
- Receive geographically remote student's access to information resources.
- To create new tools for learning and collaboration of educational process.
- Take continuing education using distance learning technologies.

By incorporating information technology improves the quality of vocational training is becoming more personalized and intensive. There is a possibility of realization of advanced and developing education through the development of innovative forms, methods and technologies for learning.

Informatization provides the necessary level of mastery of ICT tools, implements a unified educational methodology with the possibility of integration of educational, research, methodical, scientific and organizational activities.

Use of information technologies in educational process of preparing the participants of educational process to the new forms of their professional life in the information society, increases the overall professional competence and competitiveness of future professionals (Persianov, 2009; Suzdaltsev, 2008).

2. RESEARCH THEORY AND METHODS

2.1. Informational and Educational Space of the University: The Concept, Features, Components

The development of modern education requires a combination of information resources and technologies of all educational institutions in a single unified complex with a common methodological requirements and recommendations.

In this regard, a promising direction of informatization of modern vocational education is to build a school in every educational environment, followed by its inclusion in the unified information educational space (UIES), formed on a national scale.

Development of appropriate design, technical, pedagogical and methodological approaches will allow the phased build uniform information educational environment of the individual schools, and combining them in series to form a single IES (Akhmetov, 2002).

The study of the problem of formation of information-educational space of the significant contribution made by prominent scholars Abdurakhmanov, Barishpolets, Veprintsev, Grachev, Zuev, Kopylov, Krys'ko, Manilow, Modesto and others.

IES can be defined as a space of the personality changes people for educational purposes through the use of modern information and communication technologies, the increasing role that the organization of educational activities determines the urgency of the task of designing and structuring IES of the city, the region and the country as a whole (Akhmetov, 2002).

Some authors refer to the concept of "UIES."

Yastrebtseva UIES reveals the concept as a communicative information and educational environment at a particular educational institution, distinguishing feature is the flow of information. At the same authors identify "non-electronic" information educational environment of educational institutions, and "electronic" (Moiseev, 2002).

Ovechkin and Podkovyrova understand under a single information space of the university information environment in which there is a hierarchy of methods to create information resources and work with them. This information resource of the university means any data, information, knowledge sources or consumers that are the students, graduate students, doctoral students, faculty, administration and staff of the university.

Kovalevsky, Krasilnikov define common information and educational space as a reality, organized and managed by a single generated concepts, approaches and mechanisms for the implementation of the overall strategy of the existence, development and the achievement of the cultural, educational and professional level of the subject, combined on a unified information technology basis.

Single Information Space is understood by some researchers as a set of data, technologies for their support and use of, information and telecommunication systems and networks operating on the basis of common principles and general rules that provide information interaction of organizations and citizens, as well as meeting their information needs (Akhmetov, 2002).

The etymological analysis of the definitions shows that you can highlight certain characteristic features, the authors note, and separating informational educational environment of the information educational environment.

Firstly, it is the large number of information resources needed to meet the needs of participants in the educational process and the numerous tools to work with, allowing you to identify it in the category of large scale multifunctional implemented as the result properties.

Secondly, the presence of a large number of subjects, ready to use, and provide these resources.

Third, the existence of the UIES at the state level.

The best, in our opinion, is to determine the IES in the form of IES - a controlled and dynamic view of modern trends in the modernization of the Russian education system is efficient and comfortable providing information and communication services to all actors of the learning process, which is part of a single information education space of the Russian Federation.

The infrastructure of information and educational space includes the following main elements (Godina, 2005):

- General-purpose software (word processing, graphics, spreadsheets, etc.).
- Software for automation of various services (accounting for students, for personnel records, to schedule, to analyze the performance, for the automation of the library and others).
- Software and methodological support for the organization of the educational process (training and developing computer programs, electronic encyclopedias, multimedia encyclopedias, etc.).
- Information resources of educational institutions (unified database, educational databases, multimedia educational development, document storage, website).

