



SOME ASPECTS OF ORGANIZATION OF E-LEARNING COURSES

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Abstract

It is very important for modern universities to combine of electronic and distance learning with the traditional methods of teaching. Effective electronic teaching relies on well organized learning courses. From this point of view, the innovative possibility implemented in CMS Moodle, i.e. connecting of learning activities in the electronic course with certain conditions of completion is very promising. Issues of using of this innovation of CMS Moodle in electronic learning courses are discussed in this article. Implementation of this innovation gives possibility to enhance quality of adapting of electronic courses for each student, practically without involvement from teacher's side. On the basis of the model which is built by using new functional possibility was developed E-learning course "Fundamentals of Operating Systems".

Key Words: E-learning course model, learning activities, activity completion condition, restrict access.

INTRODUCTION

E-learning course is a structured material in relation to some theme. It is designed for accomplishing some predefined teaching tasks. A lot of universities across the world are successfully using course management system CMS Moodle (Zhvania, 2012) for organizing of electronic courses and other teaching activities in the web space.

In qualitative electronic courses it is necessary to take into account requirements of the university teaching process management as well as technical and functional demands from CMS Moodle. Qualitative teaching courses must meet the following requirements:

- **Access** - easy navigation in teaching components and their use from any remote point;
- **Adaptiveness** - adaptation of learning courses (weekly, thematic, social format) with university teaching process and student's individual demands;
- **Effectiveness** - placing different teaching materials in the uniform system, recourse access simplicity and diversity, placing of teaching materials on high performance servers in order to reduce delivery time and expenses;

- **Duration of use** - e-learning course content is based on the newest information about the sphere. Generally, the information is given in different formats. In e-learning course should be possible to place teaching recourses of different formats without creation and use of additional and expensive program modules. At the same time, in case of content modification, correspondence to new technologies must be provided in easy way.
- **Independence from a platform** - the use of teaching material should not depend on the platform it was created on or the one the material is accessed from. A Student should be able to access an e-learning course or its learning resources from any operating system (Windows, Linux, Android, iOS, Unix, etc.) and computer hardware (PC, tablet, Smartphone, etc.)
- **Multiple use** - the teaching material should be usable in different environments (software) and contexts.

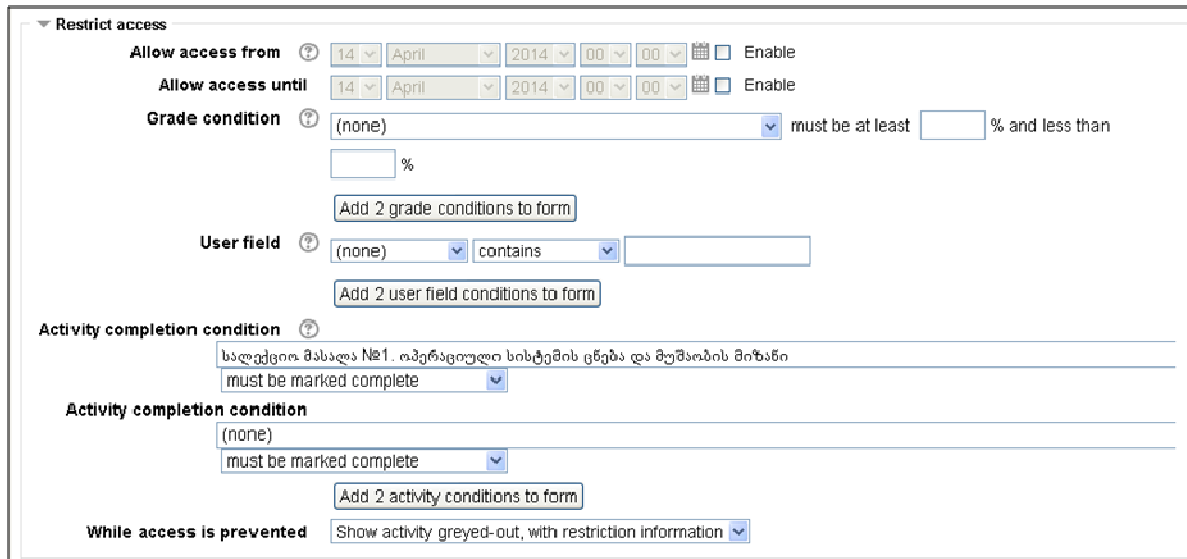
ELEMENTS OF COMMON MODEL OF E-LEARNING COURSE

