INSTRUCTIONS AND COMMENTARY ON THE UTILITY OF MOODLE

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ABSTRACT

Moodle (modular object-oriented dynamic learning environment) is a powerful online Learning Management System (LMS) that is normally used in addition to regular classroom practices, potentially offering students many more learning opportunities and which allows educators, at the least, to gain greater insights into students' study habits. This paper explains Moodle's basic functions and provides some basic commentary.

Moodle は、通常の教室で行われる教育の効果をあげるために使われている有効なオンライン学習マネジメントシステムである。学生により多く学習できる場を提供し、教師は学生の学習習慣を知ることができる。この論文ではMoodleの基本的な機能と授業での有益な使い方を説明する。

Key words: Moodle, e-learning, measurement, simplicity, testing

INTRODUCTION

Moodle is a powerful, versatile, open source e-learning course creation LMS. The brainchild of Martin Dougiamas, it was originally devised to promote educational collaboration. In addition to enabling instructors to be able to create and upload a plethora of different materials and courses online, it lets them organise, observe and measure students' online course performance. From the student perspective, with Moodle their learning opportunities will expand beyond what often tends to be a primarily teacher-fronted, textbook-based classroom. They can benefit from "blended learning," which involves doing independent study online at their convenience as well as participating in regular classes.

Moodle can be used for a variety of purposes and subjects, such as mathematics, geography and history, not merely language learning. And of course Moodle accommodates any language, not just English. Since its inception, it has been growing at an exponential rate, and as of this writing, according to the statistics at www.moodle.org, a phenomenal 5,866,088 courses have been put online at over 66,077 sites, which is, when compared to statistics cited by McNabb and Jenkins (2010), an increase of over 2,100,000 courses and almost 16,000 more registered sites over a span of approximately 1.5 years. Course creators have already made over 112,600,000 quiz questions for just under 57,000,000 users in 218 countries. That's twice as many questions as in 2010, suggesting that existing educators are substantially adding to their courses. In spite of these staggering statistics, regularly updated website data shows that Moodle continues to be comparatively under-utilized in Japan, Korea and China, especially so in Korea where there are only 167 registered sites. It would seem, therefore, that Moodle is a resource that modern Asian educators could familiarize themselves with in order to become better attuned to the needs of their students who are indeed "digital natives."

The case for blended-learning

The primary reasons for Moodle's increasing popularity are its intuitive simplicity, its increasing number of useful features and the fact that it is completely free. Once a server has been set up, non-technically inclined instructors can be shown or can learn how to use it with a reasonable degree of proficiency after about an hour and can then begin to create or upload course content. This is equally true for students; its ease of use (in Japanese, English, Korean, Chinese, etc.) allows them to be interacting

within minutes. Beyond its straightforward design, Moodle is extremely comprehensive, versatile and designed for cross-platform use. Developers have endeavoured to limit incompatibility issues, therefore most users will not be disadvantaged by using operating systems and browsers other than Microsoft Windows and Internet Explorer. In actual fact, there are some bugs with Moodle 1.9 with certain question types when using some versions of IE. Also, because Moodle is a cooperative, ongoing project, it's constantly being improved. There are dedicated forums and the Tracker database where course creators can communicate with developers in order to produce enhancements and upgrades. In short, Moodle makes it extremely easy for non-technically minded educators to initiate blended learning for the benefit of their students, many of whom expect and enjoy online study and learning.

Educationally, using Moodle enhances the learning environment, extending the classroom by ensuring that many elements of lessons are accessible online and by increasing the possibility that learner interaction with materials will be longer and more complete. Both of these serve to promote learner autonomy. In traditional classrooms, input, feedback, and collaboration with classmates often ends at the classroom door, whereas in the blended-learning environment, teachers can provide extra content via the course website, use forums to keep in touch with students and allow peer-teaching. Furthermore, quizzes and online lessons can enable students to test their knowledge and receive instantaneous feedback on their performance. Instead of having just one opportunity to examine course content, students are free to reexamine all content including slideshow presentations given in class and even full lectures as much as they need. All of this extra support is available to students at anytime so they can choose what to study, when to study and how to study, thus providing highly collaborative, interactive and autonomous learning opportunities.

The usability of basic Moodle modules
It is outside the purview of this brief paper to detail point by point each of the multifarious uses of

Moodle, therefore interested readers may wish to examine the moodle.org site to confirm which, on its ever-expanding list of features, are suitable for their needs. However, some of the more common, useful features will be described below.

