

## About development of the information and didactic system used in educational process

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**Abstract.** In this work the technology and the software of development of information and didactic system is considered. The main part of information and didactic system it is realized by means of Moodle system. Moodle - a control system of courses (electronic training), also known as the learning management system or the virtual training environment, represents free (extending according to the license GNU GPL) the web application giving opportunity to create sites for online training.

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### Introduction

Moodle - a control system of courses (electronic training), also known as the learning management system or the virtual training environment, represents free (extending according to the license GNU GPL) the web application giving opportunity to create sites for online training.

Moodle – Open Source developed by the principles, i.e. is free. Moodle has rich functionality, comparable with leading commercial systems, an in something even their advancing. It is possible thanks to wide community of users and developers from all world, supporting this product. Many developers are teachers or taught in the past thanks to what this product is distinguished by convenience and the simplicity of use which is combining with a wide range of supported methodical receptions and forms of educational interaction [1].

Moodle is written for PHP with SQL-database use of data (MySQL, PostgreSQL, Microsoft SQL Server, etc., is used by ADOdb XML). Moodle can work with objects of SCO and answers the SCORM standard [2].

Thanks to the developed modular architecture, possibility of Moodle can easily extend third-party developers. Besides language support and templates of registration, Moodle allows to connect so following types of modules:

- course elements;
- reports of the administrator;
- types of tasks;
- authentication plug-ins;
- blocks;
- formats of courses;
- reports on courses;
- fields of base of data (for an element of the course "Base of Data");
- plug-ins of a subscription to courses;
- filters;
- reports on estimates;

- formats of export of estimates;
- formats of import of estimates;
- portfolio;
- types of questions in tests;
- import formats / экспорт tests;
- reports on tests;
- storages of files;
- types of resources;
- search plug-ins [3].

### Main part

The main features of training part of system treat:

- the system is designed taking into account achievements of modern pedagogics with emphasis on interaction between pupils, discussions;
- it can be used as for remote, so and for resident instruction;
- has the simple and effective web-interface;
- the design has modular structure and is easily modified;
- connected language packages allow to achieve full localization;
- for this moment in our case 2 languages are supported;
- students can edit the registration records, add photos and change numerous personal data and requisites;[4]
- each user can specify the local time, thus all dates in system will be transferred for it to local time (time of messages in forums, terms of performance of tasks, etc.);
- various structures of courses are supported: "calendar", "forum", "subject-tichesky";
- each course can be in addition protected by means of the code word;
- rich set of modules-consist for courses - the Chat, Poll, the Forum, Glaus-sary, the Working writing-book, Occupation, the Test, the Questionnaire, Scorm, Survey, Wiki, the Seminar, the

Resource (in the form of text, web sites or in the form of the catalog);

- the changes, occurred it is aware since the last entrance of the user to system, can be displayed on the first page of a course;[5]

- almost all typed texts (resources, messages in a forum, records in a writing-book, etc.) can be edited by built-in WYSIWYG RichText - the editor;

- all estimates (from Forums, Working writing-books, Tests and Tasks) can be collected on one page (or in the form of the file);

- the full report on occurrence of the user in system and work, with schedules and details of work on various modules (the last entrance, number of readings, messages, records in writing-books) is available;

- The E-mail control - mailings of news, forums, estimates and comments of teachers is possible [6];

The main opportunities for teachers:

- Moodle uses pedagogies social construction online courses is suitable for 100%;

- Moodle has the simple, effective, compatible web-interface for different browsers;

- The list of courses contains the description of each course on the server, providing access to this information and the guest;

- Courses break into categories, there is a mechanism of search of courses on a keyword, and Moodle can support a large number of courses;

- The majority of text elements (resources, forums, tasks, etc.) can be edited, using introduced

WYSIWYG HTML the editor;

- The wide range of activities for creation of educational process is offered, including not only standard modules, but also additional;

- for communication and socialization in course community the teacher can use such tools as forums, chats, wiki, system of an exchange of messages, blogs, etc.

