A Critical Analysis of Learning Management Systems in Higher Education

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The experience of learning is changing due to rapid growth of Learning Management Systems (LMS) usage in campus universities. These systems have become an important resource in education, especially in higher education. In this paper we find the most suitable LMS for the needs of a university. First we take in consideration different approaches regarding LMS as the modern way of teaching and how does this impact the traditional teaching methods. In the second part we compare the most well-known Learning Management Systems used among universities based on two types of criteria: features and capabilities, and the second are the technical requirements. The last part of this paper focuses on discussions about the results we found.

Keywords: *Learning Management Systems, eLearning, Docebo, Schoology, Blackboard, Moodle, online.ase.ro*

Introduction

The exponential evolution of computer literacy in the last decade led to the appearance and development of numerous IT tools useful for the teaching process and for the development of several e-learning platforms, which have become increasingly familiar to teachers and students. E-learning can be defined as distance learning in an educational environment which is continuously evolving and is based on collaborative principles, combining traditional teaching methods with methods based on IT resources and it aims to increase individual performance of learners. E-learning is based on teaching in a modern way, different than the classic one, a way which is more attractive and has an important role to strengthen knowledge and assessment, performed in a manner which is attractive and adaptable to the needs of the teacher, but especially to the needs of pupils or students.

LMS are enterprise-wide and internet-based systems, such as Web CT and Blackboard that integrate a wide range of pedagogical and course administration tools. Most LMS are open source because they started as a university project, rather than being a business idea. The most prominent open source systems have been gathered together in the Sakai Project (Sakai Project, 2004), and include CHEF (University of Michigan 2003), Stellar (MIT 2003) and Coursework (Stanford University 2003). However these systems are used in many universities around the world due to their capacity to offer to the traditional campus-based students an environment for virtual learning. LMS are important to universities because adopting such a system affects their teaching methodologies, unlike adopting any other financial or HR system. Despite the important role of learning management systems have, the main focus is still on the cost point of view, together with financial and technical requirements.

LMS started in 1990, as a combination of internet, media elements and pedagogical tools and methods. Over the years has been developed and implemented in many faculties and nowadays they can be considered virtual universities since they can offer support for the teaching programs of a whole faculty. At the beginning learning management systems have been accused of transforming education to an industrial process, according to [7]. On the other hand, [8] considers that adapting traditional teaching methods to LMS makes the issues appear. [9] is supporting him and believes that there are no big differences between traditional and modern teaching techniques such as LMS, when it is established from the begging which are the success factors. If the factors are determined, students can have a successful learning

experience, no matter which style they choose. [10] believes that eLearning is especially useful for students who because of different reasons (family, financial, social, etc.) can't participate to a face-to-face course. [11] have studied the difficulties and strong points of face-to-face and online learning. They have found that the design and structure of the theoretical content of an e-training program can be more efficient and more satisfactory then those of a face-to-face program "because in face-to-face programs the teacher needs to have a previous mental structure of the contents which he/she develops in the course of the theoretical explanation". In the online learning schemas and conceptual maps are a mandatory feature of LMS and they can guide very easily the student through the course. On the other hand, in face-to-face teaching the guiding of the student to the course is often missing.

Face-to-face teaching comes though with a very strong argument: the interaction. Visual contact and such contact as an encouraging back-slaps, etc. are useful resources for motivating students. Online communication, too, permits enquiries to be made of the students, which can be especially valuable not only to encourage and motivate, but also to promote reflection and conceptual understanding.

According to [5] Learning Management systems can be referred also as "learning platforms", "distributed learning systems", "course management systems", "content management systems'", "portals" and "instructional management systems". The standards describing how a LMS should look like and not yet fully established. Despite that, the same authors specify a series of characteristics:

- LMS must provide tools for course administration and pedagogical functions so they can actually be considered a learning environment;
- asynchronous and synchronous communication (announcement areas, e-mail, chat, list servers, instant messaging and discussion forums);
- content development and delivery (learning resources, development of learning object repositories and links to internet resources);
- formative and summative assessment (submission, multiple choice testing, collaborative work and feedback);
- class and user management (registering, enrolling, displaying timetables, managing student activities and electronic office hours).

