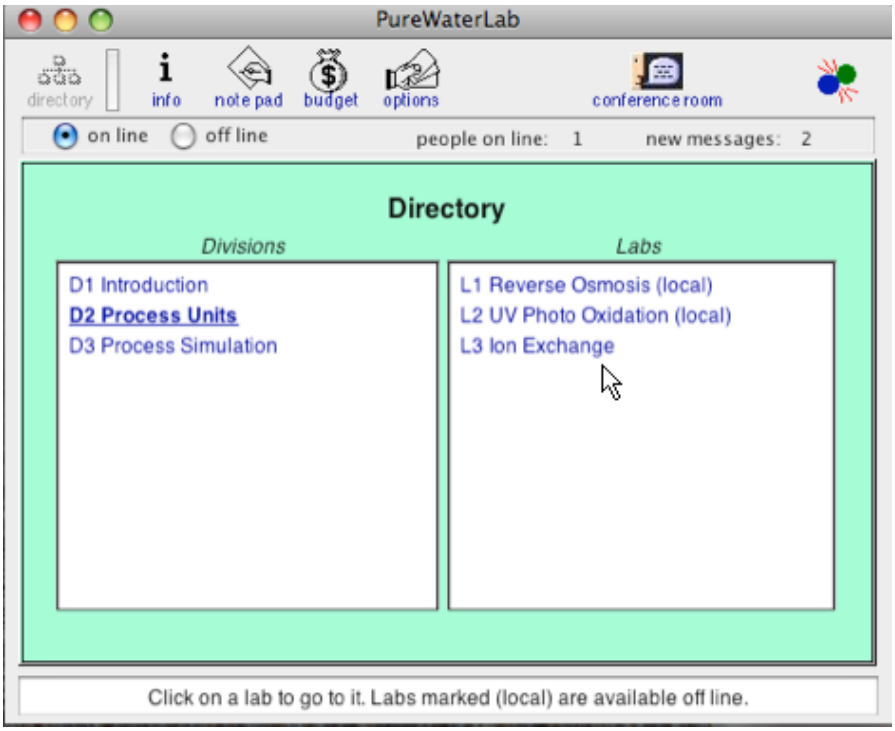
NSF Award DUE-0443044 Annual Report, February 2008

PureWaterLab - Conservation Education and Research Through Interactive Simulation

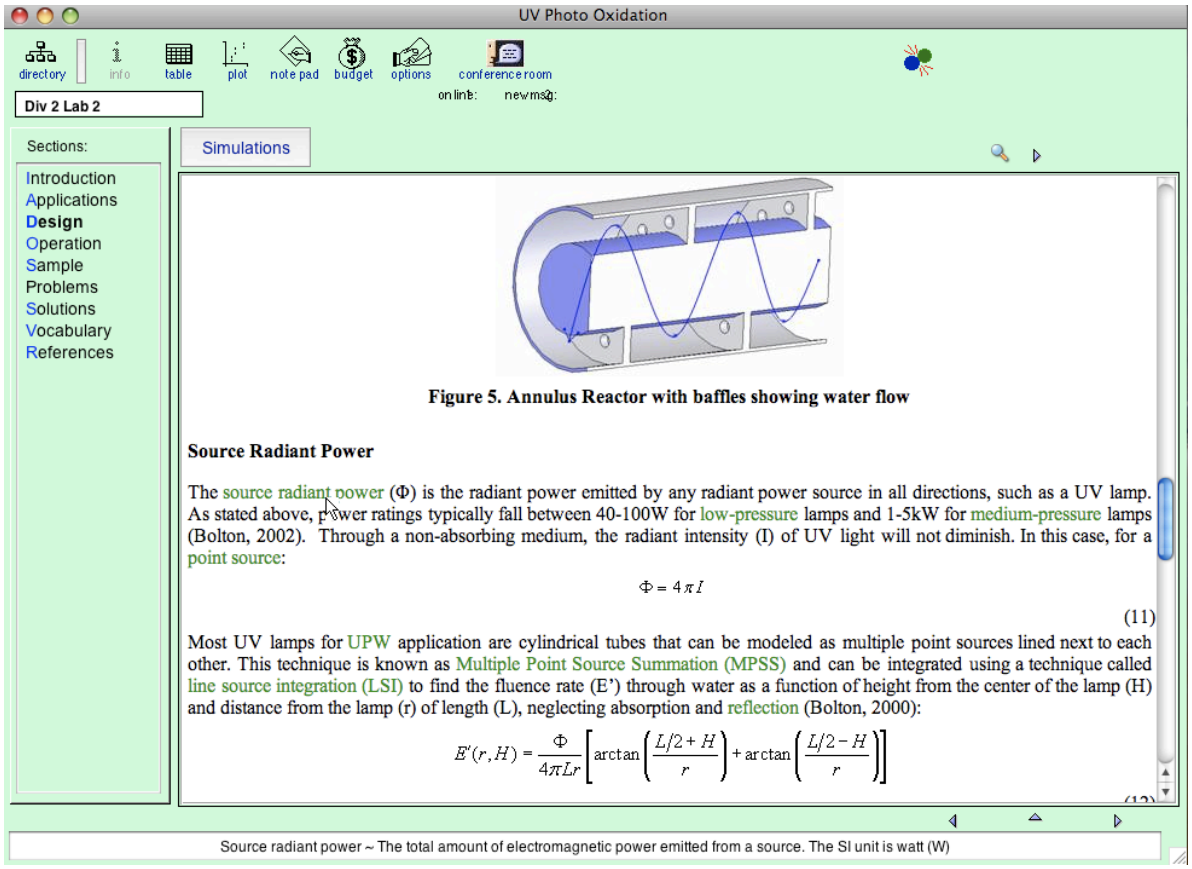
This attachment to the annual report discusses progress and plans for the PureWaterLab project.