The main opportunities for students:

- After registration the user can become the student of any course;

- For communication forums, system of an exchange by messages, etc. tools are offered;

- Any user of Moodle can tell course community about himself, using the blog;

- Access to text materials of a course, tasks, tests and other elements of a course is provided.

Technique of the organization of educational process in system.

The role of pedagogical methods and receptions repeatedly increases in system of remote training as many functions of the teacher are replaced with information technologies.[7]

The educational environment on a basis of information technologies will be how rationally and comfortably organized, and self-development being trained will be so effective. Classical methods of training can be easily realized in the conditions of the remote training organized on use of interactive elements of system. In the provided table it is shown, in what way training methods correspond to a form of their granting in system (table 1).

**Table 1 - Possibilities of training**

Types and training methods	System tools TO Moodle	Form of granting material
Verbal		
Lecture	The text page, Web page, the Link on web page or the file, the Link to the catalog, the Explanation, Occupation	The text in the *.doc format, Web site in the *.html format; Presentation in Microsoft PowerPoint (***.ppt), Audiolektion (mp3), Video lecture ()
Work with the book	The text page, Web page, the Link on web page or the file, the Link to the catalog, the Explanation	The text in the *.doc format, Web page in the *.html format; Presentation in Microsoft PowerPoint (***.ppt), Audiolektion (mp3), Video lecture ()
Discussion	Forum, Chat, Messaging, Poll	Messages in a forum; Chat session, Electronic letters
Conversation	Forum, Chat, Exchange of messages	Messages in a forum; Chat session, Electronic letters
Explanation	Occupation, Forum, Chat, Exchange of messages, Glossary	Pages with an explanation of a subject and questions, Messages in a forum; Chat session, Electronic conferences, Electronic letters, Entry of new terms in glossaries
The evident		
Illustration method	The text page, Web page, the Link on web page or the file, the Link to the catalog, the Explanation	Presentation in Microsoft PowerPoint (***.ppt), Audiolektion (mp3), Video lecture ()
Demonstration method	The text page, Web page, the Link on web page or the file, the Link to the catalog, the Explanation	Presentation in Microsoft PowerPoint (***.ppt), Audiolektion (mp3), Video lecture ()
The practical		

Exercises	The text page, Web page, the Link on web page or the file, the Working writing-book, the Task, Occupation, the Glossary	Interactive exercises with investments and without, the essay, papers, test tasks, polls, questionnaires.
Laboratory works	The text page, Web page the Link on web page or the file, the Working writing-book, the Task, the Test	Virtual laboratory practical works, flash rollers
Practical works	The text page, Web page, the Link on web page or the file, the Working writing-book, the Task, the Test	Interactive tasks with investments, the essay, papers, tests, control works, polls, questionnaires, cooperation on a method of projects, etc.

### Interface description

For an entrance it is necessary to gather the server address where the system is located. For example, on the opened page of a site in the corresponding fields before you the home page of system will open.

By pressing button the entrance in the top right corner opens an authorization window. If you the authorized user that enter login and the password and you come into system [8].

The system has a set of options of creation of registration records, including post identification, a LDAP method, external base of data, etc.

Registration – the method set by default. However registration of new users of system is the most often is carried out only by the administrator.

At registration you as the teacher of courses, the administrator connects your registration record with those special courses which you teach. List of special courses: administration of operating systems, computer graphics, networks and network technologies, web technologies, modelling of processes, a workshop on programming, object-oriented programming, logical programming, bases of the theory of recognition of images, firmware of information systems, information security, programming in Oracle, multimedia of technology and animation in training, the network programming, parallel programming, scientific and practical bases of pedagogical measurements, bases of programming of the robot, etc.[9]

If you have a registration record, it is necessary to press the link "Entrance" in the right top corner, a then in the Window of registration shown in figure 13, you should enter the name (login) and the password and to press the Entrance button.

