

## **E-LEARNING WITH MOODLE IN THE ENERGETICS AND ELECTRONICS COLLEGE**

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### **1. INTRODUCTION**

E-Learning is the integration of instructional practices and Internet capabilities to direct a learner toward a specified level of proficiency in a specified competency. Web-based training covers a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration.

There are many advantages to online and computer-based learning when compared to traditional face-to-face courses and lectures. There are a few disadvantages as well.

#### **Advantages of computer-based learning**

- ✓ Learning is self-paced and gives students a chance to speed up or slow down as necessary
- ✓ Learning is self-directed, allowing students to choose content and tools appropriate to their differing interests, needs, and skill levels
- ✓ Draws upon hundreds of years of established pedagogical principles
- ✓ Geographical barriers are eliminated, opening up broader education options
- ✓ 24/7 accessibility makes scheduling easy and allows a greater number of people to attend classes
- ✓ Fosters greater student interaction and collaboration
- ✓ Fosters greater student/instructor contact
- ✓ On-line education increases the educational quality – by means of self-dependent knowledge acquirement, using world educational resources. This fact is highly important, because it contributes to the forming of worthy personal values – self-dependence, responsibility, organizing skills, ability to value precisely the own strengths and taking reasonable decisions, which are necessary to a successful professional career.

#### **Disadvantages of computer-based learning**

- ✓ Learners with low motivation or bad study habits may fall behind
- ✓ Without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines
- ✓ Students may feel isolated from the instructor and classmates
- ✓ Instructor may not always be available when students are studying or need help

- ✓ Slow Internet connections or older computers may make accessing course materials frustrating
- ✓ Managing computer files and online learning software can sometimes seem complex for students with beginner-level computer skills
- ✓ Hands-on or lab work is difficult to simulate in a virtual classroom.

Indeed, technology tools make collaboration among students much easier. Since many projects involve collaborative learning, the online environment is far easier (and often more comfortable) to work in since learners don't have to be face-to-face.

There is no universal integrating model for e-learning, appropriate for every university. It is the entire view on the mission, the aims and the specificity of the university that is necessary, so that it could be assess, to the realization of which aims the technologies could cooperate.

The lecturers orientate themselves to creation of adequate learning projects, development of interactive and attractive contents, which could be used many times in different context.

The aim of the current research is to share experience of the choice and introduction of an e-learning system in the Energetic and Electronics College, as well as considering features of the education.

## **2. SPECIFICITY OF EDUCATION IN ENERGETICS AND ELECTRONICS COLLEGE**

It is advisable to use educational model which combines traditional methods and e-learning – blended learning. Blended learning is a term used to describe learning that mixes various event-based activities, including face-to-face classrooms, live e-learning, and self-paced learning.

A character of the university studies in Energetics and Electronics College is the practical training. All curriculums are organized to have close relation between theory and practice. The goal is training for high level engineers to combine:

- Lecture focused on problems;
- Exercises with usage of interactive computer training
- Practice in training laboratory
- Design and performance of individual and group projects
- Flex and attractive e-learning methods– WEB-based instructions, access to storages with E-contents, interactive and non-interactive training with tutor, access to expensive virtual laboratory for design, simulation and measurement. The last is very essential. Many students are training and working in parallel.

## **3. CHOICE OF E-LEARNING SOFTWARE**

More than 131 different products exist on the software market currently. What the meaning of e-learning is: hosted on server software which manage all training process. That system allows many users create storage, use many times, manage and reach training matter from one main depot. The product provides the students with

the content according to their needs. At the same time it allows to control the evaluation of the performance. It helps to the administrator of the course to update the learning matter in Internet, to the lecturer - to accompany pedagogically his students and to the students – to use educational resources, tests and connection with the lecturer any time from a distance.

If a system for educational management needs to be adopt for engineer e-learning, she should meet the following basic requirements.

- ✓ Functional - to afford the opportunity for publishing, updating and rectification of educational units – annotation of the subject, curriculum, literature, lectures, tests, exercises or problems, methodic guidance for them, schedule of the lectures, conspectus for the examination, announcement for consultations, tests, information about the teaching team;
- ✓ To be created with software instruments free of charge - GNU General Public License;
- ✓ To be suitable for the most popular operation systems and Web Browsers
- ✓ To give the opportunity for synchronous and asynchronous communication between the users
- ✓ To possess a built-in search machine for educational resources
- ✓ To have a user interface in some languages
- ✓ To be prevented from unauthorized access and server hardware failure
- ✓ To be accessible for students with specific needs
- ✓ To include means of keeping statistics of the course, the results of the student's tests, rate of mastering the lecture subject, done exercises, student portfolio and so on;
- ✓ Not only to be suitable for another analogous systems and to let import and export of educational stuff, but also to be integratable for Web courses, made by other instruments

There are many introduced platforms for e-learning in the practice that suit these standards. There have been presented some of the most popular in table 1.

