**Evaluation criteria**

* Software distributed under GNU general Public License (GNU GPL), an open-source software license that provides freedom to use, modify and share the software.
* Adherence to standards is a crucial factor of any LMs.
* LTI support
* Open standards

IMS (Instructional Management System) LTI

SCORM (sharable Content Object Reference Model)

Web content accessibility guide

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* Course templates / formats
* Ease of installation
* Internal mail system
* External mail system
* Knowledge of html
* Supporting themes
* Demo courses/ test course
* Availability
* Context-sensitive help
* Group work
* Student homepage
* Discussion forums
* Operational factors

Reliability

External support

Flexibility in design

Features

Stability

Security

* Course backup
* Course restoration
* Usage statistics
* Supporting databases
* Supporting OS
* Help desk
* Sustainability
* Regular updation
* Supporting video conferencing system
* Scalability without incurring cost ( no. of end users)
* Server installation
* Look and Feel
* Connecting with 3rd party tools and systems
* Upgradation and development
* Active community of developers
* Service providers in the country
* Fully open source with 100% source code free
* Support
* Tutorials
* Manuals
* Demo site
* Community support
* Knowledge base
* Ad-free

**Features**

* Course description
* Agenda
* Announcements
* Documents and files
* Tests n quizzes
* Learning paths/ SCORM
* Dashboard
* Social network
* Weblink
* Message board
* Groups
* Assignments
* Video conferencing
* Mail inbox
* User list
* Interactive chat
* Assessments
* Glossary
* Course progress
* Document sharing

Technical flexibility: Hardware and software requirements, Support, Cost/License, Authentication • Learning tools: Forums, Materials, Messenger, Chat, Exercises, Group work, Student tracking. • Usability: Technical knowledge/installation, Course templates, Standards, Languages.

**-------------------------------------------------------------------------------------------**

* **Usability**
* **Accessibility**
* **Instructions for use**
* **Navigational facilities**
* **Content**

[[**[[A Comparison of Two Online Learning Systems/Mark Nichols//Journal of Open, Flexible and Distance Learning]]]**

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***Administration Tools***

**􀂾 Authentication**

*Atutor:* Administrators and instructors can set courses to be publicly accessible or can protect access to individual courses with a username and password. System has a password reminder option.

*Bazaar:* Administrators and instructors can set courses to be publicly accessible or can protect access to individual courses

with a username and password. Access can be restricted based on number of login attempts.

*Bodington:* Administrators and instructors can set courses to be publicly accessible or can protect access to individual courses

with a username and password.

*Claroline:* Administrators and instructors can set courses to be publicly accessible or can protect access to individual courses

with a username and password. System has a password reminder option. Students can maintain their own passwords for

enrolled courses.

*Coursemanager:* Administrators can protect access to individual courses with a username and password. Students can

maintain their own passwords.

*ILIAS:* Administrators and instructors can set courses to be publicly accessible or can protect access to individual courses

with a username and password. Students can maintain their own passwords for enrolled courses.

*Moodle:* The system uses basic username and password authentication. The system can authenticate against a variety sources,

including external databases. System has a password reminder option. Students may maintain their own passwords for

enrolled courses.

*Sakai:* Administrators can protect access to individual courses with a username and password. Students can maintain their own passwords

**Course Authorization**

*Atutor:* Instructors can assign students limited access to instructional tools based on pre-defined roles or permissions, and

create teaching assistants or additional instructors, each with their own custom privileges. Instructors or students may be

assigned different roles in different courses, or in different groups.

*Bazaar:* The system supports restricting access based on pre-defined roles Instructors can customize specific access

permissions for each student. Instructors or students may be assigned different roles in different courses.

*Bodington:* Administrators can assign different levels of access to the system based on the following pre-defined roles:

students, instructors, and managers.

*Claroline:* Instructors can customize specific access permissions for each student. Instructors or students may be assigned

different roles in different courses.

