

USING A COURSE MANAGEMENT SYSTEM TO IMPROVE CLASSROOM COMMUNICATION

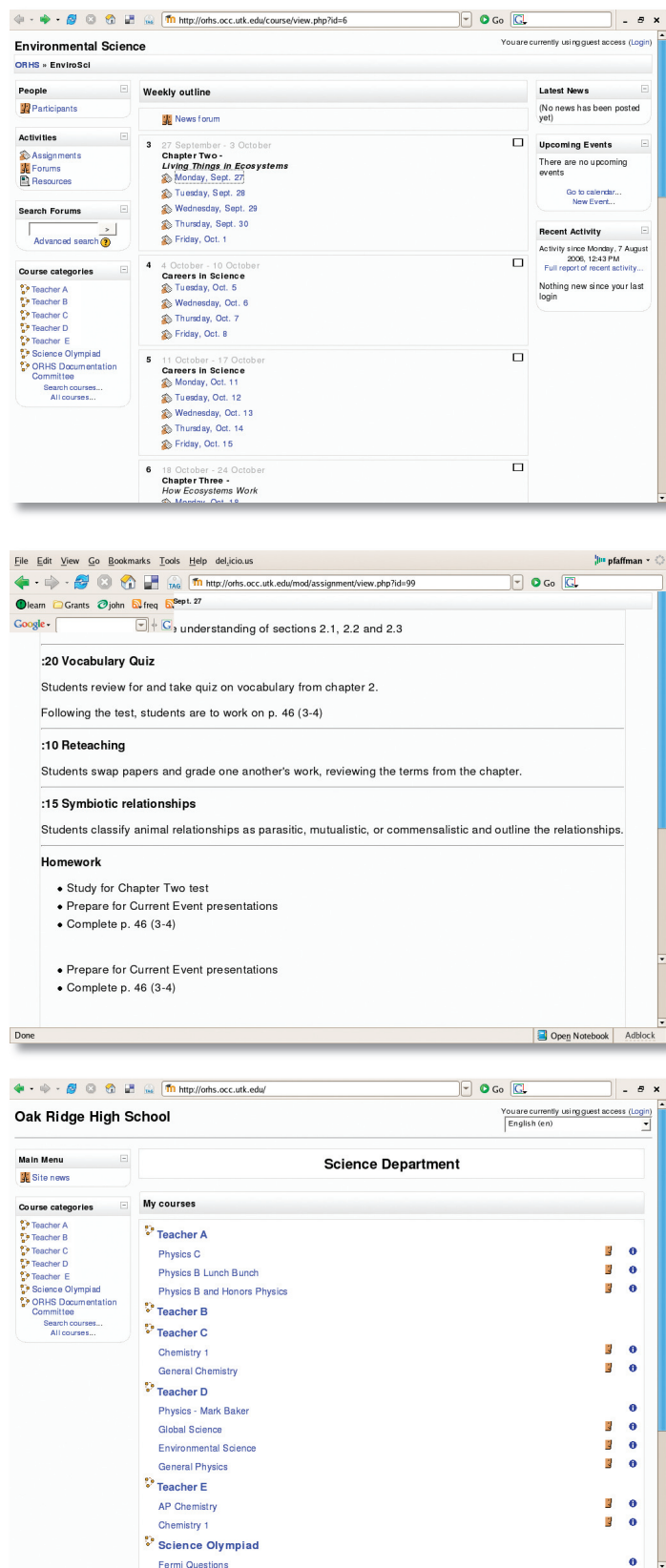
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Enabling teachers to manage effective web pages



Introducing the internet to schools and spending vast resources to wire almost all of our classrooms have both inspired and frustrated science teachers who struggle to take advantage of its many promises. Time and time again educators have been promised great advances from new technologies. Radio, moving pictures, and the teaching machine, to name a few, have been ballyhooed at their introduction, but ultimately have done little to change how we teach and learn (Cuban 1986). This paper demonstrates one internet technology that can help teachers, parents, and administrators communicate better and requires little money or training.