According to [12], there are three types of eLearning, which were classified based on delivery modes and proportion of content delivered online: complete online course, blended course and web-facilitated courses. Blended learning combines teaching in a classroom with e-Learning solutions. Depending on the course theme, this approach may take various forms, and the ratio of the two means of transmitting information may be distinct. For example, a subject may be exposed by a teacher in front of students, so that the assignments and activities which will substantiate the knowledge to be carried out online. Also courses can be divided as only certain aspects will be presented by professor and other content can be reached by the students using an application on their computers. What's common between all three of types of eLearning is the Learning Management System, which plays the role of a content provider and of tool used to communicate in an online environment. LMS offer different advantages, such as customized functions, reliable access, open source facilities, etc. Each institution seeks through the variety of LMS for the system which best fits to their needs. Universities are usually already well equipped for management of classroom instruction so LMSs tend to be primarily focus for online learning. An organization can use a commercial LMS or one they built for themselves. Open source products tend to be most appropriate for educational institutions.

This paper's purpose is to make a comparison between existing Learning Managements Systems, no matter if they are open source or commercial, such as Moodle, Educator, Blackboard, AU-PLUS and the online

platform offered by the University of Economic Studies, Bucharest (referred in this paper as *online.ase.ro*). According to [3] there are between the 12 most important learning management system providers.

The paper is based on the author's experience, which are also students and used all three types of LMS: blended, online and web-based courses. With the rise of learning platforms, teachers and students have access to a shared online learning environment that only they can access. This enables the teacher to set up and manage online activities where students can chat, share knowledge, ask questions, access learning resources and complete work online – without the fear of random internet users stumbling across the information. Both the literature review and the authors personal experience, by creating and using the platform mentioned before are the basis of this study.

Literature review

LMS is the broad term used for managing online courses to train, educate, or orient a group of learners. LMS does not involve creation of content. The software only focuses on providing training materials and it allows managing students' progress.

LMS is used in many higher education institutions due to high demand for online courses. LMS is also used by institutions for a better online organization of traditional courses. LMS provides tools for organizing content, students and marks, tools for creating discussion groups, online quizzes and exams.

According to [2] there are at least three benefits of blended learning (online and traditional). First benefit is that blended learning is a more effective teaching practice because it is based on student-centered strategies. [13] describes that in higher education, teachers focus on practical activities, discussions and case studies in the time spent face to face with students. Second benefit is increased access to education because there are people who have other occupations and distance learning is the only solution. Another benefit is that blended learning is more advantageous in terms of cost because that organized content can be distributed to a large number of people / students worldwide.

Now, we will present the most important learning management system providers.

Docebo platform is available in more than 30 languages, its customers coming from over 70 countries. Initially, the platform was used by small or medium-sized companies, but the development from the past two years has led to adopting this method of learning by various major companies all over the world. One of the great benefits of which are open to those who choose this system is that the providers of the service themselves host it, and users can access it simply by using a web browser (distribution model is SaaS). The platform has a friendly look and the interface is the same for administrators and users. Simulating stores such as Apple or Android, Docebo provides many additional free or paid applications that can be installed and used quickly and easily. Whether it comes from Docebo or third parties, these applications provide a surplus to the functional platform which has a high degree of adaptability to the needs of each company.

First, using the Blogs application, students are given the possibility to write various articles (by which they can express opinions or thoughts) and to receive comments from other users, thus improving the social component of the platform. After installing the application (process that can be achieved by a simple click) the menu on the left side of the screen gets added another section called *My Blogs*. Published articles may be individual, on any topic or related to a specific course on which the user is registered. The first category of posts appear strict on blog that customer has, where as the second category of posts (related to a course) get a name tag course and they become visible to all who follow.

Other applications provided by Docebo are *Gamification* (which offers each user the opportunity to receive badges depending on their accomplishments), Course Catalog (which adds the option to develop a curriculum either of a course or one with a general template), Power Users (whereby certain customers are provided the power to

manage certain groups or classes), etc. Also, the accounts from various other sites (WordPress, Joomla and others) may be related to Docebo platform and personal information can be easily imported from any external source. Applications can be enabled or disabled at any time. Using Docebo, instructors are able to deliver a wealth of information and verify that all learners have assimilated properly through tests, evaluations and surveys. You can upload PowerPoint presentations, PDF files, video, audio and Word documents and the evaluation can be performed through a flexible system.
Through Score Management function can be set scores for each question, but there is possibility that they might be changed later. If the multiple-choice answer case, if the student chooses the wrong one, there's the option to decrease the total score. The teacher can also leave a memo with details. For example, when providing a wrong answer, the note may contain indications on the source where the correct information can be found.
Administrators also have the ability to create notifications related either to a particular course or in general to notify the students of various events which will take place. Notifications can simply be saved and to reach the recipients must be enabled in advance. Students receive an email with the details that need to be transmitted (name of the event, email address of the sender, the message subject and text itself) before or after that event occurs, depending on the choice of who created it.