PureWaterLab is a desktop application that is integrated with the Internet and associated software on web servers. In the current web jargon, the Lab is a "rich Internet application." When on-line, a student can access new modules and communicate in the Conference Room with other students. Updates to software are automatically downloaded and installed. When off-line, the student can continue to work on the modules they previously accessed while on-line.



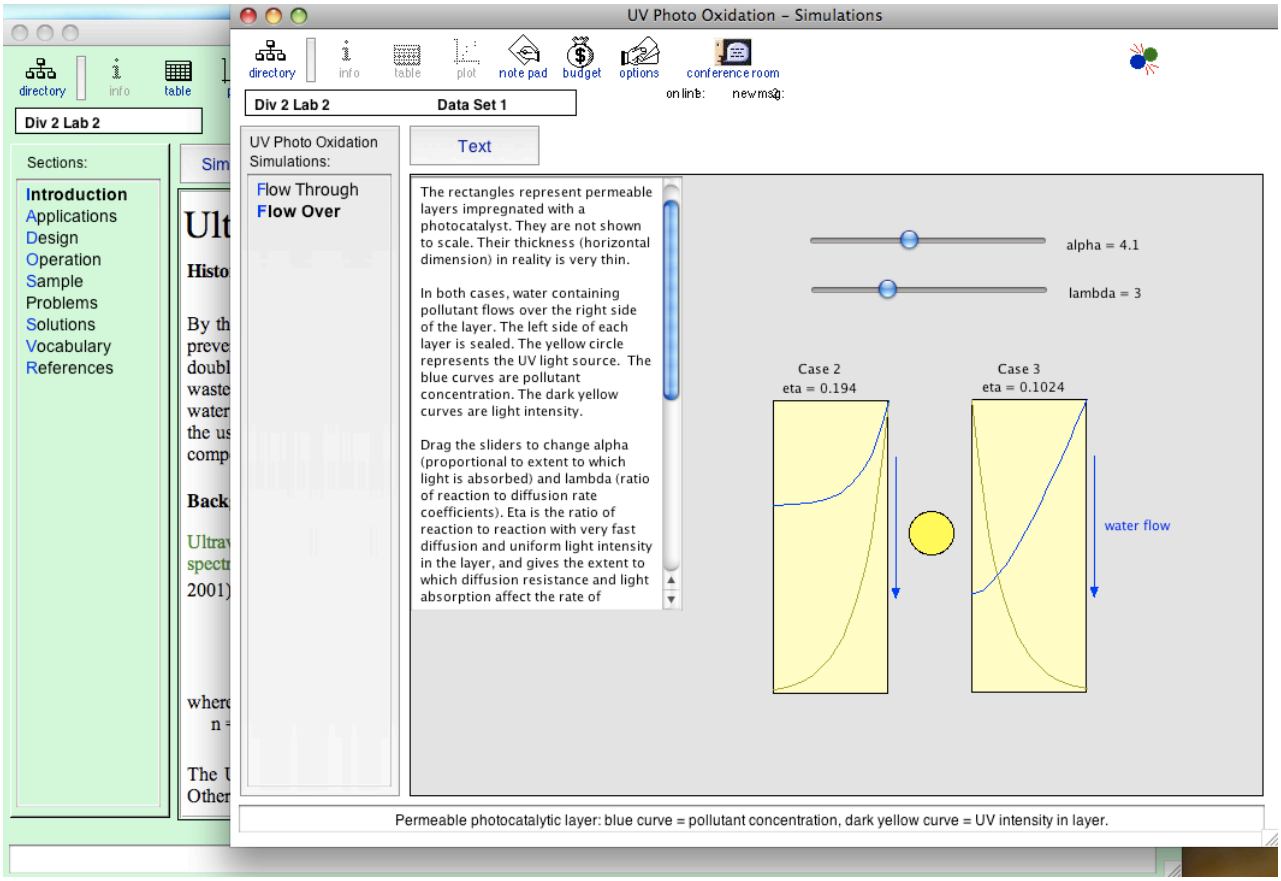
This project is a collaboration. The University of California, San Diego (UCSD) part of the team is working on the software programming and the interactive simulations. The University of Arizona (UA) part of the team is working on the main module content, including text, graphics, math equations, and assessment components.

