



Implementation of an Open Source Course Management System: the Experience of Moodle at DCSSMAT Business School, Kerala

Arun Kishore, B.L.
Librarian, DCSSMAT, Kerala

History of E-learning

The pre-history of e-learning can be traced back to the CBT systems (Computer based training systems) of 1980s characterized by the medium of CDROMs and offline delivery. Later, the proliferation of Web necessitated the online presence of learning materials and also the words 'e-learning' and 'online learning' surfaced during late 90s.

(Jay Cross, 2004).

LMS/CMS/VLEs

- Learning Management Systems/
- Course Management Systems/
- Virtual Learning Environments

“While both the terms CMS and VLE can be used interchangeably, these terms seem to be region specific. CMS is more commonly used in North America and VLE is more prevalent in European countries” (Paul Daniels, 2009).

Course Management Systems

Blackboard



WebCT



Desire2learn



Moodle



ATutor



Selection of CMS by DCSSMAT

- A local proprietary software fails.
- Testing Moodle as an experiment

Moodle

- Moodle (Modular Object-Oriented Dynamic Learning Environment) developed in Australia by the educator and computer scientist Martin Dogiamas (1998)
- Moodle is easy to implement by instructors and easy to use by trainees. Instructors can set up courses, create learning activities, and report learner tracking, as well as integrate Web 2.0 capabilities such as RSS, Blog and Wikies. (Jon Alekson, 2009).

Moodle Statistics

- 49,952 registered and verified sites
(As of October 2010)
- In 63 Countries with 1 million users
- India has got 369 registered sites
(As of June 2011)

DCSMAT Case study

- Background
- Installed Moodle in 2004 in the famous LAMP environment
- DCSMAT installed moodle 1.5 on a Feroda 2.4 Server OS.
- MySQL 4.0, PHP 4.1 and Apache were available bundled along with the OS.
- phpMyAdmin 2.4 was also installed for a web browser based MySQL management.
- The hardware used was having configurations of the following:
 - 2 GB RAM
 - Dual Core, Intel Xion 3GHz Processor
 - 70 X 3 = 210 GB Hard Disks with RAID level 6

Network Infrastructure in 2004

- Fiber-optic back bone connecting all important buildings
- 100 Mbps switches were used in coaxial networks
- 5 BroVis wifi points covered the academic area and hostels
- 512 Kbps Leased Line Internet from BSNL with Public IP
- cms.dcschool.net

Current Installation Details

- Moodle version 1.9 on MAC OSX 10.4.9 (Leopard)
- PHP 5.0 and MySQL 5.5
- MAC X- Serve Configuration
- 12 GB RAM
- 2 Quad Core, Intel Xeon 2.3 GHz Processors
- 3 TB hard disks

Currnet Network Infrastructure

- Fiber-optic back bone extended to newer buildings
- 1 GB Switches are using in important LAN Junctions.
- 10 more CISCO wifi points installed for more wifi coverage.
- 4 Mbps Leased Line Internet from BSNL with Public IP

hornbill.dcschool.net/moodle

Moodle Administration

- Server maintenance.
- Customization and branding of the installation.
- Periodical backups.
- Site policies and maintenance.
- Course Creation.
- Assigning Course Creators/Faculty.
- User profile creation both single as well as bulk.
- (For importing bulk users when large group enrollments are required, importing formats based on CSV (Comma Separated Variables) will be normally used.
- Training programmes will be organized periodically for students, faculty and guest faculty.

Moodle Administration

- Assisting faculty members for creation of difficult modules and group based activities.
- Maintaining confidential feedback data for higher authorities and the management.
- Changing/Updating RSS feed links for resource listing in relevant course areas from other Internet sites.
- Incorporating relevant useful modules and plug-ins from moodle.org
- Maintaining back up installations in different locations for archived courses for future references.

Moodle Administration

- Fixing of bugs. Normally forums at moodle.org will be referred for the same.
- Upgrading the installation to newer versions and environments. DCSMAT has tried out four Moodle versions in its production site during the last 7 years. (The version 2.0 has been installed in a different PC and the features are being studied and tested for migration. The 2.0 version has got significant changes and it requires lot of work starting from the user training. A user acceptance survey is also required for migration).
- Checking server error logs and finding out solutions for fixing.
- Complaints redressal and assistance to the whole community for all sorts of difficulty.

