A Web-Based model of the System for Development and Delivering of On-line Courses

Georgi Tuparov, Daniela Dureva, Radoslav Bratanov, Michail Dimirov

Abstract: In the paper one model of Web-based system for development and delivering of on-line courses is proposed. The system architecture and functionality of the system are presented.

Key words: Learning, learning content management system

INTRODUCTION

The new information society imposes to turn in information into knowledge. In this way the information can be used effectively especially in education and training communities. Data interchange between students and teachers becomes very important. However the amounts of information that is generated, archived, reviewed, processed and shared are enormous. That's why the management and use of this information to support a more effective learning process represent a significant research topic.

The combination "education-network-Web" leads to a new way of organizing of educational system. This way enables educators and students a virtual access to data sources according to their educational needs and current access rights. The on-line education ensures flexibility, effectiveness, enlargement and standardization in higher education.

The on-line learning usually is connected to the educational possibilities that Internet offered. This type of education is independent from the place of educational institution and from the time for using educational resources. The on-line courses could be used in 3 basic models [3].

• **A. Content + Support Model.** This model is the earliest and most extensive category of online course. It relies on the separation between course content (which is probably delivered in print or possibly now as a course package on the Web) and tutorial support (which in its simplest form is delivered by email or alternatively by computer conferencing). The model supports the notion of relatively unchanging content materials which can be tutored by other teachers than the content authors. … Considering the course as a whole, the online component represents no more than about 20% of the students' study time in this model.

• **B. Wrap Around Model.** Courses consist of tailor made materials (study guide, activities and discussion) wrapped around existing materials (textbooks, CD-ROM resources or tutorials). This model Mason categorized as the 50/50 model because the online interactions and discussions occupy about half of the students' time, while the predetermined content occupies the other half. This model tends to favor a resource-based approach to learning, giving more freedom and responsibility to the students to interpret the course for themselves. The tutor's or teacher's role is also more extensive than that in the first model, because less of the course is pre-determined and more is created each time the course is delivered, through the discussions and activities.

• **C. Integrated Model.** The third model is at the opposite end of the spectrum from the first. The course consists of collaborative activities, learning resources and joint assignments. The heart of the course takes place online through discussion, accessing and processing information and carrying out tasks. The course contents are fluid and dynamic as they are largely determined by the individual and group activity. In a sense, the integrated model dissolves the distinction between content and support, and is dependent on the creation of a learning community.”
Never less than used model the on-line course as whole could be designed from one or more of the next components:

- Tools for delivering of learning information and knowledge data base creating:
  - On-line learning materials, on-line printed materials, instructions for using of the materials, assessment criteria, obtained qualification after the course etc.
  - FAQs;
  - Answer Webs;
- Tools for communication between the learners, teachers and supported staff:
  - Asynchronous tools - e-mail, discussion forums, list servers etc.;
  - Synchronous tools - IRC, ICQ.
- Tools for management of the courses.

In the world a lot of virtual environments for development and support of on-line courses are known - Top Class (http://www.wbtsystems.com/), Virtual-U (http://virtual-u.cs.sfu.ca/), Manila etc. Also For development of on-line courses could be used authoring tools such as MS Front Page, Macromedia Flash, Dreamweaver etc.

Unfortunately these tools in some cases are not suitable for Bulgarian lecturers due to

- Higher prices;
- English interface;
- Troubleshoots in generating of web- pages with cyrillic fonts. But more and more teacher have an interest to the possibility themselves to develop on-line courses without needs to be programmers. Therefore in most Bulgarian universities now are developed e-learning environments with interface in Bulgarian and relevant to the needs of Bulgarian universities.

In the department of Informatics at the South-West University of Blagoevgrad since 1998 we have been work on the problems related to the computer based learning and online education. The follow modules for supporting didactical activities in on-line education are developed: module for creating and delivering of learning courses, module for knowledge assessment and analysis of the assessment results [1, 2, 6], module for asynchronized communication- discussion forum and module for reservation of concurrent educational resources. The module supports queries for reservation of the appointments for consultation with tutors and for reservation of working time in the computer labs at the University Center for Open and Distance Learning. [4,5].

