Modular Learning Environments - The Case of Moodle

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Abstract

E-learning means learning in a virtual world, where the student interacts with the computer in order to facilitate and deepen the knowledge of the subject studied.

The objective of this paper is to demonstrate how important bibliographic and imaginary sources for presenting lessons and preparing topics are by using electronic resources. It also demonstates that any student can access digital resources from anywhere in the country or the world and that each student group can communicate online with other student groups from any location, the teacher being able to track and discuss socio-cultural differences. Therefore, the Internet will improve education and change the current learning style.

Key words: e-learning, modular learning, MOODLE, platform
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1. Introduction

The exponential evolution in the computer field in the last decade has led to the emergence and development of numerous IT tools useful for the didactic process and, implicitly, the development of several e-learning platforms, which have become increasingly familiar to teachers and students. Generic e-learning can be defined as distance learning in an evolving, collaborative learning environment that combines traditional teaching methods with IT-based methods and aims to increase the individual performances of students. Learning through e-learning is based on a modern teaching, in a way other than the classical one, much more attractive and in which an important role is played by the consolidation of knowledge and assessment, carried out in an attractive and adaptable way to the needs of both teachers and students.

2. Theoretical background

In Romania, computer-assisted education is experiencing a rapid pace of development. After the 1990s, the major IT companies worldwide became present on the Romanian market through IT solutions in the field of e-learning. Thus, in 1999 the first Cisco Academy was set up, with the purpose of training in the field of computer networks.

Starting from the concept that the training of the human resources prepared for the new economy represents a long-term investment whose costs will be amortized by the quality and level of competence of the young generation, in 2001, MEN (Ministry of National Education), then called MEC (Ministry Education and Research), started the Computerized Education System - SEI program. This strategy was to be transposed into practice through a set of projects:

- the introduction in the pre-university education of the computer-assisted training system;
- training of ICT human resources in pre-university education;
- development and implementation of educational software that can be used in pre-university education;
- introduction and development of computer-assisted management (SMART program);
- development and use of programs for computerized records of students, teachers and resources used;
- development and use of electronic textbooks in pre-university education;

- introduction of the education system with the help of television on demand (video on demand);
- development of a data center (data center) for Romanian education;
- setting up information kiosks (info-kiosks);
- realization of pilot networks for schools located in disadvantaged areas using the distance education system.

After IBM launched Lotus Learning Space (virtual classroom) in 2002, a year later, it announced the availability of the IBM Lotusphere Learning Management System (LLMS), a collaborative platform with functionalities of distance learning. LLMS offers a complete system for e-learning, very flexible, based on standards in this field, a system that offers a fully customizable and scalable online learning environment and training, according to the beneficiary's needs and particularities.

For the university environment, e-learning is intended to be an excellent tool. Initially, the concept of e-learning replaced the classical methodology of distance learning, the written materials being on CDs. Later, the possibilities of Internet connection facilitated the creation of collaborative environments, virtual classrooms, synchronous and asynchronous training. The next period is undergoing a series of research efforts in the field of electronic education. Notable is the Sintec system, implemented at the Polytechnic University of Bucharest and funded by an INFOSOC project, the Socio-cultural Models project implemented through multiagent architectures for e-learning, the LT4eL project (Language Technologies for eL Learning - Linguistic Technologies for e- Learning), which uses multilingual technologies, language tools and semantic web technologies to improve the possibilities of retrieval of learning materials.

There are numerous e-learning software platforms in the electronic space, of which we mention: WebCT, BlackBoard, Learning Space, IntraLearn, eCollege, Docent, Click2learn. A well-known domestic platform is the AEL platform, developed by SIVECO, compatible with MathML, SCORM, IMS standards.