DCSMAT CMS Environment

- A Classic example of blended learning
- The on-line part depends largely on technology
- The laptop and wifi culture
- Instant access to CMS is a necessity
- The advantage of being residential
- The role of Faculty/Course Creators

The 4 types of pedagogical tools in CMSs

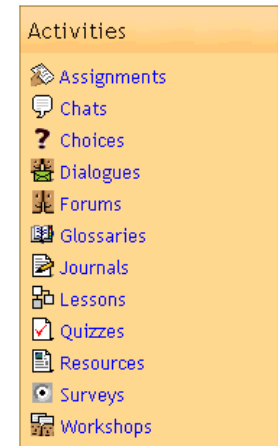
- Content Creation Tools
- Communication and Collaboration Tools
- Administration Tools
- Assessment Tools

Moodle Platform

Course Settings

Moodle has a “modular” design so adding the Activities that form a course is a simple process:

1. Course creation privileges are assigned to the teacher.
2. Select from one of three course layout; **Topic**, **Weekly** or **Social** format.
3. Click “Turn editing on” within the blank course template.
4. Create the course!



*With editing turned on, the course creator can now **Add** activities from an intuitive drop-down list of module plug-in features.*

Moodle Platform

Course Management Features - Modules

Assignment

Used to assign online or offline tasks; learners can submit tasks in any file format (e.g. MS Office, PDF, image, a/v etc.). 20 MB User Limit.

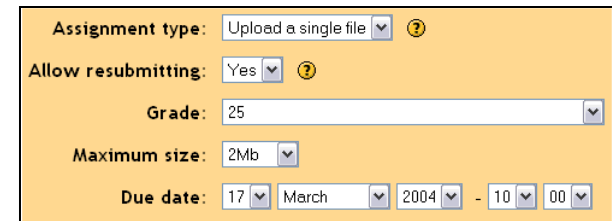
Limitation: Peer viewing not permitted

Chat

Allows real-time synchronous communication by learners.

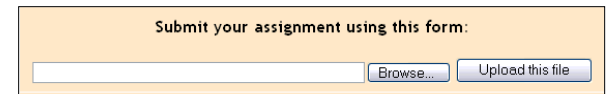
Choice

Instructors create a question and a number of choices for learners; results are posted for learners to view. Use this module to do quick surveys on subject matter.



A screenshot of the Moodle Assignment property screen. The background is light orange. The form contains the following fields: 'Assignment type:' with a dropdown menu set to 'Upload a single file' and a help icon; 'Allow resubmitting:' with a dropdown menu set to 'Yes' and a help icon; 'Grade:' with a text input field containing '25' and a dropdown arrow; 'Maximum size:' with a dropdown menu set to '2Mb'; and 'Due date:' with four dropdown menus for day (17), month (March), year (2004), and time (- 10:00).

Property screens guide instructor through setup when creating a new Assignment



A screenshot of the Moodle Assignment submission form. The background is light orange. At the top, it says 'Submit your assignment using this form:'. Below this is a text input field for the assignment name, followed by two buttons: 'Browse...' and 'Upload this file'.

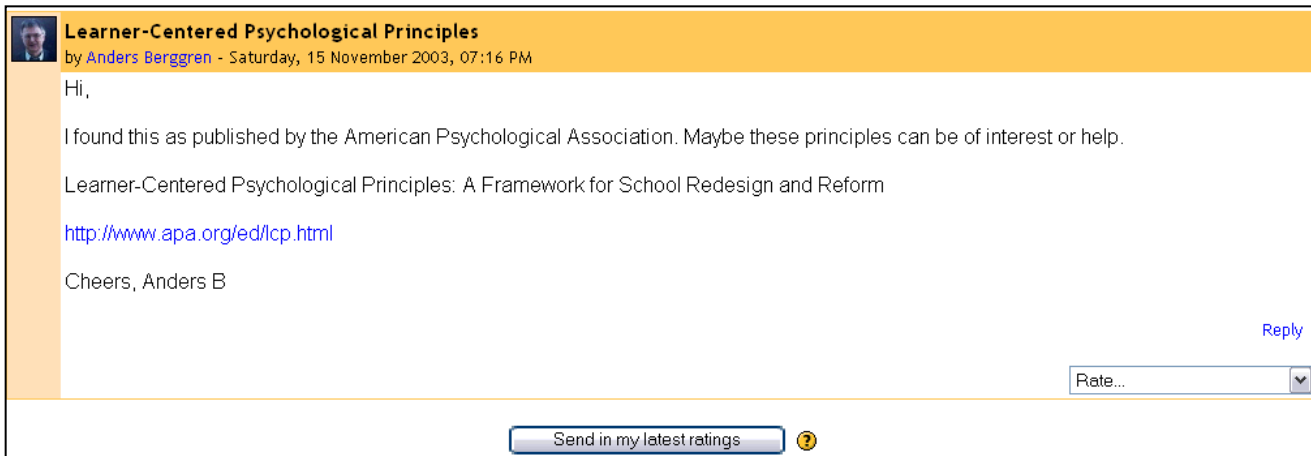
Assignment activity can require the learner to upload a completed project.