*Coursemanager:* Administrators can assign different levels of access to the system based on the following pre-defined roles:

instructors, students, teaching assistants, registrars, and administrators.

*ILIAS:* Instructors can assign different levels of access to their course based on the following pre-defined roles: instructors,

students, designers and guests.

*Moodle:* The software provides tools for Administrators to assign access privileges to different group roles: Administrators,

instructors, students and guests. Group role privileges can be further defined into subgroup privileges. Instructors or students

may be assigned different roles in different courses.

*Sakai:* Administrators can create an unlimited number of custom organizational units and roles with specific access privileges

to course content and tools. Instructors or students may be assigned different roles in different courses and group contexts.

**􀂾 Hosted Services**

*Atutor:* The product provider offers: a free-hosted system for a small number of courses.

*Bazaar:* The product does not support hosted services.

*Bodington:* The product does not support hosted services.

*Claroline:* Claroline is capable of hosting ten thousands of courses and users.

*Coursemanager:* The product provider offers a hosted system that includes 24x7x365 monitoring, redundant Internet

connections, and backups at a secure facility.

*ILIAS:* With ILIASasp Databay AG in Aachen, Germany offers hosting/ASP of ILIAS installations.

*Moodle:* The product provider and partner companies offer hosted systems.

*Sakai:* Institutions and other organizations can purchase hosting and support services from a number of Sakai Commercial

Affiliates including Embanet, which provides daily and offsite tape backups, system clustering, managed bandwidth usage,

and multiple Internet service providers to provide redundant fail-over capabilities.

**Registration Integration**

*Atutor:* Students can self-register. Administrators or instructors can batch add students to a course using a delimited text file,

and send a system generated e-mail message to students inviting them to join courses.

*Bazaar:* Instructors may enroll students in online courses, or the students may self-register.

*Claroline:* Instructors can add students to a course or students can self-register. Instructors can batch add students to a course

using a delimited text file.

*Coursemanager:* Students must self-register. The system provides registration progress tracking. The system provides

support for secure online tuition payment by check or credit card.

*Moodle:* Instructors can batch add students to a course using a delimited text file or students can self-register.

*Sakai:* Students can self-register. Administrators can batch add students to the system and courses using providers or scripts

**Course Management**

*Atutor:* Instructors can selectively release course content and assessments based on specific start and end dates.

*Bazaar:* Instructors can selectively release materials based on previous course activity or specific start and end dates.

Instructors can set up specific course content that is released on a specific date and that students must complete before they

continue with the course.

*Bodington:* Instructors can personalize access to specific course materials based on group membership. Instructors can

selectively release materials.

*Moodle:* Instructors can link discussions to specific dates or course events. The system can synchronize course dates defined

by the institutional calendar.

*Sakai:* Instructors can selectively release assignments, assessments, and announcements based on specific start and stop

dates.

**Instructor Helpdesk**

*Atutor:* Instructors can access an online instructor manual, context sensitive help, and an instructor support forum hosted on

the product provider’s site.

*Bazaar:* Instructors can access an online instructor-training manual and form online groups to share experiences with

instructors in their organization.

*Bodington:* Instructors can access an instructor support forum and subscribe to an instructor mailing list. Instructors can also

access online instructor help manual.

*Claroline:* Instructors can access context sensitive help and numerous instructor support forums through the development

community website. Site is also including teacher manual.

*Coursemanager:* It includes operation manual

Instructor Helpdesk

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community website. Site is also including teacher manual.

*Coursemanager:* It includes operation manual

***Curriculum Design***

**􀂙 Course Templates**

*Atutor:* Course content may be uploaded to a file manager, imported from, or exported to, a learning object repository,

imported directly from the Web using a URL, or imported from an HTML editor. Instructors can clone and modify the

default the templates, or create new templates. Instructors can incorporate course functions into specific course templates,

after a systems administrator has enabled those functions.