Worldwide there is a ranking of the first 100 online learning platforms, which is based on the internal statistics provided by these platforms. In this ranking on the 11th place is Moodle, which has been constantly in the last 7 years among the first 15 e-learning platforms in the world. The official Moodle site now has over 1.3 million registered users, from over 200 countries, available in over 70 languages, which proves that Moodle has managed to create one of the most powerful communities worldwide, and the statistics on this site show that there are currently almost 70,000 Moodle sites and more than 7 million courses created in this format.

3. Research methodology

This study proposes a method called *investigation* (in the sense of research, discovery) that can be best used on a Moodle platform as a learning method to teach students to think and act independently, both individually and as a team.

For example, at the beginning of the semester, the teacher establishes the list of topics that the students will approach with the help of the investigation, the period of the investigation, the way of working, presenting and using the results. The investigation can be carried out individually or collectively. Students are asked to solve a theoretical problem or to carry out a practical activity for which they are required to undertake an investigation (documentation, observation of phenomena, experimentation, etc.) within a set time frame.

Investigation has several functions: the accumulation of knowledge, the exercise of students' abilities to investigate the phenomena and to evaluate the capacity of taking such steps.

Using this method intelligently with the help of the Moodle platform the teacher can appreciate:

- The degree to which the students define and understand the investigated problem;
- Their ability to formulate and test hypotheses;
- Their ability to identify and select processes for obtaining information, collecting and organizing data,
- The brevity and validity of the analysis report of the obtained results.

- The way the student presents the methods used in the investigation .

This method of learning brings an important contribution to the development of the application capacities of the students, especially in case of problem solving, of the development of the capacity of argumentation, of the logical thinking, etc. Also correlating with the degree of complexity of the work task and the nature of the study discipline, the investigation becomes an instrument of analysis and assessment of the knowledge, abilities and personality of the students.

Individual learning activity: The teachers will draw up a list of research topics for a class and a discipline they will choose, arguing the choice of topics. For each proposed topic they will specify the way of elaboration by the students (individually or in group), the working time allotted for carrying out the investigation, the requirements for presentation of the final material, evaluation criteria.

4. The Moodle Platform

The Moodle platform is a platform with a free license (4) of the Open Source type (open source, that is, it allows anyone to contribute to the elaboration or improvement), with a course management system (CMS), also known as a learning management system (LMS) or as a virtual learning environment (VLE). The name MOODLE comes from the Modular Object-Oriented Dynamic Learning Environment, which is a modular, object-oriented and dynamic learning environment.

A Moodle platform offers a constructive, interactive and integrated environment, centered on learning and in this context of learning, the advantages that are noticeable from the point of view of the teacher, but also of the student will be highlighted, specifying that it will not be about details how to administer a Moodle platform, as the following focuses on the issues regarding the Moodle platform from the perspective of users, teachers and / or students.

The basic principle in Moodle is social constructivism, which implies collaborative learning, based on individual and group projects and tasks. Thus, learning becomes effective when the teacher constructs a learning material, for his students to interact with and learn this learning material, to understand. In this context, the student is part of a learning community, in which he is placed to understand what he has to do, to explain to others and to do together.

The Moodle platform offers teachers a variety of useful tools in teaching-learning-assessment and the way the courses are defined allows an adaptation to the needs of the educators - students, students or other categories who go through a training process, either initial or continuous. It is important to say that the teachers can take such a course when, where and as they wish, because by its form and structure, a course realized and implemented on a Moodle platform is adapted to their needs, accessible anytime and anywhere, even outside the classroom. , allowing collaboration through modern communication tools such as forum, chat, blog or wiki. Moodle allows the construction of sites that have interactive, attractive and flexible content. Thus, on a Moodle site, that is, on a Moodle e-learning platform, the organization of information is hierarchical: at the base are the courses that make up the subcategories and which in turn form the basic categories, access to courses being very easy. Can you imagine a library, whose shelves are the categories, each shelf containing several subcategories.

