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Putting It All Together

Now that we've taken a look at all the tools available in Moodle, I want to take a step back and look at the big picture. Moodle has a lot of nifty capabilities, but they are only useful if they are applied in the service of effective course design.

If you are a professor in higher education, you are an expert in your field. You know more about your discipline than 99% of the rest of humanity. Universities do a great job helping people become domain experts and researchers. They do a poor job of teaching those experts how to teach. The assumption is that teaching comes naturally, that since we've all been to school, we know how to teach. Unfortunately, this isn't the case. Creating effective learning environments requires training and careful preparation.

In this chapter, I hope to give you some ideas and background from which you can develop your courses. We'll spend a little while talking about learning environments in general, then we'll talk about how to apply everything you've learned so far to your courses. I'll provide some design patterns for different types of courses that research and experience have shown to be successful.

What Is a Learning Environment?

Since we're developing an instructional environment, it would be a good idea to have a definition of what we're hoping to develop. What makes a web-based learning environment different from a web site?

There are two important features of a learning environment that are different from other types of web sites: goals and feedback.

Learning environments have very specific goals for students. Most other web environments are there for the user to achieve her own goals. They provide information, a way to buy things, or a way to connect with other people. People come to these environments of their own volition and can participate at whatever level they choose.

Learning environments are unique because they provide goals for students to achieve, goals they are currently unable to meet on their own. Your course objectives define a set of goals for students, goals they would not normally set for themselves. These goals define how students will interact with the material, other students, and you.

For example, if you are teaching a large survey course, the course goal will be to introduce the main concepts of the field to your students. In an advanced theory course, you will want students to demonstrate the ability to reason critically about advanced topics, and possibly synthesize their own ideas.

The second defining feature of learning environments is feedback. Feedback is critical for students to monitor their progress as they pursue the course goals. Goal-oriented feedback is one of the critical defining aspects of a learning environment. If a student doesn't receive feedback, he has no way of knowing if he is closer to achieving the goals of the class or not. Other types of information environments don't can't provide feedback to their users because the users' goals are defined by them, not by the environment. The only exception is an online game, which defines external goals and measures the player's progress toward them.

Feedback in a learning environment can take many forms. Tests and quizzes are a frequently used tool for measuring student progress. They can provide feedback to students in the form of right and wrong answers or a percentage score. Homework can also provide feedback to students about their understanding of the materials. Less formal feedback might include interaction with students in class, conversations with experts, or applying new knowledge in a work setting.

These two features make learning environments unique. Moodle provides you with tools to implement these ideas in unique ways. Moodle's educational philosophy guides how those tools are designed and can influence how you structure your learning environment.

Course Design Patterns

Design patterns are abstract solutions to recurring design problems. The term was originally used in architecture, but it has been applied more recently to software design. In architecture, the placement of doors and gates, windows, and other elements are design patterns that recur in many buildings. The idea of a lobby in a large office building is a design pattern. Over time, these patterns become almost invisible to us as we are continually exposed to them. Changing a pattern can lead to the discovery of an entirely new way of interacting with a space.

Instructional design patterns are similar. There are abstract solutions to the design challenges that occur in many courses. We can abstract four basic course types in higher education:

Introductory survey course

These tend to be large lecture courses designed to expose students to basic concepts, vocabulary, and foundational ideas.

Skills development course

These courses are designed to apply the ideas introduced in the beginning courses. Labs, recitations, workshops, and second-level courses tend to fall into this category. While there is discussion of theory, applying the theory to problems is the core of the course.

Theory/discussion course

In more advanced courses, students are expected to think critically about research and theory. Application is typically secondary to the discussion of the theory itself.

Capstone course

Many programs have some sort of summative experience that enables students to demonstrate what they have learned in their course of study.

While there are variations and combinations of these course archetypes, these categories cover most of the courses taught in most universities.

Understanding the abstract problem types is the first step toward designing a solution pattern. We also need principles of quality that will help us decide which solutions will be more likely to result in a better solution. Every professor develops a response to the course archetypes. The question is, which solutions are more likely to result in a quality course?

