

Technically Speaking: Moodle, mobile apps and mobile content

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More and more learners are opting to access web sites within their institution using mobile devices rather than traditional notebook or desktop computers. To meet user demands, schools are slowly overhauling their existing course management systems (CMS), such as Moodle, to improve CMS compatibility with mobile technologies (Kolowich, 2011). This article will focus on mobile apps for Apple iOS and Android which can be used to enrich mobile users' experience with Moodle. Usage statistics shown in figures 1-3 show that Apple iOS and Android are currently the two most popular mobile operating systems worldwide ("Usage share of operating systems," 2012), and data collected from Japanese university students by the author also validate the data from Wikipedia, that iOS and Android are currently the leading operating systems for mobile devices.

Usage share of browsers

Mobile Browsers 9% (up almost 3% from a year ago)

("Usage share of web browsers," 2012)

Total share of Smartphone operating systems

iOS 15% - 60%

Android 23% - 52%

Tablet operating systems

iOS 39.1%

Android 7.6%

Usage share of mobile browsers

Safari browser 23% to 53%

Android browser 16% to 23%

("Usage share of operating systems," 2012)

both locate and validate, however Moodle usage appears to be on the rise, and Moodle may already be the leading CMS in higher education. LMS and CMS statistics published on the web suggest that Blackboard and Moodle are the dominant course management systems (“Trends in eLearning,” 2010; Rosen, n.d.). But more importantly than market share, Moodle is open source (Unal & Unal, 2011), whereas Blackboard is proprietary. The advantage of open source software is that institutions can both modify the code to better suit their needs and can develop custom plug-ins to better support their teaching and learning needs (Wilson, 2012). As demonstrated by the Moodle plug-ins directory at moodle.org/plugins/, there are hundreds of contributed projects from developers around the world. In addition to using plug-ins, it is also possible to integrate Moodle with external web-based services such as SlideShare (“Developers & API,” 2012) and Google Maps (“Google Maps API,” 2012), as well as create mobile apps that interact with Moodle using APIs.

CMS/LMS usage

Blackboard	25%
Moodle (ITC, 2011)	10%

Higher education LMS market penetration

Moodle	54%
Blackboard WebCT (Rosen, 2006)	45%

Mobile usage by students in higher education

Results of a survey given to 163 undergraduate students in Japan showed that 95% of the students surveyed owned a Smartphone and 17% planned to purchase a new Smartphone in the coming year. 24% of the students had an iOS device, 35% had an Android device, 28% had another OS device and 13% were not sure of their mobile OS type. 92% of the respondents had unlimited data packet plans. Finally 41% stated that they currently use their mobile device to access information from the campus website and 75% were interested in using their mobile device for English self-study if mobile learning content was made available.

Web based apps verses mobile apps

Current trends in eLearning indicate that a single eLearning system, such as Moodle or Blackboard will not meet every institution’s demands (Britian & Liber, 2004), and due to personalized needs, eLearning solutions will continue to diversify. Institutions are faced with prioritizing solutions, with many focusing predominantly on mobile apps followed by web-based apps (Tamarkin & Rodrigo, 2011). Moodle is a viable platform for deploying mobile learning, either through the development of web-based apps or native mobile apps. Moodle 2.2 core now ships with a standard mobile theme that is custom-designed for users accessing courses via a mobile device. The layout of the Moodle course content and buttons is now easily visible on smaller mobile screens if using the mobile theme. In addition, there are a number of mobile applications available for iOS and Android devices to support mobile users accessing Moodle. This next section provides an overview of mobile app

projects. An overview of available mobile Moodle apps can also be found at Moodle News (“Moodle news for mobiles,” 2012).

My Moodle [Apple ios]

My Moodle is a free mobile app being developed by the Moodle.org team to supplement a standard Moodle site. The app is available at the Apple App Store. My Moodle requires an upgrade to Moodle 2.1 or later and a Moodle web services option must be activated. By default this option is turned off, but can be easily activated in the Moodle admin area. My Moodle users can upload images, audio or video which reside on their iOS device to a personal folder within Moodle. Users can view a list of participants in a course along and the participant’s profile, send messages to participants and add participants to their personal contact list. A useful feature of My Moodle is that course resources can be downloaded and viewed offline. More information on Moodle’s mobile app development and a development roadmap can be found at Moodle’s Mobile app page (“Mobile app,” 2011).

Umm [Android, Blackberry, or Apple ios]

Umm is “an unofficial clone of the Moodle Mobile app” which runs on Android OS, BlackBerry OS or iOS. It is much like an open source mobile app. The main advantage of this project is that it is designed using html5 and JavaScript, making it possible to be customized by anyone. To package the app for your device, one must create an account, upload the files provided by the developers, and download the packaged app at the PhoneGap site. PhoneGap is a developer’s tool that can be used to create custom apps which are then deployed in a specialized web browser. Umm information, download links and packaging directions can be found on the Moodle plug-in site (Leyva, 2011).

mTouch & MoodleEZ [Apple ios]

These mobile apps, developed by Pragma Touch, function much like a web browser with added functionality, such as enabling users to upload and download files to and from an iPad. This app’s most useful feature is the file upload function as it is not possible to upload content to a Moodle course using the standard Safari iOS browser. The 2 apps are designed to allow users to upload files such as images to assignments or forums in Moodle. Each app costs \$2.99 and can be downloaded from the Apple App Store (“MoodleEZ,” 2012).