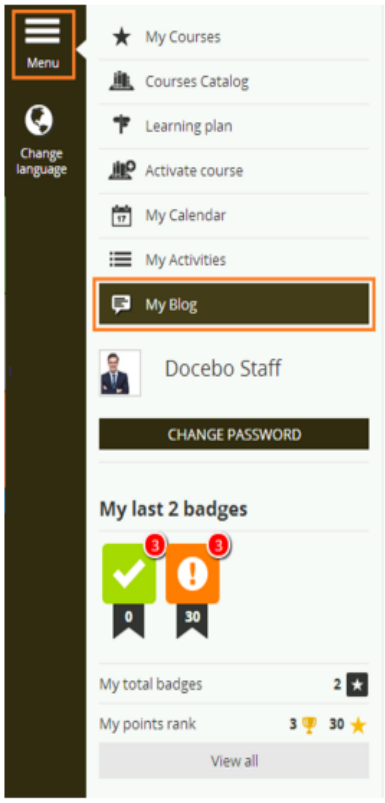

Figure 1. Left menu of Docebo platform

Docebo application is useful for all teachers, educators or trainers who are looking for a flexible, ready to be used whenever from both the computer and the tablet. By using this e-learning solution is provided a process of permanent learning, interactive and easily adaptable to the needs of each user.
Schoology platform. One of the most popular and easy to use eLearning platforms is *Schoology*. This platform has several distinct qualities, representing the ideal choice for many users, regardless of their type. The system is available for both instructors and students and parents free of charge, and the information displayed on the main page differs depending on the type of account you created. Like *Edmodo* platform, *Schoology* looks extremely similar to the Facebook social network, is extremely accessible, especially for young people that uses the network extensively.

