Web-based Information System for e-Learning

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Abstract: E-Learning, referring to learning via the Internet provides people with a flexible and personalized way to learn. This article begins with a general introduction into the field of e-learning and e-learning environments. The main part of this article examines, analyses and evaluates Dokeos open source system for e-learning. What follows is a brief description how and where is integrated this system. The final part of the article gives an overview of few alternative systems for e-learning similar to Dokeos system and gives some suggestions for the future.
Key words: E-Learning, Information system and technologies, LMS, LCMS, CMS, VLE.

INTRODUCTION

The popularity of distance learning is explained by the fact that there are a number of indisputable advantages compared with traditional. Distance learning (LMS - Learning management system) is a promising type of training relevant to the dynamics of social and personal needs, one of the most modern educational tools that influence complex on the active personality and enhances cognitive activity of students. It is built on principles such as interactivity, self and through self-testing systems, flexibility and pre-negotiated, economic efficiency, openness and dialogue in the planning of training, freedom of choice of time and place, pace and technology training, operational interaction with teachers, consultants, associates and partnership in all respects, the opportunity for lifelong learning.

SELECTION OF LCMS

During the selection of LCMS were considered all the results of the investigation phase: established characteristics and needs of students and teachers. We were looking for a LMS (Learning Management System) or LCMS (Learning Content Management System) that support synchronous and asynchronous technologies.

Minimal feature set of an LCMS should include [1]:

- Authoring tool –enables teachers to create content and assessments.
- Assessment services – enables students to do assessments and view scores.
- Learner tracking tool – enables teacher to monitor the progress of their students.
- Learner record tool – enables recording data about learners and enables students to introduce themselves in virtual school community.
- Course catalogue and registration tool.
- Asynchronous communication functions - email, discussion forum and announcements.
- Synchronous communication functions - chatting or video conferencing system.
- E-learning environment administration management tool – provides administration of all users, courses and classes.
- Courses administration tool – create, modify, back-up and restore courses and to monitor usage of course.
- Tool for administration - create users and classes, this tool should support at least 3 roles: learners, teachers and administration.
- Supporting e-learning standard SCORM. The e-content should be independent of e-learning environment. If an organization decides to change the platform all old contents must be available without special

changes or upgrading. The Shareable Content Object Reference Model (SCORM) is an XML-based framework used to define and access information about learning objects so they can be easily shared among different learning management systems (LMSs). SCORM is a specification of the Advanced Distributed Learning. It was designed to facilitate moving course content and related information (such as student records) from one platform to another, to make course content into modular objects that can be reused in other courses, and to enable any LMS to search others for usable course content.

After functional analysis of the few LMS, CMS and LCMS, the decision was made to use the open source freeware LMS Dokeos. The main reasons were: Dokeos is free of charge, appropriateness regarding operating system – Dokeos runs on different operating systems (including Linux), set of features – Dokeos is capable to meet all functional requirements, content delivery according to e-learning standards such as SCORM and IMS, feasibility to develop and deploy one's own e-educational components, Dokeos is continuously evolving.

DOKEOS SYSTEM FOR E-LEARNING

Dokeos is a web-based open source e-learning system. The code of the system is accessible to all and can be modified or adapted for specific requirements by anyone. This system also offers a wide range of e-learning tools and provides abundant scope for creating and organizing interactive multimedia-rich training content and assessment (tests) in an engaging manner. [2]

Dokeos offers an efficient user friendly e-learning environment with online content and assessment creation tools, collaboration tools, as well as sophisticated tracking and reporting tools for monitoring user activity and progress. [2]

Training in this platform is organized around a basic unit called training. In each course the teacher is able to organize students in groups. The platform provides conditions for self-sufficiency of each group through the virtual space accessible only to members of the group. [3]

Each group has a place for sharing different files or links to websites, with a forum that allows active asynchronous communication, with the wiki, which allows group editing of a text, with the chat for synchronous communication. The interface is simple and accessible, and work with these tools is intuitive and requires no special computer skills.

