White Paper:

Is This the Best Way to Develop, Deliver and Manage Online Training?

A discussion of lessons learned while integrating DVD video and PowerPoint lessons into a free open-source web-based learning management system.

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Introduction

In June 2003, my company was awarded a contract from the University of Texas Pan American (UTPA) in Edinburg to help them develop and deploy new manufacturing-related courseware for residents in the Rio Grande Valley. Under the university's *Adelante!* program, we were to create scripts for a 60-hour dual-language DVD video course to teach welfare recipients job skills for the manufacturing sector. Soon, a contract modification required us to provide a customized Web-based learning management system (LMS) to allow students to view DVD-based video lessons, perform interactive DVD exercises, and take tests while recording student progress and scores over the internet. We selected and customized an LMS, integrated existing bilingual DVD-based video lessons/exercises, recommended an authoring system for future non-DVD lessons, loaded the LMS with all materials for the first course (20 DVD lessons, 14 DVD exercises, 7 quizzes with 80 questions, and additional resources), and prepared to load two additional courses (still under development) of greater complexity. Needless to say, all of this had to be accomplished on a very tight budget. By combining and customizing free and low-cost off-the-shelf software, we were able to satisfy all requirements ahead of schedule and under budget. This paper recaps lessons learned during this project, and describes the capabilities of the resulting LMS and courseware authoring approach

Selecting a Learning Management System (LMS)

I had last researched LMSs in-depth about 3 years ago. At that time, I could not find any suitable system that I thought was low-cost (e.g., less than $25,000 with no per-student use fees), easy to use, and had the basic capabilities I needed. Therefore, I was fairly pessimistic when I started searching for a suitable LMS, and I suspected I might have to build a limited LMS on my own. I had no idea that there was such a thing as a "full-featured" open-source LMS. Further, I thought that "open-source" equated to "amateurish", "buggy", and "outdated". Boy, was I wrong!

Fortunately, when I started searching the web to see what was new with LMSs, one of the first sites I ran across was http://www.globalliteracy.com/. This site had some great articles on the benefits of open-source software, as well as good articles about relatively new open-source LMSs (http://www.globalliteracy.org/OpenSourceLMS.html). They claimed "…The Open-Source LMS's can match the proprietary LMS's ($50,000 up) feature for feature…". Although very skeptical, I read on.

I soon began to believe these Global Literacy folks knew what they were talking about. They seemed to favor an open-source LMS called *Moodle* – the "Modular Object-Oriented Dynamic Learning Environment" (http://www.globalliteracy.com/ WhyMoodle.html). A link from the Global Literacy site led me to a comparison of 66 LMSs performed by *EduTools* (http://www.edutools.info/course/compare/all.jsp). In their comparison of 42 LMS features and capabilities, Moodle had all but eight – and these eight features were not all that important to me at the time (more on this later).

NOTE: All following descriptions/discussions pertain to Moodle version 1.0.9.

I then went to the Moodle site (http://www.moodle.org/). After browsing for about 30 minutes, I learned/confirmed the following:

- Moodle is being used by a <u>lot</u> of organizations (as of 9 Feb 2004, 815 registered sites in 69 countries, with over 2500 downloads of version 1.09 within first week of release!)

- Moodle is available in 34 languages (I thought this very interesting, since my client was interested in bi-lingual English/Spanish training)

- Moodle allows a choice of 3 course formats (by week, by topic or a discussion-focused social format – although I was most interested in the topic format, I immediately saw that I could use Moodle for a variety of different types of online training).

- Moodle is based on PHP and MYSQL (both of which are totally free, and both of which I had considerable experience with – thereby making customization much easier).

- Moodle allows you to easily upload and add any file as a course resource, or link to other websites, and will track student access to these files/websites. This allows courses to be augmented with materials produced in MS Word, PowerPoint, Excel, Flash, or virtually any other program you can think of.

- Moodle is indeed totally free and totally open-source (I could use and modify it at will without paying anyone a nickel!)

- Moodle did everything I needed it to do, and almost everything I wanted it to do (and, I could customize it to do the additional things I wanted).