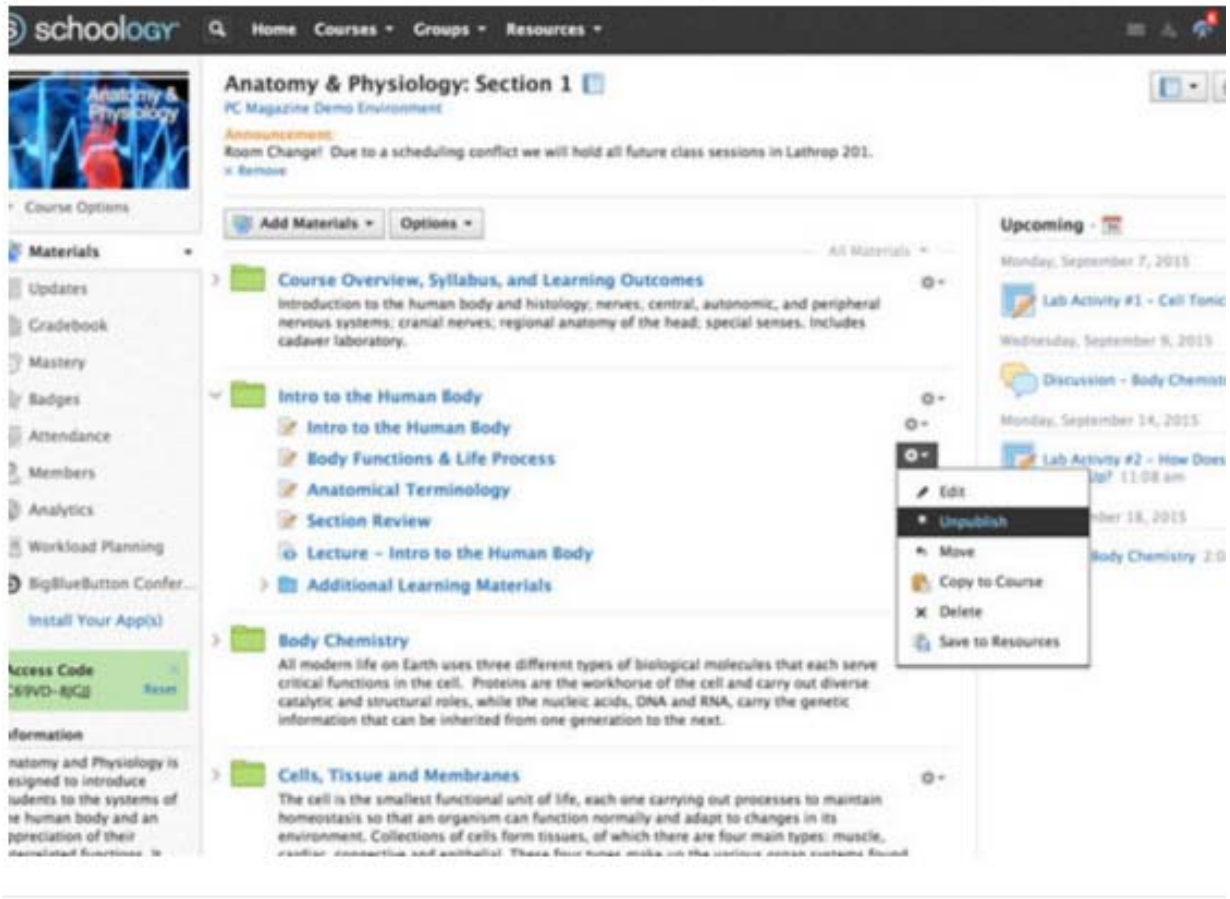

Figure 2. Schoology - course example

On the one hand, the platform is geared towards students, the aim being to improve their educational outcomes through online activity. Another point of view through which Schoology satisfies the needs of young generation is the availability on mobile phone. In this sense, the disadvantage noted is that the application does not include all options available on the website.

On the other hand, teachers have access to various resources and educational practices, and thus can reach a high level of professional development and can gain experience from other instructors from any part of the world, by having free access to their resources.

Among the advantages that teachers can enjoy choosing this platform include tools for creation and management courses. If, instead of creating files they want to use existing materials, *Schoology* platform offers this unique possibility, by offering whether written or image support. Attached materials can then be ordered by simply selecting and dragging up or down. The units making up a course are organized into separate files automatically. Teachers are free either to make those resources available to students or to keep them hidden or display them only in a predetermined time.

The scoring system available on this platform is updated constantly and student achievements are monitored continuously. Thus, teachers can use this information to adapt the course material according to the needs and the level at which each student is, the process of education is improved and increased efficiency. Teachers can carry out assessments of students through different types of tests and questions, and they can be created by themselves or imported from an existing database. If you set a deadline for teaching these topics, they are automatically marked in the calendar available on the platform.

The many options teachers have when creating a test, make Schoology an ideal

platform for evaluating their skills. On the one hand, the tests may be assigned a predetermined period in which the student must solve it. That interval can be set in advance either for the entire test or for each question, the aim being not to allow sufficient time for students to use exterior materials (this feature is extremely useful, especially if we take into account the fact that, obviously, the student has access to internet when solves the on-line test on the platform). Also, to avoid students using other online materials, when the app is closed with the test on going, the result obtained up to that point is saved and the test is completed. The teacher can choose the option that the questions within a test to appear each student in a different order so that they cannot copy answers from another colleague. In addition, students may be granted permission to take a test several times and teachers can decide which the number of attempts allowed to everyone is. The results, notes and any individual comments on the topics (especially when it comes to compositions or essays) can be sent instantly, directly to student concerned. Also marking can be done on any type of content or document, review or video.

Just like the Facebook platform *Schoology* offers the option to create groups centered on various topics that teachers can use to divide among themselves the resources and materials. Whether is about circles or about clubs, sports teams and departments and so on, each user can join any group based on the interests they have or matter that he teaches.

Blackboard platform was launched in 1997, being one of the earliest LMS platforms. It is used especially in academic environment, both of the lower level of education and in higher education, but also in the context of government and business in numerous industries worldwide. The over 19,000 users of this platform come from 100 countries.

Educators or teachers using Blackboard learning system have the ability to create and manage online courses, to give themes and grades to students. The collection of plug-ins that can enrich the system is very numerous, thus revealing the flexibility Blackboard demonstrates. The LMS platform can also be hosted by the school campuses which use it, but there is also the option that the host can be Blackboard.

The platform's interface may be different from one class to another, primarily depending on the Blackboard Learn version used, and secondly, on choices of the administrators in universities. The main sections are Types of content, Tools for course, Options for the courses, Management of users, Themes and Help. Each section includes more options and links, and this is quite a rigid hierarchy, whereas options cannot be transferred from one section to another. However, instructors can choose which options they wish to include in the first two sections.

To avoid any confusion involved in the management of an academic situation with a number of students that can reach thousands, the platform can be used together with a system for managing data about them. The courses situation is updated every few hours and is being sent automatically to all users. Another benefit that brings using a separate system for managing data about students is that Blackboard holds the members of each class in separate groups. Each university that uses Blackboard can choose which system to use for monitoring the situation of students.

