E-learning Tools in Higher Education

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Abstract

Today, many e-learning tools are currently available for educational sectors. E-learning tools can provide easy training and education to good number of students with versatile cultural, sociological, economical and educational backgrounds. However, e-learning has overestimated about what could be achieved in education, and hence could be failed. Many people normally do not properly understand the demerits, limitations and weaknesses of e-learning and most often some people may expect too much from e-learning. In this research paper, we have reviewed the multiple e-learning tools such as Canvas, Schoology, Blackboard and MOODLE. I have expressed my view on the most important features of Blackboard and Moodle tool and analyze the advantages and disadvantages. With the analysis of above tools we have obtained a global view of the current tendencies as well as and future tendencies and hence we tried to justified the use of MOODLE as an e-learning tools in the classroom. As per teaching experience, MOODLE is an effective tool in the e-learning development. A Very large number of references found from Researcher, Practitioners and Authors for MOODLE over Blackboard.

1. Introduction

Cost of learning has increased drastically in all respect hence there was a need for a new form of leaning. A new form of learning called e-learning is being introduced since beginning of the third millennium. The e-learning
decreases the educational costs in all respects and it is much more result orientated as compare to than traditional learning. It provides worldwide connectivity and hence, canceling geographic challenges. In addition, traveling time is completely reduces as the time plays vert vital role in all respects. Users can access training materials from home or while on the road via the Internet.

Over a time there is significant growth in the following area of technology particularly,

- Increase in internet speed and connectivity
- Decrease cost of digital storage devices, and
- Established standards of technology

Primarily e-learning requires Information CommunicationTechnology (ICT) facility and fast speed computer networks.

Indeed, the rapid use of e-learning systems and technologies has been reported by several studies [1]. In USA, it has been more widely spread than in the rest of the world, and in Asia e-learning has now slowly becoming a focus point.

In India, many universities, affiliated colleges, autonomous institutions are now started e-learning web sites for academic and administrative purposes. Azim Premji University, Christ University, Bengaluru, ITM university, Gwalior, Assam don Bosco University, Assam, Atharva College of Engineering, Malad, Mumbai, Maharashtra, SIES Graduate School of Technology, Navi Mumbai, A P Shah Institute of Technology, Thane, Indian are using e-learning systems such as MOODLE\(^1\) and Coursesite by Blackboard\(^2\). These e-learning tools help students and teachers to present course content in an easy and effective way [8]. Some functionalities offered in these portal sites as follows:

- On-line tests for different courses.
• Student authentication module.
• Teacher authentication for contents module.
• Assignment Submission
• On-line notices for various events.
• On-line Latest news and updates.
• On-line Concession form for train and bus sessional tickets.
• Distance learning.
• Quiz

There are other open source e-learning tools are also available like Kahoot, sakai, Latitude Learning, Dokeos, eFront, Ilias, Atutor, Cancas, Elmsln, kornukopia, Myicourse

Very Little attention paid to a number of issues that the e-learning platforms faced, such as security, usability, Openness, operational feasibility and efficiency for both in research and in implementation.

As of now universities, colleges and institutions have not realized the importance of security enhancement for e-learning systems. These institutions simply configures some ready security tools like application fire and hardware firewall to secure their systems. Today, academia requires sharing, distributing, merging, changing information, linking applications and other resources within and other related organizations [6, 8].

2. E-learning Tools

There are mainly three types of E-Learning tools. They are as follows

1. Curriculum Tools:

This type of e learning tool is used in schools and colleges for educational purpose. The main purpose of this tool is to facilitate the class activities in an organized manner. This tool consist of three parts: Instructional kit, Administration kit and Student kit. Instructional Kit includes the curriculum
design the grading functionality. Administration kit includes the credentials checking system to ensure authorized access. Student kit includes reading material, assignments, projects and other resources that helps them in efficient learning

2. Digital Library or the Digital Repository:
   It helps the student to search the desired information with the help inbuilt features such as searching, browsing.

3. Knowledge presentation tool:
   It helps learners to view the information, capture its meaning and develop the knowledge

3. Importance of Technology

   Technology is becoming a necessity in College and university classrooms. Technology helps lecturers in conceptualize and presentation of their lectures, displaying more accurate information, increase student’s attention and hence increase students learning. In addition, the use of different technologies in the classroom can help lecturers to save time and could focus on course content.

   There are numbers of advantages for using technology and learning materials in the college and university classroom [13]:
   - Better student attention and realization
   - More active learning
   - Alternative teaching ways
   - Time Saving for lecturers
   - Multimedia stimulation

   However there are four weaknesses for using technology when teaching courses [13]:
   - Network failure
• Device failures
• The need for backup
• Time require to upgrade and learn new technology

Through proper learning and testing of technologies and equipment before its utilization can be overcome on above weakness.

Several other Information Communication Technology (ICT) tools available to lecturers are (Cannon & Newble, 2000): (i) Overhead projectors (ii) Video and data projectors (iii) Blackboard (iv) Internet and (v) Course management programs.