After installation, Moodle becomes a comprehensive website for teachers where they can augment and manage their courses using their preferred web browser. The website requires a login but, when allowed, users can log in as guests. This "open door" feature has implications for local, national or even worldwide collaborations since content can easily be shared with anyone, although in general most users will want to maintain a secure site to protect personal information. After login, the website presents a list of courses that are divided according to institutional or individual preferences. Courses themselves are usually organised in a weekly or topic-based format where beginning and ending dates can be set. Each week/topic contains the materials to be studied. Each week or topic can be displayed or hidden according to instructor preference. In effect, at the bare minimum, it constitutes a multimedia online "syllabus," and at the maximum, a complete interactive course. In our case, we have over 20 courses with everything from music, podcasts and quiz questions using sound files, to slideshow presentations, interactive glossaries and course handouts. Our resources, forums, quizzes and other activities for each course are inserted into each weekly/topic heading. There is almost no limit to the amount or types of resources that can be used. By way of illustration, some common resources and activities include: adding course notes as a pdf file, graphs as jpeg files, making instant url links, exporting office suite presentations as swf files, having the ability to create webpages or text files within Moodle, plus being able to make mindmaps, glossaries, chats, forums, surveys, Wiki entries, as well as audio and video recordings and quizzes that are automatically graded. Course creators and Teachers can directly import YouTube videos and add podcasts. Using Blocks, checklists and a variety of self assessment tools, students can track their progress and develop their autonomy. Moreover, as Moodle is modular, it is easy to install extra, custom modules for more specific

purposes such as Moodle math or LaTeX plugins to display mathematical formulas. Because materials within any given week or topic can be hidden from students' view, the teacher can control pacing by defining when specific resources will become available. It is evident, then, that this LMS is a powerful and valuable, if not essential, complement to classroom education.

Potential can appreciate just how simple Moodle is. Consider the steps required to create several of the most common activities and resources. For example, to add an image, choose "Link to a file or website" from the "Add a resource" drop-down box. A new page will appear. Provide a suitable title for the

Fig. 1 Resource drop-down box

image. For an image on the web, simply input the url. Then click "Save and return to course." The url link will appear in whichever week in your course you have chosen. When uploading an image from your computer, use "Choose or Upload File" and follow instructions in the pop-up window. Once the file has been uploaded, click "Choose." Once again, be sure to give the image an appropriate name. To create a text file within Moodle is just as easy. Simply choose "Compose a text page" from the "Add a resource" drop-down box. Give the document a good title. Then compose your text or cut and paste from any pre-existing document. Choose the "Moodle auto-format" for most situations. Finally, click "Save and return to course." The text page link will appear in your chosen
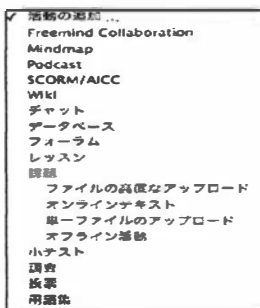

Fig. 2 Available resources

week. To be sure, uploading videos makes any course

more exciting, but they should be used judiciously. Choose "Insert a label" from the "Add a resource" drop-down box. Insert the video url in the white box. Highlight the url by double-clicking.

Choose the "Insert Web Link" icon. Insert the url and a suitable title. Click "OK." Click "Save and return to course." The YouTube or other video will appear in a given week. I have clearly demonstrated that adding basic online content to satisfy the needs of digital natives can be easily accomplished in just a few mouse clicks without training or frustrating trial and error.

Comprehensive testing with Moodle
Because quizzes and question-making are so frequently used, the procedures for their design deserve in-depth explanation. Without question, two of the most labour-saving features of Moodle are its impressive assessment and measurement capabilities. Teachers can create and deploy quizzes that are marked automatically and have the results inserted directly into the course gradebook. If item analysis (see below) proves that certain items or even entire tests are problematic, it is easy to reconfigure the weighting in a variety of ways until a fair outcome is achieved. If there are a number of instructors teaching a common course or in Japan where hundreds or even thousands of teachers use the same MEXT approved textbook, it is possible to create numerous tests that could be used by all. It is actually quite surprising, even unfortunate, that MEXT, publishers and boards of education have not promoted Moodle for this purpose.

Although this explanation of testing may seem lengthy and somewhat cumbersome because it is in print, in point of fact, everything is entered on a single page using various drop-down boxes and fields. It is completely intuitive, requiring no special training whatsoever. Setting up an empty quiz takes about a minute. The first thing to do is to create an empty quiz. In effect it is the quiz framework. After this has been done, questions are added to a question bank.

1) **Quiz**: To create a quiz, choose "Quiz" from the

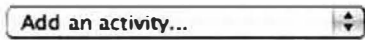"Add an activity" drop-down box. Add a suitable title.

Add an activity...