FIGURE 1 Sample screenshots from a Moodle science course.



Course management systems

Most schools now have a website, but few teachers actively maintain their own web pages or make their courses available online. Creating HTML documents is not that complex, but getting those files uploaded to a server in the right place is considerably more difficult. High-end web development tools simplify uploading files to a web server, but they can be expensive and difficult to configure correctly, often making them unavailable for teachers to use at home. Add to those difficulties the complexities of giving a school's site a consistent look and feel, usable navigation, and interactive features like forums and calendars, and the job seems intractable for all but the most tech-savvy teachers.

Web-based applications are a solution to many of these problems. For example, many teachers and students use free web-based e-mail programs, which are desirable because they work from virtually any computer. For better or worse, web-based applications like *Blogger.com*, *myspace.com*, and *facebook.com* are incredibly popular because they allow tens of millions of people to publish visually appealing content on the web without any training. Web pages created on such platforms have a consistent look and good navigation between pages and usually provide a search function.

Course Management Systems (CMS) like Blackboard, WebCT, Jenzabar, Desire-2-Learn, and Moodle are familiar to anyone who has taken a college course in the past five years. [Editor's note: For another view of using course management systems, see "A Platform to Stand On" on p. 30 of this issue.] Like the other web-based applications described previously, these tools generally require no special software, just a web browser. CMSs enable teachers to easily post assignments, lesson plans, announcements, and course documents (see the example screenshots on the left). They also allow students to participate in online discussions and chats and turn in assignments online. Unfortunately, commercial systems are often expensive to purchase and maintain, removing them from the reach of many K–12 schools. An alternative is Moodle (Figure 1), a free, open-source software program that not only provides a set of features similar to those of its proprietary competitors but is often easier to use. (For more information on "Open Source Software," see the sidebar, p. 35.)

For the past year four teachers at the first author's high school have been using Moodle to support their science courses. This article describes how Moodle has improved and enhanced student performance by promoting and organizing com-

munication among parents, students, teachers, administrators, and the community.

Moodle

MOODLE is both an acronym—Modular Object-Oriented Dynamic Learning Environment—and also a colloquial verb that describes the process of creative, nonlinear tinkering that often is characteristic of online learning. Like all CMSs, Moodle provides teachers with a variety of tools to support student learning and parental communication. When first logging in, teachers see a view very similar to what students see plus buttons that say “Turn editing on” and “Turn student view on.” The “Editing” button adds some icons to the page that allow the teacher to add “resources” or “activities” to the page as well as change the existing links on the page. Because what the teacher sees is so similar to what students see, managing a course in Moodle is quite intuitive. More detailed information about using Moodle, along with demonstration courses and teaching tips and strategies, can be found at <http://moodle.org>.

Pages that can be added to one’s Moodle site fall into two categories: “resources” and “activities.” Resources are links to external websites, documents uploaded to Moodle (e.g., PowerPoint presentations or word processing documents), or pages created with Moodle’s built-in editor. Moodle’s editor provides most features that one expects from a word processor, so changing fonts and colors and inserting links and images are intuitive. Teachers also can add to their pages live RSS feeds to sites like *BBC News*, *Science Daily*, and *The New York Times*. **[Editor’s note:** Depending on whom you ask, RSS is short for either “Really Simple Syndication,” “Rich Site Summary,” or “RDF Site Summary.” RSS feeds deliver (and update) news as an XML file. These are the type of news feeds most people are familiar with as part of their web homepage (portal entries like Yahoo, Excite, or MSN), where they appear as breaking news, sports, entertainment or—in this case—science news feeds.] Moodle’s “activities” are pages that allow for student participation and include assignments, discussion forums, real-time chat, glossary, quizzes, and Wiki (a sort of group-edited web page).