Teacher is able to put a special task to group to organize synchronous and asynchronous communication through the forum and chat. Students have the opportunity to leave the documents and work with documents left by other students, to give opinions on the documents and to obtain the opinion of their colleagues.

Through the system for testing the knowledge, the teacher is able to monitor the daily preparation of students.

Additional modules, which include the system, are: the curriculum, the ability to publish announcements from the teacher, questionnaires for students, sends private messages between students, RSS reader.

Figure 1 is presented the main page of the system, which is used for training students in five disciplines at the Department of Management at University of Economics - Varna. [4]
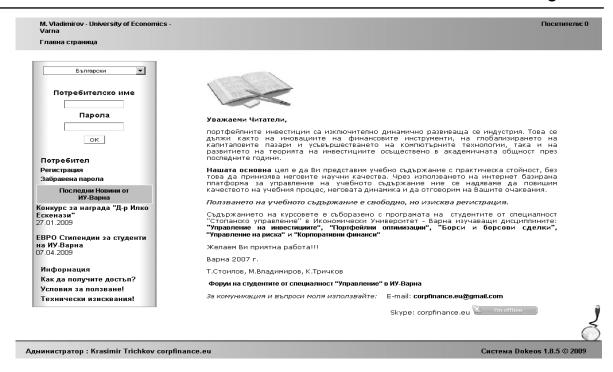
Fig.1 Main page of the system

The system is available in 34 languages. It allows the publication of materials with different formats and the integration of an additional virus scanner module, based on ClamAV.

Figure 2 is presented the administrative module of the system. It enables management of both, the system of training and introduced courses and users. [4]
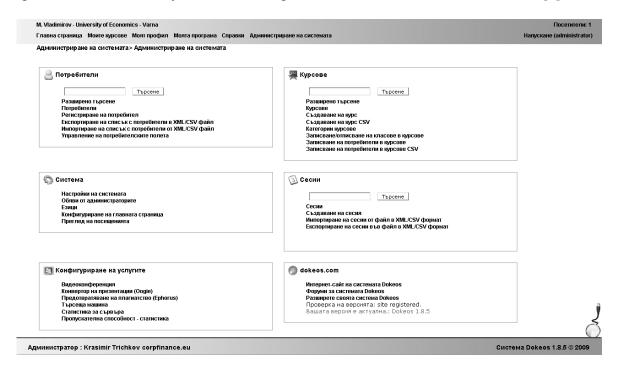

Fig.2 Administrative module

Additionally there is the possibility of a video conference. Figure 3 presents a video connection from one to many, and in Figure 4, the type many to many. This allows visual contact between teacher and students and among all participants simultaneously. [4]
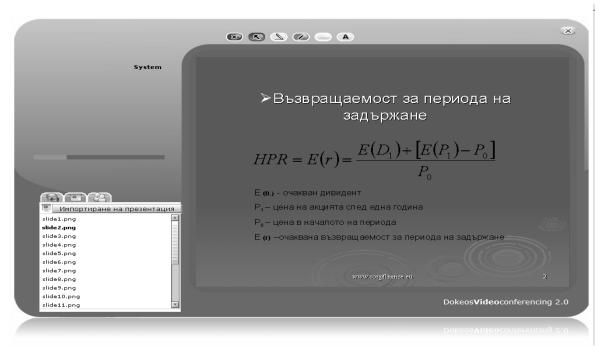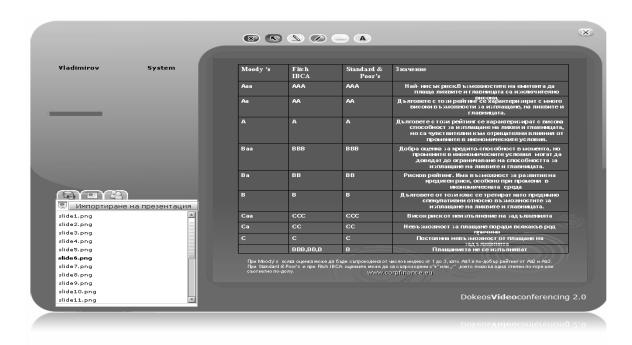
Fig.3 Video connections from one to many

Fig.4 Video connections from many to many

The system supports additional converter presentations, prevention of piracy, search engine, statistics for server, and statistics for bandwidth capacity.