The important component in one system for support of on-line education is development and delivering of learning course. Therefore the model of such module is in the focus of the present paper. The system architecture and functionality of the module are considered.

**SYSTEM’S ARCHITECTURE**

The module is realized by Microsoft-based technologies: MS SQL 2000, IIS5, ADO, ASP. The system’s architecture is presented on the Figure 1. The system is used by 3 type of Users- Administrator, Teacher and Student. The each kind of users haves an authorized access to the services of the system.

The basic components relevant to the learning content in database are paragraph and multimedia objects- images, animation, audio and video. From the elements in data base the teacher could design courses with diversity didactical structure. This approach provides flexible and adaptively learning resources.
FUNCTIONAL MODEL OF THE INTEGRATED MODULE FOR DEVELOPMENT OF ON-LINE COURSES

1. Entrance in the system
In the starting of the system the file login.asp is activated. On the Figure 2 the login in to the system is visualized. The user should authorize themselves by username and password.

2. Users
2.1. Administrator
The Administrator is user in the first level. He has an access to follow services:
- Manager of the user’s profiles, including generating of new user’s profile- Teacher or Student, editing and deleting of existing profile. Presented on the Figure 3.
- Manager of generated courses.
- Link to the administrative functions of the assessment module.
- Exit of the system.
2.2. Teacher

The teacher is a user from the 2nd level. The teacher’s services are follow:

- Generate of new course;
- Browse and visualization of the all generated courses;
- Link to the teacher’s functions of the assessment module;
- Exit;

The link “Generate of new course” allows the teacher to go through set of steps: description of the course in frame of the curriculum (Figure 4.). The teacher inputs data for name of the course, number of lectures and exercises, curriculum. After filling of these data the teacher have a choice to continue with generating of learning content or to describe another course. In case of generating of learning content the teacher could enter the name of a topic and step by step to enter the separated paragraphs or multimedia objects. (Figure 5). The process of course generating could be canceled in each time and after that to be continued in convenient time for the user.

The link “All Courses” (Figure 6) shows to the teacher all courses generated by him/her and their state in the moment- activated for browsing or selected for deleting. This service provides also the possibilities for viewing and editing of the selected course. (Figure 7)
2.3. Student

The student is a user on the 3rd user’s level. He/she could only read a course relevant to the user’s profile. The main services are:

- Reading of course;
- Access to the student’s services of the assessment system;
- Exit.

The link “Courses” follows to the list of the courses available for the student. From this list the student could choose the course for viewing. (Figure 8).

CONCLUSIONS

The on-line education reflects to the improvement of the quality of higher education in Bulgaria. Usually the teachers say, “I would like to present my course on-line, but I can not program and can not work with authoring tools.” To be most popular and available the tools for development of on-line courses should have user’s friendly interface, with no need of knowledge for programming language environments or tool for development of web applications.

With the proposed model of on-line system for development and delivering of learning courses we try to help the teachers to develop and organize themselves the online courses. This system is in the process of development. In the future the functionality of the system will be improved.
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ABOUT THE AUTHORS
Georgi Tuparov, South- West University of Blagoevgrad, dep. of Informatics, Bulgaria
tel.: 073 33032, ? -mail: georgett@aix.swu.bg
Daniela Tuparova, PhD, South- West University of Blagoevgrad, dep. of Informatics, Bulgaria, tel.: 073 33032, ? -mail: ddureva@aix.swu.bg
Radoslav Bratanov, High School for Foreigner Languages “ St. Clement Ochridski”,
Blagoevgrad, Bulgaria, tel.: 073 34147
Michail Dimitrov, Hard and Soft Ltd. Blagoevgrad, Bulgaria