Model of Organizing Information and Educational Environment of the Siberian Region using the SIBFU E-Library

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Abstract

This article presents the results of research devoted to the development of a model of organizing an informational and educational environment in the Siberian region including opportunities offered by the electronic library of Siberian Federal University. This model is designed taking into consideration the educational needs of young people and the existing social and cultural conditions. The goal of this research is to provide equal access to education.

Keywords: information educational environment, electronic library, quality of education, accessibility of education, distant education.

Introduction

The long-term program "Development of Secondary and Professional Education in the Krasnoyarsk Territory within the Period 2011-2013" includes creating conditions that allow secondary educational institutions in the Territory to offer high quality education. This is an important factor for human resources development on the regional level. The current situation is characterized by a demographic decline and migration of the young workforce to the European part of Russia. The existing models of HR management do not take into consideration the growing connectedness of the young population, and the fact that young people spend a lot of time in a virtual environment. The electronic library of SibFU, with its powerful scientific and educational potential, should have a clear structure of the school content available to all secondary and vocational schools of the Krasnoyarsk Territory. In this context, special importance should be given to natural sciences, and to assistance in preparing students for the United State Examination in Physics, IT, and Chemistry. This area of scientific knowledge has potential significance, considering the regional labor market (metallurgical, oil and gas industry, etc). The

SibFU e-library should also promote distant learning, which is especially important for rural schools lacking highly qualified teachers.

Discussions on the meaning and etymology of such notions as "distance education" and "distance learning" are more likely to become iess_ popular [2] after the Federal Law "On Education in the Russian Federation" defined the distance educational technologies as "educational technologies realized mostly by means of the information and telecommunication technologies at a distance, as well as by means of the Internet, including the cases when interaction of a teacher and a student is not exclusively distant" [4].

Though the number of scientists involved in research in distance learning courses underline specific features, A. V. Khutorskoy [8] notes that "distance education resolves psychological problems of a user, eliminates time and distance boarders, increases accessibility of the outlying educational institutions, helps disabled people having specific individual features to get education, and extends communication sphere of students and teachers", and among the basic characteristics of the distance learning courses he defines:

- higher dynamics associated with the flexibility in the students' choice of courses;
- students do more independent work;
- the opportunity to use different forms of methodological support;
- consumers of educational services access the educational environment;
- a more conscious motivation level among consumers of educational services;
- Availability of interactive communications.

These features make it necessary to examine the conditions for effective use of the distance technologies in educational practice.

The research undertaken in the V. P. Astafyev Krasnoyarsk State Pedagogical University [7] shows that, in terms of personal values of Bachelor degree program students who study by means of distance technologies, educational values do not occupy the first place. The students ranked entertainment in the first and the second places, while the values of learning and development were ranked 7 and 8. In this research work we used the method of M. Rokich to identify personality values. We

may characterize mese results as unexpected, as more man one nail 01 me respondents (61%) work in the educational and in social spheres (12%).

To provide equal educational opportunities for children in the Krasnoyarsk Territory it is necessary to create an electronic educational environment that takes into account their educational needs and social and cultural conditions. The processes of computerization and informatization in the Krasnoyarsk Territory coincide with the same tendencies taking place in Russia and in the world in general. The Federal State Statistics Service of the Krasnoyarsk territory admits that within the past five years there has been an increase in organizations' access to the Internet. The increase in the number of "home" computers exceeds the increase in the computers used by organizations.

The data on how actively students of the Krasnoyarsk Territory use the Internet indirectly reflect this fact. Most students use Internet resources more than 2 hours a day [1, p. 389]. It should also be noted that, according to the Federal State Statistics Service of the Krasnoyarsk territory, in the past five years, provision of computers to schools of the Krasnoyarsk Territory has accelerated. . The social and geographic specific features of the electronic educational environment in the Krasnoyarsk Territory may be characterized as follows:

- A large area of the Krasnoyarsk Territory with moderate or low population density;
- Many settlements are situated in the remote areas far from regional centers;
- A limited transport infrastructure (some of the territories are not accessible by land transportation during a part of the year, and transportation costsin the Northern areas are high).