MLE-Moodle [Android or Apple ios]

MLE-Moodle is a plug-in for Moodle 1.9 that allows a Moodle site to be accessible via a mobile web browser. There is no support for Moodle 2.X. The plug-in allows mobile browser access to core Moodle course activities, such as lessons, quizzes, assignments, resources, forums, surveys, choices, and wikis from a mobile device using either the **MLE** mobile client or your default mobile device browser. The **MLC** mobile client is a mobile Java application so will run on devices that support Java. The app details and downloads can be found at Sourceforge (“MLE-Moodle,” 2012).

Moodle Mobile Media Apps [Apple iOS]

The following open source mobile media apps are currently being developed by the author of this article. Rather than package all of the apps together, the decision was made to develop individual apps, each with a specific purpose. The main objective of each app is to assist learners to seamlessly upload images, audio or video from a mobile device to a Moodle course. Each app is designed to supplement a customized Moodle activity module and requires the installation of the accompanying module. The customized Moodle modules can be downloaded from moodlemodule.netcourse.org and are designed to work with or without the mobile apps. The apps are currently available only for Apple iOS; however Android-based app development is proceeding.

Moodle Slideshow module and mobile slideshow app [Apple iOS]

An important component to language instruction is the ability to bring authentic content from outside into the classroom. The mobile slideshow app shown in figure 1 was designed for this purpose. Learners can use this app to capture images from outside the classroom which can then be used in classroom language activities. The slideshow module was developed to simplify the process of synching voice narrations with images when creating an online slideshow. Figure 1 demonstrates the simple user interface, which students use to select images from their mobile device and to record audio for each image. A narrated slideshow, shown in figure 2, is automatically generated as an HTML5 package on the server-side. Images are resized and audio is synched with each slide using server-side scripts, thus maintaining a simple and clean user interface, an important element in a language learning environment. Learners can also attach a set of multiple choice questions to their presentation and can post comments on other users' uploaded presentations.



Figure 1. Adding images and audio captions to a slideshow using the mobile app



Figure 2. HTML5-packaged online slideshow

The Slideshow module is used extensively with students for presentation projects such as a hometown data project and a technical description project. This module can be used for presentation speaking practice or it can be used as a shared presentation 'board' or portfolio where uploaded presentations are shared within a particular course. The Slideshow mobile app is available for free at the Apple app store by searching 'Moodle Slideshow' within iTunes. The Slideshow Moodle module can be downloaded from moodlemodules.netcourse.org.

Moodle VideoBoard module and mobile VideoBoard app [Apple iOS]

The Moodle VideoBoard module is a simple module that allows students to upload short audio or video clips to a shared 'board' within a course. The VideoBoard layout encourages both self-evaluation and peer evaluation of the recorded language. Video can be captured using either a browser-based recorder on a computer or a mobile device. The video is then directly uploaded from the mobile device to the Moodle VideoBoard as shown in figures 3 and 4. Video uploaded in different formats are automatically converted on the server to a web-optimized **MPEG-4** format using FFmpeg.

The VideoBoard mobile app is available for free at the Apple app store by searching 'Moodle Videoboard' within iTunes. The VideoBoard Moodle module can be downloaded from moodlemodules.netcourse.org.

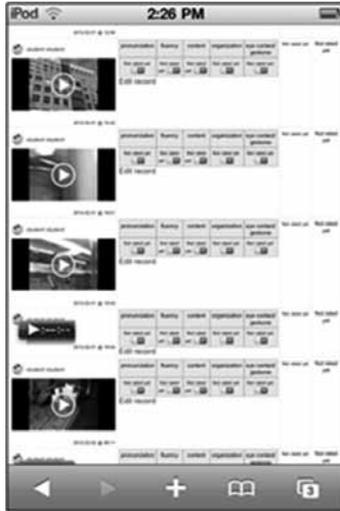


Figure 3. Moodle VideoBoard module



Figure 4. Uploading video to Moodle using the mobile VideoBoard app

Moodle VoiceShadow module and VoiceShadow mobile app [Apple iOS]

Voice shadowing is a language practice activity where a learner listens to a target language sample and attempts to repeat the language (Murphey, 2001). The VoiceShadow module allows learners to listen to an audio file uploaded to a Moodle course and simultaneously

record their 'shadowed' speech using a mobile device. The voice shadow audio files are saved to the Moodle course. The teacher and learner are both able to evaluate the recordings.

The VoiceShadow mobile app allows learners to practice voice shadowing using a mobile device. Target language is uploaded by the instructor as an audio file to a Moodle course. The learner can then access, via a mobile device, the audio uploaded to Moodle, and simultaneously listen to the audio file and record their own voice. The student recorded speech is then directly uploaded from the mobile device to a Moodle course. The VoiceShadow mobile app is available for free at the Apple app store by searching 'Moodle Voiceshadow' within iTunes. The VoiceShadow Moodle module can be downloaded from moodlemodules.netcourse.org.

