

**PROS AND CONS OF VIRTUAL LEARNING ENVIRONMENTS -  
THE EXPERIENCE OF E-LEARNING PLATFORMS IN PROJECT  
MANAGEMENT**

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**Abstract**

*Recent years have witnessed the development and implementation of an increasingly large range of virtual environments for learning and training, through the support of advanced technologies. Our paper addresses the experience of an e-learning platform for courses in Project Management through the means of a survey whose respondents are the students targeted by the online platform. The results show that using an online platform is beneficial from the learning perspective and that students appreciate the e-learning experience.*

**Keywords:** *project management, e-learning, blended learning, e-learning platform, higher education*

**JEL classification:** *D83, I23*

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**1. Introduction**

Recent years have witnessed the development and implementation of an increasingly large range of virtual environments for learning and training, through the support of advanced technologies. A number of virtual training platforms have been established in recent years at the international level, by far the most used being Moodle ([www.moodle.com](http://www.moodle.com)) and Blackboard - WebCT ([www.webct.com](http://www.webct.com)). E-learning is a broad term that describes any form of educational technology aimed at supporting learning and teaching using

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electronic or technological means. Bernard Luskin, a pioneer of e-learning, argues that "e" should be interpreted in the sense of "exciting, energetic, enthusiastic, emotional, extended, excellent, and education" in addition to "electronic" (Kalaivani, 2014). This extensive interpretation focuses on new applications and developments in this field and also consider media psychology the media in the learning process. Depending on the emphasis placed on a particular method, component or a specific mode of delivery various similar or overlapping conditions for the definition of e-learning are used in the literature. As such, e-learning includes „multimedia learning” (Saadé et. al, 2007; Mayer, 2009); „Technology Enhanced Learning” (TEL) - see Goodyear and Retalis (2010), Carneiro et. all (2011); „Computer-based training” (CBT) - see Lee and Owens (2004); „Internet-based training” (IBT) - see Anido et. al (2001); „web-based training” (WBT) - see Barron (1998); „online education” - see Allan and Seaman (2009); „virtual education” - see Barbera (2004); „virtual learning environments” (VLE), which are also called learning platforms - see Follows (1999), „m-learning” - see Cavus and Ibrahim (2009); „collaborative digital learning” - see Austin et al. (2010); „Distributed Learning” - see Alavi et al. (2002); „computer-mediated communication” - see Thurlow et al. (2004); „cyber-learning” - see Sohn et al. (2009); and „multi-modal training” - see Yuviler-Gavish et at. (2011). Each of these terms has its supporters who insist on the differences between them. In practice, however, as technology has advanced some particular aspect that was "strictly defined", then this aspect was included in the broad term "e - learning". For example, "virtual learning" in a semantically defined strict sense, involves the introduction of environmental simulation in a virtual world; in practice, however, a "virtual education" refers to any course that is delivered entirely or partially using the Internet. Thus, "virtual" is used in this broader way to describe a course that is not taught in a classroom environment, but by a substituent that can be conceptually associated with "virtual" classroom teaching, which means that people should not go to the classroom to learn. Consequently, virtual education refers to a form of distance learning whereby the course content is delivered through various methods, such as management applications, multimedia resources, video conferencing, and where students and instructors communicate through these technologies.

The extent to which e-learning assists or replaces other methods of learning and teaching is variable, ranging from none to full distance learning

online. A variety of descriptive terms have been used to classify the extent to which technology is used; for example, "hybrid learning" or "blended learning" can refer to classroom aids and laptops, or it can refer to an approach where the traditional time spent in class is reduced, but not eliminated, and replaced with some online learning. "Distributed learning", on the other hand, can describe either the e-learning component in a hybrid approach, or online media distance learning.