Participating in the project "Social and Educational Content of the Electronic Library of Siberian Federal University for the Human Resources Development of the Krasnoyarsk Territory: Concepts and Technologies of Realization" supported by the Krasnoyarsk Regional Scientific Fund, we obtained interesting statistics on what information resources are popular among students of various types of educational institutions. For example, the number of hours spent by students on the Internet: less than 1 hour - 23%; 1-2 hours - 24%; 2-3 hours - 18%; 3-4 hours - 17%; more than 4 hours - 18%. According to the Federal State Statistics Service of the Krasnoyarsk

territory, in the past 10 years there has been an insignificant growth in the number of museums in the Krasnoyarsk Territory, and the number of the museum visitors has decreased: This is a steady tendency. There is a decrease in new arrivals in public libraries and in the number of registered readers. Among the purpose of using the Internet 25% of the respondents mentioned entertainment, 16% - self-development, 14% - search for information, ^/^preparation for classes, 30% - communicating on social networks. This allows us to draw the following conclusions:

- A high level of IT development results in the changes in storing and using information resources accumulated by the society;

- Independent students' work should be organized in accordance with modern trends, including the use of the Internet resources and social services;

- Students' educational and scientific activity based on distance technologies should be organized within virtual communities and be coordinated by a teacher;

- The activity-based approach and virtual activity based on tutor support ensures learning motivation till the end of the distance learning course.

One thousand secondary educational institutions of the Territory received access to the SibFU e-library to increase access to high-quality educational services within the project supported by the Ministry of Education and the Krasnoyarsk Regional Scientific Fund in 2010-2011. The goal for 2011 is to develop the structure and catalogue for information and educational resources in the field of natural sciences for secondary schools and secondary professional educational institutions of the Territory; and to develop distance learning in the Territory using digital learning materials and methodical resources of the SibFU e-library.

The 2011 project 2011 currently underway is aimed at natural sciences and stimulating young people's interest in this field of study. In this context, we expect an increase in the number of graduates who choose engineering as a future career, as well as the number of those chose to sit for USE exams in natural sciences. This will increase the quality of training of those graduates who come to work in the leading industries of the Territory.

S. A. Sevastyanov defines an information and educational resource (IER) as a complex means of education designed on the basis of the State Educational Standard.

IER provides all types of educational activity and allows the implementation of an individual activity-based approach to professional competency development in the corresponding area of scientific knowledge [3]. The above-mentioned definition allows us to consider the IER not as the sum total of the didactic or applied products but as a complex character object or subject-oriented environment. In fact, the IER is a universal method for organizing and supporting educational processes of different types and at different levels. At present, notwithstanding the fact that the IERs are often very productive; their usage may be characterized as unsystematic at different levels of the educational system. The popularity of federal educational portals may be explained by the total multiplication effect, and usage of different services and agents ensuring interrelation of different types of information. It cannot be stated that using multiple IER helps achieve significant results and is important in modernizing "the New School" in anticipation of the information century.

In the first stage of the project devoted to the development of natural sciences contents in the SibFU e-library, team members' efforts were aimed at creating a working model of interaction for different groups of users (secondary school students, teachers) involving the resources of the SibFUe-library. The result of the pre-project work was an interface model for accessing the e-library's electronic educational resources by teachers and students of the Krasnoyarsk Territory.

