INTEGRATION OF RUSSIAN EDUCATIONAL INTERNET RESOURCES ON THE PORTAL "SINGLE-ENTRY WINDOW"

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Abstract

The paper provides information on an educational portal named "Single-Entry Window" aimed at integration of Russian educational Internet resources. The conceptual aspects of the project, the software functionality, the informational components, the structure of metadata, the questions of content management including the approach for resources collecting and evaluating are described.

Keywords: Educational portal, electronic catalogue, digital library, open educational resources.

1 INTRODUCTION

Since the mid-1990s the Government of the Russian Federation has paid considerable attention to the informatization of education, the development of telecommunication networks and production of informational and educational resources. The first step towards wider use of ICT in education was setting up of the Russian Research and Educational Network RUNNet in the framework of the National Programme "Universities of Russia". Within the Programme a nation-wide network of universities and large research institutes was established. Through regional research and educational networks shaped within federal and regional programmes and initiative projects, thousands of educational, research and cultural institutions were connected to RUNNet. This telecommunication infrastructure became the core of an integral informational and educational environment, which provided educational institutions with an access to Russian and foreign research and educational resources [1].

The launch of a system of federal educational portals, including the Federal Portal "Russian Education" (www.edu.ru) and thematic portals for various disciplines and fields of educational activity, was an important step in the development of educational content of the Russian Internet. The works were carried out in 2002-2004 within the Federal Targeted Programme "Development of the Integrated Educational Information Environment" supported establishment and functioning of a number of educational portals which collected and systematized dozens of thousands of educational resources of various types. Coordination of the works was performed by the State Institute of Information Technologies and Telecommunications "Informika".

The educational portals have evolved as an integrated system of educational Internet projects [2, 3]. The Federal Portal "Russian Education" is a backbone component, an "entry point" to the system. It contains not only a list of all the portals and links to them, but also provides general information on Russian educational system: state educational standards for various levels of education, documents regulating the education system, data bases of Russian educational institutions, information for university entrants, events database (information on conferences, seminars, exhibitions) etc.

In order to unify metadata of resources according to international standards (IMS/LOM), the standard "Metadata of informational and educational resources for Internet catalogues" was developed by "Informika" and adopted by the community of portal developers. In particular, this standard suggests an integrated approach to classification of resources based on a "four-dimension" rubricator: by the level of education, target audience, type of resources and subject field.

To facilitate access to educational resources, a federal portal named "Single-Entry Window" (window.edu.ru) was designed and launched in 2006 with support of the Ministry for Education and Science of the Russian Federation. The portal integrates resources of all federal portals, as well
resources from regional educational portals, websites of universities and other educational institutions, specialized educational projects and individual teachers (Fig. 1). The portal includes the following components: a catalogue of Internet resources, a digital library, news and events, feedback subsystem (forum, questions and answers), statistical data collection, and search subsystem. The portal has become a universal "window of access" to Russian educational resources and make available efficient navigation and search of resources [4].

2 CATALOGUE OF INTERNET RESOURCES

The integrated catalogue of Internet resources contains metadata of resources: descriptions of materials of the digital library of the "Single-Entry Window" portal and external resources published at other portals and websites (in total - metadata of over 57,000 resources).

The catalogue is indexed according to the following criteria (Fig. 2): the level of education (primary, secondary, higher, vocational and additional education), the target audience (student, teacher, university entrant, manager, researcher), resource type (educational sites, learning, instructional, reference, illustrative, research materials, regulatory documents, etc.), the subject field within general and vocational education.

A significant part of resources catalogued (over 10,000) are educational websites: websites of universities, education authorities, scientific research institutes, primary and secondary vocational schools, institutions of extended education, libraries, publishing houses, museums, non-profit organizations, research and educational Internet projects, electronic periodicals, websites providing information support to exhibitions, conferences, competitions and olympiads. Another well-represented type of Internet resources is the open educational resources published at different websites: digital books, databases, encyclopaedias, lecture courses, virtual workshops, etc.

The catalogue has advanced tools which ensure search according to subject fields together with context search in titles and descriptions of resources, in particular: by author name, key words, words...
in abstracts, URL (for Internet resources), year of publication and ISBN (for published materials). The search engine takes into account the context and morphology of the Russian language. Search queries can be refined by the use of logical operators and parentheses.

The portal has an option of contextual search using the tools of adjustable Google search service, which is rather efficient due to the fact that the "Single-Entry Window" resources are thoroughly indexed in Google. In particular, it gives excellent results of full-text search in publications (PDF-files) in the digital library.

A special subsystem of the portal provides an automated verification of availability of Internet resources presented in the catalogue. During the processing inaccessible resources are made "invisible" to users.

To facilitate navigation in the catalogue and the library, the most important and useful Internet resources for general and vocational education are highlighted in the portal section "Editors Recommended". Lists of recommended resources enable visitors finding high-quality resources on a particular subject and also can serve as starting points for further information retrieval and effective using of Internet resources.