Mobile language lab

Mobile learning typically conjures notions of students using their personal Smartphones for supplemental language practice while commuting to and from school or while sitting in a café. A less evident model of mobile learning is the mobile language learning lab.

Portable iPod trays shown in figures 5 and 6 are a cost effective alternative to traditional **CALL** or language labs. Using a Parasync docking station, as illustrated in figure 5, 20 iPods and can be transported to any classroom for listening and reading use. The docking station also allows a set of iPods to be easily synched. A Wi-Fi base router can be connected to a campus **LAN** to create an ad hoc Wi-Fi network within the classroom. Learners can use the iPods to access multimedia and other language learning materials and activities residing on the Moodle server.



Figure 5. The iPod tray can easily be transported to any classroom



Figure 6. iPod trays can be stored in a cart along with Wi-Fi routers to create a cost-effective mobile language lab in any classroom.

Mobile content management system [Android or Apple iOS]

Moodle is only just beginning to be customized to accommodate mobile devices. The development of a core Moodle mobile theme and the 'My Moodle' mobile app are substantial improvements given the complexity and diversity of the Moodle community project, but there is a considerable amount of redesigning to undertake before Moodle is completely mobile compatible. A significant weakness is that mobile users are not able to complete many of the Moodle lesson activities offline using a mobile device. In addition, several of the Moodle activities cannot be accurately displayed on an undersized screen. To accommodate these shortfalls, institutions are developing customized mobile course management systems. At Kochi University of Technology, a mobile course management system called **MCM** has been developed to supplement the core Moodle **CMS**. Currently **MCM** supports five different activity types: a vocabulary flashcard activity, a vocabulary quiz activity, a multiple choice activity, a reading/listening activity, and a dictation activity. The activities are created, stored and delivered outside of the Moodle environment, but **MCM** authenticates against the same user database as Moodle, and **MCM** activity results can be stored and retrieved within a Moodle course.

The mobile course manager or **MCM** was developed as both a web app and a native mobile app for Apple **iOS**. There are benefits to both approaches. The web app version access content that is stored on a centralized database server and learning content is accessed online via a mobile web browser. Learners must have access to a Wi-Fi connection to access the learning activities. Using the native mobile **iOS** app, the content resides in the same database that the mobile apps access, but with the native app, the content can be downloaded to a mobile device allowing learners to interact with the learning content offline.



Figure 7. **MCM** activity types from left to right: vocabulary flashcard, vocabulary quiz, multiple-choice, and reading/listening.

The content for each activity type is created using a web-based administration application. Text, images, audio and video content can be inserted into templates for each activity type. An example of a multiple choice quiz activity and the template used to create the activity are illustrated in figure 8.

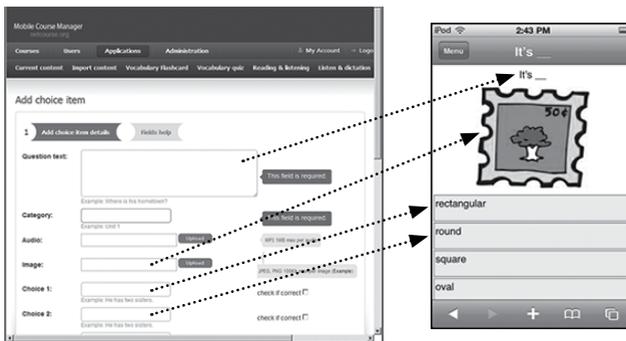


Figure 8. Web-based template used to create a multiple choice quiz activity.

The **MCM** mobile app is available for free at the Apple app store by searching 'mobile course manager' within iTunes. The **MCM** backend can be downloaded from moodlemodules.net-course.org.

Discussion

Smartphones and other mobile devices such as tablets both offer new and exciting opportunities for language learning, but early adopters will have initial hurdles to overcome. Firstly, not all students have access to a mobile device, so when deploying learning applications, mobile devices may need to be made available to learners. Some institutions are either giving or loaning devices to students. Also, there are difficulties involved in application development, and the inability to bypass online app stores to distribute applications within an

educational institution. In addition, Smartphone screens are rather small to deliver more sophisticated language learning applications. Lastly, mobile devices such as the iPhone and iPad do not support Java or Adobe Flash, two widely used technologies for creating interactive web-based applications for learning on desktop computers.

Ad hoc integration of mobile devices and course management systems will help spur more integrated and robust solutions to accessing online learning materials using a variety of devices. The mobile media applications introduced in this article were designed to offer fragmented solutions integrating mobile devices with a CMS. Fragmentation and standardization issues are not uncommon with new technology such as mobile learning. In the future, open-source solutions will hopefully emerge and developers will be able to contribute mobile plug-ins that can be used to expand the current functionality of a single Moodle mobile app, such as the official 'My Moodle' app.

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