After it you will get to the course. In that case if you forgot the password, you can use the "Send My Data on E-mail" button.

The system will request your electronic address to cancel the old password and to receive the new password by e-mail.

After authorization the user gets on the main page, from where can pass into any section of system.

### Course elements

By preparation and carrying out occupations

in system the teacher uses a set of elements of a course which enter:

- glossary;
- resource;
- task;
- forum;
- wiki;
- occupation;
- test, etc.

Varying combinations of various elements of a course, the teacher will organize material studying by such image that forms of education corresponded to the purposes and problems of concrete occupations.

The glossary allows to organize work with terms, thus dictionary articles can create not only teachers, but also students. The terms entered in the glossary, are highlighted in all materials of courses and are hyperlinks on the relevant articles of the glossary. The system allows to create as the course glossary, so and the global glossary available to participants of all courses.[10]

The glossary in Moodle system is an electronic analogy of the reference book of special terms, the dictionary. But unlike the "paper" dictionary, the glossary can consistently be created by pupils during the whole period of training. Having learned new concept, the student creates dictionary article, defines and describes this concept, the term. Other users of a course can comment on article, offer the options of definition. The glossary - a convenient way to present to definition which will be connected with all content of a course. For example, if you defined the term "sonnet" and this word appeared in the message at a forum, automatically there will be a link which will give to the user definition of this term [11].

In quality of a resource any material for independent studying, carrying out research, discussion can act: text, illustration, web-page, audio or video file, etc. For creation of web-page the visual editor who allows the teacher who isn't knowing language of a marking of HTML is built in system, with ease to create the web-page including elements of formatting, an illustration, the table.

Performance of a task is a kind of activity of the student which result usually there is a creation

and loading on the server of the file of any format or text creation directly in system (by means of the built-in visual editor).

The teacher can quickly check the files handed over by the student or texts, to comment on them and, if necessary, to suggest to finish in what directions. If the teacher considers it necessary, he can open links to the files which have been handed over by participants of a course, and make these works as a subject of discussion in a forum. Such scheme is very convenient, for example, for creative courses.

If it is authorized the teacher, each student can hand over files repeatedly – by results of their check; it gives opportunity quickly to correct work being trained, to achieve the full solution of an educational task.

All texts created in system, the files loaded by the student on the server, are stored in a portfolio.

The forum is convenient for educational discussion of problems, for carrying out consultations. The forum can be used and for loading by students of files – in such case round these files it is possible to construct educational discussion, to give opportunity being trained to estimate work the friend of the friend [12].

At addition of a new forum the teacher has opportunity to choose his type from several: ordinary forum with discussion of one subject, the general forum available to all or a forum with one line of discussion for each user.

The forum of system supports tree structure. This opportunity is convenient as in a case of branched discussion of problems, so, for example, and at collective creation of texts on the principle "add a fragment" - as it is consecutive, so and to any fragments of the text composed by other students.

Messages from a forum can, at desire of the teacher, automatically be dispatched to pupils by e-mail in 30 minutes after their addition (during this time the message can be edited or removed).[13]

All messages of the student in a forum are stored in a portfolio.

The system supports very useful function of collective editing of texts (a course "Wiki" element).

The element of the course "Occupation" allows to organize step-by-step studying of an educational material. The mass of a material can be broken into didactic units, at the end of each of them to give control questions on material assimilation. The system which has been adjusted by the teacher will take care of that, by results of control, to transfer the pupil to the following level of studying of a material or to return to the previous. This element of a course is convenient also to that he allows to carry out estimation of work of pupils in an automatic

mode: the teacher only sets to system estimation parameters then the system itself brings for each student the general for a lesson an assessment, enters it in the sheet.[14]

The element of the course "Tests" allows the teacher to develop tests with use of questions of various types:

- Questions in the closed form (a multiple choice);
- Yes/No;
- Short answer;
- The numerical;
- Compliance;
- Casual question;
- The enclosed answer, etc.