- The standard Moodle user interface for students displayed more options than I wanted, thereby making it appear a little too complex, but I could easily simplify and "pretty up" the interface (e.g., hide unneeded options, change colors, add some graphics).

As I mentioned earlier, of the 42 features of an LMS evaluated by EduTools, Moodle had all but a few. The following table summarizes why I did not think these "missing" features/capabilities were important:

Feature/Capability "Absent" from Moodle	Comment
Video Services - enable instructors to either stream video from within the system, or else enable video conferencing, either between instructors and students or between students.	Can be compensated for by easily linking to another streaming video or video conferencing program, if needed.
Whiteboard Tools - include an electronic version of a dry-erase board used by instructors and learners in a virtual classroom (also called a smartboard or electronic whiteboard) and other synchronous services such as application sharing, group browsing, and voice chat.	Can be compensated for by easily linking to another whiteboard program, if needed.
Bookmarks - allow students to easily return to important pages within their course or outside their course on the web. In some cases bookmarks are for an individual student's private use, and in others can be shared with an instructor or amongst an entire class. Some systems also allow bookmarks to be annotated.	Can be added by modifying open-source code, if needed.
Work Offline/Synchronize - a set of tools that enable students to work offline in their online course and for their work to be synchronized into the course the next time they log-in. Sometimes students download course content to their local computers and sometimes they access content on a CD-ROM. Course content that resides on a CD-ROM can also be linked dynamically within the online course. A course placeholder automatically returns students to the location in their course where they were working the last time they logged off.	Partially accomplished by linking to course content on a CD-ROM or DVD within the course—full offline capability with synchronization is the only capability I have not yet found a way to easily add to Moodle.
Groupwork - the capacity to organize a class into groups and provide group work space that enables the instructor to assign specific tasks or projects.	Can be accomplished by using built-in discussion forums.

Table 1 – Features/Capabilities "Absent" from Moodle

(Source: http://www.edutools.info/course/compare/all.jsp)

So far, Moodle was looking like a great solution— far better than I had hoped for (it was FREE!). However, I was not yet convinced. I had been "burned" in the past by programs that looked great on the surface, but turned out to be "buggy" or cumbersome when put to actual use. The real test was to download, install, and test it for myself.

Downloading was easy. Installing onto a web server was a bit of a problem for me, but mainly because I didn't read the instructions. I installed MYSQL and PHP separately, and it took a couple of hours to get them properly configured on our web server. Once that was done, Moodle installed easily and fired up without a bug. (Note: for future

installations, I used the "package" from www.moodle.org that installs and configures PHP, MYSQL, and Moodle in one pass – much easier!).

I then spent a couple days testing Moodle. I added courses, lessons, quizzes, discussion forums, and various student and administrator accounts, then logged in as students and instructors and tried them out. Overall, it was easy to learn, easy to use, and worked great. I was convinced, and almost ready to recommend it to our client. Only one more issue remained – could I make it control and track access to DVD-based video lessons?

Adding DVD Control Capabilities to the LMS

My client already had produced one DVD of video lessons and exercises, and was in the process of producing two more (my company, San Antonio Training Partners, had won the contract to script these two additional DVDs). The client had done some research, and concluded that it would be very difficult and expensive to make a web-based learning management system control and track access to a DVD. I half expected that all I would be able to offer was an online testing and collaboration system using Moodle, with the students being required to use their existing DVD playback program to play the DVD in another window (since the DVD was already produced and duplicated, I could not add any hyperlinks from the DVD video to a Moodle website).

I must admit, at first I was skeptical about incorporating DVD video into a web-based training system. I preferred converting the video to web-based format (e.g., RealVideo .RA or Microsoft .ASF files), and playing them quarter-screen from the web server. I have since changed my position. If you need video to show action details or motivate your students, the full-screen quality of DVD just can't be beat. Plus, you retain all of the interactivity programmed into the DVD, and students have the option of taking the DVD into the living room and watching it on their TV. Although the cost of scripting, shooting, and producing the DVD can be high, reproduction costs are low. If you need high-quality video or bandwidth is at all limited, DVD is well worth consideration.