The main functions performed by the information space, include the following:

1. Integrated: As part of this function, the information space brings together in a single space-communicative and socio-cultural environment different kinds of human activity and dealing with their subjects, including both individuals and entire nations, peoples, international coalition and multinational corporations.
2. Communicative: Information space creates a special environment of cross-border, online and mobile communications various stakeholders in which they carry out information exchange.
3. Updated: It is carried out in the information space actualization interests of various stakeholders through the implementation of information policy.
4. Geopolitical: Information space generates its own resources, and changes the value of traditional resources, creating a new environment of geopolitical relations and competition.
5. Social: Information space is transforming the composition of society and changes the nature and content of socio-political (social) relations in all spheres - politics, culture, science, religion and others.

The information space is regarded as construction, serving in a variety of forms: Physical space co-curricular activities of students, the virtual space of hypertext hierarchical system space (Materials Forum "common educational space of the school," http://www.sandbox.openclass.ru/forums/36040).

Our analysis of a number of research scientists revealed the most important benefits of the formation of information educational environment of high school:

- The possibility of implementing technology-oriented individual training in specific subjects through the submission of information on the program, the form and procedure for training, presentation of theoretical material, material for self-assessment, project tasks.
- The possibility of implementing an individual trajectory of advancement of the domain by selecting the level and type of presentation, depending on the individual development types of thinking.
- The ability to differentiate the learning process through the use of tools and technologies to choose jobs at different levels of organization of self-promotion on the themes of the course performing students and return to a running material lagging students.
- The emergence of new forms of interaction between the teacher and the student in the learning process, leading to a change in the content of their activities.
- Improving the methodology to select the content of professional training, better planning, organization, management, quality control of the learning process, improve the overall quality of education.
- The use of various forms of self-study.

2.2. Technological Bases of Design Information and Educational Space of High School

In modern conditions should be clearly built system design information and educational space of the university, which should lead to the improvement of the quality of the educational process, a high level of scientific research, integrating higher education into the national education system and the world. This will allow the university to strengthen the position of the regional scientific and methodical center of information, improve the competitiveness in the educational space.

Creating an IES in general terms through the following stages (Persianov, 2009; Yastrebtseva, 1999):

1. Formed all the necessary basic information sharing educational institution, which can be completely or partially open to all subjects of the educational process.
2. Information sharing array of processed and differentiated through the planning, organization and management of educational process.
3. The main part of the instantiated information is transmitted to the administration and to ensure the content of the educational process, where it is further processed, archived and stored.
4. Information sharing and processed information enters the system modules additional security, where there is further work with it.
5. Processed in systems and modules are the basis for the formation of accounting documentation.

For the design of information and educational space must be based on the basic technological stages of construction of educational spaces such as:

- Decomposition IES for a particular system of high school education.
- Allocation of the main content structure and component composition of the IES.
- A general description of the information and educational space and its components.
- Construction of the relevant schemes and technical specifications.
- The development of logical and physical structures of information and educational space.
- Identification of the main technical and technological characteristics of the IES, the problems and solutions.
- Choice of development tools, hardware and software, information resources.
- The development of the space component, their unification and binding within the same environment.
- Training of personnel and trainees to work with the relevant components of the IES.
- Practical testing of the IES in terms of the educational institution.
- Improvement of infrastructure on the results of testing of the IES.
- The development of the missing information resources and their integration in the information-educational environment.

The information system of the university should be designed as an integrated logistics system, where the main business process serves the educational process, and all the rest is subsidiary and must ensure the flow of basic educational process.

Logic and structure of building an information base should be based on the possibility of automation of all stages of the core

business process, starting with a set of entrants and ending with the release of the finished professional (Moiseev, 2002).

The educational process as an object of logistics engineering is supported by three main components - the management, production and information flow.

The input to the system receives the logistical, financial, technological, energy, human and information resources. During operation of the educational system, they, in accordance with a predetermined single learning technology used, processed, modified to the final state. As a result, it issued a variety of products and the effects in the form of trained educational content, including e-defined methodology of the educational process, the system of methods, approaches and training aids.

Logistics processes must ensure the full functioning of education as a production company that works with different resource providers - schools and "sends" his "products" - graduates of specific enterprises, institutions and firms. The information system provides the organization is information links of any complexity and trends, supporting not only the specific information environment of the university, but also in general education space.