Functional module for authorization allows the teacher to permit and prohibit access to the system.

Advantage of Dokeos system is light and clean interface for operation and administration.

Basic system requirements needed for optimal use of the system include:

- Apache web server - no requirements to versions.
- PHP - the lowest version with which the system can function, but with certain restrictions is 4.3.0. To use the full package of options is necessary version 5.2.0.

- MySQL - no requirements to version.
- For the video connection and conversion of presentations are required Open Office, Java RTE 1.5, RED5 Open source flash server.

The system is implemented and used by students of the University of Economics - Varna and is available at http://corpfinance.eu. In addition is integrated alternative forum to the students of Department of Management and application reporting statistics.

ALTERNATIVE SYSTEMS FOR E-LEARNING

This section of the paper gives an overview of two alternative systems for e-learning similar to Dokeos.

CLAROLINE: Training in this platform offers similar opportunities for the organization of group work like in the education system Dokeos. Education in this platform is also organized around a basic unit called training.

System imported SCORM compliant learning objects created by other means. Used teaching materials in .pdf, .txt, .doc, different image formats, html and multimedia materials created with Flash and Power point, interactive simulations. [5]

The system offers services such as chat, discussion forums, wiki, tools for group or individual work project, announcements.

Through the module for testing the students' knowledge, the teacher creates self-tests, like such may include images. The system automatically evaluates the tests. There is an option for ordering the questions in a random manner.

The system maintains a calendar to assist students and training schedule.

Basic system requirements to enable effective work with the platform are:

- Apache web server version 1.3 or 2.0, and Microsoft IIS.
- PHP - version higher than 4.1.
- MySQL - version higher than 3.23.6.

The system is available in 36 languages. Compared with Dokeos, this system was developed at a lower level, with fewer opportunities for students and not enough clean interface to work and administration.

MOODLE: In addition to the forum and all the other spaces for group work that provide Dokeos and Claroline, Moodle has a wide range of activities such as various types of interactive tests, job, working studio, dictionary, wiki, activities about which the teacher can organize the group work with opportunities for various interactions between group members and making a product with the active participation of all trainees, at all stages of its development. This platform allows the teacher to put "online", not only static content and many resources. It allows such an organization in which the trainees themselves can participate in creating these materials. [6]

In Moodle each of the participants in the learning process is able to monitor the activities carried out by other participants in a group or individually. Moreover, the trainee can observe the reactions of their colleagues to understand the way they have achieved a result and thus to draw conclusions about the process of learning.

Also, Moodle allows the delegation of certain rights for students, or some of them, that generally belong to the teachers. Thus, students may be more active as moderators of certain forums or creators of questions to be included in the interactive tests. Putting in place to its teachers, student better start to give account of the learning process, thus helping their own learning, support the work of the teacher directly or indirectly support the training of their colleagues.

Basic system requirements to enable effective work with the platform are:

- Apache web server - no requirements to version, Microsoft IIS.

- PHP - for Moodle version 1.4 is required minimum php 4.1.0 or php 5.1.0. For version 1.6 of the system - php 4.3.0 or php 5.1.0. For version 2.0 there is not support in php4. A minimum requirement is php 5.2.0.
- MySQL - no requirements to version.

The system is available in 78 languages and their variations. As functionality in terms of services and amenities, it outperforms the previous two. In some degree, as disadvantage may be adopted a heavy structure.

CONCLUSIONS AND FUTURE WORK

In the academic and business world the term e-learning is used as a new term for distance learning through internet or web based training.

This paper examines, analyses, evaluates and presents the main features of the integrated information system for e-learning Dokeos. Description of how and where is integrated this system was produced. Considered are the possibilities of alternative systems Claroline and Moodle. Defined are their functional features and software dependencies. Defined are the advantages and disadvantages to them. The system is available in http://corpfinance.eu. As a future work our plans include optimisation, developing and management of this system.

E-Learning will become more and more important and pervasive in our lives.

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