Table 1

	<b>ATutor [3]</b>	<b>Claroline [5]</b>	<b>LAMS[6]</b>	<b>Moodle [4]</b>	<b>Sakai [7]</b>
Licence	GNU/GPL	GNU/GPL	Open Source	GNU	GNU
SCORM/IMS	yes	yes	no	Doesn't create by itself, but it uses ready; IMS - yes	yes
Language interface	Over 30 languages	Over 32 languages	Over 19 languages	Over 54 languages	Over 10 languages
Bulgarian language	yes	yes	partially	yes	yes
Application language	PHP, JAVA	PHP, JAVA		JAVA	JAVA

Structure	Main body + modules	monolithic	monolithic	Main body + modules	Main body + modules
Used technologies	Apache (Microsoft IIS], MySQL, PHP	Apache, MySQL, PHP	Apache, JBOSS, Tomcat, MySQL	Apache, MySQL, PHP	MySQL, Oracle
Platform	Windows, Linux, Unix, MacOS	Windows, Linux, Unix	Windows, MacOS	Windows, Linux, Unix, MacOS	Windows, Linux, Unix, MacOS
Tools for developing the educational resources	Built in	Built in	Built in	Built in	Built in
System for progress check	Tests	Tests	Tests	Tests	Tests
Analyze of activities	Poorly developed	Medially developed	Poorly developed	Well developed, it is developing constantly	Developed, it is developing constantly

Based on the system's feature and possibilities, given in table 1, according to the specificity of the education in the College and the available resources, a choice of LMS is been made – platform Moodle.

### **MOODLE** [4] - Modular Object-Oriented Dynamic Learning Environment

Moodle is a constantly developing project, based on the theory of socially constructional pedagogic. It is been built on the principles of constructivism, constructionism, social constructivism and logically and self-dependent learner [9] , [9]. The whole idea is to create knowledge for the other participants through learner's activity, while working in a team. Every participant could be a both lecturer and learner. The lecturer stops being just a "source of information", but becomes a "moderator". He communicates with every learner in personal; they work together considering learner's individual needs. Meanwhile the "moderator" guides group discussions and activity toward the general aims of the course.

Features of Moodle:

- ✓ Creating of courses through activities – forums, tests, dictionaries, resources, chat, seminar;
- ✓ Tool, through which the lecturer could see information about the learner's results
- ✓ Patterns – the lecturer could use pattern models for creating discussions, hyperlinks, content, resources through WYSIWYG corrector

Moodle fits completely in all the criteria. The system has been chosen, because it provides structure and set of tools, that give not only information, but also draw the learner into performing the activities. The students are actively bound up with the activity contents and working group.

#### 4. FIRST INTRODUCTION OF THE SYSTEM

The first application is at the subject “Materials and components about the electronics”. In relation to the introduction of the e-course the educational stuff is structured in separate topics. There have been developed practical exercises, methodic guidance for their solution and progress test.

Initial system options begin with the installation. Parts of them are: setting the server, where the platform should be installed, data base and user account for access. Moodle needs a data directory of the server disk space, where the document and resource files should be uploaded. The creation of an administrator account is very essential.

#### User's accounts:

In fig.1 it has been shown how a main page for administrating of user accounts looks like. The system gives the opportunity for outer (with a preliminarily given code for enrolment) and inner (manually by the administrator) enrolment for an e-course.

fig.1

#### Creating of a new course

There are some types of courses in Moodle: social, weekly and topical. In the fig.2 it's been shown the window for description of a new account. Construction of the course activities is interactive.

fig.2

### Addition of resources

Adding resources forms one half of the course construction. Moodle has a variety of types of resources – fig.3.

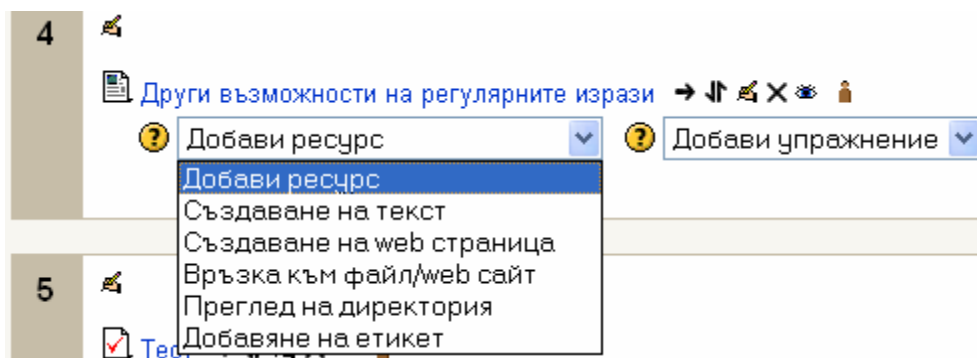


fig.3

### Addition of educational activities

Educational activity modules are numerous and various, as others are consistently adding (from [www.moodle.org](http://www.moodle.org)).

In the part “Administration”, “Reports” it could be get various statistics about the participation of the user in the system. This is quite important for the lecturer.

## 5. CONCLUSION

In this article it has been examined the question about the introduction of the e-learning system in the Energetic and Electronics College.

The shown system has the main functions in relation to the methodic service by the e-learning of students. On the one hand the student receives access to educational stuff on the learned subjects and it's possible to value his progress any time he wants. On the other hand the record of the test results in a distant data base lets the lecturer find out the rate of mastering the matter. This decision could be used as a prototype of a system, which could be developed in time. Development in the system could be made in including new courses and enriching the existent, as well as expanding the available information for the learning in Internet, increasing in the security level of the system and so on.

## 6. REFERENCES

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