The courses have two fundamental parts: the lateral ones that are made up of different blocks with different destinations, very useful in the course and the central part, of a larger dimension in which the activities and resources of the course are included. Courses made on a Moodle platform can be backed up, allowing the insertion / restoration of the course on another platform, or within another category / subcategory on the platform on which it was initially created. For example, a teacher's ESP for math course can be used by another ESP for math teacher, either within the category of the initial course, or within another category, or even on another Moodle platform.

It is obvious that when defining and constructing the site, the needs of the group of trainers to which it is addressed are taken into account, the elaboration of this site being based on the particularities and needs of the group, but also of the individuals that make up this group. Important to mention is the Moodle feature regarding the number of users: Moodle can be used by both a kindergarten and a large university, in other words, the number of users is adaptable to the institutional needs, from a small number of users, to a very large number. The roles that users can

play are different and take into account the different ways of approaching the content and the rights they have, from full rights on the platform, to rights that only allow viewing some content: administrator, manager, creator of course, teacher, teacher without editing rights, student / student / visitor.

All of them log in as authenticated users, a fact which highlights another important aspect: the access of a user is ensured, controlled and secured with a username and password. The ways of communication between users is very important to a Moodle site. Thus, tools such as the forum (of general use, news or question-answer type) and wiki - which allow the elaboration and access of common content represent asynchronous / offline communication tools, but also there is chat as a tool made available to users as synchronous / online communication. Obviously, these allow good communication and collaboration between the teacher and his students, but also between the students. There is also the possibility to exchange messages through internal messaging, but also via email and to notify users about future events.

The development of a course by the teacher takes into account the particularities of the group to which it is addressed and although the teacher is constrained by a curriculum, he can approach the whole content of this curriculum adapted to the needs of the group being trained. The success of acquiring knowledge from a curriculum is ensured by the approach, adapted to the level, needs and particularities of the members of a group, which may be a group of students, a class or why not, several classes targeting a common content. The course is structured on topics, units of learning or lessons so that it respects the curriculum, but the friendly approach offers a special attractiveness and helps the student to cross the barriers of anost and unfriendly content. The emphasis in the courses developed in Moodle is not focused on providing information, but on activities that involve exchanging ideas and building new knowledge based on previous knowledge. The virtual classroom or webinar is another useful tool, in which the teacher can communicate audio and video with the students, in which the work sessions are online, being able to take place outside the classroom, the learning being synchronous and guided by the teacher. It is worth mentioning that there is also the self-training module, which allows the student to complete the asynchronous course, depending on the need and the time available.

5. Teaching and learning activities on Moodle – Hot Potatoes

The activities and resources made available to students in a course are varied and attractive. Thus, in the list of activities there should be mentioned: the database, useful in managing the personal information of students in a group or class, questionnaires with different questions that can be addressed not only to students, but also to parents, for example, but also questionnaires applied in real time, the glossary created in progress as a useful and collaborative tool, games based on information contained in a glossary, lessons with steps imposed by conditions that allow the continuation or return to content to be reviewed, feed-back with regarding activities, topics that can be given to students and which can be solved online, offline or with the upload of files and for which an antiplagiarism system and many others can be used. The ones listed are only a small part of the activities that can be done in Moodle.

Regarding the resources that can be added to a course, it can be said that they are varied: electronic books, pages with attractive content, URLs, image gallery, files of any type - documents, presentations, etc. Moodle editor should also be mentioned, which is similar to the text editors that users are already used to. In addition to formatted text insertion, the editor allows the insertion of symbols, images, media files, links, as well as HTML editing.

Along with those listed above with direct reference to the teaching-learning process, we should mention the particularly important role the assessment has. The diversity of approach to the problem of evaluation is the strongest argument that brings the Moodle platform to the foreground and in this context we can remember: the varied ways of elaborating the tests, the so diversified type of questions made available by Moodle and which can be displayed in random orders in the test and with different initial data for different users, the modalities of combining and structuring the tests, the application modalities, which allow to define the working time - the duration of the test, the student knowing how much time he has until the completion, the date and time when this test can be supported, the issues related to the permission to repeat the test support to improve the

results, as well as the various reports for the users who have taken the test and which are obtained after applying a test, from the analysis on the whole, to the analysis on the items, obtaining different statistics and many more. It should be said that in these tests the correction is automatic, thus eliminating the subjectivism that may affect the grade given. But it is important how the teacher defines the method of awarding points / marks on the items related to the test set.