Our paper's objective resides in presenting and explaining the experience of using an online e-learning platform for teaching topics in Project Management, more specifically <http://pmllearning.ase.ro>. The platform has been implemented within a European POSDRU project - "Innovative Higher Education in Project Management using Modern Educational Techniques" (rom. „Invățământ superior inovativ în managementul proiectelor prin utilizarea tehnicilor educaționale moderne”). The project addresses students enrolled in five master programs delivered by the Faculty of International Business and Economics within the Bucharest University of Economic Studies (BUES) and the Faculty of Economic Sciences within Lucian Blaga University of Sibiu (LBUS). The project is implemented between May 2014 and November 2015 and has as main objective to improve the quality of education offer for five master programs within the above-mentioned universities and to increase the attractiveness of continuing education for graduates of undergraduate studies by offering advanced programs, developing student-cantered learning opportunities, aligning curricula with the requirements of the labour market and promoting modern methods of learning. The paper is structured as follows: Section 2 provides a brief description and comparison of the two mostly used VLE worldwide - Moodle and Blackboard Web-CT, Section 3 described the e-learning platform used in the project, while Section 4 presents and discusses the results of a survey regarding the easiness of use of the e-learning platform. Section 5 concludes.

## **2. Moodle versus Blackboard Web-CT: a brief comparison**

As mentioned above, the most used e-learning platforms in higher education around the world are Moodle and Blackboard Web-CT. Although fundamentally the two platforms serve the same purpose, there are some differences between the two learning environments that might favour one or the other in terms of effective use. We briefly outline in this Section the main

characteristics of these two e-learning platforms before describing the platform used in the project.

*Moodle* is a VLE - Virtual Learning Environment or CMS - Course Management System that allows both courses management and monitoring course delivery. Moodle is distributed as an open source software (under the GNU Public License) as a package of free software, under the General Public License - GPL. This means that Moodle is copyrighted but the user benefits from additional rights. For example, the user may copy, use, and use Moodle or supplement its component programs. The user can also provide Moodle to other users, but cannot modify or remove the original license and copyrights, and apply the same license to any derivative work. Moodle can be installed on any computer running a Web server that has the PHP language installed PHP and can support a SQL database. It can run on operating systems such as Windows, Mac and Linux.

The Moodle project includes several distinct but interrelated elements: (i) the Moodle software; (ii) Moodle Pty Ltd (also known as Moodle headquarters or Moodle Trust, based in Perth, Western Australia), an Australian company that operates most of the developments for core Moodle modules; (iii) the Moodle Community, a free network with over one million registered users who interact via the Moodle community site to share ideas, codes, information and free support; this community includes a large number of developers that can create additional modules and functionalities, due to the open source license. This allowed the Moodle project to become a true global collaboration in its scope; and (iv) the Moodle partner network, which forms the Moodle's commercial environment and provides the bulk of the money needed to finance Moodle Pty Ltd.

Moodle is a platform for e-learning of the learning management systems type, offering a comprehensive product and module development and evaluation of the learning environment for e-learning purposes. Moodle is a set of components and modules, communication tools, virtual classroom and digital library using standards and systems such as LMS / LCMS / SCORM / AICC. Moodle allows the administration, documentation, tracking and monitoring (supported by a reporting system) of training programs, classes (groups), business trainers, online events that occur in a required calendar or script course, within the elearning program. Moodle facilitates building courses' digital content or other types of resources and activities. The Moodle system also provides support for distance learning so that students have access

to the relevant training when they want, the teacher can monitor their progress to verify that performance indicator are met, and supports online training through virtual classroom session types. The system also allows implementing testing sessions with the aim of assessing the knowledge acquired. The main modules of the system are grouped based on the functions they offer, namely: online self-learning, virtual classroom, online testing, communication and exchange, monitoring and control, management and security.

The latest statistics regarding Moodle usage (available at <https://moodle.net/stats/>) shows that Moodle has 53,763 registered sites, is used in 226 countries - the first 10 are United States, Spain, Brazil, United Kingdom, Mexico, Germany, Italy, Columbia, Australia and Russia), 7,692,244 have been developed using Moodle, and 68,862,920 users are benefiting from Moodle. At present there are 225 Moodle sites in Romania - among them, one can mention Alexandru Ioan Cuza University of Iasi, Bucharest University of Economic Studies, Technical University Cluj-Napoca or Victor Babes University of Medicine and Pharmacy in Timisoara.

*Blackboard Web-CT* is a virtual learning environment, which is licensed in educational institutes and other institutions and used in many campuses around the world for e-learning. Instructors can add tools like discussion forums, e-mail systems and live chat with content including documents and web pages for their WebCT courses. The latest versions of the software are now called Webcourses. WebCT is important in that it was the first management system for higher education courses in the world.

