A comparative analysis of traditional and electronic learning systems and their applications in new education system

K. D. V. Prasad | Shyamsunder Chitta | Hariprasad Soni

Abstract Teaching via the Web is a new issue that functions mostly as a possible academic infrastructure and a fruitful field of inquiry into its influence on teaching & learning practices. It is a subject that deserves more attention since it is so new. Due to the major differences between e-core learning and face-to-face transmission, extra new abilities for programmed development, online evaluation, and interaction, in addition to conventional characteristics, are needed in contrast to conventional features. Construct online programs and websites from the ground up using MOODLE, a package of the program that allows you to do just that. It is called a Learning Management System (LMS) because it allows students, instructors, & peers to work together more efficiently on initiatives or assignments in general. In this section, we will look at how instructors utilize MOODLE to build exciting & exciting learning programs at a variety of specialized schools, as well as how educators make use of the multiple capabilities of MOODLE to develop vivid & fascinating teaching circumstances.

Keywords: E-Learning, development, knowledge, teaching, programmer, software

1. Introduction

University administrators are investing large opportunities in e-learning platforms to aid in the delivery of instruction and learning as Web innovations progress. The Learning Management System (LMS) is an example of an e-learning system that incorporates capabilities for distributing coursework over the Web as well as for online collaboration. It facilitates interaction between educators and students, as well as performance tracking and the secure online transmission of course data (Álvarez et al 2013). In recent years, learning management systems (LMSs) have emerged as practically indispensable instructional aids. Many educational institutions, whether they specialize in distance education or classroom-based teaching, are presently using learning management systems (LMSs) to strengthen and optimize learning and teaching processes. With the implementation of learning management systems (LMSs) by academic organizations, it is anticipated that higher-quality, learner-centered education would be provided (Russell 1986). Localized learning management systems (LMSs) often include a broad variety of features that may be utilized to support either conventional or distant learning. New learning and teaching methodologies that cover a broad variety of educational objectives may be provided via learning management systems (LMSs) (Lowry and Gaskin 2014). The use of learning management systems (LMSs) in higher education, for instance, has made it straightforward to offer hybrids programs to students.

A hybrids program mixes face-to-face classroom instruction with digital instruction. In hybrids classes, educators combine the rewards of internet education with the positives of face-to-face schooling to provide a more effective learning experience. Rather than opting for either a purely in-person or entirely digital program, a combination of face-to-face and digital learning is preferred since it gives students more academically challenging learning experiences (Bhattacherjee 2001). The acquisition and use of e-learning systems are one of the best extensively researched topics in the previous research since they provide university administrators with more flexibility in a variety of areas, such as program planning. In the bulk of this study, the technological accepting models (TAM) and other associated concepts were utilized to investigate the origins of e-learning platform usage as the end dependence factor, which was the final dependent factor. Following these analyses, several components were revealed to be the origins of the use of e-learning systems (either directly or indirectly). Facilitating conditions of use, considered utility, considered pleasure, considered liveliness, data reliability, systems reliability, services reliability, and system functioning are all important factors to consider when evaluating a product or service. The recognized usefulness and considered ease of use of e-learning have been the greatest important elements in promoting acceptance in the majority of instances. Encounters with others web allow for a wide exchange of understanding on a variety of various forms.
of material. Software programs that may be utilized as digital learning platforms include several different options (Lengyel and Herdon 2009).

These solutions are expressed via the use of documents, professional programs, and open sources software (OSS) (Muwanguzi 2009). Moodle has been adopted by a lot of universities and groups all across the globe since it offers a comprehensive and simply available set of features. Several of its elements, notably its security functions, were, on the other hand, constructed without the benefit of comprehensive architectural specification.

Besides having an active audience, Moodle also boasts a solid design, implementations, compatibility, and internationalization. MOODLE is accessible as free and open-source software licensed underneath the General Public License (GPL). It has no up-front costs, and it is reasonably easy to get your hands on one. Although it has certain advantages, it also has some drawbacks, such as a shortage of SCORM support and a constrained roles and authorization framework. Documents modification is not supported by this application. These limitations, on the other hand, will be tackled as parts of the program's route plan. Increasingly, greater educational organizations are using a course management system (CMS) to assist in the distribution of program contents to students, whether as a supplement to conventional programs or as a completely digital programmer experience. It is possible to use a CMS system as an alternative teaching strategy that does not include the scientific challenges that arise when dealing with large groupings of pupils. Moody was developed as an e-learning framework as part of a developmental programmer aiming at improving the quality of the teaching and studying experience (Robertson 2021).