Content distributed via the platform, useful links and tools are organized into separate sections called modules, and their number can increase exponentially unless certain restrictions are set in advance. The first step in the determination of types of restrictions applicable to avoid overloading section of the course is choosing the type of content that is meant to be shared. To this end may be taken into account several factors such as the type of course that is intended to be supported (if it is meant to supplement what was taught using traditional methods or is regarded as an independent unit) or type files that can be distributed (audio, video, images, text, etc.).

Blackboard eLearning platform facilitates communication between students and teachers through several means. For example, the latest version of this system, Blackboard 8.0,

provides users with two versions of chat, a virtual classroom where the teacher can lecture in writing, and students can intervene with questions whenever they want, and a mail service. The section that contains these options is called Communication Tools. Although the main method of communicating is written, users may attach pictures or videos on their message.

Figure 3. Blackboard options

Unlike other e-Learning platform, Blackboard allows students to communicate directly with one another, but limits the options of these discussions are set throughout instructor. It decides whether students can add files, if they can start discussions on a new theme, if their interventions can be anonymous or if they can evaluate other people's posts.

What many users have reported on this platform is the difficulty in initiating certain orders, and the large number of steps necessary to order or to implement a new setting. For example, if a teacher / educator wants to enroll a student in a course, the process that must be followed involves 17 separate clicks, and this route is hard to navigate intuitively. However, some of these disadvantages can be compensated by the many additional options which can be enriched system.

One of the most important characteristics that differentiate Blackboard other systems is that the program can be augmented with numerous extensions. Option, called Building Blocks allows various external companies to provide users with a large number of plugins Blackboard either to enjoy some additional options, or to carry out certain tasks easier. For example, to create and then publish a course, the teacher or the educator can use Qwickly plugin, of which students can benefit alike. They can send emails to teachers, can deliver their homework, and if they belong to a group, they send emails to every member of it.

Moodle is a free online Learning Management System (LMS). In the words of the Moodle creators (2004): "Moodle is a course management system (CMS) — a free, Open Source software package designed using sound pedagogical principles, to help educators create effective online learning communities. You can download and use it on any computer you have handy (including webhosts), yet it can scale from a single-teacher site to a 40,000-student university. Moodle has a large and diverse user community with over 50,000 users registered

on this site alone, speaking 60 languages in 120 countries."

It allows educators to develop their own private online hub filled with dynamic courses for education anytime. The platform can be downloaded free license being under the GNU General Public License. Projects available on this platform can be used in both commercial and non-commercial purposes without users to cover additional costs for authorization. However, to qualify for certain options may require payment of fees in addition. For example, to include the ability to make video calls, users would have to pay an additional $600 annually.

A big advantage of Moodle is its availability in multiple languages. Moodle team initiated the translation program and the resources provided through it in more than 120 languages, giving users the opportunity to discuss in his speech. As a result, this program is used in the government in many countries, such as Spain, Russia and Colombia.

Moodle allows teachers to test their learners through themes and written examinations. The main difference between Moodle and other platforms is that, besides choosing between several predefined answers to a question or giving short answers, students can upload files larger, like documents, records, images, audio and video clips. Teachers can either leave comments on that subject either to organize discussion groups between members of the same group on the subject. Therefore, this platform is distinguished by the high level of interactivity they offer.

Moodle users are able to choose the role that they want to have inside the platform, standing out in this respect three types of educators. These roles are: Course Creator, Professor and Professor without editing rights. The first type of user can create course content, the second can change and add tasks and evaluate students, and the latter can assess students, but cannot interfere by altering activities. Students can view the content, but I cannot change it, and those who are just visitors may take part in courses, usually.