Now I had to figure out a way to integrate DVD control and student tracking into Moodle. To make a long story short, web searches quickly led me to articles on WebDVD – a method of combining the high bandwidth and high quality of DVD with the interactivity, timeliness, updatability, and communication of the Internet. It's a great way to get the best of both worlds. Microsoft and others are producing tools and technology that supports the development and use of WebDVD titles. After looking into various options of integrating WebDVD, I decided to purchase *OnStage DVD for ActiveX* by Visible Light ([http://www.visiblelight.com/onstage/ products/activex/dvd/](http://www.visiblelight.com/onstage/products/activex/dvd/)). This product allowed me to create a PHP script to add full DVD control capabilities to Moodle. Although the "professional" version OnStage cost $995, it provided several capabilities I needed:

- The ability to automatically stop DVD playback where desired, either at the end of a DVD title, chapter, or at a specified time. We wanted each

lesson/exercise link from the LMS to play only a specified portion of the DVD, and did not want students to be able to "skip ahead".

- The ability to create links to specific portions of the DVD, and specify a DVD title and chapter for both the English- and Spanish-language version of the lesson/exercise. When I added a DVD playback screen to Moodle (by creating a new PHP script), I was able to add a button to let the student toggle between the English and Spanish versions as desired. In some cases, this button simply played another DVD title/chapter, in other cases it activated the second audio track on the DVD (various segments of the DVD used different approaches).

- The ability to hide the default DVD control bar and create my own (the default DVD control bar had options not needed by our students).

- The ability to toggle between "full-screen" and "in-window" video playback.

- The ability to automatically and silently download the OnStage ActiveX control to the student's computer, if needed.

- The ability to use *OnStage DVD for ActiveX* in multiple courses on multiple servers for no additional cost.

This approach does have one limitation: it requires students to use Microsoft Internet Explorer (it won't work with Netscape). However, since all of our students will be using IE, this was not a problem.

Using *OnStage*, I was able to fully integrate DVD control, and DVD access tracking, into the LMS (see figure below). After explaining and demonstrating the capabilities to the clients, they accepted our recommendations and quickly amended our contract to include developing a customized version of Moodle to suit their specific needs. We were off and running.

Figure 1: DVD Playback Screen Integrated into LMS

Customizing the LMS

Our requirements for customizing the LMS are summarized below.

Hide unneeded options and simplify the user interface. By default, the main Moodle course selection and course details screens display a lot of information our students didn't need or want. I had to modify the Moodle PHP files to reformat and simplify many of the default screen displays.

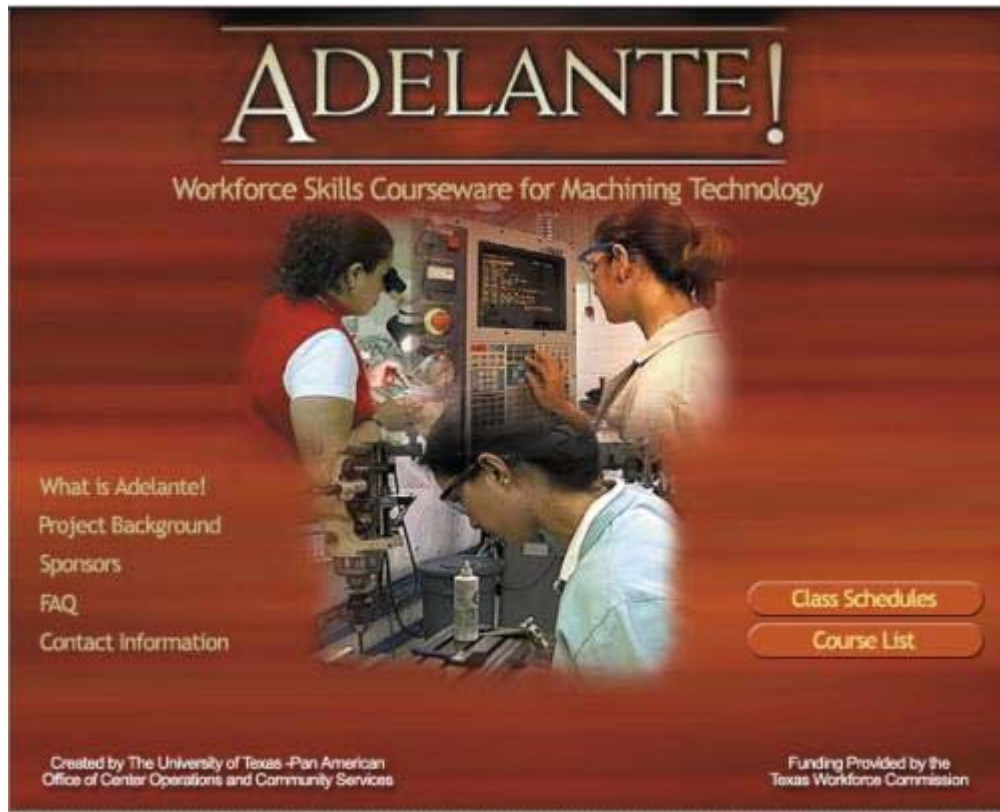**Adjust colors and add graphics.** Easily done by slight modifications to PHP files.