Questions of tests remain in base of data and can be reused in one or different courses. Ha passing of dough can be given some attempts. It is possible to establish a limit of time for work with dough. The teacher can estimate results of work with dough; it is simple to show the correct answers to dough questions.[15]

## Conclusions

Resources and course tasks

To work with resources rather simply – they need to be mastered in the terms established by the teacher. Having clicked on what - or to a resource, you can open and see it, or you can keep it on the computer for further acquaintance.

Often all resources (lectures, methodical instructions, a syllabus) and tasks (IDZ, control works, tests) are described in the initial (zero) block. They can have different delivery terms, it is possible to determine delivery terms by the maintenance of a syllabus.

Each section of a course can include resources and active elements of a course. All of them are presented in sections in the form of links with icons. The icon indicates type of a resource or a course element. Click on links opens the corresponding element or a resource.

## Task

At a choice of a task there will be a page with the description of the task and options of its performance.

Tasks allow the teacher to put a task which demands from students of preparation of the developed answer. Typical tasks are sketches, projects, messages, etc. After task check the teacher can expose an assessment and write the review of work.

## Types of tasks

In system there are 4 types of tasks:

- Task with the answer in the form of the text: the pupil leaves the answer on a site in the form of the text;

- Task with the answer in the form of the file: in quality of the answer the pupil loads the file of any type on the server;

- Task with the answer in the form of several files: in quality of the answer the pupil loads on the server one or some files of any type;

- Task with the answer out of a site: the pupil receives a task on a site, but has to hand over it out of system, for example, by e-mail or at an internal meeting.

### Estimates

The student can receive the marks which are put down for all active elements of a course or the teacher, or automatically system. For viewIntrong of these estimates the pupil has to click on the link "Assessment" in the block "Management".

### Main maintenance of a course

The zero section usually contains the course description, forums, chats, the general resources concerning all courses as a whole. In it the following elements usually take place:

- News forum: contains subjects which are automatically dispatched to all participants of a course; in a news forum of a subject the teacher of a course can add only;

- General forum: it is intended for discussion of various questions concerning the studied course;

- General chat: it is intended for free communication of all participants of a course in real time.

Each course contains:

- One zero section consisting of the general for all course of elements;

- Quantity of thematic sections;

The section of a course is the fragment of an educational course having the name and consisting of resources and elements of a course. The section of a course contains materials in the majority of cases on one subject.

To the main page of a site in the Main Menu block there are links to forums "News and announcements" and "The general forum".

The forum "News and announcements" serves for mailing to all users of important information messages.

The administrator of system can create subjects in this forum only. All users can look through them.

Each module represents itself a set of the interconnected tables in base of data.

### Auxiliary modules

Calendar – for monitoring of all events connected with this course. The student also has opportunity to appoint own events, in such way organizing the system of reminders or the calendar of events. The Calendar block contains a grid of the current month with the events celebrated on it on which it is necessary to turn attention.

There are four types of events of a calendar:

- The general events – the events leaving for a framework of a course;

- Course events – the events relating directly to a course in which you are at this moment, a: boundary dates of performance of various elements and the events of this course added manually;

- Group events – events of your group for a course in which you are;

- Events of the user – your personal events which you for yourselves added. For event addition you need to pass to the page of a calendar and events (for example, having pressed the link with the name of month), on this page to press the New Event button and further to fill necessary fields.

All types of events on a calendar are displayed by different flowers. Interpretation of flowers is given at once under a calendar grid. In area of interpretation of the name of types of events are links: by pressing them it is possible to switch off/include display of this type of events.

When aiming at the corresponding event the small window in which date of an event and its name in the form of the link is displayed emerges, when pressing on which you will pass to the full description of this event. Events for a certain period (usually 21 days) are displayed also in the Coming Events block.

A user on a site – online at this moment (figure 19) shows all available users.

Online is inserted a window of an exchange by messages in a mode.

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