The approach from the perspective of the intensified Logistics ensures transparency and openness of all processes and procedures of clarity and consistency, a high majority of optimization of business processes, gives the mechanism of formation of high efficiency and adaptability to any external conditions.

Design information and educational space must be based on a clear system of training specialist teachers, which can be built on the principles of automation and informatization. Adequate overall educational tools automated system for training of educational process will organically fit and interact with all levels of education to ensure the transfer and exchange of experience, research and innovation activities between colleagues.

Note that the main subjects of information and educational space are the experts in the field of education, directly addresses the problem of higher education. Data related subjects and a team of additional vocational education training. Among the new subjects of information and educational space include experts in the field of software, offering optimal solutions of information and educational services, as well as professionals, to develop innovative solutions for the automation and informatization of educational process.

All subjects of design information and educational space launching a new level of modernization of the educational process, aimed at greater autonomy learner conscious manifestation of the desire to acquire knowledge and sustainable learning motivation, development of search and research and creative activity.

Information space means the teacher provides the following functions (Gagarina, 2009; Krasnoshlykova, 2005; Persianov, 2009):

1. Create and modify training material, educational tasks of the course (individual modules, lectures, tutorials, assignments for tests, examinations, course and diploma projects, exam materials).
2. Library Management course development (templates, audio and video clips, animation).
3. Individual modification of the composition and level of the course for specific students.
4. Quick, fast and optimal search of the necessary information about the course.
5. Monitoring the course (obtaining the necessary statistical information about the course, trainees jobs).
6. Turn on the developed training course in the university database.

Must be designed and individual student's educational environment, where there may be electronic textbooks and manuals, videos of lectures, workshops, testing system, the online version of the course for distance learning and so forth.

Information means this space provide the following features (Persianov, 2009):

- Configuration of the course at the request of the student.
- Playback of multimedia and animation fragments of the course.
- Self-testing and self-knowledge of learners at all stages of the study course.
- Access to the course through the network and study it with the navigation services.
- Introduction of passwords to eliminate unauthorized access to the work and files of trainees.
- The development of skills training network.

2.3. Methodological and Organizational Approaches to the Design of Information-Educational Space of Modern High School

An important component of the design is the development of the IES and unification of information resources of educational space, which must satisfy several methodological principles (Tagunova, 2009; Yastrebtseva, 1999):

- Principle of complexity, involving a study of the university information space in the socio-cultural context and within the framework of various scientific disciplines: Sociology, pedagogy, library science, computer science, cultural studies, theories of documentary and information flows.
- Humanitarian principle, which allows to solve the problems of social partnership library - society, library - university librarian - reader in IES, both the university and the region in which the institution is located.
- The principle of the optimum ratio of valuable orientations of the person and a particular national, cultural and educational environment of the territory, has an important influence on the development of intellectual potential of society and as the university and the individual.

In terms of pedagogical content of the specified list of principles expanding characteristics such as scalability, dialogue, adaptability, redundancy and quality of the multidimensional nature of the information and educational space of the university.

Unification of the information resources should provide all users in high school uniform interface to the operating principles of the means of information, to give consistency and completeness of the information support of all the activities inherent in the modern university.

Since the projected area of the university has managed not only to the nature of the development, but also self-development (Klimontovich, Dobronravov, Tsikin, et al.). The basic principles underlying the development and self-designed information space They are:

- The open nature of the information and educational space.
- Coordination of actions of all participants in the information process.
- Mnogovariativny nature of the development of information and educational space.

Maximum variation IES University provides differentiation of all users into categories, substantially simplifies the adaptation to the specifics of the operation of a particular institution, the needs of teachers, the content of implemented methods and forms of training of students.

Design information and educational space should have a holistic conceptual in nature and is a specialized information project presented at the level of individual educational institutions (Kechiev et al., 1999 and Moiseev, 2002).

Design information and educational space from the standpoint of the integrated presentation should be related to the further development of modern telecommunications and information environment of high school; active informatization of educational process, the creation of an automated library system, automation of administrative and management processes of the university and research organizations; development of multifaceted cooperation with other educational institutions outside the territorial boundaries.

