A COMPARATIVE EVALUATION OF VIRTUAL LEARNING PLATFORMS AND ITS IMPLEMENTATION AT DEPARTMENT OF COMMERCE, DELHI SCHOOL OF ECONOMICS, UNIVERSITY OF DELHI.

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Abstract: This paper does the comparative evaluation of virtual learning platform availability for usage at the Department of Commerce, Delhi School of Economics, University of Delhi. Further, it focuses on the importance of Virtual Learning Environment in the field of education at the University Level and it further discusses the importance of virtual classroom and its various features. Various software and platforms in the field of Virtual Learning Environment and Virtual Classroom have been analyzed and compared to provide the logical reasoning for the acceptance of such software and platforms which best fit the department's needs.

Key words: VLE, LMS, CMS, Open Source Learning Management System, Commercial (Proprietary) learning management system.

Introduction: A virtual learning environment (VLE) is a new concept designed to supplement teaching and learning in an educational setting. A VLE is a computer program that facilitates e-learning. Such e-learning systems are also called **Learning Management System (LMS).** A learning management system operates over the Internet and generally provides a collection of tools such as those for uploading of content required for teaching, return of students' assignment, assessment (particularly of various types that can be marked automatically, such as True/false, multiple choice questions etc.), communication tools, Reporting tools, Utility tools, collecting and organizing student grades, etc.

On the other hand a **virtual classroom** is an online meeting space for real-time learning activities, which provides a convenient communication environment for distance learners just like traditional face-to-face classroom. A virtual classroom also allows learners to

attend a class from anywhere in the world and aims to provide a learning experience that is similar to a real classroom.

Objectives:
To identify and select the best available platform for virtual learning environment to meet the needs of Post Graduate Courses at Department of Commerce Delhi School of Economics, University of Delhi.

Methodology:
The information on which the paper is based has been collected from both primary as well as the secondary sources. Various interviews were conducted with the executives and the representatives of different software companies and interviews were also conducted using tele-communication mode. Further, in order to get the first hand information about the virtual classroom, a video conferencing which was conducted by Reliance world for XLRI Business School for online lectures and queries was also attended. Demo sessions of different softwares (evaluated) have also been relied upon for the completion of this work.

Secondary data for this research work has mainly been obtained with the help of various published sources available on the internet. The source from which the data has been obtained has been referenced appropriately in the bibliography.

Typical components of a virtual learning environment
There are various types of activities that are possible within the virtual learning environment. Generally, these activities can be divided into two different categories, i.e. Unsupervised Activities and Instructor led Sessions.

1. Unsupervised Activities
Unsupervised activities are those activities wherein there is no presence of the instructor or the supervisor. Out of the various benefits which it provides, one of the main benefit of unsupervised activities is the ability to engage the participants with unusual schedules due to 24/7 availability. The main drawback of such an activity is that it does not allow the participants access to immediate feedback from a live instructor. Unsupervised activities are possible through learning management system**.** A learning management system (LMS) may typically include some or all of the following elements:

- **Assessment tools**- It helps to create question banks with all type of questions (free response, objective type, fill in or column matching) tests and homework generation tools, an online grade book that can automatically integrate assessments scores and generates different types of grade reports.

- **Communication tools**- It includes internet e-mail, announcements, live-chat, and discussion forum, survey and survey reports.

- **Reporting tools**- It includes students' grade report, activity reports and research tools correlating students learning and performance.

- **Utility tools**- It includes adding ones own content, assessment questions, document for student including syllabi, and manage their online calendar.

- **Teaching notes**- Teaching notes can be used for several activities for engaging students in-class, local computer labs or online.
- **Multiple-choice Surveys**- Various multiple choice questions and answers is available through which the reader can benefit himself/herself for his/her required information of a particular topic.

- **Tutorials-** Tutorials are same as lecture notes to maintain consistency, and several other self-guided learning activities.

- **Link to web resources**- This tool provides for additional resources for related learning activities.

- **Continuous updated progress report**- The progress report of the students can be continuously updated using this feature.

- **Record keeping-** The system keeps record of all the students, including, at what time they are logged in, what activities they have completed and accessed, what time of the day, for how much time and how they are progressing.

A learning Management system can be created with the help of either an open source learning management system or a commercial learning management system.

1. (A) Open source learning management systems- Open source LMS are typically developed by freelance developers. Open-source LMS can be defined as a computer software that is available in source code form that allow users to study, change, and improve the software. Open source software is often developed in a collaborative manner. The term open-source software originated as part of a marketing campaign for free software.