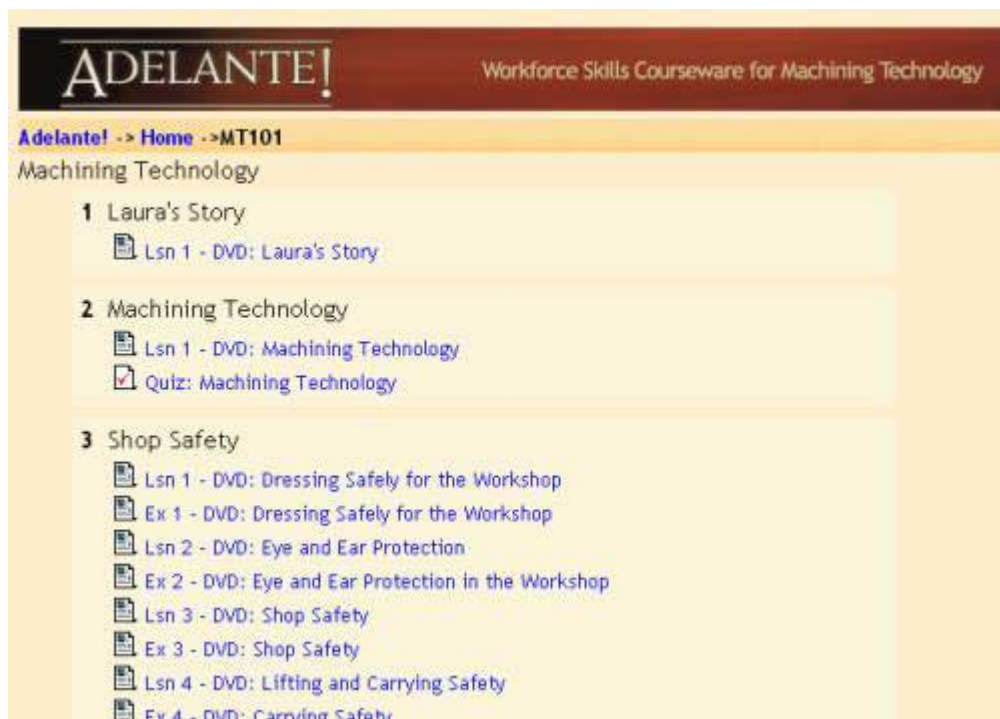Figure 2: Main Web Page Providing Access to Online LMS

Figure 3: Course Details Screen

Figure 4: Quiz Screen

Add option to require completion of preceding course component before allowing access to next course component. Our client wanted to ensure students progressed through all course lessons in a pre-determined sequence. We wanted a flexible LMS that could be used for many purposes, including some that we could not foresee at this time. Therefore, we added a new option to each course component (e.g., lesson, exercise, quiz, assignment, discussion forum, etc.) – "Sequential Progress". If this option is not checked, the link to the course component will always be active for all students – students can take the course components in whatever sequence they desire (this is the default mode of Moodle). If this new option is selected, the link to the course component will not be active unless the student has already taken (clicked-on) the previous component. This prevents students from jumping ahead, yet still allows them return to any previously viewed lesson.