*Bazaar:* Instructors can use templates to create announcements, course content, course units, discussion forums, and

instructor biography, links, and multimedia content, syllabus and course descriptions. Course content may be uploaded

through a form, by attaching files, or chosen from a learning object repository. Instructors can create new content templates.

*Bodington:* The software provides support for template-based content creation. The templates include a content editor.

*Claroline:* Instructors can use templates to create agendas, announcements, course content, discussion forums, links and the

syllabus and course descriptions.

*Coursemanager:* Instructors can use templates to create syllabus and course descriptions and FAQs.

*ILIAS:* The software provides support for template-based content creation. Instructors can use templates to create

announcements, calendar entries, course content, course units, glossaries, syllabus and course descriptions. Course content

may be uploaded through a form or chosen from a course-specific content library.

*Moodle:* The software provides three default course templates: activities arranged by week, activities arranged by topic, or a

discussion-focused social format. Instructors can create new course or content templates.

*Sakai:* Instructors can categorize course content as announcements, calendar entries, discussion forums, syllabus information,

assessments/assignments, and resources.

**􀂙 Customized Look and Feel**

*Atutor:* The system provides 2 default course look and feel templates, as well as others that can be downloaded and installed. Institutions can create their own look and feel templates. Institutions can apply their own institutional images, headers and

footers, across all courses, or across categories of courses.

*Bazaar:* The system provides default course look and feel templates. Institutions can create their own look and feel templates across the entire system. Institutions can apply their own institutional images, headers, and footers across all courses.

*Bodington:* The system provides default course look and feel templates. Institutions can apply their own institutional images,

headers and footers across all courses.

*Claroline:* The system provides default course look and feel templates. More than 10 type style sheet in Claroline.

*Coursemanager:* Institutions can create their own look and feel templates. Institutions can apply their own institutional

images, headers and footers. Instructors can change the order and name of menu items and the background for a course.

*ILIAS:* Institutions can apply their own institutional images, headers and footers across all courses.

*Moodle:* The system provides 10 default course look and feel templates. Institutions can create their own look and feel

templates across the entire system. Institutions can apply their own institutional images, headers and footers across all

courses. Instructors can change the navigation icons, color schemes, and order and name of menu items for a course.

*Sakai:* The system can support multiple institutions, departments, schools or other organizational units on a single

installation. Each unit can apply its own look and feel templates as well as institutional images, headers and footers.

Instructors can customize the left navigation menu of their sites by enabling or disabling tools, as desired

**Instructional Design Tools**

*Atutor:* Instructors can create both linear and nonlinear learning sequences, organized hierarchically by course, lesson, or topic. Instructors can organize learning objects into learning sequences that are reusable.

*Bazaar:* Instructors can organize learning objects into learning sequences that are reusable. Instructors can create relationships between assignments and required resources which can then serve as templates for future lessons.

*Coursemanager:* Instructors can create both linear and nonlinear learning sequences.

*ILIAS:* Instructors can create both linear and nonlinear learning sequences organized hierarchically by course, lesson, topic, and chunk. Instructors can organize learning objects, content libraries into learning sequences.

*Moodle:* Instructors can create both linear and nonlinear learning sequences using a content library. Instructors can organize learning objects into learning sequences. The software supports constructivist and problem-based learning approaches. Instructors can create relationships between assignments and required resources which can then serve as templates for future lessons.

*Sakai:* Instructors can create linear learning sequences organized hierarchically by course, lesson, and topic

[[[**An Evaluation of Open Source Learning Management Systems According to Administration Tools and Curriculum Design//**Ozdamli, Fezile//]]

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**1- Communication Tools**

**1.1 Discussion forums**

*Atutor:* Topic, author, post date, and activity level can be sort by threads. Forums can be viewed by thread. Student can enable or disable notification by e-mail when replies are posted. An administrator can share discussions across courses, departments or any institutional unit.

