



A brief primer on the open source course management system

## **What is it?**

- Software designed to create a rich online learning environment
- Software to aid in developing internet-based courses
- Open Source
- Designed around sound pedagogical principles (Constructivist in approach)
- Runs on the LAMP stack (Apache, MySQL, PHP)
- Stands for Modular Object-Oriented Dynamic Learning Environment

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## **The Philosophy of Moodle**

The design and development of Moodle is guided by a particular philosophy of learning, a way of thinking that you may see referred to in shorthand as a "social constructionist pedagogy". (Some of you scientists may already be thinking "soft education mumbo jumbo" and reaching for your mouse, but please read on - this is useful for every subject area!)

This page tries to explain in simple terms what that phrase means by unpacking four main concepts behind it. Note that each of these is summarizing one view of an immense amount of diverse research so these definitions may seem thin if you have read about these before.

If these concepts are completely new to you then it is likely that these ideas will be hard to understand at first - all I can recommend is that you read it carefully, while thinking about your own experiences of trying to learn something.

### **Constructivism**

This point of view maintains that people actively construct new knowledge as they interact with their environment.

Everything you read, see, hear, feel, and touch is tested against your prior knowledge and if it is viable within your mental world, may form new knowledge you carry with you. Knowledge is strengthened if you can use it successfully in your wider environment. You are not just a memory bank passively absorbing information, nor can knowledge be "transmitted" to you just by reading something or listening to someone.

This is not to say you can't learn anything from reading a web page or watching a lecture, obviously you can, it's just pointing out that there is more interpretation going on than a transfer of information from one brain to another.

### **Constructionism**

Constructionism asserts that learning is particularly effective when constructing something for others to experience. This can be anything from a spoken sentence or an internet posting, to more complex artifacts like a painting, a house or a software package.

For example, you might read this page several times and still forget it by tomorrow - but if you were to try and explain these ideas to someone else in your own words, or produce a slideshow that explained these concepts, then I can guarantee you'd have a better understanding that is more integrated into your own ideas. This is why people take notes during lectures, even if they never read the notes again.

## **Social Constructivism**

This extends the above ideas into a social group constructing things for one another, collaboratively creating a small culture of shared artifacts with shared meanings. When one is immersed within a culture like this, one is learning all the time about how to be a part of that culture, on many levels.

A very simple example is an object like a cup. The object can be used for many things, but its shape does suggest some "knowledge" about carrying liquids. A more complex example is an online course - not only do the "shapes" of the software tools indicate certain things about the way online courses should work, but the activities and texts produced within the group as a whole will help shape how each person behaves within that group.

## **Connected and Separate**

This idea looks deeper into the motivations of individuals within a discussion. Separate behavior is when someone tries to remain 'objective' and 'factual', and tends to defend their own ideas using logic to find holes in their opponent's ideas. Connected behavior is a more empathic approach that accepts subjectivity, trying to listen and ask questions in an effort to understand the other point of view. Constructed behavior is when a person is sensitive to both of these approaches and is able to choose either of them as appropriate to the current situation.

In general, a healthy amount of connected behavior within a learning community is a very powerful stimulant for learning, not only bringing people closer together but promoting deeper reflection and re-examination of their existing beliefs.

Once you are thinking about all these issues, it helps you to focus on the experiences that would be best for learning from the learner's point of view, rather than just publishing and assessing the information you think they need to know. It can also help you realise how each participant in a course can be a teacher as well as a learner. Your job as a 'teacher' can change from being 'the source of knowledge' to being an influencer and role model of class culture, connecting with students in a personal way that addresses their own learning needs, and moderating discussions and activities in a way that collectively leads students towards the learning goals of the class.

Obviously Moodle doesn't force this style of behavior, but this is what it is best at supporting. In future, as the technical infrastructure of Moodle stabilizes, further improvements in pedagogical support will be a major direction for Moodle development.