The development of modern telecommunications and information environment of the university involves the systematic acquisition of computer equipment to the required standards, the purchase of necessary network and peripheral equipment that provides the ability to copy and reproduce the information on various storages.

Under the educational needs of the university need to purchase licensed software by concluding agreements with leading software providers to acquire academic versions and licenses.

It should be established distributed corporate university computer network with high-speed channels of all branches and permanent increase in the speed of access of educational institutions to the Internet.

It should be the creation of a cable television university with a view to its active use of the university. It must be developed and implemented a wireless network access to electronic resources of the Institute in order to increase mobility training.

It should constantly seek out and quickly deploy the most effective training at mandatory use of integrated complex telecommunications, multimedia and distance learning technologies.

Also important is the purposeful formation of information culture of teachers and students as an integrated quality of life of the individual characteristics of the information society.

Serious attention should be paid to the system of motivating-stimulating measures to increase the interest of teachers and university staff in active use and the creation of software and methodical support of network information and multimedia technology to support multi-level training, works to improve the skills of teachers.

It is necessary to ensure continuity of educational programs "school - college - high school" in the field of information technology, to develop a system of additional vocational training in information technology, certified training, a two-tier higher education (bachelor and master) on Information Technology.

Informatization of processes of university management involves the creation of a single integrated automated information system of university management, which will on the basis of the analysis and modeling of information flows circulating between the structural units of the University establish a system for controlling access to data, system administration and user interfaces; automate the management of administrative, educational and scientific departments of the university; create a single system for monitoring all types of information resources: Education, intellectual and material.

Information of research should be linked to the development of new forms of research activities based on the use of modern information technology - teleconferencing, electronic magazines, remote database access, etc.

Let some research areas, which in modern conditions should actively initiate (Averyanov, 2003; Godina, 2005; Usenkov, 2003):

- Carrying out fundamental and applied research in the field of complex use of new information technologies in the field of scientific research.
- Creation of a computing cluster for the organization of high-performance computing to simulate real processes and phenomena in various fields of science, technology and socio-economic activities.
- The development of scientific areas related to new information technologies, environment and resources (computer-aided design techniques, multimedia techniques, etc.).

Sharply there is a need of establishing joint production, inter-institutional, regional and international centers and laboratories for the implementation of information technology in a variety of domain-specific areas of activity and the development of integrated scientific and educational projects.

It is actively developing a system of training of scientific personnel in the field of information, that is, to develop appropriate programs

and course materials, include them in the curricula of master's and postgraduate studies.

It is necessary to develop a system of internet-resources of the university and its divisions, contributing to the expansion of relations with other educational institution educational communities.

It is necessary to form the legal documentation governing the procedure for placing sites on the server of the university departments, establishment of domain names, securing persons responsible for the maintenance and content of the portal.

It should involve teachers and students in the university commissioned an educational portal and content pages cathedral.

Need an optimal structuring of the site content, reorganized sections and systematization of information taking into account the focus on the target groups of visitors.

We need to develop foreign-language versions of the portal, as well as the monitoring of complaints of students and university staff to the information resources of federal and regional educational portals, domain-oriented sites. There should be a comprehensive analysis of the demand for electronic information and educational resources of the university.

The development of information and educational space should be carried out as an increase in the number and scope of the elements included in its composition, its gradual expansion and consolidation, planned to create new opportunities, and actively promote the accelerated IES college to a new qualitative state.

This space promotes intensive development of the capacity of educational process for innovation, generates stable installation on the changes in the conscious and deliberate mastery of professional activity, the development of innovative activity, creativity (Godina, 2005 and Krasnoshlykova, 2005).

Formation of information-educational space of the university will allow to reach the current level of private information, significantly improves the content of education based on ICT tools through the creation and use of virtual laboratory complexes, multimedia lecture notes, electronic textbooks.

In addition to ongoing research work on creation of IES of the university, now it is advisable to consider possible future prospects for the integration of information spaces of high schools into a UIES at the regional and national levels with a view to gradual integration into the world information and educational space.