In case of e-learning which as usually is carried out in a distance form, traditional methodological and technological structure has different form. In the e-learning course theme/module is the main organizational and informational component. Each theme/module of the e-learning course's conceptual model, constructed by us, consists of the following elements (activities, recourses):

- **Lecture materials** - different (text, graphic, multimedia) resources can be used as a lecture material. These resources can be connected to each other consistently, hierarchically and in other nonlinear form. CMS Moodle allows an easy creation of hyperlinks to web sites, presentations, video lectures, different materials and content;
- **Laboratory/practical works** - teaching recourses (text, screencast and other multimedia material) necessary for execution of appropriate practical work of theme of lecture;
- **Assignments** - gives possibility to course creator to give students home works (laboratory, course work, etc.) of different types and set time period for making them. The instructor assesses the assignment, it should be entered manually in the CMS Moodle evaluation section.
- **Pretest** - gives possibility to define knowledge level of student at the moment of pretest carrying out in order to estimate knowledge progress of student in the future.
- **Lecture (theoretical) material knowledge control** - gives possibility to define student's readiness for permission to other activities of current week;
- **Self-checking quiz** - gives possibility to student to estimate/diagnose obtained knowledge and improve it by taking into account quiz results.
- **Tests** - Generally, university learning process management envisages weekly, intermediate and final estimation of the students' knowledge. In electronic courses, academic progress estimation is carried out by means of testing.
- **Glossary, Wiki, chat, forum** - means of interaction among students and lecturers, well organizing of these activities is possible by using of CMS Moodle. It is also possible to stage video conferences and web-seminars and integrate them in the e-learning courses.

In the early versions of CMS Moodle, access mode for specific recourses or activities was defined by course developer according to the identical rules, for example, by indicating the access period, using of passwords, etc. Such rules required permanent involvement of the teacher in learning process.

Beginning from the Moodle 2.4 version, it is possible to link e-learning course activities to some completion condition (Kapanadze, Zhvania & Todua, 2013). For this purpose, in course parameters section is added new possibility - restrict access. In early versions of Moodle, it was allowed limiting access to an activity by its opening/closing date, password, address for permission in the network and by delay between attempts. Panel for addition of new limitations is shown on figure 1.



The screenshot shows the 'Restrict access' panel in Moodle. It includes the following sections:

- Allow access from:** Date and time pickers set to 14 April 2014 00:00, with an 'Enable' checkbox.
- Allow access until:** Date and time pickers set to 14 April 2014 00:00, with an 'Enable' checkbox.
- Grade condition:** A dropdown menu set to '(none)', followed by 'must be at least' and an empty input field, and '% and less than' and another empty input field. Below are buttons for 'Add 2 grade conditions to form'.
- User field:** A dropdown menu set to '(none)', followed by 'contains' and an empty input field. Below is a button for 'Add 2 user field conditions to form'.
- Activity completion condition:** A text area containing Georgian text: 'სადღვეცილ მასალა №1. ამერაფილი ხისტივის ცნება და მუშაობის მიზანი'. Below is a dropdown menu set to 'must be marked complete' and a button for 'Add 2 activity conditions to form'.
- While access is prevented:** A dropdown menu set to 'Show activity greyed-out, with restriction information'.

Figure 1: Panel for Addition of New Limitations

Access to the activities of the learning course can be obtained by the following parameters:

Access from/to - Access from/to dates determine when students can access the activity via a link on the course page. The difference between access from/to dates and availability settings for the activity is that outside the set dates, access from/to prevents access completely, while availability allows students to view the activity description;

Grade condition - This setting determines any grade conditions which must be met in order to access the activity. Multiple grade conditions may be set if desired. If so, the activity will only allow access when ALL grade conditions are met.

User field - You can restrict access based on any field from the users profile.