Some of the open sources learning management system are as follows:-
1. **Claroline** - Claroline is an Open Source eLearning platform which allows teachers to manage teaching and learning in an educational setting. Claroline is translated into 35 languages & has large worldwide users' and developers'. (see :-www.claroline.net)

2. **e-Front** -It includes a variety of tools that can be used to create a lesson structure, build online-tests, communicate with others, track users' progress, conduct surveys, assign task to the students. Community edition of e-Front is distributed as open source software. One can download the community edition for free & customize it according to his/her needs.   (see:- www.efrontlearning.net)

3. **ILIAS -** ILIAS is a powerful Open Source Learning Management System for developing e-learning environment. ILIAS is available under the General Public License and free of charge.(see:- www.ilias.de)

4. **Moodle** -Moodle is an open source Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that an educator can use to create effective e-learning sites. (see:-www. moodle.org)

5. **OLAT (Online Learning and Training) -** OLAT is an open source Learning Management System (LMS) which is based on Java and completely free of charge. OLAT offers an e-learning system along with extensive features which guarantee teaching and learning independent of time and place. It has been created especially for public institutions such as academies, colleges and universities .(see:-www.olat.org)

Comparative analysis

Features	Claroline	OLAT	ILIAS	Moodle	efront
Announcements (Instructor can post announcements to a course announcement page)	√	√	√	√	√
Discussion Management (Instructor Can allow students to create discussion groups)	√	√	√	√	√
Real time Chat (Online discussion tool)	√	√	√	√	√
Group work(Instructor can assign students to groups and each group can be given group specific assignments)	√	√	√	√	√
Work offline(Students can compile & download the content for an entire course into a format that can be printed or stored locally)		√	√		√
Community Networking (Students can create online clubs, interest & study groups)		√	√	√	√
Assignments (Create and grade online or offline assignments)	√	√	√	√	√
Link to web resources	√	√	√	√	√
Presentation upload and download	√	√	√	√	√
Video & Audio upload & download	√	√	√	√	√
Grade book(Calculate, store & distribute grade information to students)		√	√	√	√
Internet E-mail (Instructor can email the entire class at once at a single address)	√	√	√	√	√
Tests & Quizzes (Create and manage online assessments)	√	√	√	√	√
Course Management (Instructors can selectively release assignments, assessments & announcements based on specific start and stop dates)		√	√	√	√
Student Tracking (Instructors can track the frequency & duration of student access to individual course)	√	√	√	√	√
Authentication(Administrator can allow guest access to all courses)	√	√	√	√	√
Registration Integration (instructor can add students to their courses manually or allow students to self registered)	√	√	√	√	√

1.(B) Commercial (Proprietary) learning management systems- Proprietary systems have been marketed to higher education since last many years but if we analyze properly we may find that out of the companies that originally entered this marketplace only a handful now command a significant market share. A significant characteristic of all these companies under the Commercial (proprietary) LMS is that they provide institutions with a content-free infrastructure for the presentation of e-learning materials.

Some of the Commercial (Proprietary) learning management systems are as follows:-

- **Blackboard Learning System** – The Blackboard Inc. is a public company headquartered in Washington, D.C. The Company's product line consist of Blackboard Learn, Blackboard transact, Blackboard Connect and Blackboard Mobile. Blackboard provides software applications and related services to over 2200 education institutions in more than 60 countries.(see:- www.blackboard.com)

- **Illl (Institute of Lifelong Learning) -** Illl is a moddle based e-learning portal designed and developed especially for the students, teachers and staff of Delhi University. The main focus of this Institute is to enhance the quality of education in Delhi University through the use of Information and Communication Technology. The content of this e-learning Portal is divided into five sections, viz. e-Lessons, e-Lectures ,e-Quizzes, e-Labs and e-classes.(see:- www.illl.ac.in)

- **Joomla LMS-** Joomla LMS was introduced by e-learning force company which initially provided Joomla components, extensions and modules developed by Belitsoft outsourcing software developer located in Minsk, Belarus (Eastern Europe). Joomla LMS provides Learning management system in two editions for creating e-learning in an educational setting. (see:- www.joomlalms.com).

- **Educo Soft**- Educosoft is a comprehensive teaching and learning system of Educo International Inc. pioneer in the field of Education Technology in USA over the last 25 years. Educo International, Inc. offers teaching and learning resources for, schools, colleges and self-learners in the Unites States, Puerto Rico, India, the Middle East, and Caribbean Islands. (see:-www.educosoft.com)

- **Pearson Learning Studio**- Pearson is the world's leading education company which provides learning materials, technologies, assessments and services to teachers and students of all ages and in more than 60 countries. Pearson Learning Studio is an advanced personalized virtual learning environment designed with educators and students in mind that promotes e-learning in an educational setting.(see:- www.pearsoncustom.com).