When one refers to monitoring and control of the activities carried out by the users, there should be remembered all the activity reports that can be obtained and which can be used in a current format, such as those of spreadsheets (* .xls). Thus, log reports, activity reports, course attendance reports and different statistics can be obtained. These reports can be useful to the teacher for monitoring student activity. Also, there are reports generated in the evaluation activities, namely reports of the grades, both for each user (student) or as a whole for all users enrolled in a course and for each of the items that make up the test for which the report is made.

Regarding the software that can be integrated on the Moodle platform, Geogebra and Wiris should be mentioned, useful for teachers who teach mathematics, but also physics or chemistry. You can also mention Hot Potatoes (test creation or crossword games) and Audacity (audio editor), but also others such as Antiplagiarism System, useful in any discipline.

The online test application - Hot Potatoes - a product of Half-Baked Software – can be used when teaching and learning a foreign language. It contains a set of six test editing tools of different types:

- ✓ **Jquiz** - allows the creation of multiple-choice grid tests: multiple choice: multiple choice questions, of which only one is correct; short-answer: short answer questions; many select: multiple choice questions, some of which are correct; hybrid: questions to which the answer must have one of the predefined formats;
- ✓ **Jmatch** - for creating association items (pair type), establishing links between two columns: between keywords (terms) and their description.
- ✓ **JMix** - allows the generation of exercises by ordering the words in a sentence or the letters of a word;
- ✓ **Jcross** - is used to create crossword tests: crosswords or puzzles; the lines of the puzzles should be completed horizontally and vertically;
- ✓ **Jcloze** - is used for creating tests with sentences that lack some words;
- ✓ **The Masher** - allows you to combine tests of different types and pass them in turn.

Hot Potatoes type tests can be saved in various formats: * .zip; * .Htm. The * .htm format allows you to run the test on a computer system and display the result without having to connect to the Internet. The score obtained is viewed for several minutes, until the application closes. The * .zip format is recognized by the Moodle platform and can be implemented on it. The user can pass the test as a visitor or as a student. If the user is registered on the platform and is associated with a group, the test score remains recorded in his electronic book and in the teacher's electronic catalog.

A .zip test file can be uploaded to the Moodle as a resource - IMS content package. In this case, the student can go through the resource with the role of fixing the new knowledge taught in the current lesson; the score will not be recorded in the electronic booklet and this helps the student to go through the resource a sufficient number of times until his knowledge is fixed.

A test.zip file can be uploaded to the Moodle platform as an activity - SCORM / AICC. In this case, the score obtained after completing the test, will be recorded in the electronic book and in the electronic catalog. If the teacher deems it necessary, he can set a limited number for the test and the scoring method: the average test score.

6. Conclusions

The advantages that Moodle offers can only be noticed after the development, implementation and use of courses for any discipline and in which it is recommended to integrate as many activities and resources as possible. The advantages highlighted by the use of Moodle are both from the teacher who offers his students attractive courses, as well as from the students, the latter being delighted by e-learning and all that it entails. Perhaps a disadvantage that should be mentioned is the time that should be devoted to creating and developing the courses, but the fact that a once-developed course can be used whenever this need arises greatly diminishes this disadvantage.

7. References

- http://c4lpt.co.uk/top100tools/
- https://moodle.org/
- https://moodle.org/stats/
- http://docs.moodle.org/dev/License
- http://www.geogebra.org/cms/ro/
- http://www.wiris.com/en/
- https://edu.moodle.ro/