Moodle Platform

Course Management Features - Modules

Forums

Threaded discussion boards for asynchronous group exchange on shared subject matter. Participation in forums can be an integral part of the learning experience, helping students define and evolve their understanding of subject matter.



The screenshot shows a forum post in a Moodle interface. At the top, there is a yellow header bar with the title "Learner-Centered Psychological Principles" and the author "by Anders Berggren - Saturday, 15 November 2003, 07:16 PM". Below the header, the post content reads: "Hi, I found this as published by the American Psychological Association. Maybe these principles can be of interest or help. Learner-Centered Psychological Principles: A Framework for School Redesign and Reform <http://www.apa.org/ed/lcp.html> Cheers, Anders B". To the right of the post, there is a "Reply" link. At the bottom right of the post area, there is a "Rate..." dropdown menu. Below the post area, there is a button labeled "Send in my latest ratings" with a question mark icon.

Students can Rate a forum post, based on Scales set up by the course creator

Moodle Platform

Course Management Features - Modules

Glossary

Create a glossary of terms used in a course.
Has display format options including entry list, encyclopedia, FAQ, dictionary style and more.

Journal

Learners reflect, record and revise ideas.

Label

Add descriptions with images in any area of the course homepage.

Lesson

Allows instructor to create and manage a set of linked "Pages". Each page can end with a question. The student chooses one answer from a set of answers and either goes forward, backward or stays in the same place in the lesson.

The screenshot shows the Moodle Glossary module interface. At the top, there is a search bar with a "Search" button and a checkbox for "Search full text". Below the search bar are four buttons: "Add a new entry", "Import entries", "Export entries", and "Waiting approval". Underneath these are four more buttons: "Browse by alphabet", "Browse by category", "Browse by date", and "Browse by Author". The main content area is titled "Browse the glossary using this index" and displays an alphabetical index: "Special | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | ALL". The letter "H" is highlighted in a yellow bar. Below the index, there is a "highlight:" section containing a list of definitions for the letter "H". The first definition is: "1. An area or a spot in a drawing, painting, or photograph that is strongly illuminated. 2. An especially significant or interesting detail or event. 2. a. To make prominent, emphasize. b. To be a highlight of. 3. To mark (important passages of text) with a usually fluorescent marker as a means of memory retention or for later reference. In Moodle, Glossary terms are highlighted in light grey." There is a close button (X) in the bottom right corner of the highlight section.

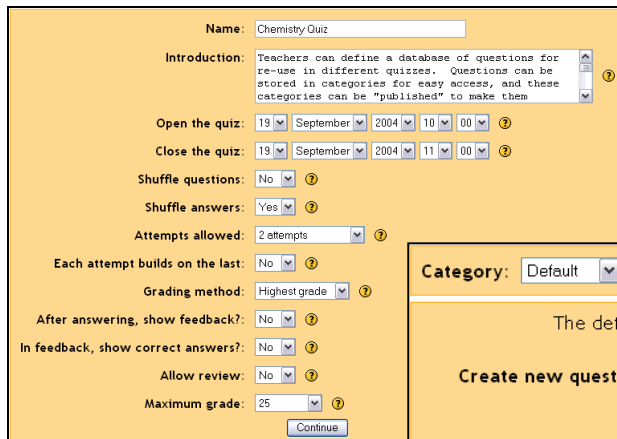
Glossary terms appear in highlight within all activity resources. Moodle includes its own site search engine.