Figure 1 Student Teacher Experience.

2. Literature review
2.1. What is MOODLE?

Moodle is a public learning management system that provides a framework for e-learning. It greatly assists different instructors in conceptualizing the numerous classes, courses frameworks, or content, hence enabling engagement with digital participants (Yordanova 2017). Martin Dougiamas created Moodle, and its major goal has been to add appropriately to the network of e-learning as well as enable digital teaching or achievement of digital qualifications from its start. Moodle is an acronym that refers to Modular Object-Oriented Dynamic Learning Ecosystem.

![Moodle Diagram](image)

Figure 2 Moodle. Source: self-developed.

2.2. Learning Management Systems

A learning management system (LMS) is a programming program that is used to administer training programs, academic programs, or training and advancement programs by monitoring, analyzing, automating, or delivering them. The notion of a learning management system arose straight from e-Learning. LMS account for the lion’s share of the learning system market. The LMS was initially introduced in the late 1990s. Because of the focus on distant education even during the COVID-19 epidemic, the use of LMS has skyrocketed (Ülker and Yılmaz 2016).

Utilizing analyzing information and monitoring, learning management systems were created to detect educational or learning shortages. LMSs are primarily used for digital learning distribution, but they may also be used for a variety of other purposes, such as serving as a framework for digital material such as courses, both asynchronously or synchronously. An LMS in tertiary learning may provide lecture administration for teacher instruction or a flipping class (Williams van Rooij 2011).

Smart techniques are used in advanced LMSs to provide automatic course suggestions depending on a person’s ability profiles, as well as to gather information from learning components to create similar suggestions much more reliable.

![LMS Diagram](image)

Figure 3 LMS (Learning Management System). Sources: self-developed.

2.3. Moodle Structure

Table 1 shows how Moodle delivers multiple packages for teaching and education to students and learners (Herman Dwi 2014).
2.4. Moodle Application

Moodle may be downloaded and installed on a Web platform including Apache HTTP Server, and it supports a variety of databases administration platforms like PostgreSQL (Wu 2010).

It is simple to set up utilizing LAMP (Linux, Apache, MySql, PHP) and WAMP (Windows, Apache, MySql, PHP). For Microsoft Windows or Macintosh, which was before configurations of Moodle with Web servers or databases are accessible. There are other automatic deployment methods available, including downloading a Debian distribution, distributing a prepared TurnKey Moodle appliances, utilizing using Bitnami installers, while using "one-click download" services like Installatron. Additional Moodle solutions offered by Qualified Moodle Associates include hosting, education, customization, or material production (Table 2). Via licensing, this community of suppliers contributes to the growth of the Moodle program (Herbimo 2020).

### Table 2 List of Moodle delivery packages.

| 1 | Plugins | Extensions are a powerful collection of tools that enable Moodle customers to customize and enhance the functionality of the website. There seem to be numerous Moodle extensions available, each of which adds new capabilities to Moodle’s basic capability. The Moodle extensions catalog contains a listing of all of the extensions available. |
| 2 | Patterns | To customize the appearance and performance of a Moodle website or a particular program, graphical templates for Moodle may be downloaded or deployed. |
| 3 | Translating | Moodle has been converted into more than 100 languages and is accessible for installation by any website administrator. Individuals from a variety of nations work together to preserve and improve the different languages packages. |
| 4 | Smartphone | Several Moodle designs, which are focused on flexible web design, make it possible to utilize Moodle on portable platforms as well. Moodle mobile applications are also accessible on Google Play, the App Store (for iOS devices), and the Windows Smartphone Stores, among other places. |

2.5. Moodle’s Basic Functions and Activities.

Several of the elements and characteristics expected of an e-learning system, such as communities, material administration, exams with different sorts of inquiries, and a range of activities packages, are featured in LMSs. Moodle’s primary features include facilities for building courses and events. Those, in turn, provide the course’s professor with a plethora of useful possibilities. The teacher may use the Assets section to build text sheets or web pages with a combination of text and graphics, as well as links to documents or online sites/pages (Anonymous 2020).