*Bazaar:* Instructors can create separate forums for small groups. Groups can be open to public or only selected students. Instructors can limit discussions to specific time posts. Teacher can be delete posts also posts can include attachments an image or URL. Wanted forums can be saved or printed for offline reading. Students and teachers can enable or disable notification by e-mail when replies are posted. Forums can be viewed by date, by thread, by title, by groups, by topics and by author.

*Bodington:* Instructors can create separate forums small groups. Groups can be open to public or only selected students. Students can be creating groups if instructor gives permit them.

*Claroline:* Forums can be viewed by date. Instructors and students can enable or disable notification by e-mail when replies are posted.

*Coursemanager:* Forums can be viewed by date by author or by thread. Posts can include URL. Instructors can create separate forums for small groups.

*ILIAS:* Instructors can create separate forums for small groups. Forums can be viewed by date, answer. Students can be creating groups if instructor gives permit them. Groups can be open to public or only selected students. Posts can include attachments.

*Moodle:* Forums can be viewed by date, by author, by thread. Posts can include attachments an image or URL. A discussion forum includes a formatting text editor like Microsoft word tools. Students may receive posts to the discussions forums as daily digests of subject lines or whole posts as e-mail.

*Sakai:* Posts can include attachments an image or URL. Forums can be viewed by category and by thread.

**1.2 File Sharing**

*Atutor:* Students and instructors can upload projects, images or any files to a shared library. Students can share content from their personal folder with others.

*Bazaar:* Students can upload files to a shared folder. Students can share content from their personal folder with others. Instructors and students can edit their text files in their folder using a browser. Instructors can upload files to the students’ folders. Students can share files using the internet message tool.

*Bodington:* Student can submit assignments using drop boxes. Instructors can upload files to the students folders.

*Claroline:* Students can upload files to a shared folder and the other students can download it.

*Coursemanager:* It does not support file sharing.

*ILIAS:* Users can upload files in the discussion forms and others can be downloading them.

*Moodle:* Students can submit assignments using drop boxes.

*Sakai:* Students can upload files a shared folder and after they can download all the contents of a folder. Instructors and students can edit their text files in their folder using a browser. Students can submit assignments using drop boxes. Instructors can upload files to the students folders.

**1.3 E-Mail**

*Atutor:* It provides internal e-mail service. Students and instructors can use the internal e-mail feature or instant messaging tool to communicate with other enrolled students.

*Bazaar:* It provides internal e-mail service. Students and instructors can use the internal e-mail feature to e-mail others. Students can attach files. Students use a searchable address book to e-mail others. Students can compile multiple messages into a file to be saved or printed.

*Bodington:* Students must have an external e-mail address.

*Claroline:* Students must have an external e-mail address. Students can use the internal e-mail feature to e-mail individuals.

*Coursemanager:* Students can use the internal e-mail feature to e-mail others. Students can attach and archive files.

*ILIAS:* It provides internal e-mail service. Students can use internal e-mail feature to e-mail individuals and groups. It supports the delivery of internal mails to external e-mail addresses as well.

*Moodle:* Students must have an external e-mail address. It does not provide e-mail service.

*Sakai:* Instructors and students must have an external e-mail address.

**1.4 Chat**

*Atutor:* It provides chat tool for messaging. It is PHP-based and students can see who else is online within their courses or group. It creates archive logs and instructors.

*Bazaar:* It provides a basic chat tool that Internet Relay Chat (IRC) for real-time user exchanges.

*Bodington:* It does not support chat tool.

*Claroline:* It provides a basic chat tool. The system creates archive logs for all chat rooms.

*Coursemanager:* The system has a chat tool that supports private rooms.

*ILIAS:* ILIAS offers an internal news system, chat. Students can see who else is online.

*Moodle:* It provides a chat tool that supports images. It creates archive logs for instructors. Instructors can share logs with students. Students can see who else is online within their course. Instructors can schedule chat using the course calendar.

*Sakai:* It provides a basic chat tool that creates archive logs. Users can create new rooms. Users can see who else is online within their course.