Add "classes", and report each class separately. The version of Moodle we were using did not seem to support the concept of classes (this may have been added as "Student Groups" in Moodle version 1.1 released later). We wanted to group students into a class, report student scores/usage by class, and archive student records by class. We modified the MYSQL database and the PHP files to provide this capability.

Add more reports. Although Moodle comes with some reporting capabilities for student use, student scores, and system usage, we wanted to provide additional reports that could easily be downloaded into Microsoft Excel, including:

- Time spent in course component (lesson, quiz, exercise). By default, Moodle records the date/time each student enters a course component. By subtracting one time from the next, we can report how long a student spends in each course component. Among other things, this allows us to report how long is spent in each lesson (including DVD-based video lessons) - with minimum, average, and maximum numbers reported by student and class.

- Min, average, and maximum quiz scores by student and class.

- Quiz item analyses. We added the percentage of responses to each question that are correct/incorrect, and what percent of time each multiple-choice answer is selected. This is to help identify poorly worded questions (either too difficult or too easy), as well as lessons needing modification to ensure an acceptable number of students are capable of answering each question.

Add/modify user types. Moodle supports three types of user: administrator, teacher, and student. An administrator configures the Moodle site, a teacher creates courses and manages students, a student takes courses. For our project, our teachers would really be course facilitators. We wanted them to manage students, but we did not want them to modify course materials. Therefore, we created a new user type called "Course Author" who could create and modify courses, and we removed course creation and editing capabilities from teachers.

Make email addresses optional. Moodle requires each student to have a unique email address. This allows students to subscribe to discussion forums (e.g., receive an automatic email whenever a new post has been added to a forum), and allows teachers and students to email one another. Many of our students, however, would be accessing the system from classroom computers with multiple students per computer and no individual email accounts. We modified the LMS to make email addresses optional, and ensure no user or the system attempts to send an email to a user who does not have an email address.

Add "remote course login" ability. Many of our students will have little or no computer experience, and many will not have any typing skills. We were even concerned with our students' ability to login in by typing their user name and password. Therefore, we modified the LMS to accept a "remote course login". When a course id, user name, and password is contained in the URL address, the system will automatically verify the name/password, login the user, and take the user to the specified course. At the start of each 2-3 week course, the course facilitator (teacher) can create a user account for each student, then modify the properties of the link icon on each student's computer desktop to pass in the appropriate course id, name, and password. At the start of each day, the

student simply needs to double-click the desktop icon to be automatically logged in to the proper course. This also allows a "remote login" hyperlink that can be emailed to users.

Add custom icons for different types of course resources. Moodle allows for the following types of information to be added to a course: assignment, choice, forum, journal, quiz, resource, and survey. Each of these has a different icon associated. Almost everything we added to our courses would be either resources or quizzes. Since we had different kinds of resources (DVD lesson, DVD exercise, DVD glossary, student handbook), we added more icons and modified the system to allow the course author/editor to select a specific icon for each resource.

Embedding uploaded graphics into messages posted to forums. Moodle allows a graphics file to be uploaded along with any message posted to a discussion forum. By default, the message will contain a text hyperlink that must be clicked to display the graphic. We modified the PHP file to automatically display an uploaded graphic at the bottom of the posted message.

Removing transition page before starting quiz. By default, Moodle displays a "transition" page when a student clicks to start a quiz. This transition page displays the student's score for all previous attempts at that quiz, lets the student view his/her answers in any previous quiz attempt, and has an "Attempt Quiz Now" button. Since the quiz score is available to the student under the "Grades" hyperlink on the course page, we decided to bypass this quiz transition page. When a student clicks to start a quiz, the quiz is immediately displayed and the student can begin answering questions (results are automatically stored as a new quiz attempt).