Moodle Platform

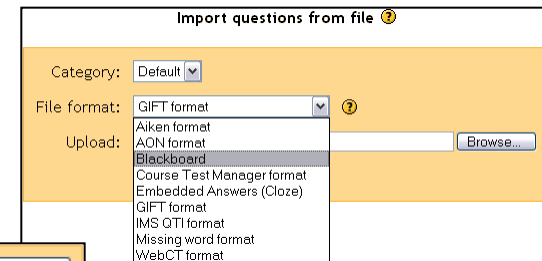
Course Management Features - Modules

Quiz

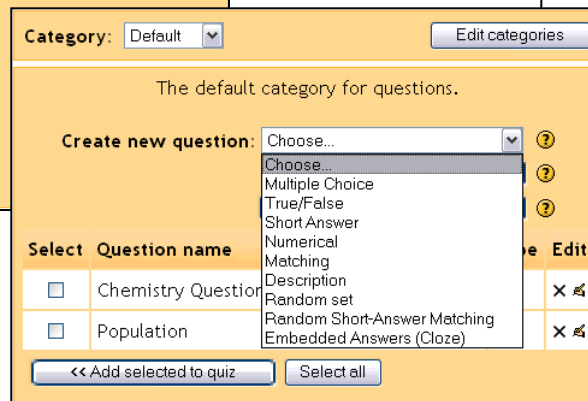
Create all the familiar forms of assessment including true-false, multiple choice, short answer, matching question, random questions, numerical questions, embedded answer questions with descriptive text and graphics. DCSMAT is using the GIFT format



Quiz settings page for 'Chemistry Quiz'. Fields include: Name (Chemistry Quiz), Introduction (Teachers can define a database of questions for re-use in different quizzes...), Open the quiz (19 September 2004 10:00), Close the quiz (19 September 2004 11:00), Shuffle questions (No), Shuffle answers (Yes), Attempts allowed (2 attempts), Each attempt builds on the last (No), Grading method (Highest grade), After answering, show feedback? (No), In feedback, show correct answers? (No), Allow review (No), Maximum grade (25). A 'Continue' button is at the bottom.



'Import questions from file' dialog. Category: Default. File format: GIFT format. Upload: Browse... button. A dropdown menu is open showing options: Aiken format, AON format, Blackboard, Course Test Manager format, Embedded Answers (Cloze), GIFT format, IMS QTI format, Missing word format, WebCT format.



'Create new question' dialog. Category: Default. The default category for questions. Create new question: Choose... dropdown menu is open showing options: Choose..., Multiple Choice, True/False, Short Answer, Numerical, Matching, Description, Random set, Random Short-Answer Matching, Embedded Answers (Cloze). Below is a table with 'Select' and 'Edit' columns.

Select	Question name	Edit
<input type="checkbox"/>	Chemistry Question	<input type="checkbox"/>
<input type="checkbox"/>	Population	<input type="checkbox"/>

<< Add selected to quiz Select all

Instructors have granular control in defining course assessments, and can import quiz questions from popular formats like Blackboard, IMS QTI and WebCT. Moodle also supports embedding audio into a quiz.

Moodle Platform

Course Management Features - Modules

Resource

The primary tool for bringing content into a course; may be plain text, uploaded files, links to the web, Wiki or Rich Text (Moodle has built-in text editors) or a bibliography type reference.

Survey

This module aids an instructor in making online classes more effective by offering a variety of surveys (COLLES, ATTLS), including critical incident sampling.

Workshop

An activity for peer assessment of documents (Word, PP etc.) that students submit online. Participants can assess each other's project. Teacher makes final student assessment, and can control opening and closing periods.

fraction:

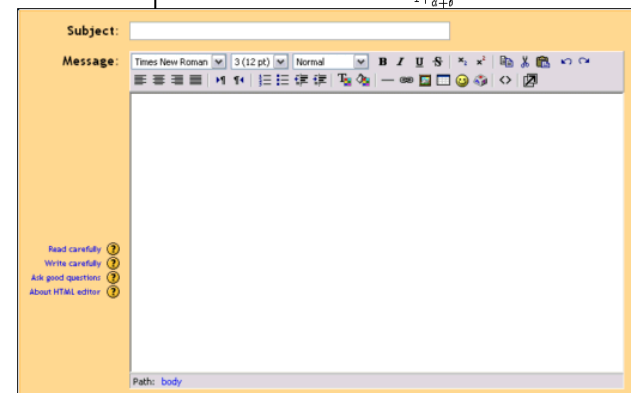
- Syntax: `\frac{numerator}{denominator}`
- Use font sizing commands for specific sizing if you don't want the predefined one to be taken.
- Ex. (with predefined sizing): `$$f(x,y)=\frac{2a}{x+y}$$` gives

$$f(x,y)=\frac{2a}{x+y}$$

- Ex. (with specific sizing): `$$f(x,y)=\frac{\small 2a}{\small x+y}$$` gives

$$f(x,y)=\frac{2a}{x+y}$$

- You may nest fractions as much as you want.
- Ex. (nested fractions): `$$\frac{\frac{a}{x-y}+\frac{b}{x+y}}{1+\frac{a-b}{a+b}}$$` gives

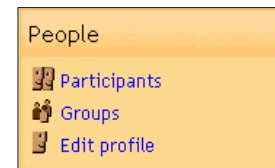
$$\frac{\frac{a}{x-y}+\frac{b}{x+y}}{1+\frac{a-b}{a+b}}$$


Moodle supports adding math expressions to a Resource activity, using the built-in HTML editor


Moodle Platform

Learner Management Features – Participants

One click and you can view activity from all participants enrolled in the course. Learners create a personal profile that can include a picture, helping connect students socially in the online learning community.