## **Why Use Moodle?**

### **School-To-Career Preparation**

As technology continues to evolve, employers are requiring their employees to be proficient computer users; students with increased abilities will have a distinct advantage over other potential employees. College-bound students may be interested to know that many colleges and universities now offer completely internet-based courses. An increasing amount of college courses have some type of online component.

### **Take control of Internet resources**

The internet brings to bear many resources that are not available in books alone. Instead of letting students free to search the internet, Moodle can focus their search to a few sites that the teacher may find useful.

### **Productivity**

Moodle allows for an increase in the personal productivity of both students and teachers. Students can revise and edit their work with a great deal more ease than on paper alone. Additionally, students are able to keep their original work, and have proof of assignment submission.

### **Student Tracking**

No, not that kind of tracking. The kind where you can see what course materials students have accessed and how many times. You can see assignments they have handed in, when they handed it in, or even if it was late or not.

### **Quick Feedback**

Using Moodle, you can respond to student work online. Since the overhead of paper work is gone, getting through to students needs can be on their schedule not ours.

### **School happens outside your classroom**

Students have the ability to take part in discussions and activities on a Moodle site when ever and where ever they can access the internet.

### **Easier to keep organized**

Everything is online and accessible when ever. Moodle takes care of organizing data for you. It even takes care of things you may not be able to do like students access and time handed in.

### **Collaboration**

Moodle provides tools for peer feedback. Not only can students give this feedback to other students, logs are kept so the teacher can read the feedback.

## Features of Moodle (or what can it do for teachers and students)

### Overall Design

- Promotes a social constructionist pedagogy (collaboration, activities, critical reflection, etc)
- Suitable for 100% online classes, but more importantly a huge supplement to face-to-face learning
- Simple, lightweight, efficient, compatible, low-tech browser interface.
- Courses can be categorized and searched. Allows for many courses on one site.
- Emphasis on strong security. Student information is safe.

### Course Management

- A teacher has full control over all settings for a course they are teaching
- Choice of course format such as by week, by topic, or a discussion-focused social format
- Flexible course activities - Forums, Journals, Quizzes, Resources, Choices, Surveys, Assignments, Chats, Workshops
- Full user logging and tracking - activity reports for each student are available with graphs and details about each module (last access, number of times read) as well as a detailed "story" of each students involvement including postings, journal entries etc on one page.

### Assignment

An assignment is where you set a task with a due date and a maximum grade. Students will be able to upload one file to satisfy the requirements. The date they upload their file is recorded. Afterwards, you will have a single page on which you can view each file (and how late or early it is), and then record a grade and a comment. Half an hour after you grade any particular student, Moodle will automatically email that student a notification.

- Assignments can be specified with a due date and a maximum grade.
- Students can upload their assignments (any file format) to the server - they are date-stamped.
- Late assignments are allowed, but the amount of lateness is shown clearly to the teacher
- For each particular assignment, the whole class can be assessed (grade and comment) on one page in one form.
- Teacher feedback is appended to the assignment page for each student, and notification is mailed out.
- The teacher can choose to allow resubmission of assignments after grading (for regrading)

### Choice

A choice activity is very simple - you ask a question and specify a choice of responses. Students can make their choice, and you have a report screen where you can see the results. I use it to gather research consent from my students, but you could use it for quick polls or class votes.

- Like a poll. Can either be used to vote on something, or to get feedback from every student (eg research consent)
- Teacher sees intuitive table view of who chose what
- Students can optionally be allowed to see an up-to-date graph of results

## Forum

This module is by far the most important - it is here that discussion takes place. When you add a new forum, you will be presented with a choice of different types - a simple single-topic discussion, a free-for-all general forum, or a one-discussion-thread-per-user.