Fig. 3 Activity drop-down box

2) Settings and attempts: Next, set the parameters: date(s) and time (e.g., May 3 1:15 to May 6 5:45) and then the test duration (e.g., 20 min.). You can decide whether or not you want to randomize the quiz by shuffling questions and/or answers. Then fix the number of attempts -- practice quizzes could have unlimited attempts to make sure that students master the content. By restricting when the quiz can be taken and for how long, fixing the number of attempts allowed, and automatically shuffling questions and answers, it makes it extremely difficult for anyone to cheat. Indeed, with shuffling, while one student is viewing his question 7, it is different and the choices are in a different order from the question 7 of the student sitting next to him. In a quiz with 20 questions, almost all students' questions and choices will be completely different from other students'. Once students realise this, they will know they have no choice but to study. Depending on the composition of given groups of students, the shuffling option will have greater or lesser value.
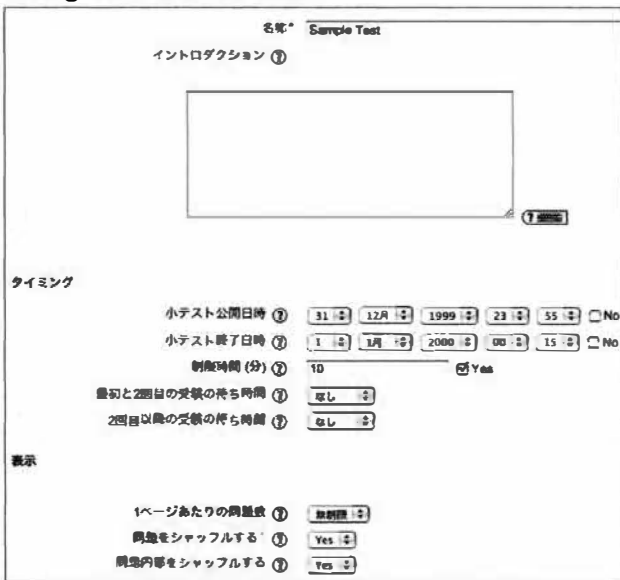
Fig. 4 Setting test parameters

3) Grading: The next step is to determine the way the quiz will be graded -- according to the highest score,

the average of all attempts or the first attempt.

4) Feedback: Choose whether or not to offer overall feedback. You can provide hints and encouragement according to your students and course.

5) Security: Choose the level of security. For practice quizzes it may not be needed at all, but for real, in-class (English) tests, it can be important, because in some versions of IE, when the cursor is passed over a
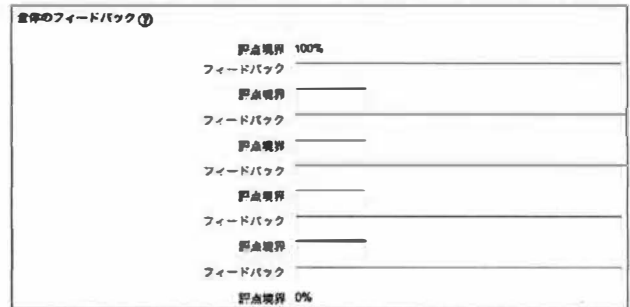
Fig. 5 Grade range and feedback settings

word, a Japanese translation is produced. Also in at least one version of IE, the secure setting sometimes creates viewing troubles but this is easily fixed by turning off the pop-up blocker.

Fig. 6 Test question types

6) Making questions: Once all of the parameters have been set and the framework of the empty test has been made, the next stage is to import or create questions for the question bank and then "fill" the empty test. There are all sorts of weighting possibilities and the ability to override answers or manually regrade in the

event of teacher error, excessive difficulty or some type of glitch. With paper tests, instructors would have to manually regrade and adjust scores one by one in their gradebook, but with Moodle, these sorts of issues can be resolved in a few clicks. To add questions, make sure that "Editing" is turned on. Then click on the empty quiz you've just made and begin to add questions. With colleagues teaching the same course, you can develop a cooperative question bank and use the "Add random questions" function as well. In the case of these writers, three colleagues shared the workload and created a full question bank for several units of a common course in about an hour. It is worth noting that because different people bring different notions of what's important to test for, this makes for greater variety, which is certainly preferable to one person acting alone. With Moodle it is much easier to instill variety into testing. There are numerous question types: matching, multiple choice, cloze, short answer, advanced ordering, essay, true or false and more. Some question types allow for awarding partial points for some answers. If you already have questions, you can create tests quickly by cutting and pasting from opened files. Using "Aiken format," it is possible to directly import multiple choice questions made in standard word processing software with considerable ease. For example, if you have files of with hundreds of carefully constructed questions used for paper-based placement tests, you can upload all of them at a go. If you do not have any existing files to draw from, begin making questions just as you would for any paper quiz. It only takes slightly more time which is paid back by not having to collect and grade papers.