Activity completion condition - This setting determines any activity completion conditions which must be met in order to access the activity. Note that completion tracking must first be set before an activity completion condition can be set. Multiple activity completion conditions may be set if desired. If so, access to the activity will only be permitted when ALL activity completion conditions are met.

Using new possibilities of restricted access to the activity, CMS Moodle learning course does not contain separate, independent components; its elements are interconnected and the learning course is adapted with the activity results of each student.

Connecting activities by some completion condition in electronic courses minimizes course author's involvement necessity in teaching process. For this it is necessary that course developer developed such model of the course in which course activities and interrelation algorithm will be defined in advance.

MODEL OF E-LEARNING COURSE "FUNDAMENTALS OF OPERATING SYSTEMS"

"Fundamentals of Operating Systems" e-learning course was developed by means of the above described elements and new possibilities of Moodle. According to the subject syllabus, the course content is divided into 21 weeks, 15 weeks out of which are assigned for learning, 2 weeks are assigned for intermediate tests, and the remaining weeks - for final and additional exams. Estimation of Student's learning activities is carried out in each learning week. In our learning course model, student activity during each week is estimated by 2 points. You can see the content of "Fundamentals of Operating Systems" e-learning course and the planned different activities at the address: <http://testing.gtu.ge/course/view.php?id=73>.

Conceptual model of E-learning course “Fundamentals of Operating Systems” for each learning week is shown on the figure 2:

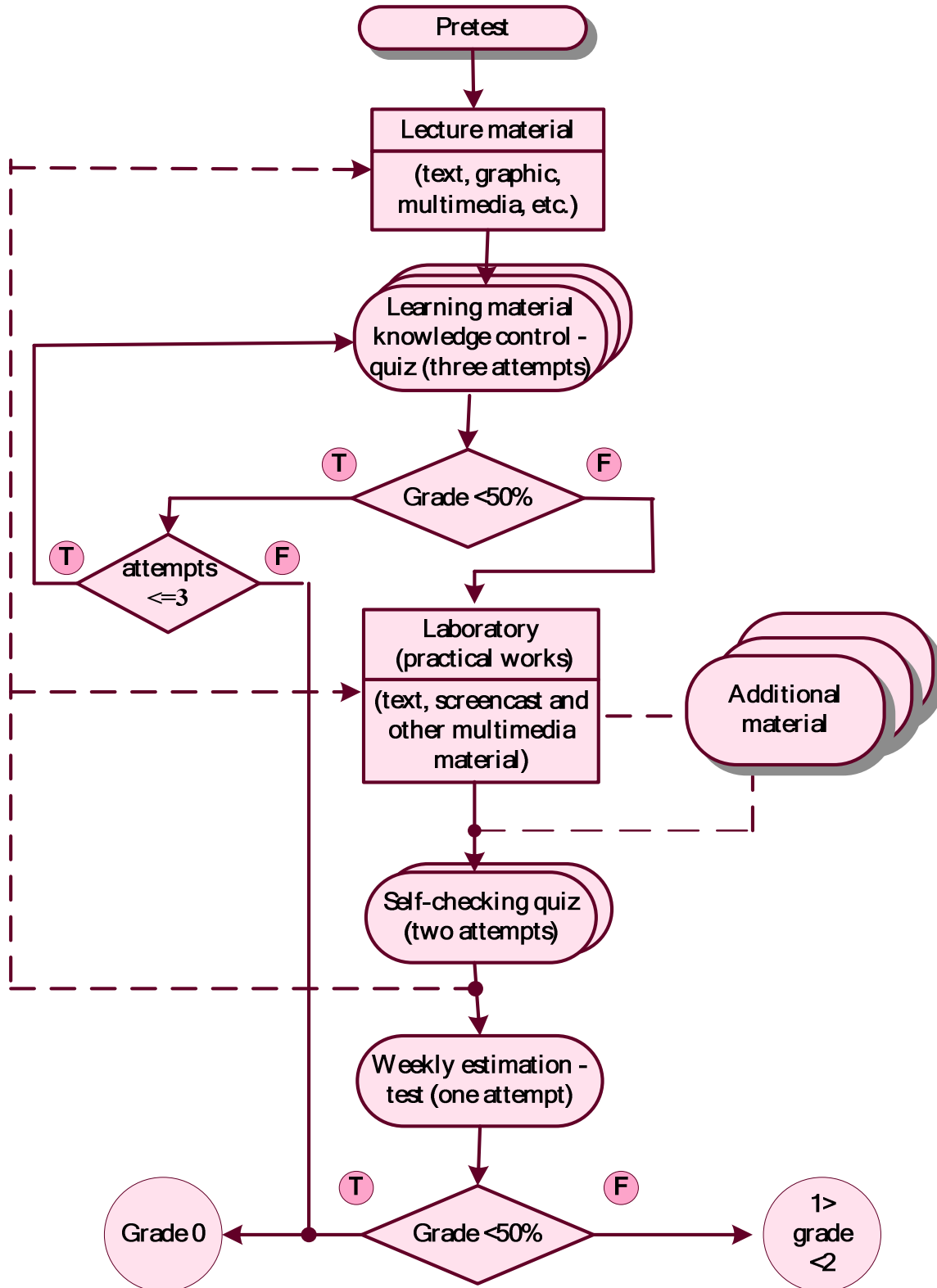


Figure 2: Conceptual model of e-learning course “Fundamentals of Operating Systems” for each learning week



As you can see in the model, first of all, a student takes the pretest to check the initial level of knowledge. The pretest is obligatory for the assesment of progress. Transition to the next activity (lecture material) of the learning course does not depend on the pretest grade. The student's level of knowledge is checked after familiarization and learning the lecture materials. The knowledge is assessed by means of a quiz. If a student's grade is more than 50% of the maximum appraisal, the student gains permission to the next learning activities, particularly to the laboratory (practical) works. In case of desire student can read the additional material. Student has three attempts for passing this quiz. In case of the negative result the student can not accomplish the current week activities and the week appraisal will be zero.

On the grounds of the specifics of a learning course, files (screencasting) of laboratory (practical) works are created in CamStudio. Additional material makes it possible for the students to improve their knowledge of the lecture and practical issues.

In the developed model, a test or an assignment is used for estimation of the student in a given week. Before the test, student will have to check his/her knowledge by using the self-checking quiz. It should be noted that this quiz envisages feedback. After completion of the quiz, student can see mistakes (if any), the right answers and proceeding from the results of quiz, the professor's recommendations prepared in advance. The student can make two attempts at the self-checking quiz. In order that the student could take the weekly estimation test or receive/perform the assignment, he/she has to pass the self-checking quiz at least once. It should be also noted that permission to the weekly estimation test does not depend on the result of the self-checking quiz. If student's grade in test (assignment) is less than 50% of maximum estimation, it means that student could not overcome the minimal competence limit and his/her estimation in current week will be equal to zero. According to the course syllabus, there are considered two midterm estimations and final exam, in case of necessity - additional exam. In the e-learning course we developed, each component is estimated by electronic testing. It should be noted that this type of e-courses have two purposes: On the one hand, such e-courses are not targeted to replace existing lectures, practical works and laboratories, they are peculiar filling for them. E-courses help students to master the lecture materials. Also, they consist of such themes that the lecturer failed to discuss during lectures and laboratory works because of the lack of time. On the other hand, students that cannot attend the university classes are given an opportunity to learn at any time from any place of the world. They can learn lecture materials, perform necessary activities and receive weekly estimations. The student takes the midterm and final exams in the university examination center which is equipped by special technical means (cameras, computers, etc.). Access to the midterm and final exam tests is possible only from the computers' IP address of the center.

E-learning course organized by the above-mentioned innovative means, makes more effective teaching process. Such course does not contain separate, independent components, its elements are interconnected and it is adapted to the activity results of each student, which minimizes the course teacher's involvement in the instruction and makes it more effective.

WJEIS's Note: This article was presented at 5th International Conference on New Trends in Education and Their Implications - ICONTE, 24-26 April, 2014, Antalya-Turkey and was selected for publication for Volume 4 Number 2 of WJEIS 2014 by WJEIS Scientific Committee.

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