4. E-learning Technologies and Systems

A Course Management System (CMS) is a web-enabled system with a database at back-end. A CMS assists lecturers in obtaining resources on the web for students and to facilitate the management of course activities and tasks [7]. Some of common e-learning systems available are adobe connect, canvas, udutu, schoology, courser, WebBoard, , and Blackboard, MOODLE, and Sakai[9].

A study conducted by the University of Queensland (UQ) [5] demonstrates that one of the most common successful strategy in teaching large classes is the use of web-based course material (e.g., online resources, course website, discussion boards, white board, etc.) and use of mixed media in lectures (e.g., power point, overhead projector, LCD projector etc.). Nowadays, use of online course management systems is widespread in education [10].

There are three focus point of web-based course management systems are:

i) Easy accessibility of course contents to students
ii) Timely linkage between lecturers and trainees
iii) Reduce paper usage (green computing).

A web course has number of advantages including [14]:
- It is a convenient and available anywhere any time
- It is paperless learning
- It helps to improve skills and innovative
- Web course makes the teaching easier

One of the main unique selling point of Course Management (CMS) is a security and privacy. CMS has implemented security and privacy to perform the following tasks [14]:

- Student access controlled to activities and tasks
- Guest user access controlled to activities and tasks
- Copyrighted materials secured from intruders
- Student activities log
- Update Course content
- Assignment submissions logged

MOODLE, Blackboard and Coursera are three common web-based learning management systems used worldwide in education, training, and knowledge management.

<table>
<thead>
<tr>
<th>Features / LMS</th>
<th>Blackboard 9.1 SP3</th>
<th>Moodle 2.0.1+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Files</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Director / Folder</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Create / extract file archives</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Blank Page / Page</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>HTML-Editor</td>
<td>yes (formula editor)</td>
<td>yes (with LaTeX filter)</td>
</tr>
<tr>
<td>Multilanguage filter</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>External links</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Internal links</td>
<td>yes</td>
<td>yes (no separate feature, but Moodle uses permanent links)</td>
</tr>
<tr>
<td>Audio</td>
<td>yes (embedded QuickTime-Plugin, Internet Explorer uses WM-Plugin)</td>
<td>yes (embedded Flow Player)</td>
</tr>
<tr>
<td>Video</td>
<td>yes (FLV embedded in all browsers, MPG only with Internet Explorer and installed Plugins, WMV only with Internet Explorer and installed Plugins, MPG only with Internet Explorer and Chrome)</td>
<td>yes (FLV embedded in all browsers)</td>
</tr>
<tr>
<td>S.C.O.R.M.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>IMS-Content-Package</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upload a single file</td>
<td>yes (assignment)</td>
<td>yes</td>
</tr>
<tr>
<td>Upload multiple files</td>
<td>yes (assignment)</td>
<td>yes</td>
</tr>
<tr>
<td>Online text</td>
<td>yes (quiz)</td>
<td>yes</td>
</tr>
<tr>
<td>Offline activity (create a gradebook item)</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glossary</td>
<td>yes (only editable by the instructor)</td>
<td>yes (participants can also add entries)</td>
</tr>
<tr>
<td>RSS Feeds</td>
<td>yes (database, forum, glossary)</td>
<td>yes (system-wide and within a course)</td>
</tr>
<tr>
<td>Blogs</td>
<td>yes (course-bound)</td>
<td>yes</td>
</tr>
<tr>
<td>Graded blogs</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>
4.1 MOODLE

The name Moodle is an acronym for Modular Object Oriented term Developmental Learning Environment and is a course management system (Course Management System - CMS) through the Internet, also known as a Learning Management System (LMS). It is a free web application that educators can use to create effective online learning sites. One of its main advantages is its open source, or has open source allowing any user with programming knowledge to modify and adapt the environment according to their own needs.[3]

MOODLE has a number of advantages in education. MOODLE is very easy to install, upgrade and use. MOODLE is platform independence so it does not need modification on UNIX, Linux, Windows, Mac OS and any other systems [12]. It is specially design for educational purpose, it has special feature which other e-learning plat form is lack off.

MOODLE 1.6 [2] supports user authentication. User account can be created to access the MOODLE portal site. Once logged in, users can access to the courses they are registered for. Lecturers are registered as users, they can edit the course’s site, including modifying the activities and marking students, prepare and schedule online quiz and examination. The types of contents are: text files, HTML files, XML, links to other WebPages, static images, multimedia files and hyperlinks to uploaded files to make system faster and device portable, while the activities commonly used are quiz, forum, chat, choice and assignment.