Integrate full DVD control and access tracking. This had been largely accomplished in the "proof of concept" stage described above. All I had to do now was clean up my code and "pretty up" my draft DVD user interface.

Add user interface to specify links to DVD segments. When we built the capability the control a DVD, we used the existing "Add Resource – Web Page" option. The course author would then type in a URL containing the name of the DVD playback PHP file we created, along with the title and chapter number of the start point, the chapter number of the end point (last chapter to play) or the total number of chapters of play, and the title number or audio track of the Spanish version (e.g., dvdchapter.php?title=3&chapter=1&t2=10&numchaps=1). Although this works, it is a little confusing for new authors, and it requires authors to figure out desired title and chapter numbers using an external DVD playback program (or their TV DVD player). Therefore, we are in the process of developing a screen to allow the author to specify start point, end point, and Spanish version via a graphical interface that controls the DVD.

Display "Web Link" Resources in a Pop-Up Window. You can add links to other web sites and files as course components (e.g., as a lesson or additional info resource). We needed to add a link to our student handbook Adobe Acrobat .PDF files. Normally, such

a link displays the linked page embedded in the Moodle "frame", which does not work well when you want to see the document in a full-sized window. Therefore, we modified a Moodle PHP file so "web link" resources are always displayed in a pop-up window that can be sized full-screen (Moodle version 1.1 has this option built-in, so you no longer need to modify the PHP file).

Recommending a Simple Authoring System

In addition to developing a solution to help the client easily track the results of existing and planned DVD courseware, I also wanted to help the client develop future courseware in the most cost-effective manner available. Although DVD works great when quality video is needed, I suspected that some future lessons might not require full-screen video.

Throughout my career, I've developed courseware using Click2learn's Toolbook (http://home.click2learn.com/en/toolbook/index.asp), Macromedia's Flash (http://www.macromedia.com/software/flash/?promoid=home_prod_flash_082403), HTML, Adobe Acrobat (http://www.adobe.com/products/acrobat/main.html), Microsoft PowerPoint, and a few other tools. I am also familiar with, and have evaluated, various other courseware authoring tools (e.g., Director, CourseBuilder, Authorware, etc.).

In my younger days, I was a staunch advocate of the "power" authoring tools like Toolbook, Authorware, and Flash because these gave me the capability to do whatever I wanted to do. Although such tools were very powerful, they were also difficult for a new or casual user to master. After about 10 years of using such tools, I began to change my position. Although these tools could do just about anything, I found that most of the features I was putting in my courseware could be developed in a much simpler tool like PowerPoint. All PowerPoint was missing was an ability to store results from online quizzes. And, I was skeptical of PowerPoint's ability to package interactive multimedia presentation in a web-friendly format.

Once I found a free, full-featured, open-source LMS that handled quizzes for me, I started looking into a better way to package PowerPoint presentations for the web. Again searching the web, I ran across PresentationPro's PowerConverter (http://www.presentationpro.com/products/ PowerCONVERTER.asp). This $399 tool automatically converts PowerPoint presentations, along with the supporting audio and video files, into Flash .SWF files. These Flash files retain all of the media and interactivity of the original PowerPoint presentation, while reducing file size up to 90%. The result is great for web-based training (you can even resize the resulting presentation window as desired).

After testing PowerConverter on a variety of different types of PowerPoint presentations (with audio narration, video, transition effects, and various hyperlinks), I fell in love with this program. I now strongly recommend PowerPoint with PowerConverter as a low-cost, easy-to-use, easy-to-maintain courseware authoring system for most clients. Even if some complex lessons require a high-end tool like Flash, Director, or DVD, most courses will include some relatively simple lessons that can easily and quickly be created in

PowerPoint. Plus, with PowerPoint, a "part-time" courseware author (e.g., the client) can easily modify the lesson in the future.

