### Experiments with Open Source e-Homework and Exam Systems

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#### LMS Provide Some Features

- Blackboard, Canvas, D2L, etc. provide some e-Homework and e-Exam features (Canvas is open-source, others proprietary)
- Interface between LMS and e-Homework often is difficult.
- For some systems, unusual formatting and/or proprietary extra software is required
  - Respondus (proprietary) can convert Word files into output QTI for import into e-Homework systems
  - Excel often may be used to create questions.
- Commercial alternative standards for packaging e-Homework into "modules" or "cartridges" to be loaded into LMS:
  - SCORM (federal DoD initiative)
  - QTI (higher-education initiative (IMS Global)
- Technically demanding, instructor unfriendly
- In business, LMS and e-training/testing systems are employer-oriented
  - Focus is employee training and evaluation, and ease of integration into HR tracking system (perhaps for government compliance, e.g., FDA)
- In higher education, a need for a flexible instructor-based systems

#### The Issue

Should there exist a textbook/publisher-agnostic e-Homework and e-Exam system in higher education?

**Requirements/Desires**

- Ability to use a single system for multiple courses, independent of publisher/textbook
- Use in online and flipped classrooms
- Permit instructors to create and own a personal library of portable, reusable homework and exam questions (as in the “paper” days)
- System independent of the school’s learning management system: Switch to an alternative LMS should not destroy a professor’s library of homework/exams
- Reduce/avoid charges to students for use of system

#### Proprietary Systems

- Cengage: Mindtap
- Pearson: MyEconLab
- McGraw Hill: Connect
- Macmillan: Launchpad and Sapling

**Advantages**

- Pre-configured with content
- Reduces instructor work load, including e-grading
- Ideal for the current higher-education environment based on low-cost, ad hoc adjunct instructors
- A tool for publishers to kill used book market

**Shortcomings**

- Proprietary, linked to specific publisher
- Licensed only for use with most current textbook version
- Intellectual property belongs with publisher, not instructor
- Little ability to develop portable question library

#### Two Experiments With Open-Source e-Learning Systems

- **TC Exam**: A web-based open-source (LAMP) package from UK.
  - No-cost license if no fee or tuition is charged. Not free for university use (approximately $50 per user per semester).
  - Runs easily on Linux. We had no problem installing it under Ubuntu.
  - Good documentation for installation
  - Confusing documentation regarding exam/quiz setup. Does not import MS Word or other "standard" file formats.
  - Vendor claims large user base (including major American corporations). We have been unable to verify and/or locate other users.
- **Chamilo**: A web-based (LAMP) package, now from Spain. No license fee (GNU license).
  - Installs/runs best on Linux. We used Ubuntu.
  - Good documentation.
  - Relatively easy import of homework and exam material

#### Vision and Dialog

- Does the higher-education community desire a nonproprietary, open-source, flexible e-Homework and e-Exam system that complements the Open Source textbook movement?
- Build on the LAMP platform, best-practice for current software
- Ease of authoring, using Microsoft Word or similar (OpenOffice, LibreOffice)
- Complementary with major LMS but not embedded in or owned by the LMS
- Practical issues of programming, staffing and development
- Non-profit, non-proprietary => Need a consortium
  - Funding: Gates Foundation?
  - Academic home (university sponsor?)

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