

Internet-Based Delivery Systems for Gen Ed Chemistry Course Curricula

A Report of a Capstone Project for the Faculty Teaching Certificate Program

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This capstone project investigated the utility of both a faculty webpage and the Desire2Learn™ (D2L) system for distribution of content for general education chemistry courses. While each of these systems exhibit its own advantages and disadvantages, it was hoped that meaningful comparisons between the two could be drawn, with the specific goal of suggesting which system would best serve future courses.

Methods:

A faculty-maintained website was developed for content distribution for the fall 2005 offering of Chemistry 131: Forensic Science. Content posted on this site consisted mainly of lecture notes posted in chapter form approximately once a week, after the content had been covered in lecture. Occasionally, non-content related information (assignments, due dates etc.) was also announced. A mock-up of the typical information accessible to the student can be viewed at <http://mavweb.mnsu.edu/swartd>

The D2L software package was used as the foundation for a more integrated content distribution for a spring 2005 offering of Chemistry 201: General Chemistry I. A primary advantage of the D2L system was its ready-built framework for online submission and grading as well as the ease of uploading course content directly to the site for student access. Unfortunately, as the D2L system contains private student information and grades, outside access to this course site must be restricted.

Discussion:

Both of the systems investigated were found to equally disseminate information quickly to students. However, at the onset of this project, it was believed that the D2L system would have been the better of the two methods in regard to both student ease of access and faculty development time. However, this assumption was not realized as the spring semester progressed. The primary reason for choosing the D2L package for integration into Chemistry 201, online homework submission and grading, turned out to be its most major disadvantage.

The quizzing system of D2L utilizes a text-matching methodology of grading for the majority of its question types. While this type of grading can easily handle multiple choice and vocabulary questions, it cannot easily be used for grading calculation-based numerical questions. This is in part due to its inability to recognize scientific notation, but more importantly, due to its inability to grade ranges of values (i.e. 5.212 ± 0.003). This type of variation in chemistry student calculations is to be expected, and because the system matched exact text only, many student submissions were misgraded as incorrect simply because their submissions were not letter perfect matches to the key. After two unsuccessful online homework attempts, leading to the frustration of both students and instructor, the online quizzing system was abandoned for classical hand-graded homework sets.

With the attraction of automatic grading removed, much of the advantage of using the D2L system was lost compared to webpage based content. At this time, the author has decided to begin a second round of comparisons between webpages and the updated version of D2L expected in fall 2005.