This software is also used in electronic publishing. To use a textbook or other learning tool published in WebCT format, some publishers require students to obtain a password at the higher education institution library or to purchase it. The user interface in WebCT has been criticized as unnecessarily complex and less intuitive. The "Vista" version of the product represented an attempt to achieve a balance between flexibility and ease of use, but, however, was also the target of criticism about its usage. Some critics of WebCT refer to problems generated by the use of multiple browser tabs or windows, its dependence on Java, the use of too many frames browser, or features that require pop-ups to be stopped.

The main similarities between the two systems, Moodle and Blackboard, are the following: students have to register in the course; the access is restricted to users; they are adjustable; files can be uploaded (e.g. Word, PowerPoint, audio files etc.); the user can make links to external sites;

courses may be stored and provided to students on portable media; they are re compliant with SCORM (Sharable Content Object Reference Model); both have a discussion forum; synchronous chat is allowed; both support tests and examinations; both have DropBox; they have a course Calendar; they allow for monitoring of student participation; their size is adjustable.

At the same time, there are important differences in the functioning of these two systems, summarized in Table 1 below. A quick reading of these differences is enough to explain the higher attachment to Moodle of worldwide users, as it is a system with more flexibility in use and more adaptable to the user needs.

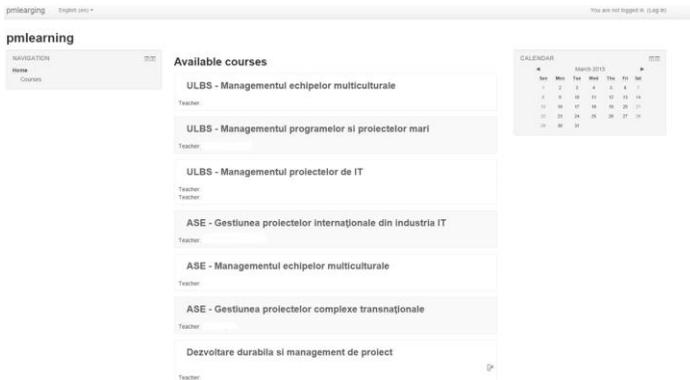
**Table 1: Differences between Moodle and Blackboard**

<b>Attributes</b>	<b>Moodle</b>	<b>Blackboard - WebCT</b>
Band width	Operates even on a dial-up connection	Required size is large, which causes difficulties in connection
Learning curve	A manual or a training can be used. The Help function is excellent and easy to use	The use is not intuitive, as the initial configuration requires many components. The Help function is complicated to use
Discussions	Allow photos and complex links	Posts are seen one at a time
Tools	Blog, wiki platform, diary, glossary, workshop	Whiteboard
Cost	Free	Not free
Adjustability	Open source, so it can be changed locally, as needed	The amendments require approval from WebCT
User statistics	Allows creating graphs to compare students; can provide information about the number of visits of a page	Provides information about the time spent by a student on each page
Course format	Selecting a course from „My courses” section leads to a home page with one of the following formats: Topics, Weekly and Social. The format used is determined by the teacher by choosing Settings section in the administrative component of the platform	Selecting a course of from „My courses” section leads to the course home page with a single presentation format and certain categories and sub-categories that have a fixed and non-changeable format

### 3. PMLEARNING - The project e-learning platform

Figure 1 presents the home page of the platform, built using Moodle. We have used Moodle due to its facilities and to the easiness in use, as demonstrated by Moodle testimonials (available at <http://moodle.com/partners/?mode=search&sector=university>) and existing literature - see, for example, Cole and Foster (2008), Bri et al. (2009), and Carvalho et al. (2011). Moreover, we decided to use a Moodle-based platform due to the selection of Moodle by the BUES for the creation of its online platform ([www.online.ase.ro](http://www.online.ase.ro)). Due to the fact that students from LBUS could not be enrolled in BUES platform, the project team opted for building of a project's platform. From the home page a user chooses a course and logs in - we use the "Sustainable development and project management" course as a demo. A number of three courses will be delivered with the support of the platform, all of them being developed within the project: IT-based Project Management, Management of Multicultural Teams and Large Project Management.