Using online (practice) quizzes, instructors can offer *students* the freedom to choose their own timing to attempt a quiz, which affords them the opportunity to put forth their best effort. They can do their own practice quiz wherever and whenever they want, which actually may not be a minor consideration for students who have to commute three hours a day. As previously indicated, by permitting this, it gives the teacher insight regarding study patterns. For students who miss an actual test, it is possible to have them do it at home (you can reset the parameters and easily

confirm i.p. address) or from another designated place. For example, for students who miss our placement tests, we offer another supervised opportunity in our Languages Centre and restrict test-taking to a specific i.p. address range. Additionally, having students do practice quizzes online at home frees up classroom time for more learning, and as Moodle does all the marking, teachers have more time to plan their next lesson or relax and come to school with more energy.

To do all of this initially requires some set up time (not an onerous amount), but if the course or courses are going to be taught for several semesters or used by many teachers and students, it is a worthwhile initial investment. For busy, mid-career university professors and teachers who have many students coupled with interminable committee and administrative responsibilities, the hours gained by not having to mark papers alone is definitely worth having Moodle. Furthermore, it reduces paper clutter in one's office and is environmentally friendly.

In Moodle, instantaneous item analysis allows us to quickly or thoroughly compare different students and class sections, graphically display grading in order to have an immediate sense of our students' achievement and provides an abundance of useful statistical data that would normally require considerable time spent on calculations. After a quiz, or even during one, item analysis can be performed. We can analyze a fifty-question placement test taken by 350 students mere minutes after the fact and can get an immediate global impression of a cohort while verifying at the same time if there were any unsuitable questions. We can confirm whether certain discrete grammar points will need to be addressed or not. In a unit test, through item analysis if we determine that most students couldn't answer a particular question, then we may need to revisit that subject matter or simply award points because the question wasn't properly framed. While we would be able to find out this information by grading manually, it would take much longer. It is evident, then, that Moodle's item analysis features give educators greater awareness about testing and allows them to conduct analysis with greater efficiency.

Administration and observation

From an administrative standpoint, Moodle is a godsend. Once students register using their name, student number and e-mail address, permanent ordered name and grade lists are created. As a result, the teacher can send group messages with a single click. While teachers can see the entire gradebook, students are restricted to viewing their own results. At any time, teachers can export all their grades to a spreadsheet or text file should they wish to print them out or send them to others.

Students can subscribe to forums and other updates from the Moodle site as well as send and receive messages via the Moodle site to the teacher or other students. This means that students have the ability to communicate with one another at will about their classes, homework, and so forth. Because Moodle maintains course contents 24 hours a day, it definitely assists students in autonomous and collaborative learning. Its online calendar is highlighted and provides a link to any test, activity or homework where a date parameter has been specified so students should always be able to know about tests and assignments. Privacy is easily controlled. E-mail addresses are visible to other course members by default, however this can be changed.

Using Moodle, teachers have access to a variety of tools that enable them to immediately and accurately quantify the study routines and performance of their students. There are several reports that teachers can access to obtain data related to student participation in a given course. When students do any kind of online task, it is tracked. Therefore teachers can see when each student logged in, with some accuracy what the student did while logged in and for how long the student was logged in, even for how long specific files within a course were likely used. There are certain "tricks" such as creating a webpage within Moodle that permit better tracking. All of these logs can be compiled into statistical reports that let the teacher know when students are using Moodle, and how often each activity, resource or forum has been accessed, thereby providing insights into the study habits of the class and of course individual students. Armed with these statistics, course coordinators and others may be able to make better decisions after several semesters. Most teachers, however, will simply view the available data as cues about how to interact with students in the next lesson(s). In short, this allows for superior one-to-one instruction that simply cannot be replicated in the traditional classroom. Before the teacher comes to the next class, s/he will have a much better idea of what to teach or reteach and for how long. In large classes, from the logs, instructors can actually know the names of students who may need special attention, be it enrichment or remediation, whereas without these records, teachers might have to wait weeks or even months for initial test results.

Conclusion

It has been adequately established that Moodle is a powerful, dynamic and versatile e-learning platform whose simplicity should prove to be a boon to a wide range of educators lacking computer expertise but who recognise the need to diversify their pedagogy by blending captivating and functional aspects of e-learning with the traditional classroom experience. I have suggested that through Moodle, a professional collaborative environment is possible. Before we begin any blended learning Moodle project, however, we must first truly grasp the underlying, crucial point which is that students in the 21st century *expect* a degree of online education, hence it is absolutely incumbent upon us to catch up, if need be, to enrich their learning experiences.

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