3 DIGITAL LIBRARY

The digital library of the "Single-Entry Window" portal is the largest repository of open-access full-text learning and methodical materials in the Russian Internet. The digital fund contains over 30,000 materials developed in more than 300 Russian universities and research and educational institutions. The majority of the library materials are designed for use in higher education. The library contains textbooks, manuals, course materials, lecture notes, workbooks, methodological materials, learning materials for practical trainings and labs, instructional guidelines, curricula, reference books, monographs, conferences proceedings etc.

Most of the resources in the digital library have been developed by the departments and research centres of leading educational institutions and are being used in their educational process. One of the main tasks of the "Single-Entry Window" is to integrate the resources, which are of interest to a broad range of participants of educational process, but are dispersed among hundreds of websites of higher schools, faculties and departments (it is often difficult to find them and so they remain inaccessible for teachers and students from other educational institutions). The digital library contributes to the preservation of the teaching and methodological potential of Russian higher education institutions, facilitates the dissemination of pedagogical experience and promotes circulation of publications among wider audiences.
During the digital collection building a special attention was given to teaching and instructional materials prepared by Russian universities and higher schools and peer reviewed before publication. Dozens of leading universities provided their materials at the early stages of the library development. The main sources of materials are open digital libraries of higher schools, websites of faculties and departments, and personal pages of teachers containing collections of teaching and instructional manuals.

Original materials stored in various formats (doc, rtf, PostScript, TeX and others) are converted into PDF, described and classified under certain rubrics on the basis of the metadata model adopted for the portal. Description of full-text digital publications includes the following attributes: publication title, full list of authors, subject field/discipline, abstract, year of publication, bibliographic description, ISBN, source (university/faculty/department, library, publishing house etc.), resource type, level of education (Fig. 3). A card with metadata contains a field for feedback where visitors can evaluate and comment the material.

Full texts are mainly available in the library as a single file in PDF format. Some publications are presented in the library as a collection of files of various formats (html, PDF, DjVu, jpg, gif, etc.). In this case, there is always a "starting" file - an html-document usually designed in the form of a table of content of a certain publication that includes references to other files (for example, chapters or sections). There is a link to the "starting" file in resource description card. In some cases, there is an option of downloading all files of a "composite" resource as an archive.

All full-text materials are physically located at the server of the "Single-Entry Window". Initial version of the portal included only metadata of resources with references to the full-text files available on the websites of their creators or rightholders. However, a weak point of such an approach is the lack of guarantees of stability of Internet addresses, which are references to these files. Changing the structure of site (restructuring, using other web-technologies etc.) often leads to changing of the initial
address too. It is not a rare case when some pages with collections of resources or even complete sites disappeared from the global network, especially if these sites of departments / research groups / teachers were made by students and hosted on free servers. Uploading of full-texts to the "Single-Entry Window" library guarantee their availability and integrity.

The content management and acquisition of new materials are ensured by two ways: through a bulk uploading of resources submitted by universities or their structural units, and by offering of single resources by individual teachers. In the first case, the mechanism of a "bulk" upload based on XML-import is used. In the second case, resources and their descriptions are uploaded by means of a web interface of the portal.

4 INTERACTION WITH AUTHORS AND USERS

The permissions of authors or rightholders on open dissemination for educational purposes are received before publishing of the materials in the digital library. Higher education institutions - owners of large collections of materials provide written consent on publication of digital copies of their materials in the library of the "Single-Entry Window". Permissions to publish materials are also requested by e-mail from authors and officials (heads of departments, project coordinators etc.). The portal is granted a non-exclusive right to publish digital copies of materials; all other rights are kept by the higher school and authors. Digital copies uploaded to the library are in full conformity with original materials provided by authors/rightholders. Authors are awarded by certificates confirming publication of their materials in the "Single-Entry Window".

Users of the portal enjoy an opportunity of providing a feedback. They can discuss resources in the Forum section. One can leave a comment on a resource by filling in the review field in resource’s card and evaluate the resource using the five-grade scale. All users’ messages pass through prior moderation. In the Questions-Answers section, visitors can ask questions related to both the methods of the work with the system and its informational content, and receive answers from the portal helpdesk.

An important element of the feedback option serves to submit of new materials to the portal by individual users. One can upload full-text material for the digital library or offer links to Internet resources to be added to the catalogue. The materials are checked by an editor, and, if a positive decision is taken, they are processed and published on the portal with appropriate metadata.

Nowadays, the "Single-Entry Window" is one of the most popular and requested educational projects of the Russian-language Internet. The portal has 100,000 - 150,000 hits and 60,000 - 80,000 unique visitors per day (Fig. 4). The analysis of geographical distribution shows that visitors from Russia make up 75-80%, shares of foreign visitors are as follows: Ukraine - 8-12%, Belarus - 3-5%, Kazakhstan - 3-4%, USA - 2-3 %. Informational content of the portal is thoroughly indexed by the leading search engines: Google - over 500,000 pages and Yandex (leading Russian search engine) - over 900,000 pages. The total number of full-texts downloaded from the digital library can be estimated as over 5 million electronic copies per year.

Fig. 4. Example of monthly visitor statistics (December, 2012).
REFERENCES