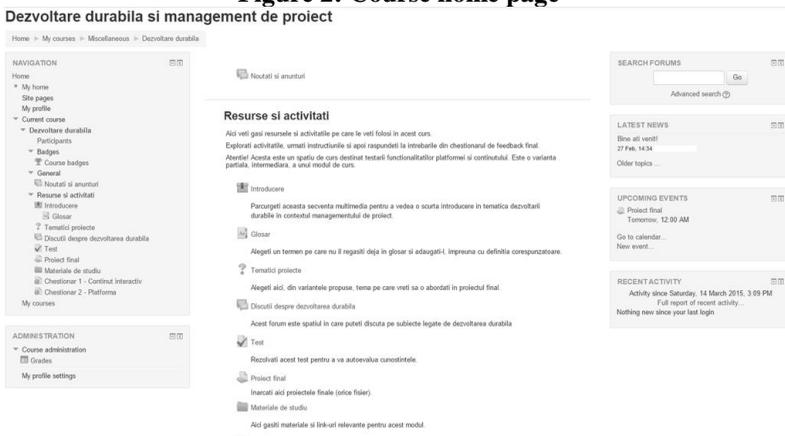
Figure 1: PMLEARNING platform home page



After logging in, the page in Figure 2 opens - the course home page. The course page has three components: Navigation (on the left side), a central screen (where the content of a section from the left is displayed) and Information on course activities (on the right). The content of the online course has been customized by project experts; the sections are Participants, General and Resources and activities. The „Participants” section provides

information on course attendance and the last time when a participant visited the course page; also, various criteria can be used in order to obtain statistics on course use by participants. The „General” section provides information on News and activities, while the „Resources and activities” section provides the teaching tools, as follows: Introduction, Glossary, Project topics, Discussions, Test, Final project and Course materials. The teachers are free to use any of the course page sections to upload course materials, to test students, to initiate discussions and to obtain statistics. Also, the platform allows tests and quizzes to be automatically graded and course grades to be available to participants.

Figure 2: Course home page



#### 4. Testing the effectiveness of the project e-learning platform

Besides just building an e-learning platform, its easiness and effectiveness in use are critical for the success of any virtual environment. Since the project targets a number of at least 210 students from the two universities, we were interested in their opinion regarding the use of the platform. The survey is available (in Romanian) at the following web address: [https://docs.google.com/forms/d/1qmVdYYAchOynfsU7CINOCdEGZg\\_D3AmXh2pW2QdToOA/viewform](https://docs.google.com/forms/d/1qmVdYYAchOynfsU7CINOCdEGZg_D3AmXh2pW2QdToOA/viewform). The survey was filled in by a number of 13 students, between March 1 and 14, 2015. We present and discuss below the survey's main findings.

The survey had five components, each of them targeting a specific area of learning using online platforms, as follows: (1) the overall support

towards teaching and learning provided by online activities – 4 questions; (2) the organization of the online course – 2 questions; (3) the ease of use of various platform areas – 6 questions; (4) the learning utility of various platform areas – 6 questions; (5) the difficulty of using the online platform – 1 question.

Figure 3 presents the responses for the first component. We observe that online resources and activities support students' ability to retain information to a high extent (92% of the respondents) and motivate the students to deepen the studied topic (also 92% of the respondents). At the same time, respondents appreciate the interactivity induced by the online platform to a high extent (77%) and the possibility to exchange views with their colleagues and teachers also to a high extent (70%).