Fortunately, the American Association for Higher Education has come up with some recommendations for high-quality university courses. The AAHE has published 12 recommendations in three categories:

Culture:

- High expectations
- Respect for diverse talents and learning styles

- Emphasis on early undergraduate years

Curriculum:

- Coherence in learning
- Synthesizing experience
- Ongoing practice of learned skills
- Integration of education with experience

Instruction:

- Active learning
- Assessment and prompt feedback
- Collaboration
- Adequate time on task
- Out-of-class contact with faculty

It would be impossible to apply all 12 of these principles in every class. But a course that integrates as many of these principles as possible will likely be of higher quality than one that doesn't.

Fortunately, many of the tools in Moodle lend themselves well to realizing these quality principles. Let's take a look at how to apply the tools in Moodle to meeting these quality principles in the four class types.

Introductory Survey Course

The introductory survey course tends to be a large lecture course. The primary goal is to expose students to the basic concepts and vocabulary of a field of study. In the best case, this course helps students develop a basic conceptual structure that serves as the foundation for more advanced courses.

There tend to be two primary, related problems to address in these courses. First, their large size makes it difficult to assess open-ended assignments such as projects and reports. Second, student motivation is difficult to maintain due to the course's large size and its nature. Students who are required to take the course may find it difficult to engage in the subject matter, and long lectures are hard for anyone to get excited about. So how can we use the Moodle tools and the above principles to create a successful survey course?

Groups

The key to success in a large class is the strategic use of groups. To promote active learning, create a group project that students must complete by the end of the

semester. Such a project cuts the number of submissions you need to grade and provides students with opportunities for collaboration.

Resources

Posting your lecture notes before each lecture will help students stay engaged by giving them a structure for taking notes. Before each lecture, post an outline of the upcoming class to help students plan ahead for that class.

Quizzes

Use the quiz tool to provide a small quiz for each reading assignment. This will reward students for completing the reading and allow them to test their understanding of the material. Each quiz should be relatively low-stakes, but all of them taken together could add up to a significant part of the student's score. These small quizzes will provide assessment, prompt feedback, and help students spend adequate time on task.

Forums

A mix of class forums and group forums can be an effective tool for collaboration, active learning, and out-of-class contact with faculty. Forums for questions to the instructors and for general course discussion are great for class discussions. Each group should also have a discussion area for reading groups and lectures. Be sure to seed the discussion each week with a good question that will require students to apply the concepts learned during that week. Bring the best questions and discussions to the attention of the whole class to help motivate students. Create a class forum for the submission of final group projects. Everyone can see the projects, and each group needs to post the project only once.

Glossaries

A good glossary is critical when students are learning a new vocabulary. You can use the glossary to promote active learning by assigning a different group to create definitions for each week or topic. You and the other students can rate their submissions based on their usefulness. Be sure to turn on autolinking to get the most benefit.

Wikis

Each group should have a group wiki for their course project that they can submit at the end of the semester. Using a wiki this way promotes active learning and collaboration.

Lessons

Learning vocabulary is difficult without a lot of practice. To provide another opportunity for assessment and feedback, create a series of vocabulary flash cards in the lesson module to help students drill themselves on the new concepts.

Combine these tools to create an effective learning environment. Each week or topic should have lecture notes, a glossary, a quiz or quizzes, and a forum. At the beginning of the course, post the course glossary, the course forum, and your syllabus. At the end of the course, post the final-project forum.

Skills Development Course

The skills development course is generally the second-level class in a course of study. The aim of this course is to give students the opportunity to apply the basic concepts learned in the survey course and explore one aspect of the field in more detail. These are usually workshop or lab courses that focus on a project or the repetitive application of important skills.

Skills development courses require continuous feedback and assessment. Engaged students need feedback so they can know if they are performing the skills correctly. They also need resources to help them troubleshoot when they cannot solve a problem on their own. You can create an effective practice environment for skills development with the following tools in Moodle:

Resources

As students practice on their own, they will need information resources to help them diagnose their mistakes. If you can post demonstrations, step-by-step instructions, or other aids for students as they practice on their own, you'll make it easier for students to succeed and eliminate a lot of repetitive questions.