A model of organizing the personal user environment (Pic. 1-2) allows presenting the user in the virtual environment, supporting quick access to personal ePortfolio materials and regular use of network resources. These elements are important for attracting the target group users (teachers and students) to use the secondary school content of the SibFU e-library (research work carried out in 2010). A classification model of the educational resources on the basis of the competency approach and the activity-based approach became the foundation for the interface model for accessing the SibFU e-library environment. This meets the needs of teachers and students - the potential e-library users - and helps them adapt to the competency approach introduced in the system of education in accordance with the new federal educational standards.
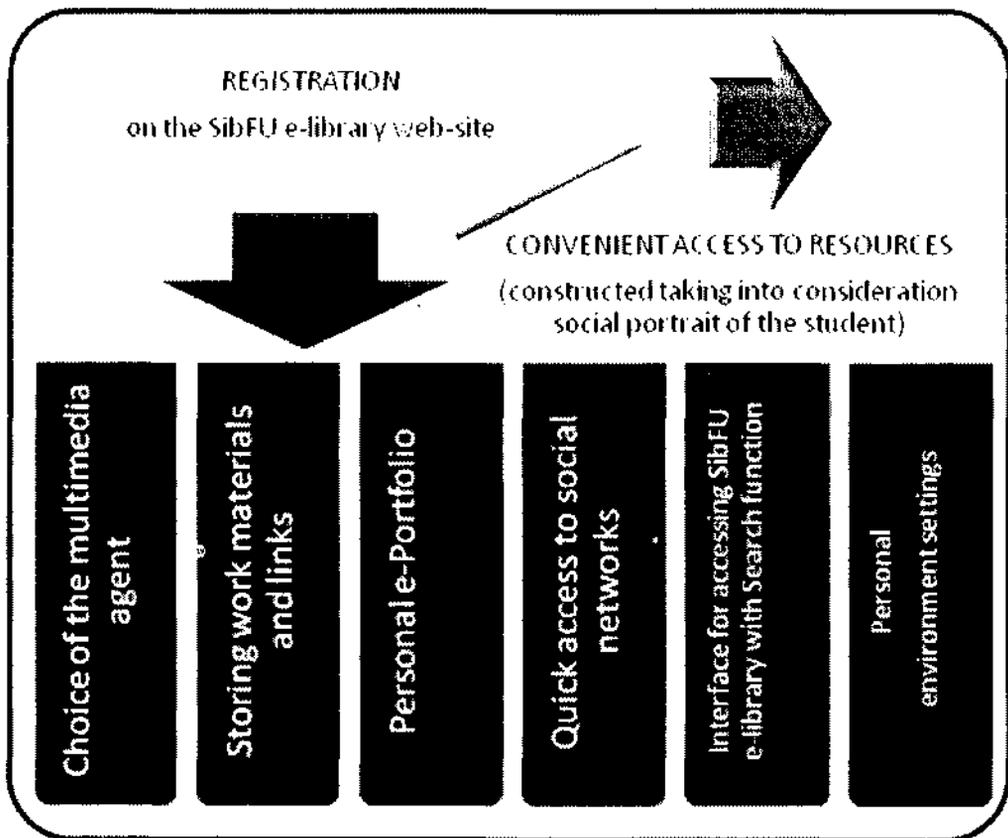
Pic. 1 Model of personal environment of the SibFU e-library user (student)

Modern technologies significantly change the organizational framework of the educational process; provided they have a convenient structure distance technologies allow organizing effective independent work of students in classes and at home. The Siberian Federal University is a large center that aggregates scientific and cultural potential and aims to create a virtual educational environment for students and teachers of the Krasnoyarsk Territory. It should be mentioned that our research revealed that gaming resources, resources for communications, self-presentation, multimedia, and interactive educational resources are most popular among students. The interface model for accessing the electronic educational resources in the SIbFU e-library includes:

o   educational/scientific materials;