3. CONCLUSION

Creation and development of teaching information technology is a prerequisite for the functioning of the educational information space of the state, as these technologies on one hand, is based on the theory of pedagogy, psychology, computer science, management, on the other - using the broadest possibilities of modern information and telecommunications technology.

The real way to create a UIES in the country is its basing on modern computer media telecommunications exchange.

In this regard, it is increasing the relevance of the requirements of building the information educational environment of educational institutions in the form of educational information Internet portals based on maximum use of the advantages of regional and global information networks.

In this respect, actively developed nation-wide scientific and educational portals, accumulates all similar provincial and regional portals and is a system basis of IES of the country (Shcherbina, Design ethno regional educational space of pedagogical high school, http://www.rspu.edu.ru/university/publish/pednauka/2006_2/sherbina3.htm).

Thus created space is distributed and has a common navigation tools to ensure that all categories of users for quick and simple means to find: An educational institution, regardless of the location and directions of preparation of students.

With the new tools, you can get complete information about the structure and functioning of the institution; a list of institutions providing education in a particular occupation through their information educational environment. It is possible to gain access to any information resource registered in the information educational environment, regardless of where it is physically held and accessories for specific information educational environment of educational institutions.

Speaking about the prospects of development of the information educational environment of higher education, it should be noted the need to integrate it with the now formed a global information space. There is growing number of information of educational resources for widespread, not "attached" to a particular area of use (Yastrebtseva, 1999).

Freely distributed educational information systems available around the world through their location on the means of global computer telecommunications.

Computerization and the expansion of access to education through the use of information and communication technologies have become part of the process of globalization that provide everyone an opportunity to receive education throughout their lives.

REFERENCES

Akhmetov, B.S. (2002), Features of the construction of information educational environment of in high school. Materials of the VIII International Conference the use of new technologies in education. Troitsk: FNTO "Baytik". p15-16.

Averyanov, L.Y. (2003), Modern problems of e-learning. Information and Education, 5, 70-75.

Domansky, E. (2008), Information society and education: Mythology and

reality. Narodnoe Obrazovanie, 2, 261-267.
Eremenko, T. (2002), Information resources of a new type as a factor affecting the quality of education. Alma Mater, 3, pp. 8-11.
Gagarina, D.A. (2009), The structure of the information-educational environment of highly innovative university. University Management: Practice and Analysis, 3, 69-73.
Godina, T.A. (2005), A Study of Innovation Processes of Formation of Information Space of Higher Education Institutions: With the use of Foreign Experience: Dissertation of the Candidate of Economic Sciences. Moscow. p147.
Kechiev, L.N., Putilov, G.P., Tumkovsky, S.R. (1999), Preparation of teaching materials for inclusion in the educational environment. Moscow: MIEM. p34.
Krasnoshlykova, O. (2005), Creation of a single information space as a condition for the development of a municipal education system. Information and Education, 12, 19-20.
Materials Forum Common educational space of the school. sandbox. openclass.ru. Available from: http://www.sandbox.openclass.ru/forums/36040. (date of treatment: 15.09.2011).
Moiseev, V.B. (2002), Information Technology in Higher Education. Penza: Publisher of Penza Institute of Technology.
Pankova, E.V. (2007), Practical work for searching the Internet as part of the formation of information culture of the student. Informatics and Education, 4, 71-73.
Persianov, V.V. (2009), Electronic educational environment of pedagogical university: The formation, use, problems. Informatics and Education, 10, 111-113.
Shcherbina, E.N. (2006), Design ethno regional educational space of pedagogical high school. Available from: http://www.rspu.edu.ru/university/publish/pednauka/2006_2/sherbina3.htm. (date of treatment: 16.09.2011).
Suzdaltsev, E.L. (2008), The use of modern technology as a factor in improving the quality of education. Informatics and Education, 9, 125-126.
Tagunova, I.A. (2009), Model of world education in the context of the Internet. Bulletin of Moscow University. Pedagogical Education, 4, 3-16.
Usenkov, D.Y. (2003), The use of electronic educational resources in the educational process. Informatics and Education, 9, 62.
Yastrebtseva, E.N. (1999), My province - The center of the universe. The development of telecommunications activities in the regions. Moscow: YUNPRESS. p225.