Teachers



Mark Burnet
Email address: markburnet@earthlink.net
Location: Providence Forge, Va, United States of America
Last access: Never


Activity
[Full profile...](#)

8 Students




Daniel Miksik
Email address: miksik@phil.muni.cz
Location: Brno, Czech Republic
Last access: Wednesday, 17 March 2004, 12:14 PM [4 hours 21 mins]

Activity
Unenroll
[Login as](#)
[Full profile...](#)



Diane Yeager
Email address: dmyeager@scgjobal.net
Location: Willoughby, United States of America
Last access: Friday, 12 March 2004, 08:52 PM [4 days 19 hours]

Activity
Unenroll
[Login as](#)
[Full profile...](#)



Floyd Collins
Email address: floyd@gcOhio.com
Location: Fremont, United States of America
Last access: Wednesday, 10 March 2004, 01:09 PM [7 days 3 hours]

Activity
Unenroll
[Login as](#)
[Full profile...](#)


Learners complete a personal profile page that helps build the online learning community. Adding a picture and details to the profile creates a social connection.

Moodle Platform

Learner Management Features - Groups

Assigning learners to a group is a common practice in education and business. Moodle allows the course instructor to easily create group categories, and determine how members will interact with each other and within various activities.

People

-  [Participants](#)
-  [Groups](#)
-  [Edit profile](#)

People not in a group	Groups	Members of selected group
<ul style="list-style-type: none">Deniel Miksikger tielemansThomas SpeckVerhulst Eric	<ul style="list-style-type: none">Maps (5)Widgets (0)	<ul style="list-style-type: none"># Mark BumetDione YeagerFloyd CollinsP. StancelTom Murdock
<input type="button" value="Add selected to group ->"/>	<input type="button" value="Info about selected group"/>	<input type="button" value="Info about selected members"/>
<input type="button" value="Randomly assign all to groups ->"/>	<input type="button" value="Remove selected group"/>	<input type="button" value="Remove selected members"/>
<input type="button" value="Info about selected people"/>	<input type="text" value=""/> <input type="button" value="Add new group"/>	

Creating distinct group names is easy. Learners and teachers are assigned to a group by clicking a single button.

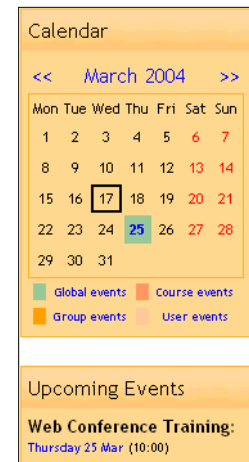
Moodle Platform

Learner Management Features - Calendar

Keeping a calendar of events is important to both the learner and course instructor. Events can be created for different categories, including:

- Global events that appear in all courses (system admin).
- Course events set by an instructor.
- Group events set by instructor relative only to a group.
- User events set by learner (e.g. due dates, personal etc.).

Upcoming Events appear on the course homepage, alerting the learner across all courses they are enrolled in of different category events. Alerts are color-coded by category.

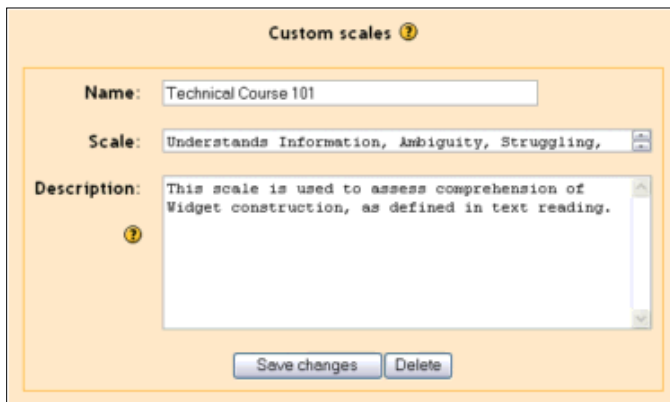


Moodle Platform

Learner Management Features - Scales

Instructors may define custom Scales to be used for grading Forums, Assignments and Journals. Standard scales include assigning a value from 1-100% for each submission (or no grade), and indicating whether the learner was demonstrating one of three characteristics in the activity:

- Shows mostly CONNECTED knowing.
- Shows mostly SEPARATE knowing.
- Equally separate and connected.