Apart from features, MOODLE has various advantages, first in tutorial registration:

- No physically presence of student is required in college for tutorial registration,
- The registration can be done at convenient time,
- Double entries of registration can be avoided by using a ID and monitoring,
Second, the advantages of the communication in MOODLE [2]:

- Saving time spent on writing questions which are usually quite lengthy
- Immediate respond to students queries,
- Reduction in number of enquiring for confirmation of activities from students,
- Allowing questions and discussion in class.
- Downloading in ‘just-on-demand’,
- Motivating students to work from virtual class too,

4.2 Blackboard

The blackboard e-learning tool can be used by lecturers and trainers throughout the lecture to brain storm ideas or identify key points. It is recommended that only key points or ideas should be written instead of detailed information. The blackboard can be a best useful tool to assist students visualizing key aspects of the lesson but this tool may not be adequate to teach a large group. Blackboard assessment tools include:

- Tests
- Surveys
- Assignments
- Automatic/Manual Grading
- Access control over quiz/test
- Availability, grading, reporting, and others
- Various forms of assessment

Blackboard has a number of advantages:

- Integrate assessment with teaching materials
- Auto grading with instant feedback
- Random question selection
- Reports and analysis
However, blackboard has a number of disadvantages:

- No features for testing of all skills and activities
- Require IT skills to use
- Time consumption to design and input questions
- Plagiarism
- Security

In a Gartner Group's 2002 “Distributed Learning in Higher Education” Survey reports that 38% of users use WebCT, 26% of them use Blackboard, 25% no campus standard and 9% other[14].

Furthermore, Casey Green’s Campus Computing Study of American Public Institutions reports the following [14]:

<table>
<thead>
<tr>
<th>Distributed Learning in Higher Education</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard</td>
<td>27.7%</td>
</tr>
<tr>
<td>NoStandard</td>
<td>23.1%</td>
</tr>
<tr>
<td>WebCT</td>
<td>44.6%</td>
</tr>
<tr>
<td>Other</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

5. Discussion

Blackboard, WebCT and MOODLE are three famous web-based learning management systems very widely used in education sector. In respects to functional feasibility, Blackboard is far better than MOODLE. Blackboard allows greater flexibility in designing course curriculum and time table, which is particularly fitting for continuing education courses. Blackboard offers
active participation among lecturers, trainers and students through many communication and discussion features, and allows varieties in designing learning materials and resources such as the use of images, audio, multimedia.

MOODLE distinguishes from other tools in flexibility and conformability. For example, SIES College using MOODLE for numerous courses since 2012. Course, the quizzes in MOODLE were conducted in each individual class on different times set by the lecturer.

Another point, in Blackboard, lectures may send email to all students or in a workgroup. Whereas in MOODLE; lectures posts on Forum instead of sending email to all students or workgroup. As soon as lecturers post to the class Forum, that posting is immediately emailed to the class participants, unless they have opted out. Since the posting remains visible in the forum, those not receiving emails, can check for unread postings. Further, the posting remains visible and may facilitate further discussions.

MOODLE also has more conformability and convenience when teaching large class. The following points has been identified as the major challenges in managing large classes [5]:

- Distribution/ organization of information.
- Communication.
- Time and place for discussion or presentation.
- Groupwork.

However, we still have some open challenges relating to teaching and assessing students in large classes in e-learning environment. We still question that how can Web 2.0 or Web 3.0 satisfy and solve the open issues in large classes? Some of these open issues are listed [7, 11]: Inability to get to know students,

- Inability to reduce students feeling of anonymity,
- How to create interest and interaction in class,
- Managing marking loads and maintaining consistency,
• dealing with email,
• scheduling office hours for consultation,
• assigning homework or tutorial materials,
• recording grades, and
• How to effectively communicate the subject material.

Security in e-learning is another challenge. Built-in security in e-learning tools is not sufficient to protect students and lecturers resources. As MOODLE is open so the developers can add extra level of security and enhance the protection method in MOODLE.

Yet, universities, colleges and institutions over world have not realized the importance of security of e-learning systems. These universities, colleges and institutions use some ready security tools to secure their systems.

However, security principles (such as data integrity, consistency) of e-learning system may be at loose. For example, an adversary (Hackers) can penetrate the web system in many forms [3-4]. An insider adversary, who gains physical access to a web server, would be able to destroy any type of static content in the root of a web server. It is not only physical access to a server that can corrupt e-learning systems. Malicious and Trojan web manipulation software can attack on server machine and once located on the server such malicious software can monitor, intercept, and tamper online transmissions in a trusted organization. The result typically allows the adversary full root access to server data and web server application. Once such access has been established, the integrity of any data or software on a server is in question.

6. Conclusions

The three main e-learning tools such as WebCT, MOODLE, and Blackboard
have been reviewed. We also comment on the most important aims of each tool and analyze the advantages and disadvantages. While both Blackboard and MOODLE are learning management systems with many in intersections, there are some key differences that we have noted in the Section 5 and Section 5. Our teaching experiences indicated that the MOODLE is effective in the e-learning development. However, MOODLE is not fully pure social software.

One of the main challenges that should be taken in account, that, the current e-learning systems faces some security issues because a security is not integrated into the e-learning development process, for example, In MOODLE spammers can register themselves using the email based self-registration to access the course content.

References


of the RST conference on First Workshop on Hot Topics in Understanding Botnets, Berkeley, CA, USA, USENIX Association (2007).