Moodle’s assignments provide several ways for students to turn in their work. Students can either upload a document, type in something using Moodle’s built-in editor, or pro-

duce an “offline” assignment (e.g., they hand you a piece of paper). For any of these methods, Moodle allows the teacher to give feedback consisting not only of a grade on any of several scales (also used by Moodle’s built-in gradebook), but also free-form feedback. Assignments can have due dates that are automatically added to Moodle’s calendar and may also be hidden from students’ view until a certain time.

Because we were interested primarily in using an online system to better communicate with each other,

Open Source Software.

An interesting development in software development has been the Open Source Software (OSS) movement. OSS such as Moodle is free in the sense that people are free not only to use OSS but also to study, change, and redistribute it. There are now numerous OSS solutions that can be used in place of many applications that schools use. OpenOffice.org, for example, is a complete productivity suite that includes a word processor, spreadsheet, and presentation tool.

OSS uses a model similar to that of the online encyclopedia, Wikipedia. The expectation is that collaboration among users will improve and expand the content over time. Since its founding in 2001, Wikipedia now has over 4 million articles and 200 language editions. Moodle now has over 4 million users and more than 400,000 courses; it is downloaded at a rate of 45,000 downloads per month.

We are fortunate that a local university is hosting our Moodle site for us, but because Moodle is OSS, we can run Moodle on our own web server without the administrative bother and cost of negotiating a license for a proprietary product. A detailed description of OSS can be found at www.opensource.org/docs/definition.php.

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students, and their parents, we did not use many features that Moodle offers. This is one of the nice things about using Moodle—teachers can choose to use many or only a few of its features. Moodle has a rich set of features for online discussion with threading, means to send an e-mail when a new message is posted, and a system for ranking students' posts. Moodle also includes modules for students to maintain personal web logs, Wikis, and real-time chats. Teachers can use Moodle to build an online glossary of terms used in a course that are then hot-linked to text throughout the course. These terms and their definitions can be added and edited by students, and a setting allows these terms to automatically be linked back to the glossary if they appear in any of Moodle's pages. Also, Moodle has a robust online testing system that provides not only for automatic grading but also gives students formative feedback.

Unlike an HTML editor, Moodle limits the kinds of pages that teachers can create. Like fences on a playground, these constraints are freeing, enabling teachers to focus on content without spending excess energy thinking about formatting or navigation, and create pages with a uniform look and feel. In spite of these constraints, however, Moodle allows plenty of flexibility; our four teachers use Moodle in very different ways.

How Moodle changes teaching and communication

Though many people associate online CMSs with distance education, we use Moodle to support our traditional classroom instruction and facilitate communication. Oak Ridge High School prides itself on its efforts to include parents in the educational process. Moodle gives parents access to lesson plans, slide show presentations, assignments, and due dates. Moodle helps parents and teachers to better hold students accountable for assignments made during the school day. It also helps parents to know the teacher's expectations for students. For students, managing the course online prevents the usual misunderstandings about assignments, due dates, and other course requirements. Because they are online, important course information and materials can never be “lost.”

Managing our courses online has been very useful to students who are absent by giving those with internet access at home a convenient way to access daily lesson plans. This feature is especially useful for students who are absent consecutive days; because assignments and course obligations are posted on Moodle, teachers spend less time helping students catch up when returning from an absence. “You never gave me the assignment” is now as farcical as “My dog ate it.” Of course not all of our students have access to the internet from home—even in our community, which is centered around a major research lab.

Like many communities, ours tries to reduce the digital divide by providing internet access at school and in community libraries, but having to remember to access Moodle at school or get a ride to the library is certainly not as easy as having a computer with internet access in one's own home. In starting this project we were concerned that this web-based tool would further disenfranchise those without home access. We were somewhat surprised to find that because fewer students were asking us about makeup work, we actually had more time available to assist students without internet access at home.