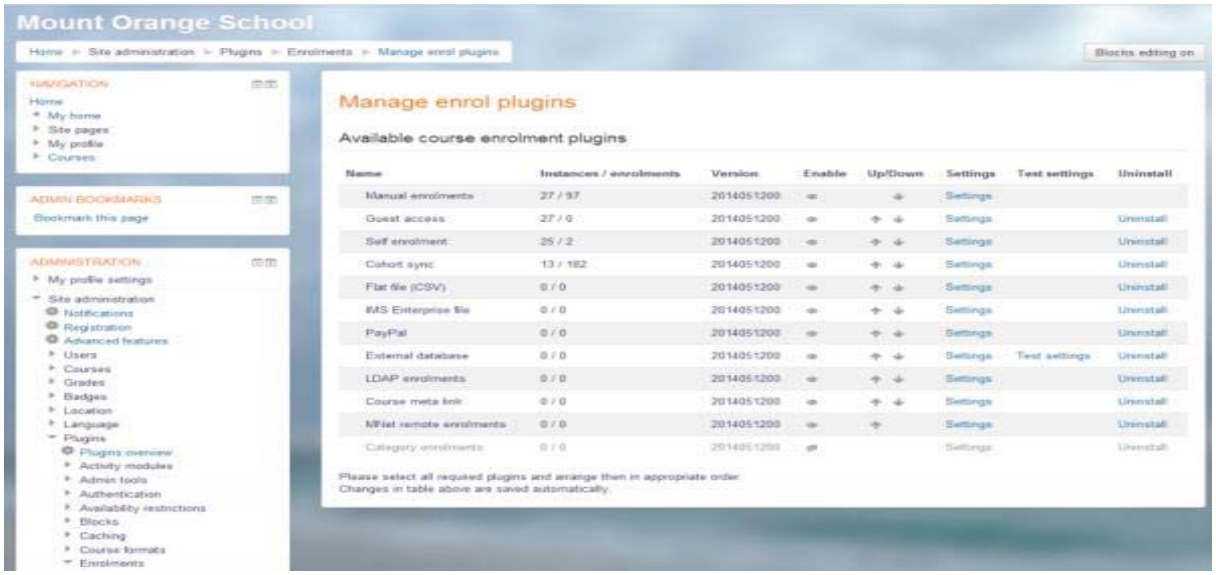

Figure 4. Example of Moodle interface

Moodle is available on any device and can be used from any Internet-connected device. Moodle platform was first launched internationally in 1999 and the network EDUMoodle Romania is available since 25th of November 2010.

online.ase.ro is an online platform offered by the University of Economic Studies, Bucharest. All teachers and students of this faculty have free access to Blended Learning Platform, *online.ase.ro*. Especially, this platform is dedicated to student ID - IFR education. It is a modern system that ensures an interactive and efficient learning, adapted to the latest requirements and current technology trends. To access the platform,

teachers will use existing username and password (for access to the Intranet) and students will use the username and password for access to personal page.

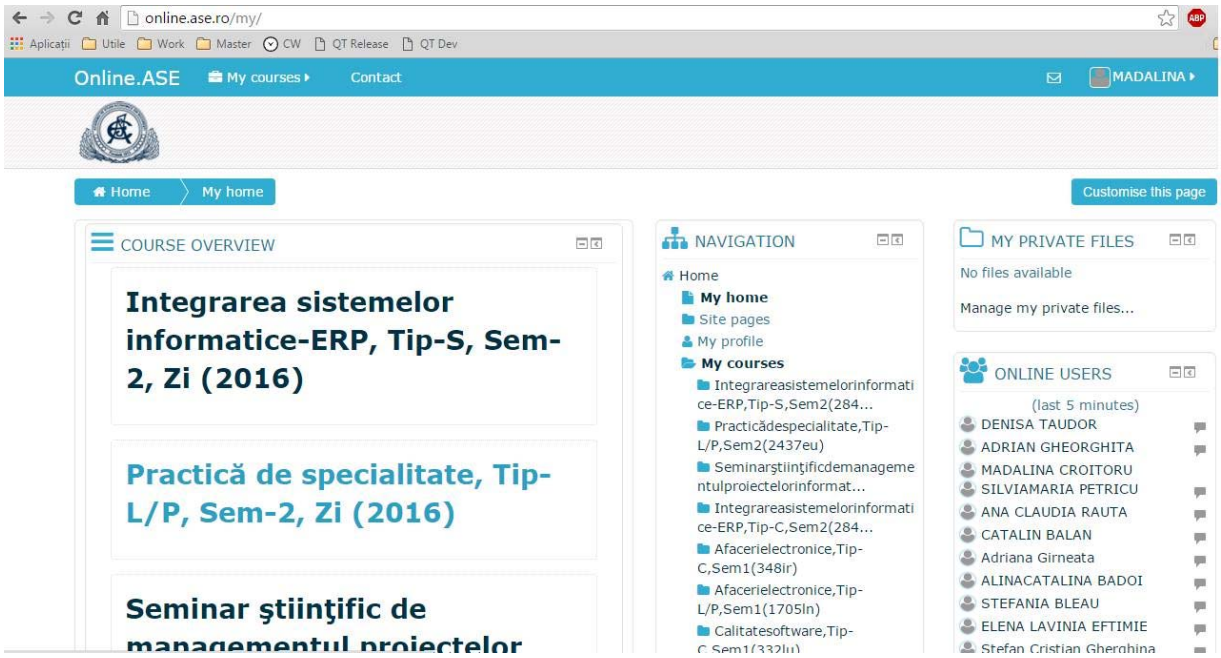

Figure 5. Example of *online.ase.ro* interface

There is not too much documentation about this platform, only the user's experience. *online.ase.ro* has the following facilities and tools: discussion forums, discussion management, file exchange, internal e-mail, real-time chat, calendar, progress review, help menu, student community building, course authorization and management.