**Figure 3: Responses to survey's component 1**

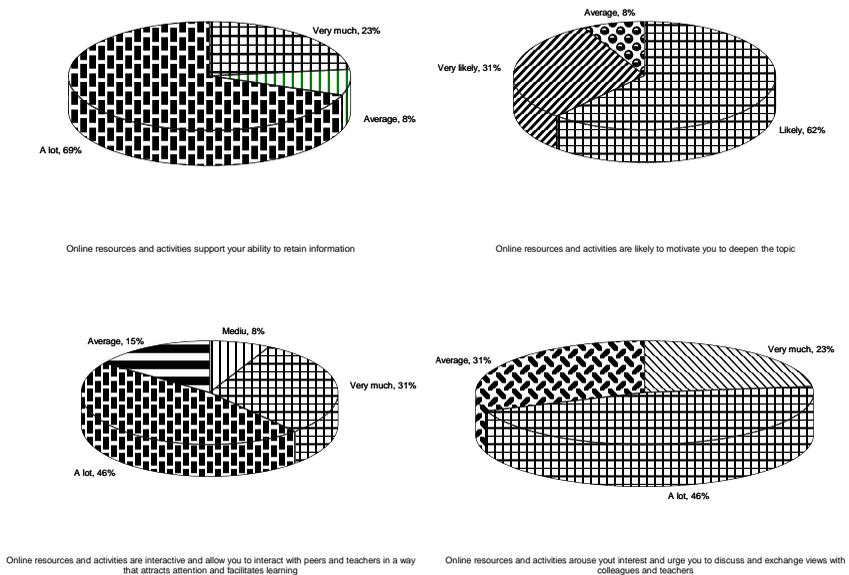
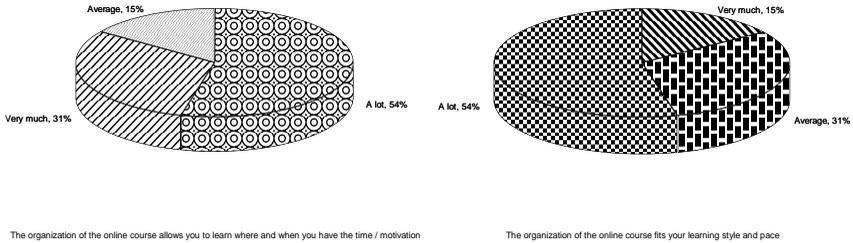


Figure 4 presents the responses for the second component, which addresses the organization of the online content and course (see Figure 4). 85% of the respondents appreciate that the online course allows them to learn

when they have the time and motivation and the same number of respondents (85%) consider that the online course format fits well and very well their learning style and pace.

**Figure 4: Responses to survey's component 2**



We now turn our attention towards the third and fourth component of the survey, which address the ease of use of several platform areas, coupled with the learning utility of these areas. Table 2 summarizes the results.

**Table 2: Responses to survey's components 3 and 4**

Question	Responses (%)		
	High	Average	Low
Ease of use of "Multimedia sequence"	69	15	15
Ease of use of "Glossary"	54	46	0
Ease of use of "Multiple choice"	69	31	0
Ease of use of "Forum discussions"	85	15	0
Ease of use of "Test"	31	69	0
Ease of use of "Project/Homework"	23	62	15
Learning utility of "Multimedia sequence"	62	8	31
Learning utility of "Glossary"	54	38	8
Learning utility of "Multiple choice"	38	38	23
Learning utility of "Forum discussions"	31	31	38
Learning utility of "Test"	38	38	23
Learning utility of "Project/Homework"	38	54	8

We observe that students believe that the online platform is easy to use – the easiest to use area is “Forum discussions” (85% of the respondents consider its ease of use as being high), while the least easy to use area is

“Project/Homework” (only 23% of the respondents think it is easy to use, but 62% of them consider its level of easiness in use as average). In terms of learning utility of the various platform components, the respondents seem a bit dissatisfied, with the notable exceptions of “Multimedia sequence” (62% of respondents consider its learning utility high) and “Glossary” (54% of respondents consider its learning utility high). The other four components’ learning utility is considered high by 31 to 38% of the respondents, which indicates that the platform’s facilities should be improved in order to foster their learning features.

Overall, 46% of the respondents consider the difficulty level of the platform as low, while 54% of them consider it average. It is also interesting to note that all respondents would recommend the use of online platforms for course conduct.

## **5. Conclusions**

Our paper analyzed the experience of using an e-learning platform for courses in Project Management by master students in the Bucharest University of Economic Studies through the means of a survey whose respondents are the students targeted by the online platform.

The results show that using an online platform is beneficial from the learning perspective and that students appreciate the e-learning experience. The respondents appreciate to a high extent the ability of the online platform to motivate students to find more about the studies topics and the interactivity embedded in the platform, which allows them to share and discuss opinions with their peers and teachers, while participating in the course. Moreover, the use of the e-learning platform is valuable for students from the time management perspective, as the online manner of conducting courses permits them to study whenever they have the time to do it and feel motivated, thus fitting well and very well with their learning style and pace. The online platform is easy to use and useful for learning, and all respondents would recommend it for conducting courses. At the same time, the structure of responses indicates that the platform’s facilities should be improved in order to foster their learning features.

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