For every subject or even a week, the Assets section also provides for the establishment of sub-directories, which include documents. The Operations section, which includes projects, discussions, or choices (another question with a choice of replies – comments are collected so analytics may be determined), information, which would be tables established by the instructor or completed results indicating that students are additional useful and collaboration component. The teacher provides a dictionary of terminology and definitions that anyone may read or a debate thread in which anyone can participate in the topic. Tests are integrated into classes, allowing learners to pick which route to pursue and how many questions to answer. A test allows you to create a range of tests, a poll gathers student input, as well as a wiki is a web address that multiple individuals update. Any Virtual Learning Environment (VLE) may utilize SCORM-enabled material by incorporating it into the material that it serves. A teacher may modify several of the course’s fundamental characteristics by accessing the administration section of the program website. The structure, design, amount of weeks and themes, or minimum uploading volume for your courses are all possibilities. It is feasible to change your enrollment selections, accessibility, or languages here. By giving categories to individuals, various degrees of accessibility may be allowed to individuals (Moreno 2008).

Moodle, an accessible e-learning software, is used by over 400,000 individuals worldwide. Including a wide number of contributors, the development’s communities webpage offers tools such as blueprint, how-to instructions, or CVS tutorials for anyone interested in delving into the original codes. It does not give any guidance for potential growth. Instructors may utilize it as a framework for preserving and distributing instructional materials, including engaging together digitally including both learners and educators, to let students participate in a variety of ways. Several components are available for download from the Moodle.org community site, and it’s quite beneficial for integrating video illustrating elements to the Moodle e platform.
These instruments help to improve the efficiency of classroom instruction. There are numerous Moodle systems worldwide, varying in length from a single-teacher site to a college with 40,000 students. However, numerous Jordanian institutions that have chosen commercialized CSM (WebCT and Blackboard) are thinking about converting to Moodle (Tenriawaru et al. 2016).

2.6. Platforms for E-Learning

Several words are used to describe instructional computer applications, particularly e-learning systems, Learning Management Systems (LMS), Course Management Systems (CMS), and even Virtual Learning Environments (VLE), and several more (Wallace 2014).

Students may utilize these systems to access course content in a variety of media (text, image, and voice), as well as engage with instructors and classmates through messaging platforms, forums, conversations, multimedia conferencing, and additional messaging services. Such solutions include a suite of customization resources that enable customers to construct virtual courses, topic sites, work teams, and learning groups. Aside from pedagogy, such platforms offer a collection of features for registration, analyzing, and assessing student and teacher behaviors, and the capacity to manipulate data through the Web (Moreno et al. 2016).

It is a technology that offers comprehensive help for the following 6 primary operations:

- Formation
- Organization
- Distribution
- Interaction
- Partnership
- Assessment

Figure 4 E-Learning Platforms Types. Sources: self-developed.

Figure 5 E-Learning Platform’s primary operations. Sources: self-developed.
Technically speaking, there are various kinds of learning management systems (LMSs), many of which are commercialized (including Blackboard) and others that are accessible (such as Moodle). Different studies have shown that implementing e-learning programs offers considerable advantages, irrespective of the type. However, implementing e-learning technologies brings several challenges for organizations, including the right choice of technology platform to use. In respect of open alternatives, numerous polls have shown that Moodle (Modular Object-Oriented Dynamic Learning Environment) is the most extensively used and intuitive, and easy framework in higher ed, according to the results of the studies.

2.7. Moodle Technological Needs

Moodle is free software, thus it is not limited to a specific range of technical needs and can be run on a broad variety of CPUs, including old and new versions, rendering it incredibly adaptable (Gorbâns and Bierne 2015).

- It is possible to use any one of the following operating systems on a Mac: OS 9.3 (Mac OS X) or 10.3 (Mac OS X), as long as the computer is equipped with a Pentium 2 or 3 processor. This means that everyone may benefit from it.
- Increasing the pixel density from 800 x 600 pixels to a maximum of 1024 x 768 pixels is possible.
- To access the web, you may utilize 56k modems or elevated ADSL/Cable connections.
- Firefox, Internet Explorer, and a slew of additional technologies are available. There is no constructed HTML writer in Opera or Safari.
- Moodle can access and utilize many programs, including Microsoft Word, Spreadsheet, and Ppt. Except for a basic text editor, the Excel and Ppt reader’s work. Free Desk may be used as a substitute.
- Windows Media Player, Realistic Player, Apple Quicktime, Adobe Readers, Flash player, Shock-wave player, Desktop Applications, and Java Mac OSx are all compatible with this application.


