

## **The quest for a wireless LMS (Learning Management System)**

At the last audioconference it was agreed that the first part of workpackage 1 the 'Specification of Mobile Learning Management System (mLMS)' would be addressed by each of the partners providing a listing of the specifications of the mLMS for the meeting in Hagen. In order to initiate this process I am sending this to each of the partners.

Here is my initial listing plus an analysis of how Moodle provides this functionality.

### **Management**

1. The wireless LMS must be able to accept enrolment from students enrolling from mobile devices.
2. The wireless LMS must be able to send back enrolment data, course information data, passwords and entry to the system to mobile devices.
3. The wireless LMS must be able to store student data in some kind of a database.

### **Course content**

4. The wireless LMS must be able to store course content for all courses in the system.
5. The students must be able to access course content by mobile devices.
6. The wireless LMS must create a comfortable learning environment for students studying with mobile devices.

### **Questioning**

7. The wireless LMS must be able to provide questioning and evaluation activities for students studying with mobile devices.
8. The wireless LMS must be able to immediately provide answers and feedback on assignments to students studying with mobile devices.
9. The results of the assignments should be able to be added to the student data collected in point 3 above.

### **Communication**

10. The wireless LMS must be able to facilitate communication by voice, SMS and MMS from the system to students studying on mobile devices.
11. The wireless LMS must be able to facilitate communication by voice, SMS and MMS from students studying on mobile devices to the tutor and the course administration.

12. The wireless LMS must be able to facilitate communication by voice, SMS and MMS from students studying on mobile devices to other students in the system.

I attach an analysis of how Moodle provides this functionality:

### ***MOODLE Features***

#### **Overall design**

- Promotes a social constructionist pedagogy (collaboration, activities, critical reflection, etc)
- Suitable for 100% online classes as well as supplementing face-to-face learning
- Simple, lightweight, efficient, compatible, low-tech browser interface
- Easy to install on almost any platform that supports PHP. Requires only one database (and can share it).
- Full database abstraction supports all major brands of database (except for initial table definition)
- Course listing shows descriptions for every course on the server, including accessibility to guests.
- Courses can be categorised and searched - one Moodle site can support thousands of courses
- Emphasis on strong security throughout. Forms are all checked, data validated, cookies encrypted etc
- Most text entry areas (resources, forum postings, journal entries etc) can be edited using an embedded WYSIWYG HTML editor

#### **Site management**

- Site is managed by an admin user, defined during setup
- Plug-in "themes" allow the admin to customise the site colours, fonts, layout etc to suit local needs
- Plug-in activity modules can be added to existing Moodle installations

- Plug-in language packs allow full localisation to any language. These can be edited using a built-in web-based editor. Currently there are language packs for over [34 languages](#).
- The code is clearly-written PHP under a GPL license - easy to modify to suit your needs

## User management

- Goals are to reduce admin involvement to a minimum, while retaining high security
- Supports a range of authentication mechanisms through plug-in authentication modules, allowing easy integration with existing systems.
- Standard email method: students can create their own login accounts. Email addresses are verified by confirmation.
- LDAP method: account logins can be checked against an LDAP server. Admin can specify which fields to use.
- IMAP, POP3, NNTP: account logins are checked against a mail or news server. SSL, certificates and TLS are supported.
- External database: any database containing at least two fields can be used as an external authentication source.
- Each person requires only one account for the whole server - each account can have different access
- An admin account controls the creation of courses and creates teachers by assigning users to courses
- A course creator account is only allowed to create courses and teach in them
- Teachers may have editing privileges removed so that they can't modify the course (eg for part-time tutors)
- Security - teachers can add an "enrolment key" to their courses to keep out non-students. They can give out this key face-to-face or via personal email etc
- Teachers can enrol students manually if desired
- Teachers can unenrol students manually if desired, otherwise they are automatically unenrolled after a certain period of inactivity (set by the admin)

- Students are encouraged to build an online profile including photos, description. Email addresses can be protected from display if required.
- Every user can specify their own timezone, and every date in Moodle is translated to that timezone (eg posting dates, assignment due dates etc)
- Every user can choose the language used for the Moodle interface (English, French, German, Spanish, Portuguese etc)

### **Course management**

- A full teacher has full control over all settings for a course, including restricting other teachers
- Choice of course formats such as by week, by topic or a discussion-focussed social format
- Flexible array of course activities - Forums, Journals, Quizzes, Resources, Choices, Surveys, Assignments, Chats, Workshops
- Recent changes to the course since the last login can be displayed on the course home page - helps give sense of community
- Most text entry areas (resources, forum postings, journal entries etc) can be edited using an embedded WYSIWYG HTML editor
- All grades for Forums, Journals, Quizzes and Assignments can be viewed on one page (and downloaded as a spreadsheet file)
- 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.
- Mail integration - copies of forum posts, teacher feedback etc can be mailed in HTML or plain text.
- Custom scales - teachers can define their own scales to be used for grading forums, assignments and journals
- Courses can be packaged as a single zip file using the Backup function. These can be restored on any Moodle server.

### **Assignment Module**

- 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)

### **Chat Module**

- Allows smooth, synchronous text interaction
- Includes profile pictures in the chat window
- Supports URLs, smilies, embedded HTML, images etc
- All sessions are logged for later viewing, and these can also be made available to students

### **Choice Module**

- 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 Module**

- Different types of forums are available, such as teacher-only, course news, open-to-all, and one-thread-per-user.
- All postings have the authors 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
- Attached images are shown inline
- If forum ratings are being used, these can be restricted to a range of dates

### **Journal Module**

- 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 Module**

- 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 (randomised) 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)
- Embedded-answer questions (cloze style) with answers within passages of text
- Embedded descriptive text and graphics

### Resource Module

- 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 Module

- Built-in surveys (COLLES, ATTLS) have been proven as instruments for analysing 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 Module

- 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.