Custom scales

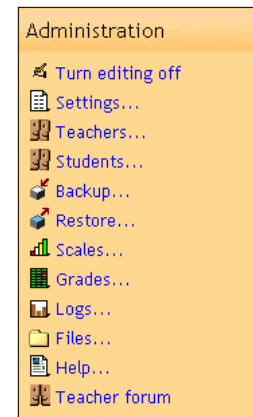
Name: Technical Course 101

Scale: Understands Information, Ambiguity, Struggling,

Description: This scale is used to assess comprehension of Widget construction, as defined in text reading.

Save changes Delete

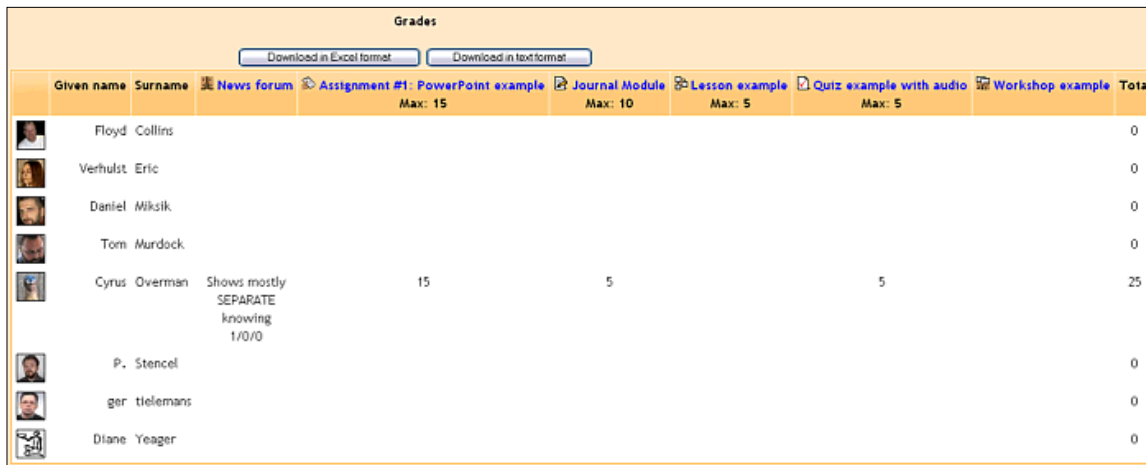
*Custom scales allow the instructor to fine tune their grading for specific content. Easily create several types of scales, and connect them with different activities you **Add** to the course.*



Moodle Platform

Learner Management Features - Grades

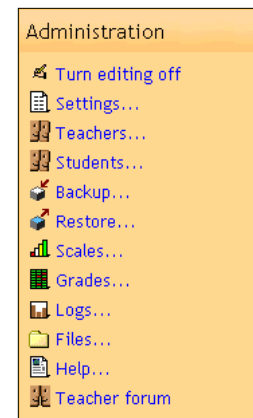
The Grades feature in Moodle provides a quick view of all Forum, Assignment, Journal, Quiz, Lesson and Workshop grades. The grading scale applied to a learner's submission is shown, along with a cumulative total, on a single page.



The screenshot shows the Moodle Grades page with a table of student grades. At the top, there are two buttons: "Download in Excel format" and "Download in textformat". The table has columns for "Given name", "Surname", and several activities: "News forum", "Assignment #1", "PowerPoint example", "Journal Module", "Lesson example", "Quiz example with audio", and "Workshop example". The "Total" column shows the cumulative score for each student. The student Cyrus Overman has a score of 25, while others have 0.

Given name	Surname	News forum	Assignment #1	PowerPoint example	Journal Module	Lesson example	Quiz example with audio	Workshop example	Total
Floyd	Collins								0
Verhulst	Eric								0
Daniel	Miksik								0
Tom	Murdock								0
Cyrus	Overman	Shows mostly SEPARATE knowing 1/0/0	15		5		5		25
P.	Stencel								0
ger	tleemans								0
Diane	Yeager								0

Grades can be downloaded in Excel or plain text for inclusion into an existing electronic gradebook



The screenshot shows the Moodle Administration menu with the following items:

- Administration
- Turn editing off
- Settings...
- Teachers...
- Students...
- Backup...
- Restore...
- Scales...
- Grades...
- Logs...
- Files...
- Help...
- Teacher forum

Moodle Platform

Learner Management Features - Logs

Monitor when and what course resources the learner has accessed. Moodle's Logs provide detailed learner activity.