- o   Interactive elements (e-laboratories, simulation interactive models, interactive workbooks, virtual excursions, virtual museums, etc.);
- o   materials for preparation for the United State Examinations;
- o   games, entertainment;
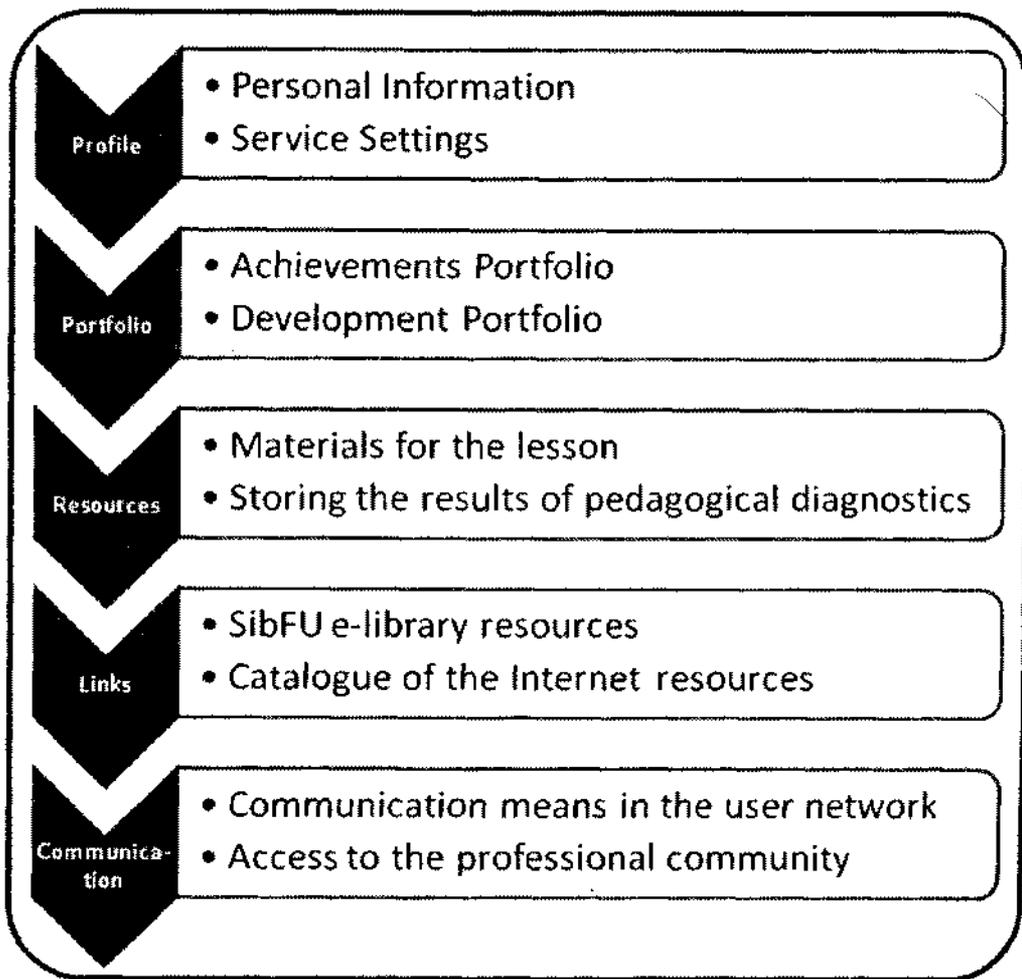- o   On-line/ off-line tutor/specialist support.

Figure 2. Model of personal environment of the SibFU e-library User (teacher)

The interface model for accessing electronic educational resources in the SIbFU e-library for teachers was designed taking into consideration that its basic

function is organizing students' work in class and independent work at home. It allows users to select electronic resources in accordance with:

- Types of organizing educational activity;
- competencies to be formed;
- Types of organizing the students' work.

Therefore the proposed model of organizing information and educational environment of the Siberian region using the SibFU e-library will allow:

- taking into account the interests of different categories of users (students/teachers) searching for resources, organizing personal environment by means of differentiated access;
- attracting young people to educational resources and help them in their educational activities in accordance with their interests;
- teachers to use the virtual environment of the SibFU e-library to access the means of organizing the students' educational activities in class and their independent work at home; to use the environment to explain the material, conduct pedagogical assessments, etc..

The following stages of our research work will include launching a pilot version of the described information environment of the Siberian region using the SibFU e-library; and its testing. This research is carried out with the support from the Ministry of Education and Krasnoyarsk Regional Scientific Fund within the project KF-193 "Increasing the Quality and Accessibility of Education in the Krasnoyarsk Territory: Formation of the Content Structure of the SibFU e-Library for Secondary Schools with Natural Sciences Profile."

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