The most significant evaluating consequences for e-learning are the exploration of questions related to the assessment of the e-learning processes and methods of instruction, and the formulation of a comprehensive approach for the assessment of e-learning and instructing. Any evaluating action may have an impact on judgment (Wongpratoom and Sranamkam 2019). To attain this aim, the university will need a rigorous evaluation technique for measuring the impact of its numerous education, training, and study operations. Every plan must gather a variety of information and comments, as well as deliver a high quality of service and make proper usage of information and communications technologies in education and learners, in addition to other requirements (Anonymous 2020). The major differentiation between various forms of educational assessments tasks is made by dividing them into three categories: receptive, tracking, and integrating assessments. A simple and inconspicuous information collecting approach for assessment techniques should be used, and it should be updated frequently with all

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students and faculty members. Table 3 contains additional information from the following assessment that was acquired as part of the diversity information gathering procedure:

<table>
<thead>
<tr>
<th>Table 3 Evaluation of effects of E-learning on students.</th>
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</thead>
<tbody>
<tr>
<td>1 Evaluation in the developmental stage</td>
</tr>
<tr>
<td>2 Tracking and assessment as a part of an integrated assessment</td>
</tr>
<tr>
<td>3 Assessment in the evaluation</td>
</tr>
<tr>
<td>4 Evaluation at the start of the process</td>
</tr>
</tbody>
</table>

2.9. What Are The Distinctions Among Online and Traditional Education?

Whether you are selecting between online and conventional learning, the following comparisons in Table 4 may be useful (Anonymous 2020):

<table>
<thead>
<tr>
<th>Table 4 Comparison of online and traditional educational systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online education</td>
</tr>
<tr>
<td>Encourages a self-directed learning method</td>
</tr>
<tr>
<td>Online material and online trainers are the key sources of data.</td>
</tr>
<tr>
<td>Completing online courses exposes you to additional technologies, allowing you to become more technologically adept.</td>
</tr>
<tr>
<td>While it may seem counter-intuitive, online learning may be beneficial for enhancing classroom engagement. An online class fosters an atmosphere in which individuals who are often hesitant in regular classrooms may engage.</td>
</tr>
<tr>
<td>Certainty the absence of commuting, this is almost a despite. By just turning on your computers and enrolling in an online class, you just save the time it takes to get dressed and attend class.</td>
</tr>
</tbody>
</table>

3. Results

The questionnaire went on to emphasize the importance of the Moodle systems as an e-learning platform in his subsequent response. In a program, the use of a learning management system (LMS) might just save students a significant amount of time even while arranging and handling multiple simultaneous components for the same course. The Moodle Learning Management System (LMS) helps pupils in improving their study skills. It is believed by learners that an e platform is a valuable tool and an open classroom for the full-time period. Students can connect with instructors online and participate in live conversations from anywhere and at any moment, and they can easily discover missed class resources. The contents of the lessons may be completely entered into the database and, as a result, made available to students. We study about 250 samples where both online learning and traditional learning are important in their field but the result, we found that students and teachers choose online learning as a priority and easiest thing so the percentage ratio that we studied to read samples is 60% Online learning and 40% Traditional learning students and teachers choose for their requirements.

4. Discussion and conclusion

Several studies have proved the benefits of the Moodle systems over certain comparable systems. We discovered several E-learning elements that Moodle has to provide throughout our investigation. Moodle is an ideal tool for instructors because it allows for the simple creation and preservation of educational resources and a cooperative online learning atmosphere for instructors and students. Apart from creating courses, participating in online communities is a terrific method to remain recent with both the planet and encounter a group of scholars who will encircle the planet. We can rapidly find a huge variety of components that may be utilized to improve our Moodle website just on the moodle.org website. These resources help us improve the efficacy of our education. As a consequence of bringing data and communications technologies into teaching via e-learning through moodle, instructional performance is boosted. E-learning makes it easier for learners, teachers, and students to collaborate. E-learning has the potential to improve availability, affordability, and student cooperative education even while raising engagement in students and instructors.

A detailed assessment of the fundamental causes for academicians’ use, or lack thereof, of e-learning resources, and an inquiry into what these innovations could help in the efficacy of the teaching and learning procedure, should be included in ongoing studies.
Ethical considerations

Not applicable.

Conflict of Interest

The authors declare that they have no conflict of interest.

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