**2- Productivity Tools**

**2.1 Bookmarks**

Bazaar and ILIAS supports bookmarks that students can create and categorize bookmarks in a folder.

2.2 Help

*Atutor:* It provides an online course to help students and instructors, learn how to use the system.

*Bazaar:* It provides an online guide. It covers how access the system help.

*Bodington:* It support help desk.

*Claroline:* Students and instructors can download manuals on site. These manuals have been written by members of the Claroline Community.

*Coursemanager:* It provides an online guide.

*ILIAS:* It provides a student manual.

*Moodle:* Students can access context sensitive help.

*Sakai:* It provides an overview of features and students can access context sensitive help. Students can use search tool in the online help.

**3- Student Involvement Tools**

**3.1 Group work**

*Atutor:* Instructors can create group activities, and assign group leaders to create and manage groups.

*Bazaar:* Instructors can create groups. Each group can have its own shared group presentation folder, group e-mail list, chat room, group notice board, polls, journal areas, group homepages and editing of a document.

*Bodington:* Instructors and students can assign students to groups. Each group can have its own discussion groups, assignments, activities and assessments. Bodington have Group Communication Rooms that a room where a group of people can communicate asynchronously by posting messages. Messages are threaded and it is possible to monitor activity.

*Claroline:* Instructors can create groups. Each group can have its own discussions forums and file exchange.

*Corusemanager:* Instructors can create groups. Each group can have its own discussions forums.

*ILIAS:* Instructors and students can assign students to groups. Each group can have its own discussion forum, file exchange and chat room.

*Moodle:* Instructors can assign students to groups or the system can randomly create groups.

*Sakai:* Instructors or students can create groups through the use of distinct “project” sites, separate from the main site.

3.2 Student Community Building

*Atutor:* Students can create study groups. Students from different courses can interaction system wide using shared discussion forums.

*Bazaar:* The system allow user to create collaborative spaces for students.

*Bodington:* The system allows users to control access to certain areas and documents. It lets user create usernames for external collaborators working on projects. Committees can create their own private areas to hold minutes prior to publication.

*Claroline:* Teacher can create study groups. Once uploaded there, their documents can be published to the public area of the course website.

*Coursemanager:* The system does not allow to users to create any type of group.

*ILIAS:* Students can send e-mail to their groups, use a shared chat space and notice board, and share material privately within the group.

*Moodle:* Moodle has a large and diverse user community on main site.

*Sakai:* Students can create project sites. It includes a calendar, announcements, e-mail list and discussion forum

**3.3 Student Portfolios**

*Atutor:* Students have personal and public folders that can be shared with other students, group members or teachers.

*Bazaar:* Students can create a home page for themselves. It allows user to create electronic Portfolios.

*Claroline:* Students have a public folder for displaying their work in every course in which they are enrolled.

*Coursemanager:* The system does not allow to users to create any type of student portfolios.

*Moodle:* Students have a home page that includes their personal information and their photos. It may include discussion forms.

*Sakai:* Students can create home pages that include their photo, personal information and links to websites.

[[ **An Evaluation of Open Source Learning Management Systems According to Learners Tools]]**

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**Mandate**

The chosen LMS would need to accommodate the unique nature of AU's mandate as an open distance education institution. In choosing an LMS, the evaluation comn1ittee 1nembers considered the need for

* Flexibility in start and end dates for students enrolling in courses
* Support for paced and individualized study courses
* Affordability for students
* Accessibility for students with disabilities
* Access at different connection speeds (dial-up vs. high speed)

**Systems Administration**

Systems administration features had to facilitate:

* Integration with current registration procedures
* Single sign on capabilities and compatibility with current authentication systems
* Flexible administration across centres and programs
* Secure access, authorization, and virus protection
* Interoperability using SCORM, IEEE LOM, and CanCore

**Cost**

The price tag for the system chosen was an important consideration, and included:

* Licensing fees
* 1-lardware and software costs
* Costs related to integration \vith the Banner registration system
* Cost of ongoing support (external and inhouse)
* Staff training costs

Instructional Design

* *Granularity* refers to the LMS 's capacity to separate content from presentation so that the content can be reused or redirected, accommodating content delive1y on a variety of devices. including mobile devices and sharing learning objects across courses.
* *Templates and modularization* refers to the LMS's capacity for customizing the

look and feel of different AU Centres and programs

* *Student Experience* refers to the intuitive logical layout in the LMS from the students' point of view, if it supports standard Web browsing, multiple platforms, systems, low bandwidth, and Java

**Teaching and Learning Tools**

* a workable assignment drop box,
* accommodate XML and mobile device delivery.
* Course authoring tools to create effective online quizzes or

display correct mathematical notation.

[[**Choosing MOODLE: An Evaluation of Learning Management Systems at Athabasca University**]]

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**Pedagogical Factor (learner and instructor view)**

View course objectives:

View course activities:

Feedback for users:

Self-assessing for students:

Students’ progress tracking and monitoring for teachers:

**Learner Environment:**

***Communication (****Synchronous)*

Real-time chat room

Audio/Video conferencing:

Whiteboard

***Communication (****Asynchronous)*

Discussion forums

File sharing:

Internal e-mail:

Online journal:

***Search***

Metadata and keyword search engine:

Search within courses:

Calendar/ Progress Review

Student profile:

Work offline:

**Instructor Tools**

Online editor for course organization

Online quiz editor

Grade distribution:

**Course and Curriculum Design**

Automated testing

Online grading

Course templates

Curriculum management:

Customize look and feel:

Automated glossary

**Administrator Tools**

Authentication:

Course Authorization:

Validation of input

Automated registration:

Course creation, duplication, and deletion

Course and web site back-up

Statistics:

First and last access date for courses

**Technical Specification**

**Hardware/Software**

Client browser required:

Database required

UNIX server

Windows server

**Technical Support**

Help desk

Multi-languages support

**Pricing/Licensing**

Company profile

Cost:

Open source

[[[**Comparison between two Learning Management Systems: Moodle and blackboard]]]**

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**Technical flexibility**

* Hardware and software requirements
* Support
* Cost/License
* Authentication

**Learning tools**

* Forums
* Materials
* Messenger
* Chat
* Exercises
* Group work
* Student tracking

**Usability**

* Technical knoledge/installation
* Course templates
* Standards
* Languages

**[[Comparison of Moodle and ATutor LMSs]]**

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* Course format/layout
* Announcements / News
* Lessons / Course Documents
* Discussion Board
* Assignment Modules
* Collaboration and Communication Tools
* Gradebook,

[[ **Evaluating and Comparing the Usability of Web-based Course Management Systems]]**

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**Technical design and materials**

Esthetic design

Quantity and quality of the icons

Ease to find the tools

Presentation of contents

General services

Administrative management

General information

News

Activity agenda

Recreational activities

**Instructional design**

Presentation of the objectives

Guides

Course information

Flexibility of the didactic contents

Possibility of use in another environment

Activities

Individual

Collaborative

Communication

Synchronous

Asynchronous

Evaluation

**Tutorial**

Constructivist

Communication

Virtual community development

Personalization of the tutorial

Professor´s role

**Virtual class**

Learning path

Video or written communication

**[[Innovative Scenarios in the Teaching and Learning Process: A View From the Implementation of Virtual Platforms]]**

* ***F*ee**
* **Technical support**
* **Hardware and Scalability**
* **Development**
* **Security**
* **Integration**
* **Sustainability**

 Does the LMS to be selected update regularly and does it follow the trends?

 In what time intervals are new hardware and web technologies included in LMS?

 How long does it take to eliminate any found and informed security vulnerability?

**[[[ Learning Management Systems and Comparison of Open-Source Learning Management Systems and Proprietary Learning Management Systems]]]**