Choose which logs you want to see:

Mathematics All participants Today, 19 March 2004 All activities Show these logs

Teacher Demo: Cyrus Overman, Friday, 19 March 2004 (server time)

Teacher Demo Cyrus Overman Today, 19 March 2004 All activities Show these logs

Displaying 28 records

Fri 19 March 2004, 09:54 AM	65.143.168.27	Cyrus Overman	assignment view	Assignment #1: PowerPoint example
Fri 19 March 2004, 09:53 AM	65.143.168.27	Cyrus Overman	course view	Teacher Demo
Fri 19 March 2004, 09:53 AM	65.143.168.27	Cyrus Overman	chat view	Course Chat
Fri 19 March 2004, 09:53 AM	65.143.168.27	Cyrus Overman	course view	Teacher Demo
Fri 19 March 2004, 09:53 AM	65.143.168.27	Cyrus Overman	dialogue view	Dialogue example
Fri 19 March 2004, 09:53 AM	65.143.168.27	Cyrus Overman	dialogue open	3
Fri 19 March 2004, 09:53 AM	65.143.168.27	Cyrus Overman	dialogue add entry	1
Fri 19 March 2004, 09:52 AM	65.143.168.27	Cyrus Overman	dialogue view	Dialogue example
Fri 19 March 2004, 09:51 AM	65.143.168.27	Cyrus Overman	course view	Teacher Demo
Fri 19 March 2004, 09:51 AM	65.143.168.27	Cyrus Overman	forum view forum	News forum

Administration

- Turn editing off
- Settings...
- Teachers...
- Students...
- Backup...
- Restore...
- Scales...
- Grades...
- Logs...
- Files...
- Help...
- Teacher forum

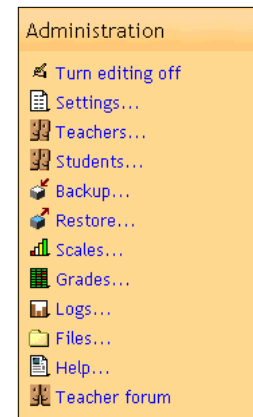
Logs pin-point where a student is within coursework. Easily locate specific course, student, date and module activity access.

Learner Management Features - Files

Centrally locate all course resources within the Files area of Moodle so they are available when creating new activities.

	Name	Size	Modified	Action
<input type="checkbox"/>	Graphics	-	12 Mar 2004, 10:45 AM	Rename
<input type="checkbox"/>	backupdata	-	12 Mar 2004, 12:15 PM	Rename
<input type="checkbox"/>	moddata	-	8 Mar 2004, 04:28 PM	Rename
<input type="checkbox"/>	VW-9_Form.pdf	42.2Kb	8 Mar 2004, 04:27 PM	Rename
<input type="checkbox"/>	argonline.swf	260.8Kb	8 Mar 2004, 04:27 PM	Rename
<input type="checkbox"/>	mug.jpg	6.7Kb	8 Mar 2004, 04:27 PM	Rename
<input type="checkbox"/>	presentation.mht	983.9Kb	8 Mar 2004, 04:27 PM	Rename
<input type="checkbox"/>	question2.mp3	209.6Kb	8 Mar 2004, 04:27 PM	Rename
<input type="checkbox"/>	toptopic.htm	8.6Kb	17 Mar 2004, 11:46 AM	Edit Rename
<input type="checkbox"/>	writing.htm	732 bytes	8 Mar 2004, 04:27 PM	Edit Rename

With chosen files...

