Introduction to LON-CAPA, by Steven Wolf and JT Laverty – Bamboo Room

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Core Competency Area: Technology in the Classroom

Introduction
The LearningOnline Network with CAPA (LON-CAPA) is a free, open-source, distributed learning content management system. LON-CAPA actually is more than just a course management system; it also provides learning content and assessment functionality. The network was developed by educators in the Physics Department at MSU but the LON-CAPA community has grown to a global scale with more than 450,000 resources (including 200,000 homework problems).

Reflections
I wanted learn about LON-CAPA because a number of my classmates in SME 870 have brought it up in class and I was curious to see how it compared to the other course management systems that I am more familiar with (ANGEL, blackboard, and moodle). JT made it clear right from the beginning that LON-CAPA is much more than just a course management system. It’s a community of educators, sharing resources and using materials in a more sophisticated manner than any of the other systems with which I am more familiar.

The community and the assessment methods are really what make LON-CAPA so much more valuable. Free access to educational resources (including homework problems) makes the system much more than a repository for an instructor’s own material. Why reinvent the wheel when the material is packaged in such a usable format? LON-CAPA is also a powerful grading tool. It can provide immediate feedback for questions and randomized problems for both exams and homework (practically eliminating the generic forms of cheating). Below are some of the ways that JT suggested LON-CAPA can be used before class, in class, after class, and for examinations:

Pre-class
Through simple assessment tools (comprehension questions, etc.), LON-CAPA can assist an instructor in tailoring lecture material by reporting back on the content that students had trouble grasping on their own. It’s perfect for “just-in-time” teaching, a method where the instructor can adapt a lecture to the students’ level of understanding. For example, if there was a pre-class question that all of the students answered right, then the instructor knows that this is a topic that does not need to be dwelled upon for long in class. Conversely, if there is a question that had a range of answers, or predominately the wrong answer, the instructor can focus attention on this concept to ensure that students understand it before moving on.

In-class
In class, LON-CAPA is particularly powerful when linked with clicker questions/quizzes. The clickers are tools that can be flexible – for assessment of individual understanding and also for peer instruction. The responses can be embedded in LON-CAPA so that they can be seamlessly linked with student grades. JT suggested that students be awarded some points for
wrong answers but not full points because students, who are generally grade conscious, will take each question much more seriously.

Post-class

In terms of post-class assessment, a key attribute of LON-CAPA is the ability to produce highly randomized questions. It works particularly with for equation-based problems and even works with R. It also understands physical units. The randomization really helps eliminate cheating. Though the equations may be the same, because the values are different, for students to get the right answer on their assignments, they must be able to apply the correct formula and logic. Because they know the system is giving each of them different questions, they know that just copying the answers from someone else will not provide them with the correct solution for their own assignment. This is critical because it forces students to learn the concept to achieve the grade they desire – using the grade-oriented mindset of a student to motivate them to learn the material!

Exams

Like with online homework problems, LON-CAPA can provide randomized exams. This process is also automated. For example, an instructor can create one exam, LON-CAPA will self-randomize it (changing the numbers in equations and also changing the order of questions), and then the instructor can print it out for his/her students. Bubble-sheet responses (because they are labeled with the student’s ID number) can be loaded into LON-CAPA to maintain continuity with other grading components.

Conclusions

Technology in the classroom is an every evolving, ever updating tool for teaching. As students become more and more tech savvy, they also become more efficient at learning using technological tools. Instructors need to embrace technology to assist student learning and also ease grading and assessment. This seminar made me recognize that even if I don’t use LON-CAPA in my own teaching, that tools like it exist and are important resources for instructors. They make teaching more flexible and more driven by student needs, which should ultimately be the goal of teaching anyways!