Comparative analysis

Features	ILLL	EDUSOFT	Pearson learning studio	Joomla LMS	Blackboard Learning System
Announcements (An Instructor can post announcements to a course announcement page)	√	√	√	√	√
Discussion Management (Instructor Can allow students to create discussion groups)	√	√	√	√	√
Real time Chat (Online discussion tool)	√	√	√	√	√
Group work(Instructor can assign students to groups and each group can be given group specific assignments)	√	√	√	√	√
Online marking tools (An instructor can mark assignments turned in through the assignment tools)			√	√	√
Work offline(Students can compile & download the content for an entire course into a format that can be printed or stored locally)		√	√	√	√
Online grade book (An instructor can add the grades for offline assignments)	√	√	√	√	√

Community Networking (If allowed, Students can create online clubs, interest & study groups)			√	√	√
Student portfolio (A student can create a personal homepage which may include his/ her photo & other details)			√	√	√
Video & Audio upload & download	√	√	√	√	√
Presentation upload and download		√	√	√	√
Link to web resources		√	√	√	√
In -built email (An instructor can email to one student, a group of students or to the entire class)			√	√	√
Drop Box (Students can submit their assignments using drop box)	√	√	√	√	√
Searching within course (Students can search all course content by name and dates)	√	√	√	√	√
Grade book(Calculate, store and distribute grade information to students)	√	√	√	√	√
Help (The system includes online tutorials for students that help students how to use the system)	√		√	√	√
Tests & Quizzes (Create and manage online assessments)	√	√	√	√	√
Course Management (Instructors can selectively release assignments, assessments & announcements based on specific start and stop dates)	√	√	√	√	√
Student Tracking (Instructors can track the frequency & duration of student access to individual course)		√	√	√	√
Authentication(Administrator can allow guest access to all courses)	√	√	√	√	√
Registration Integration (instructor can add students to their courses manually or allow students to self registered)	√	√	√	√	√

2. Instructor Led Virtual Classrooms

Instructor led virtual classrooms can be very different from the unsupervised activities. A virtual classroom is an online meeting space for real-time learning activities, which provides a convenient communication environment for distance learners just like traditional face-to-face classroom. A virtual classroom also allows learners to attend a class from anywhere in the world and aims to provides a learning experience that is similar to a real classroom. They have many benefits like immediate feedback and access to instructors and a face to face feeling. Because there is an instructor in the environment with you while you are doing or looking at activities your experience may more closely resemble a real classroom experience. Virtual Classrooms may typically include some or all of the following elements:

- **Text chat-** Using this feature a participant and presenter can send short text messages to each other. People can type what they would like others to see and learn in real time and to sort out the queries, if any.

- **Screen sharing-** Screen sharing allows all class participants to see an application that is opened on any given presenter's or participant's PC. Everyone can see the shared application or screen as if it were running on their own machine.

- **Whiteboard**- Whiteboard is a blank screen which is used to write while session is going on. Authority of using whiteboard will be with presenter only. As a participant in the session he can view whiteboard screens. Presenter can write on screen or he can draw different geometrical shapes as well.

- **Presentation display**- The presenter can show PowerPoint presentation in the session. For that he can upload presentation file into the session. Instructors also have the multiple options for presentation of content from audio/video/multimedia lectures.

- **Audio & Video**- It can be used in session. Using audio, presenter can deliver voice based lectures in the classroom. People can share information in a real time with the help of microphone and speakers.

- **Polling-** The presenter can ask the participant any question by using the poll functionality that will be of the objective or yes/no type question. The response of the poll will be public or private. If the response of any particular poll is private then the response will not be shown to the participant's, only presenter will be able to see the response.
- **Hands-up**- The presenter interface will consist of hands-up lists, which will display the names of the participants, which has raised their hands. Hands up by participant indicate he has some doubt or question to be discussed with presenter.

- **Shared resources and web links**- The presenter can share their resources using the load resources facility that will be present in the presenter interface. The resources will be files of type (doc, rtf, pdf) or web links (URL). The participants can download these shared resources on their machines, also they can refer the given web links using their web browser.

- **Breakout rooms**- In a traditional classroom a teacher often divides the learners in two groups to discuss a specific topic or to work on a group assignment. The same way a break out session can be started in virtual classroom, using which different group of users can be created in same virtual classroom session.

- **Participant List**- It displays the name of the participants that are logged in for the session.