Before inexperienced courseware authors begin developing online training in PowerPoint, I do recommend they seek assistance from someone with experience. There are many "tricks of the trade" or techniques that can simplify courseware development in PowerPoint and add interesting and powerful features. Often, professionally developed PowerPoint templates tailored to a specific organization's needs, and optimized for conversion to Flash using PowerConverter, can greatly reduce authoring time and provide a high return on investment. Having an experienced consultant available "on-call" can also save time and money.

Loading the LMS with Course Materials

Overview

Once we had selected and customized the LMS, and added the DVD control capability, it was time to load up all the materials for the first course – 8 modules (or units) with 20 DVD lessons, 14 DVD exercises, 7 quizzes with 80 questions, a DVD-based glossary, and a student workbook in both English and Spanish (Adobe Acrobat .PDF files).

I was relieved when I was able to add the entire course in less than a day - and much of the time was spent learning more about Moodle. I found it easy and straightforward to create a course, specify course settings (enrollment key = no, Guest access = no, course format = topic), create 8 topics (units), and add all course materials. The only time I had to stop and scratch my head a little was when I started adding quizzes – and this is only because I had not yet bothered to read the Moodle instruction manual.

Creating Quizzes

I quickly discovered that creating quizzes was a multi-step process:

1. Create question categories (e.g., question banks). I created a quiz category for each unit in the course.
2. Upload graphics files. If you want to display graphics in your questions (e.g., "What is this a picture of?"), you must first go to the common "File Uploads" area of the course and upload the graphics files. Later you can then assign the graphics to individual questions (and reuse a graphic in multiple questions).
3. Add questions to each question category (e.g., question bank). I used multiple choice (both "select best choice" and "select all appropriate choices"), true false, and matching questions, but did not use the "short answer" question (too easy for a student to miss the question through a spelling or typing error, or by strangely wording the answer).
4. Create a quiz. I selected "shuffle questions" for each quiz so the question order when be randomized, but I did not select "shuffle answers" (I like multiple choice and matching answers to be displayed in a fixed sequence, such as alphabetical,

short to long, or numerical order). I also selected "allow unlimited attempts", "grading method" = highest score (not average, first, or last – our students can repeat a quiz as many times as it takes to pass), "after answering show feedback", "after answering show correct answers", and "allow review" after completing quiz.

5. Assign questions to a quiz. You can assign questions from any category to any quiz, thereby letting you reuse questions in multiple quizzes. You can also add a "random question" placeholder to any quiz category. When you then assign this "random question" to a specific quiz, the system automatically selects a question at random from that category.

Bilingual Issues

Moodle allows each user to specify one of 34 languages. While all system prompts and instructions are displayed in the selected language, Moodle can't automatically translate the course content provided by authors. Since our project had DVD lessons/exercises and student handbooks provided in both English and Spanish, much of the course content is available to students in either language. However, the links to course content (lessons, quizzes, etc.) and the quizzes are only available in English. Since part of the goal of this course is also to strengthen English skills, this was acceptable. When a full bilingual capability is needed, we will modify the system to allow authors to input course content (links and quizzes) in multiple languages, and display the content corresponding to the student's preferred language.

First Pre-Deployment Test

Once we had the course materials loaded, it was time to run a pre-deployment test. Although Moodle has been proven to support numerous simultaneous users and courses, we wanted to test both performance and user-friendliness in the client's environment. A demonstration had been scheduled for Texas Workforce Commission personnel in Austin, so we decided to also treat this as our first thorough test of the system.

One of the ways this training will be made readily available to the targeted students is via a mobile classroom (see figure 5 below) equipped with a 14 notebook computers with wireless networking to a server. On the night before the demonstration, we met up in Austin to install the customized LMS on their web server and ensure everything worked on all their computers (before this, we had been working off our development server).

I must admit to being fairly nervous. If you've ever tried to install new software on someone else's network, you know that a lot of things can go wrong (depending on how their computers and server are configured, what drivers they have installed, etc.). I thought that beginning installation the night before a major demonstration was risky, but the schedule offered no other options. Fortunately, everything installed surprisingly well. Within 2 hours we had MYSQL, PHP, and Moodle installed and properly configured, and we installed all of our custom Moodle updates and our populated LMS database.