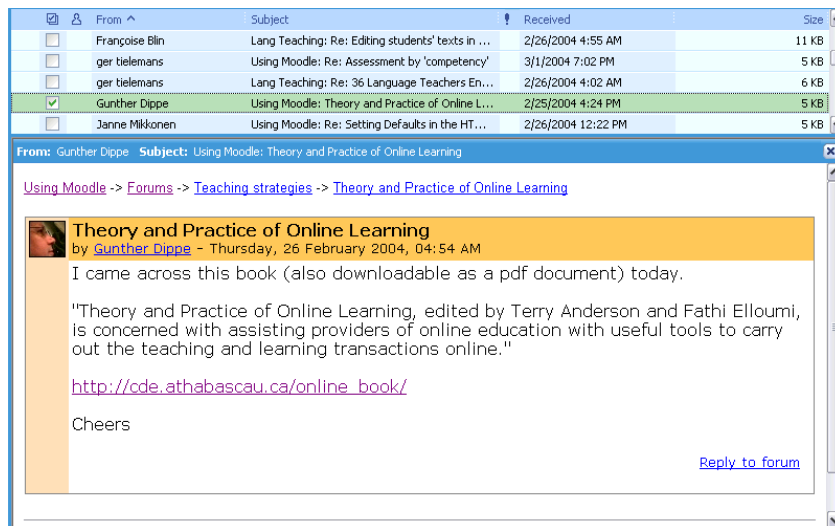


Files storage area resembles your computer, making it easy to add, move, zip and delete resources.

Moodle Platform

Learner Experience – E-Mail Notification

When learners “subscribe” to forums they are notified by e-mail of new postings. Additionally, instructors can set e-mail notification for private Dialogues.




The screenshot displays an email client interface. At the top, there is a table with columns for 'From', 'Subject', 'Received', and 'Size'. The table contains several entries, with the one from 'Gunther Dippe' highlighted in green. Below the table, the details of the selected email are shown. The 'From' field is 'Gunther Dippe' and the 'Subject' is 'Using Moodle: Theory and Practice of Online Learning'. The email body contains a link to a forum post, the title 'Theory and Practice of Online Learning' by Gunther Dippe, a date of Thursday, 26 February 2004, 04:54 AM, and a message about a book. A URL is provided: http://cde.athabascau.ca/online_book/. The email ends with 'Cheers' and a 'Reply to forum' link.

	From ^	Subject	Received	Size
<input type="checkbox"/>	Françoise Blin	Lang Teaching: Re: Editing students' texts in ...	2/26/2004 4:55 AM	11 KB
<input type="checkbox"/>	ger tielemans	Using Moodle: Re: Assessment by 'competency'	3/1/2004 7:02 PM	5 KB
<input type="checkbox"/>	ger tielemans	Lang Teaching: Re: 36 Language Teachers En...	2/26/2004 4:02 AM	6 KB
<input checked="" type="checkbox"/>	Gunther Dippe	Using Moodle: Theory and Practice of Online L...	2/25/2004 4:24 PM	5 KB
<input type="checkbox"/>	Janne Mikkonen	Using Moodle: Re: Setting Defaults in the HT...	2/26/2004 12:22 PM	5 KB

From: Gunther Dippe **Subject:** Using Moodle: Theory and Practice of Online Learning

[Using Moodle](#) -> [Forums](#) -> [Teaching strategies](#) -> [Theory and Practice of Online Learning](#)

 **Theory and Practice of Online Learning**
by [Gunther Dippe](#) - Thursday, 26 February 2004, 04:54 AM

I came across this book (also downloadable as a pdf document) today.

"Theory and Practice of Online Learning, edited by Terry Anderson and Fathi Elloumi, is concerned with assisting providers of online education with useful tools to carry out the teaching and learning transactions online."

http://cde.athabascau.ca/online_book/

Cheers

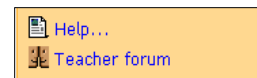
[Reply to forum](#)

Rich text e-mail is sent to each learner “subscribed” to different Forums. Instructors can set private Dialogues to e-mail notification that comments have been added.

Moodle Platform

Learner Management Features - Help

An extensive Moodle Help file is a button click away. Courses include a Teacher only forum, where colleagues can collaborate on tasks and share ideas.



Teacher Manual

This page is a very quick guide to creating online courses with Moodle. It outlines the main functions that are available, as well as some of the main decisions you'll need to make.

Sections in this document:

1. [Getting started](#)
2. [Course settings](#)
3. [Uploading files](#)
4. [Setting up activities](#)
5. [Running the course](#)
6. [Further information](#)

Getting started

This document assumes your site administrator has set up Moodle and given you new, blank course to start with. It also assumes you have logged in to your course using your teacher account.

Moodle's built in Teacher Manual provides step-by-step instructions on all aspects of course and learner management

Learner Experience – 24/7/365 Anywhere!

Learners can login *any time, anywhere* to interact with coursework, and can specify the Time Zone and Language they wish to use. Moodle has interface support for 68 languages.



Learners can select from 34 languages at Login

Suggestions

- More customization
- Integration with other utility softwares like more Class Schedulers, sophisticated Web Calendars, and Project Softwares.
- This can done with the help of moodle.org forums and wikis.



Thank you and Questions, if any.