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***INTEGRATION OF THE TOOLS WHICH INCREASE EFFICIENCY  
OF LEARNING INTO THE EDUCATIONAL PROCESS ON THE EXAMPLE  
OF THE CURRICULUM***

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*The article is devoted to the issues of improving the effectiveness of learning through integration into a single integrated informational data space, which are present in various computer systems.*

**Keywords:** *education, education provision, curriculum, integration of systems.*

**Statement of the problem.** Obtaining high-quality vocational education is a complex process, with some problems, the removal of which allows to be in step with the existing and future needs and challenges. Modernization of the education system control is an important social problem, the solution of which provides with the necessary improvement of the quality of training at the university. Objective means of quality management training are:

- the model of the educational process;
- the scheme of assessment of the quality of education the student receives, aligned with the system of subject knowledge and professional goals in chosen field of work;
- form and quality of provision of educational materials;
- information system for quality management education.

Quality management system of education is the basis of the system of management in modern conditions and is based on an integrated field of knowledge, which contain structural and semantic representation of various models and evidence as well as mechanisms for their treatment [5].

We can distinguish the following categories of users of the information system that determine the quality of education in the university:

- a applicant;
- a student;
- a teacher;
- a leadership of the university.

Further let's describe the basic needs of some categories which is satisfied by the use of information systems at the university.

Student as the primary user of the information system is provided with the information about the content of the curriculum in evaluating the quality of education. He can quickly and independently identify the level of compliance of the material presented on separate academic disciplines and professional competence of the specialty as a whole.

System is used by applicant primarily for professional self-determination and informed choice of profession.

Teachers have the opportunity to participate in the provision of proper educational services that improve their status and the contribution to the educational activities of the university.

Analysis of the ways of information technology development of recent decades has revealed a clear trend: moving from data-processing tools to work with information and further to the information systems that help users to find, analyze, recognize, process and store the required information effectively and on this basis to make solutions [3].

The key factors of informational systems are the completeness, accuracy of information, limitation of access to confidential data and the ability to operate with the system remotely. Furthermore, in our case, it is important to provide access to different study information for

anonymous users. That is why for the educational and scientific purposes it would be more logical to choose web-site as a form for providing information. Advantages of this approach are obvious:

- *Availability* - with high probability (depending only on a constant functioning of the servers that host the Web site) is accessible all over the world, when the Internet connection is available.
- *The equivalence of the displayed data* on most common platforms (covering ~ 98.7% of the total number of platforms with access to the internet).
- *Actuality of information* (depending on the frequency of content updates of the web site).
- *Ability to access for anonymous users* to provide introductory information about the university.

**Analysis of the latest researches and publications.** The problems of integrating data from disparate sources for their further analysis and decision making are actively investigated by following leading specialists in the field of data (Spivakovsky A., Keberle N., Serge Abitebul, Rakesh Agrawal, Philip Bernstein, Stefano Cherie, David DeWitt, Hector Garcia-Molina, Jim Gray, Laura Haas, Janis Ionnidis, David Meyer, Hans Schack), different systems combining data from various resources are created.

**Sorting out of unsolved aspects of the general problem, which the article covers.** In Ukraine, despite the relatively high level of development of information technology in education, not enough attention is paid as to the development of information environments for support of learning as for their integration with existing tools (tools for providing actual information to the community, creating interaction between students, teachers and leadership of the university). The main problem in intergration area is quality of data and issues of security.

**Statement of the object of article.** Aim of the article is to reveal opportunities of the improving the quality of learning in modern education, to describe ways of data integration residing in different information systems.

**Summary of the basic material of research.** Web-site of Kherson State University is an example of implementation of the information system. This site is an important component of the institution. It contains full information about the university, specialities, teaching staff, contains various functional tools for work with the contents of the site (search, filter, photo gallery, etc.), events from the life of the university.

Such as nowadays information space of the educational process is played the leading role, each university, including the Kherson State University tends to satisfy the information needs of consumers of diverse types: applicants, students, university staff and other interested persons. And there the problem of data integration is appeared [2], in different computer systems. Typically, these are not only statistics, information of sociological surveys, of archives, but also such types of information as educational curriculum, methodological aids, publications of books and magazines, research reports, dissertations and so on.

If we consider that every university in the learning process is guided by its workers Curriculum, which declares the list of the disciplines mastered by students of the university during some period of education, than its implementation in the information system provides an opportunity to demonstrate:



- logical interconnection of all components of information systems;
- integration with other insights and tools of the given area;
- usability ( comfortable usage, intuitive clarity, habitualness) of interface.

According to the classical definition, the syllabus is a document that defines the structure of academic disciplines that are studied in this institution, their distribution on years during all period of study. The curriculum usually includes 3 parts: the schedule of the educational process the periods of theoretical studying, educational and industrial practice, examination (or laboratory examination) periods, degree work, vacations, and their alternation during the entire period of study; a summary of the budget time - total duration of each period of the learning process over the years and for the entire period of study; plan of the learning process - the list of obligatory, alternative and optional subjects, indicating the volume of each of them in academic hours and the

distribution of these hours on weeks, semesters, academic years, deadlines for examinations, credits and course work (projects) and the quantity of hours devoted to lectures, seminars, laboratory and test works [7].

From above-mentioned we can come to conclusion that during providing this document as an electronic resource the possibility of providing information and educational resources to the user is opened at any time ( considering some requirements - such as the internet access, availability of client-supported browsers, etc.). In this case, all training materials of the curriculum allow operational adjustments and timely additions. Depending on user's needs and interests he can move in the space of the curriculum, extracting relevant information from various information systems, using a system of cross references and tight integration with different tools.