Forum

Forums provide valuable opportunities for your students to help each other. Set up a forum for each topic or week and have students ask each other for assistance with course assignments. Allow post ratings in these forums to reward students who provide assistance to their classmates. This encourages collaboration and gives students an important out-of-class communication channel for support.

Quizzes

If your class is focused on math skills, you can use the new calculated-question type to provide your students with unlimited practice opportunities. Create a library of questions for each topic and let students take the quiz as many times as they'd like. Each time, they will see a different set of questions. Writing or other project-based skills don't lend themselves to the quiz tool very well.

Workshops

For project- or writing-based skills courses, the workshop is a great tool for active learning. Students learn from creating the work for submission and from evaluating the work of others. The scoring guides also give you an important tool for reminding students about the important dimensions of their performance. Remember that you don't need to use the workshop just for electronic submissions. If each student uploads a placeholder file, you can use the workshop to evaluate speeches, paintings, sculptures, and any other performance you may require of students.

Exercise

As a summative experience at the end of the class, make the final-project submission an exercise rather than an assignment. The self-assessment piece of the exercise tool

creates an opportunity for self-reflection. The scoring guide also helps you eliminate ambiguity in the students' final grade.

Theory/Discussion Course

A discussion course focuses on readings and the discussion of ideas. These are usually senior- or graduate-level courses that focus on discussions of theory and research. There is little practical application. Instead, ideas are discussed, debated, and critiqued. Emphasis is on reasoning, presenting evidence from the research literature, and critical thinking.

Student motivation is typically not a problem in these courses. They are advanced courses taken by students who are usually interested in the subject. The problems come from creating opportunities for active learning, and providing prompt feedback. Fortunately, there are a few Moodle tools that can help you overcome these issues:

Journal

Critical thinking and analysis of theory typically requires periods of private reflection along with public discussion. Encourage students to actively engage in these activities by providing them with a space to privately journal about the course topics. Having students keep a journal in Moodle rather than on paper allows you to give them feedback on their entries without interrupting the writing process.

Assignment

One of the hallmarks of most theory courses is a large amount of reading, usually as original research. To help your students keep on top of the reading, create a weekly assignment asking them to submit a short summary or abstract of the papers they read. This strategy will reward them for keeping up with the reading and encourage them to actively engage with the reading.

Choice

As a stimulation for conversation, include a choice each week. Poll the class about a controversial point in the reading or discussion. Combine this with a forum asking students to explain their responses.

Forums

Forums are one of the keys to a successful discussion course. As we discussed in Chapter 4, forums allow students to compose their thoughts and focus on the content of their responses. Encourage careful, well-reasoned postings in the forum by scoring posts. Encourage more active engagement by assigning groups of students as moderators for different topics.

Wiki

A class wiki can be used to create a shared understanding of the ideas under discussion. At the end of the semester, the students will have a synopsis of the entire class to take with them.

Workshop

A workshop for papers is a good way to provide rapid feedback and additional learning opportunities for students. Give students an opportunity to give each other feedback on early drafts of research papers or essays as well as a summative evaluation of the final product.

Capstone Course

Capstone courses are usually focused around a final project that requires students to demonstrate what they have learned during their course of study. In graduate school, these courses are focused around a thesis or dissertation. In undergraduate study, students are expected to produce a paper or another artifact. These project-based courses present challenges for both the instructor and students.

Assignment

You can help students structure the task by assigning a set of deliverables over the course of the semester. Each deliverable should be a one- or two-week project you collect with an assignment. For example, if students are writing a paper, you could collect an annotated bibliography, a subject proposal, an outline, a couple of early drafts, and a final draft.

Dialogue

Set up a dialogue as private feedback channels so students can discuss their work. As they work on each section of the project, they will need to ask questions about the assignment and their performance. The dialogue tool is an organizational tool that allows you to track multiple simultaneous conversations.

Journal

Part of a student's capstone experience is reflecting on what a he has learned over the course of study. Journals can act as a tool for reflection and as a project notebook. Encourage students to use the journal for both activities.

Exercise

Use the exercise tool for the final submission. The self-assessment and scoring guides make for a good summative experience.

These design patterns are abstract starting points for designing a solution that works in your class. I've tried to recommend patterns that I have seen work, or that other researchers have reported to be successful. They are not the final word on effective course design by any means.