Methods

We conducted our study by comparing each of the platform presented above, based on a number of characteristics which we considered to be the most important. The comparison has two answers, Y or N. Y means the product has the feature and N means the product does not. These criteria are described in figure 6.

1) Learner Tools	2) Support Tools	3) Technical Specifications
1. Communication Tools • Discussion Forums • File Exchange / Internal Email • Online Journal/Notes • Real-time Chat • Video Services / Whiteboard	1. Administration Tools • Authentication • Course Authorization • Registration Integration • Hosted Services	1. Hardware/Software • Client Browser Required • Database Requirements • Server Software • UNIX Server • Windows Server
2. Productivity Tools • Bookmarks • Orientation / Help • Searching Within Course • Calendar / Progress Review • Work Offline/Synchronize	2. Course Delivery Tools • Course Management • Instructor Helpdesk • Online Grading Tools • Student Tracking • Automated Testing and Scoring	2. Pricing/Licensing • Company Profile • Costs • Open Source • Optional Extras • Software Version
3. Student Involvement Tools • Groupwork • Self-assessment • Student Community Building • Student Portfolios	3. Curriculum Design • Accessibility Compliance • Course Templates • Curriculum Management • Customized Look and Feel • Instructional Standards Compliance • Instructional Design Tools • Content Sharing / Reuse	

Figure 6. Summaries of the Features and Capabilities of LMS

i. Learner Tools. This phase contains three kinds of tools: Communication Tools, Productivity Tools and Student Involvement Tools. Each Learner Tool has some features and capabilities as in the table 1.

Table 1. The Comparison between Selected LMS Products based on Support Tools

Tools \ Product	Docebo	Schoology	Blackboard	Moodle	*online.ase.ro*
i. Learner Tools					
1.1 Communication tools					
Discussion Forums	Y	Y	Y	Y	Y
Discussion Management	Y	Y	Y	Y	Y
File exchange	Y	Y	Y	Y	Y
Internal Email	Y	Y	Y	Y	Y
Online journal / Notes	Y	Y	Y	Y	N
Real-time chat	Y	Y	Y	Y	Y
Whiteboard	Y	Y	Y	Y	N
Video Services	Y	Y	Y	Y	N
1.2 Productivity Tools					
Bookmarks	Y	Y	Y	Y	N
Calendar/Progress review	Y	Y	Y	Y	Y
Orientation/Help	Y	Y	Y	Y	Y
Searching Within Course	N	N	Y	Y	N
Work offline/Syncronize	N	N	Y	Y	N
1.3 Student Involvement Tools					
Group work	N	N	Y	N	N
Student Community Building	Y	Y	Y	Y	Y
Student Portfolios	N	N	Y	Y	N
Total Features	16	16	16	16	16
Total available features	12	12	16	15	8
Total missing features	4	4	0	1	8

The table above shows what any LMS should be in the first place: support tools. Blackboard and Moodle are the best at this chapter, considering that they have already experience on the market, since they appeared for the first time in the 90s. *online.ase.ro* has a pretty good position, considering that is a university project and doesn't have a huge budget only for developing the platform.

ii. Support Tools. These tools contain three kinds of tools: Administration Tools, Course Delivery Tools, and Content Development Tools, and all of these tools have features and capabilities, which are shown in table 2.

Table 2. The Comparison between Selected LMS Products based on Support Tools

Tools \ Product	Docebo	Schoology	Blackboard	Moodle	*online.ase.ro*
2. Support Tools					
2.1. Administration Tools					
Authentication	Y	Y	Y	Y	Y
Course Authorization	Y	Y	Y	Y	Y
Hosted Services	Y	N	Y	Y	N
Registration Integration	N	N	Y	Y	N
2.2 Course Delivery Tools					
Test Types	Y	Y	Y	Y	N
Automated Testing Support	N	N	Y	Y	N
Course Management	Y	Y	Y	Y	Y
Online Grading Tools	Y	Y	Y	Y	N
Student Tracking	Y	Y	Y	Y	Y

2.3. Content Development Tools					
Accessibility Compliance	Y	Y	Y	Y	Y
Content Sharing / Reuse	Y	Y	N	Y	Y
Course Templates	Y	Y	Y	Y	N
Customized Look and Feel	Y	Y	Y	Y	N
Instructional Design	Y	Y	Y	Y	N
Instructional Standards Compliance	Y	Y	Y	Y	N
Total Features	16	16	16	16	16
Total Available Features	13	12	15	16	6
Total Missing Features	3	4	1	0	10

iii. Technical specification Tools. These tools contain two kinds of tools: Hardware/Software Tools and Pricing/Licensing; all kinds of Technical Specifications Tools have some features and capabilities as in table 3.