- Different types of forums are available, such as teacher-only, course news, open-to-all, and one-thread-per-user.
- All postings have the author's photo attached.
- Discussions can be viewed nested, flat or threaded, oldest or newest first.
- Individual forums can be subscribed to by each person so that copies are forwarded via email, or the teacher can force subscription for all
- The teacher can choose not to allow replies (eg for an announcements-only forum)
- Discussion threads can be easily moved between forums by the teacher
- If forum ratings are being used, these can be restricted to a range of dates

## Journal

Each journal activity is an entry in the whole course journal. For each one you can specify an open-ended question that guides what students write, as well as a window of time in which the journal is open (weekly course format only). A general rule of thumb is to create one journal per week. Encourage students to write reflectively and critically in these journals, as they are only available to them and you. Afterwards, you will be able to grade and comment all the entries for that week or topic, and students will receive an automatic email informing them of your feedback. Journals are not designed to be continually added to - if you need to do that then add more journal activities.

- A student can respond to something (reaction, question response, etc.). Immediately viewable by the teacher.
- Journals are private between student and teacher.
- Each journal entry can be directed by an open question.
- For each particular journal entry, the whole class can be assessed on one page in one form
- Teacher feedback is appended to the journal entry page, and notification is mailed out.

## Quiz

This module allows you to design and set quiz tests, consisting of multiple choice, true-false, and short answer questions. These questions are kept in a categorized database, and can be re-used within courses and even between courses. Quizzes can allow multiple attempts. Each attempt is automatically marked, and the teacher can choose whether to give feedback or to show correct answers. This module includes grading facilities.

- Teachers can define a database of questions for re-use in different quizzes
- Questions can be stored in categories for easy access, and these categories can be "published" to make them accessible from any course on the site.
- Quizzes are automatically graded, and can be re-graded if questions are modified
- Quizzes can have a limited time window outside of which they are not available
- At the teacher's option, quizzes can be attempted multiple times, and can show feedback and/or correct answers

- Quiz questions and quiz answers can be shuffled (randomized) to reduce cheating
- Questions allow HTML and images
- Questions can be imported from external text files
- Quizzes can be attempted multiple times, if desired
- Attempts can be cumulative, if desired, and finished over several sessions
- Multiple-choice questions supporting single or multiple answers
- Short Answer questions (words or phrases)
- True-False questions
- Matching questions
- Random questions
- Numerical questions (with allowable ranges)

## Resources

Resources are the content of your course. Each resource can be any file you have uploaded or can point to using a URL. You can also maintain simple text-based pages by typing them directly into a form.

- Supports display of any electronic content, Word, Powerpoint, Flash, Video, Sounds etc
- Files can be uploaded and managed on the server, or created on the fly using web forms (text or HTML)
- External content on the web can be linked to or seamlessly included within the course interface.
- External web applications can be linked in with data passed to them

## Survey

The survey module provides a number of predefined survey instruments that are useful in evaluating and understanding your class. Currently they include the COLLES and the ATTLS instruments. They can be given to students early in the course as a diagnostic tool and at the end of the course as an evaluation tool (I use one every week in my courses).

- Built-in surveys (COLLES, ATTLS) have been proven as instruments for analyzing online classes
- Online survey reports always available, including many graphs. Data is downloadable as an Excel spreadsheet or CSV text file.
- Survey interface prevents partly-finished surveys.
- Feedback is provided to the student of their results compared to the class averages

## Workshop

- Allows peer assessment of documents, and the teacher can manage and grade the assessment.
- Supports a wide range of possible grading scales
- Teacher can provide sample documents for students to practice grading
- Very flexible with many options.

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## Moodle Resources

<http://moodle.org/>

The main site on everything moodle. The best place to start.

<http://moodle.org/sites/>

Currently there are 12620 sites from 156 countries who have registered with the Moodle site. Moodle is global.

<http://desktoplinux.com/articles/AT4392353051.html>

A good article which talk about how to install Moodle. It gets only a little geeky.

<http://www.webers-online.com/scott/projects/K-12%20OA%20with%20OSS%20Moodle.pdf>

A thesis from Scott D. Weber at Capella University which proposes an online academy using Moodle. Quite long, but very good.

<http://www.mevl.net/>

Maine Virtual Learning project. The states new server to provide teachers with access to Moodle.

<http://moodle.umeedu.maine.edu/>

The University of Maine College of Education and human Development Moodle server.