How we use Moodle

Like most of our teachers, our Advanced Placement (AP) physics teacher—a former software developer with eight years of classroom experience—uses Moodle to publish the daily homework assignments. Being somewhat more tech-savvy than others, she also posts her slideshow presentations and practice quizzes. Moodle makes it easy not only to publish these notes for students to use outside of class but also to keep her materials organized. The accessibility of the information allows her AP students to maintain their breakneck pace in preparing for the exam even when they are absent from school or forget to take

a notebook home. Having access from any internet-connected computer is good for the teacher, too. Being able to manage her course materials from home, her classroom, or other computers in the school has made her planning much easier.

One of our chemistry teachers, a talented 15-year veteran teacher, found Moodle has helped him better organize and structure his lessons. It also serves as a planning record that reminds him which demos and activities he used for each unit. He is also enthusiastic about having these records available next year to help him remember which assignments worked well.

Matthew Perkins, coauthor of this article, uses Moodle to publish his environmental science lesson plans with objectives, procedures, and homework assignments for each week. The built-in editor's formatting features are flexible enough for him to control the appearance of his lesson plans. He has noticed that his students now seem better prepared for their lessons because they know what to expect.

Managing courses online has also helped teachers working on different sections of the same course synchronize their lesson planning. The introductory chemistry teachers coordinate lesson planning through Moodle. This helps because only one of them needs to enter each assignment and having the shared space describing their activities has reduced the number of meetings needed for them to collaborate. Moodle has facilitated their keeping courses in sync better; they now meet less often and have more productive meetings when they are able to get together.

Finally, the teachers are proud of their strong science department and the innovative and effective instruction that they do. Moodle gives them a way to make public the things they are most proud of. The teachers share their course pages with teachers in other schools, principals, parents, and community leaders. Course pages show how the learning process works in the classrooms. Moodle serves as a virtual window into the classrooms and helps to keep the teachers accountable to those who care about the quality instruction in their classrooms.

Using Moodle at your school

Moodle is available to download for free at <http://moodle.org>. It comes with installers for Mac OS X and Windows that include not only Moodle itself but also the web server (Apache) and database (MySQL) applications that it is built on top of. Though it is fairly easy to install, maintaining a web server, especially one that will be accessible at all times, will almost certainly require cooperation and help from those who manage a school's network. Further, most school networks are behind firewalls, so even if Moodle is installed on a teacher's desktop, people may not be

able to access it from home. The good news, though, is that for someone who knows how to run a web server, installing Moodle is not difficult, and because it is free and can be set up in about 15 minutes, the technical staff has little reason not to let teachers give it a try.

If the above argument is not compelling to a teacher's staff, or they would rather have someone else manage the system, <http://moodle.org> provides links to several Moodle hosting services. Prices range from \$100/year for a class to about \$1000/year for an entire school or district. Other CMSs such as Blackboard, WebCT, Jenzabar, and Desire-2-Learn offer similar services.

Jay Pfaffman, the other coauthor and a university faculty member, has arranged for technology staff at his university to provide Moodle services to teachers and schools in Tennessee at no cost. After two of his former students demonstrated Moodle to their schools, the administration there was quick to install Moodle on their district or school web servers.

A solution for your school?

We are happy with how managing our courses online with Moodle has enhanced the science classes at Oak Ridge High School by providing a new way to communicate and organize our courses. It provides students access to presentations and assignments at their convenience. It provides parents a way to stay current on what their children are learning in school and to encourage prompt completion of assignments. It provides principals, administrators, and the community a window into the proceedings of the classroom. It provides teachers with a simple-to-edit-and-update way to organize a class web page and communicate with colleagues. Using an online CMS can help to reduce distractions and roadblocks to science learning and improve communication with colleagues, students, and parents. ■

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References

- Cuban, L. 1986. *Teachers and machines: The classroom use of technology since 1920*. New York: Teachers College Press.
- Hart, T.D. 2003. Open source in education. <http://portfolio.umaine.edu/hartt/OS>.
- Open Source Initiative. 2004. The open source definition. www.opensource.org/docs/definition.php.
- Stallman, R. 1993. The GNU manifesto. www.gnu.org/gnu/manifesto.html.