Further I would like to present a page of the working curriculum of speciality "Informatics" KSU, which in our opinion has many of the above-listed characteristics (<http://www.ksu.ks.ua/About/Faculty/FPhysMathemInformatics/ChairInformatics/EduPlans.aspx> (Fig. 1).

CURRICULUM FOR 2010 - 2011. DIRECTION: INFORMATICS, PROGRAM ENGINEERING											
Informatics 1 course	Informatics 2 course	Informatics 3 course	Informatics 4 course	Informatics Specialist	Informatics Master	Program Engineering					
Curriculum for 2010 - 2011 Direction: 6.040302. Informatics 1 course Form of studying: daily Qualification: Engineer - Programmer											
№	Discipline	Lecturer	Total (h)	Hours of training time (h)						Form of control	
				Class work	Individual work	Lectures	Practical classes	Seminars	Laboratory		
<b>II. The cycle of natural-scientific training (NS)</b>											
<b>1. Normative part of the cycle</b>											
NS01	Mathematical analysis	Tatochenko V.	216	134	82	72	62	0	0	Exam (1,2)	
NS02	Algebra and Geometry	Kolesnik S.	180	100	80	52	48	0	0	Exam (1,2)	
NS03	<b>Discrete Mathematics</b>	<b>Spivakovsky O.V</b>	216	134	82	72	62	0	0	Exam (1,2)	
<b>Total (II cycle).</b>			612	368	244	196	172	0	0		

*Figure 1. Working curriculum of specialty "Informatics"*

As it is seen from the structure of the working curriculum (Fig. 1), increasing of the efficiency of training is determined by the presence of a definite structure. In this case, we refer to an inner, well-thought-out structure, which allows you to provide maximum information to each student in terms of modern education.

It can be concluded that the curriculum is the most important document of any department of the university. It combines a variety of resources and connects various components [4]. For example, insufficient condition in the curriculum is reflection of the name of discipline only. Discipline must be defined by curricula, textbooks, manuals. Teacher is free to choose the system for placement of the material of his discipline (KSU faculty designed courses (curriculum, lectures, seminars, laboratory work for this course, recommendations) are mainly located in the systems of Kherson Virtual University (<http://dls.ksu.kherson.ua/dls/Default.aspx?l=1>) and the KSU Online (<http://ksuonline.ksu.ks.ua/>)). Integraton of these systems into the curriculum form the so-

called "user space", which plays a supporting role, mainly acting as a means of improving the efficiency of the quality of education.

As for information about the teachers, which serves to show information about his/her professional experience, education, scientific degree, academic rank, position, research interests, publications and courses taught at the university, it can be provided through the close integration with the main Web site of the university, the site of the research institute of information technology (<http://riit.ksu.ks.ua/index.php?q=ru/node/85>) and sites of some companies. All this due to our teachers who are employees of a research institute and software companies.

According to the curriculum a certain number of hours must be defined for lectures, workshops, laboratory and test work, as well as a form of control of this course - all this information is present on the page "Curriculum" of Department of Informatics of KSU.

Looking through the curriculum where the set of information collected in one place, it is possible to see the results of reviews of students about the discipline, for this purpose urgent references integrated into the curriculum [1] on the list of reviews of such services as «KSU Feedback». The essence of this service is to provide anonymous or normal voting on clearly defined criteria among a well-defined set of respondents. One of the key moments of this service is that the project "KSU Feedback" clearly defines the problems in relationship between teacher and students. The lecturer can see the degree of student's satisfaction of his activities, can identify his strengths and weaknesses, which results in the motivation for more intense activity and self-perfection (so-called "feedback") [6].

It should be mentioned that during dealing with «KSU Feedback» user gets the results in form of a report. The report can contain text, charts, tables and so on according to customer's wish, who generate reports. The presence of multiple levels of access is also an unquestionable advantage of the system "KSU Feedback". For example, the right to appoint the kind of access to a particular object (full access / public access to read / access to read to a particular group of persons, and so on) has only the user who created the object (questionnaire, survey, report, directory). Therefore, the user of this system (the teacher) can allow or deny to perform certain actions with an object that he created, which leads us to a logical compromise between the two indicators - publicity (openness) / confidentiality. In our case, to see the report on the activities of interested us teacher, is possible only if the teacher himself open the access for looking through this page. Currently, most teachers of the Department of Informatics don't want to provide the results of their survey to students. View of the results is available only to users with specific rights. This point is taken into account in the curriculum - all public pages with reports of the system are marked as public, and made the appropriate footnotes. This was done to improve the usability of this page.

**Conclusions.** During realization of the working curriculum in informational system of KSU we were guided by the following principles:

- Consistency and clarity of the construction.
- Integration with other resources, best groundworks, tools of improving the efficiency of education.
- The presence of feedback in the "student-teacher" system.
- The interdependence of the components that make up the resource.
- Usability of Interface.
- Full access to information (including confidential data).
- Currency of information.

The order of sequence of these characteristics does not play a big role, such as they are all interrelated and equally important.

Access to such information will help teachers to build competently a personal plan of development of informational activities in the practice of teaching the subject, will help to increase student's interest to the disciplines, will help to develop and utilize resources of the informational environment effectively as well as the students' activity in modern teaching.

At present time for increasing the effectiveness of teaching and the interaction of "student-teacher" system during using the curriculum the following tasks are deciding:

- complement of the base of teachers in disciplines that students master at the KSU at the Department of Informatics;
- The development and introduction of urgent changes in the curriculum of the new disciplines of the Department of Informatics of KSU;
- providing of new functional for access to the records in the system «KSU Feedback».

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