I was also worried about the performance of their wireless network. Experience had taught me that clients and their users have little patience for web-based programs that are slow to respond. I needn't have worried – everything worked fine. The first time we accessed the LMS from each computer, it took less than a minute to automatically install the OnStage DVD ActiveX control. After that, everything worked quickly and flawlessly (I slipped out by myself that night to have a few celebratory beverages!).

Figure 5: Mr. Larry Temple, Executive Director of Texas Workforce Commission, holding model of Adelante! mobile classroom

The real test began the next morning – 3 sessions with 14 TWC personnel simultaneously using the system for the first time (at least several of whom were obviously not experienced using web-based programs). We had created student user accounts in advance, inserted a DVD into each computer, and created a desktop link to the LMS website. Each user double-clicked the desktop icon, and they were off and running.

At first, I walked around trying to give helpful instructions to each user – afraid they would find the user interface less than intuitive (I always think my user interfaces are totally intuitive, but I've learned that others don't always agree). I quickly realized that I was just getting in the way, so I sat down, shut up, and watched. They had no problems selecting and running lessons, using the interactive options in the DVD exercises, toggling between full-screen and windowed video playback modes, switching from English to Spanish lessons, and taking the quizzes. Although some of our students with no computer experience will need a little more help getting started with the courseware, it was obvious that the system was indeed easy to use and robust. We were a hit!

Where We Are Now

We are now finishing the scripts for the next two DVD courses. UT Pan Am will then shoot the video. Another company will convert the video to DVD, program the required interactive features, and produce and replicate the DVDs. Once these are finished, we will load the next two courses into the LMS (we need to know exact DVD layout, with title and chapter numbers, before we can add the links to the DVD lessons/exercises). Then we will update the Adelante mobile server (for use by the mobile classroom) and install everything on another UT Pan Am server (for use outside of the mobile classroom – e.g., from homes and libraries). At that point, student training will begin.

In the meantime, I'm finalizing some of the new features we added to the LMS, and we are beginning to duplicate this approach for other clients (using PowerPoint-produced lessons converted to Flash instead of DVD where appropriate). In my spare time, I'm also customizing another Moodle to serve as a "family forum" to share digital photos and correspond with family and friends (prototype at http://www.jackjensen.net/login/index.php?courseid=2&username= guest&password=guest).

Summary

During this project, we learned that the free open-source Moodle LMS had all of the capabilities we needed from an LMS, and allowed us to easily add the additional capabilities we wanted. We learned how to embed DVD control and tracking capabilities, and that such DVD integration into an online training system can be a cost-effective solution when high-quality full-screen video playback is needed. We also learned how to further customize the LMS for fully bilingual courseware. Finally, we learned that converting PowerPoint presentations to Flash via PowerConverter is a great way to quickly and easily develop online lessons with the interactive and multimedia features sufficient for many, if not most, courses.

By combining four tools (Moodle, OnStage ActiveX for DVD control, PowerPoint, and PowerConverter), we ended up with an online training development, delivery, and management solution that is much more powerful, flexible, low-cost, and quick/easy to use than I ever thought possible. I wish I could have had this solution years ago - I could have saved both my clients and myself considerable time, money, effort, and headaches.

Recommended websites:

- San Antonio Training Partners Website – http://www.satrainingpartners.com/

- San Antonio Training Partners E-Learning Demonstration Website/LMS - http://www.americastrainingpartners.com/projects/ATP/login/index.php?courseid=7&username=guest&password=guest

- Moodle - http://www.moodle.org/

- Visible Light OnStage ActiveX for DVD - http://www.visiblelight.com/onstage/ products/activex/media/

- PresentationPro PowerConverter - http://www.presentationpro.com/products/PowerCONVERTER.asp

- Global Literacy - http://www.globalliteracy.com/

- EduTools Comparison of LMSs - http://www.edutools.info/course/compare/all.jsp

About the Author

Jack Jensen has 15 years' experience managing, designing, and developing over 100 CD-ROM and web-based interactive training courses. For the past year he has worked with San Antonio Training Partners as their Chief E-Learning Technologist.

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