Table 3. The Comparison between Selected LMS Products based on Technical Specifications Tools

Tools \ Product	Docebo	Schoology	Blackboard	Moodle	Online ase.ro
3. Technical specifications					
3.1 Hardware/Software Tools					
Client Browser Required	Y	Y	Y	Y	Y
Database requirements	N	N	Y	Y	Y
Unix Server	N	Y	Y	Y	N
Windows Server	Y	N	N	N	Y
3.2 Pricing/License Tools					
Company Profile	Y	Y	Y	N	N
Costs	Y	Y	Y	N	N
Open Source	N	N	N	Y	N
Optional Extras	Y	Y	Y	Y	N
Total Features	8	8	8	8	8
Total Available Features	5	5	6	5	2
Total Missing Features	3	3	2	3	6

As we can see in tables 2 and 3, Blackboard has taken the lead, followed immediately by Moodle. Even if Moodle is an open source product, it manages to offer most of the features free and this would be our choice if we were to pick a LMS to either teach our course, or to follow a course. *online.ase.ro* has the least characteristics at this chapter, also due to the fact that there is not too much documentation about this platform, only the user's experience.

Results Analysis

The final results of the comparison between selected LMS products are presented in table below.

Table 4. The Final Results of the Comparison between Selected LMS Products

Tools \ Product	Docebo	Schoology	Blackboard	Moodle	Online ase.ro
Total Features	40	40	40	40	40
Total Available Features	30	29	37	36	16
Total Missing Features	10	11	3	4	24

The weakest product is *online.ase.ro*, which has missed 24 out of the 40 features. The best product is Blackboard, which has missed just 3 out of 40 features and capabilities, and the second product is Moodle which have missed 4 out of the 40 features.

The result of the evaluation shows that Blackboard has the best rating. The strengths of Blackboard are the realization of communication tools, the creation and administration of learning objects, the comprehensive didactical concepts and the tracking of data.

Discussions

This paper aims to help universities in taking the right decision when it comes to choose one Learning Management System from the multitude of such systems on the market. The chosen platform must meet the needs that a big university may have. The study focuses on a comparison of the main Learning Management Systems such as Blackboard, Moodle with other platforms (Docebo, Schoology and *online.ase.ro*) and is based on two different types of comparison. In the first part we compare the systems based on their features and capabilities, and on the second part we take a look at the technical requirements. There should be a balance between those two parts, since technical requirements are translated from the university's point of view in budget.

Based on the features and capabilities we took in consideration in the first part of the study, we decided that Blackboard is the best platform which would suit to a university, followed closely by Moodle. Blackboard has a total of 37 features and technical requirements out of forty, and Moodle missed only 4 of 40 criteria. The weakest product is *online.ase.ro*, which has only 16 out of 40 features but this can be easily explained by the fact that is a platform newly developed and it's evolving daily.

The technical aspect show also Blackboard as the best choice and is also our general recommendation based on this study. There is a small difference between Blackboard and Moodle in the paper we conducted, but in the end the choice belongs to the user. Hence we recommend Blackboard as the best choice for higher education generally.

Conclusions

Blackboard is a widely used Learning Management System all over the world by all educational institutes (schools, universities, schooling parents), but also by companies since the tool has a special version for trainings. Blackboard enriches the experience of learning with many plug-ins and tools that can be used to enhance traditional classroom tuition in the system of managed learning. It can scale back and forth from a single teacher to a more than 55.000-student University.

This paper has compared multiple platforms known to be Learning Management Systems based on two types of criteria. The first category was based on the features and capabilities of the LMS tools, while the second category was based on the technical aspects of the platforms. From this study we discovered the most suitable LMSs for higher education. This study is the first part of our work and we concluded that the optimal Learning Management System is Blackboard, followed closely by Moodle.

This section consists of our work until the current date. In future we plan to make a final decision between Blackboard and Moodle by testing each one of them more closely and, if possible, by integrating them in two different departments at the University of Economic Studies in Bucharest in order to discover all possible additional features one of them might have despite the other. A survey will be done to get the feedback from users which are in

position to judge the platforms, including students. There will many variables to consider and will be challenging to discover the relationship between them.

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