- **Session Recording**- Using this feature, virtual classroom sessions can be recorded. The session can then be replayed as if they are videos. Participants or presenters can replay a session at any time after the session has finished.

Facilities Identified:

1. **Adobe connect-** An Adobe connect is a commercial software which is created by Adobe Systems use to create online training materials, information and general presentations, learning modules and web conferencing. This product is entirely Adobe Flash based. (See: - www.adobe.com)

2. **WIZIQ-** WIZIQ is a virtual classroom product of educomp use to connect students and teachers all around the world. WiZiQ not only facilitates the connection between learners and teachers around the globe but it also provides a channel of communication between them. Thousands of teachers across the world using wiziq's Virtual Classroom to teach students from their schools, colleges, universities and other educational institutions. (See:- www.wiziq.com)

3**. Elluminate Live**- Elluminate Live is a web conferencing platform developed and designed by Elluminate Inc. Elluminate Live enables world-class communication, collaboration, and education that transform teaching and learning in an educational setting. (See: - www.elluminate.com)

4. **Electa Live**- ELecta Live is a product of ELecta Communications Ltd. ELecta Live is a Virtual Classroom Software and a Web Conferencing Solution for live classes, online meetings and webinars. It is available in different editions and configurations used for online teaching and web conferencing. (See: - www.e-lecta.com)

Comparative analysis

Features	Adobe	Elluminate	Electa Live	Wiziq
Attendance	√	√	√	√
Video & Audio upload & download	√	√	√	√
Virtual Hands-up	√	√	√	
Visual with web cam	√	√	√	√
Unlimited Live Sessions and Classes	√	√	√	√
Share Whiteboards, Presentations & Files	√	√	√	√
Record Your Classes	√	√	√	√
Use breakout rooms to focus discussions	√	√	√	√
Get immediate feedback with polling	√	√	√	√
Prepare content behind the scenes	√	√	√	√
Enhance content with quizzes	√	√	√	√
Manage class discussions	√	√	√	√
Text chat	√	√	√	√

Conclusion:-   On the basis of the comparative evaluation of the virtual learning platform available for post graduate courses in commerce at Delhi School of Economics, University of Delhi, we analyzed that virtual learning environment is to be created in two ways, i.e., through learning management system and virtual classroom. Further, we conclude that virtual classroom is more useful for distance education mode On the other hand; learning management system can be used to supplement the regular teaching or the traditional classroom teaching. There are two types of learning management system capable of being used at Department of Commerce at Delhi school of Economics i.e., open (free) learning management system and commercial (proprietary) learning management system. If the free LMS is implemented, in that case though the user or an organization may not have to incur any cost for the software at the initial stage but they are required to keep the IT technicians for customizing such software and using it. Hence, the cost required for such IT staff is generally much more than the cost of the software.

On the other hand, if any organization or a company is implementing the commercial (proprietary) learning management system, in that case though the user has to pay for the software but generally they are not required to pay anything for the customizing work or in other words their cost or cash outflow for the technician would be eliminated. Hence, it is to be concluded that commercial (proprietary) learning management system best suits the requirement of Department of Commerce, DSE. Regarding the cost analysis, we further conclude that out of the various learning management system which we have examined in this paper, **ILLL (Institute of Lifelong Learning)** is providing its learning management services free of cost for the courses in Delhi university whereas other software companies would charge a price for making available their platforms to the user. Apart from a license fee some recurring charge will also be there, which has to be borne by the user or an organization.

Conclusion: The principal author was one of the few teachers who started using the ILL platform for engaging students in the class room. The platform was most useful for hosting study materials for downloading by students. It was also useful for organizing weekly class test fro students based on the topics covered in class. It resulted in continuous evaluation of students. The test had to be converted to digital format and revised from time to time. It became a very helpful tool for internal assessment of students. It worked well for two academic years. After that in the third year the platform started showing defects and its functions became severely limited. Thereafter it completely collapsed. As of 2015-16 there is no digital platform at the University of Delhi. A University that could have shown the way for digital leadership in colleges, Business schools and Universities failed to utilize this opportunity after a faltering start. The lesson to learn from this fiasco at Delhi University is that for each school / institution who wants to use the digital platform must have essential prerequisites:

1. A chief IT officer to manage the platform and maintain it (24x7) . S/he must be a full time person and also impart training to faculty and hand hold faculty members to bring their class online.

2. The Head of the institution must have a commitment to introduce digital platform and gradually bring all classes and teaching to online contact and engagement over a given period.

3. A group of faculty members should be provided assistance to prepare and digitize the teaching material used by them in traditional methods.

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