A work process was developed such that the UA group can develop and add new and revised content easily without having to involve the software group at UCSD. The UA group develops content as standard web pages and uploads them to the PureWaterLab (PWL) server. Whenever a student is using PWL on-line, the software automatically detects new and updated modules and downloads them for on- or off-line use.

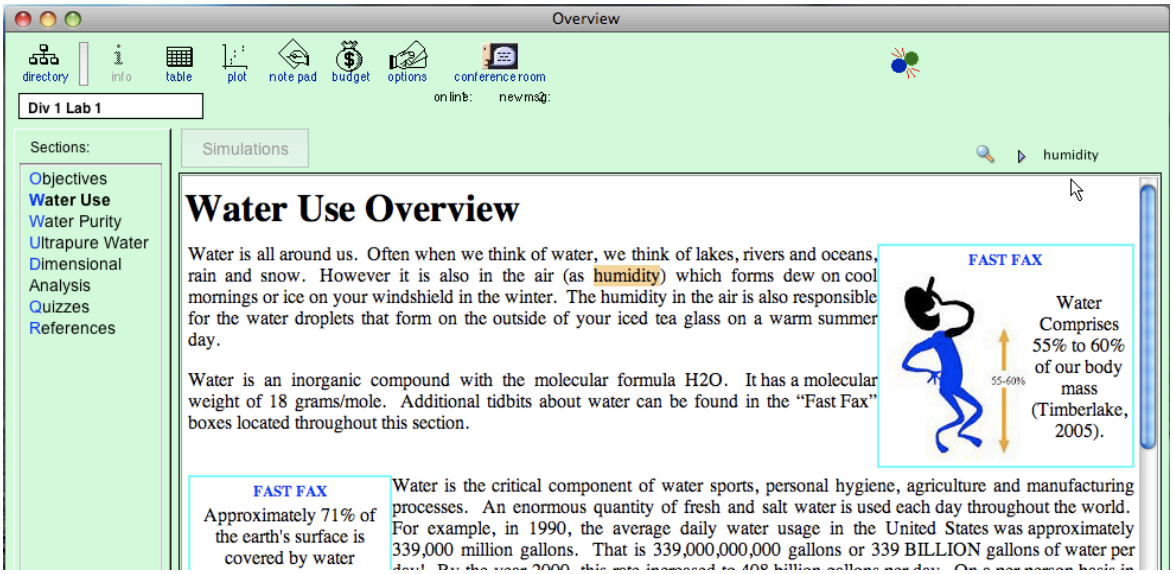


Text can contain links to web sites external to PWL. These links are opened in the users web browser.

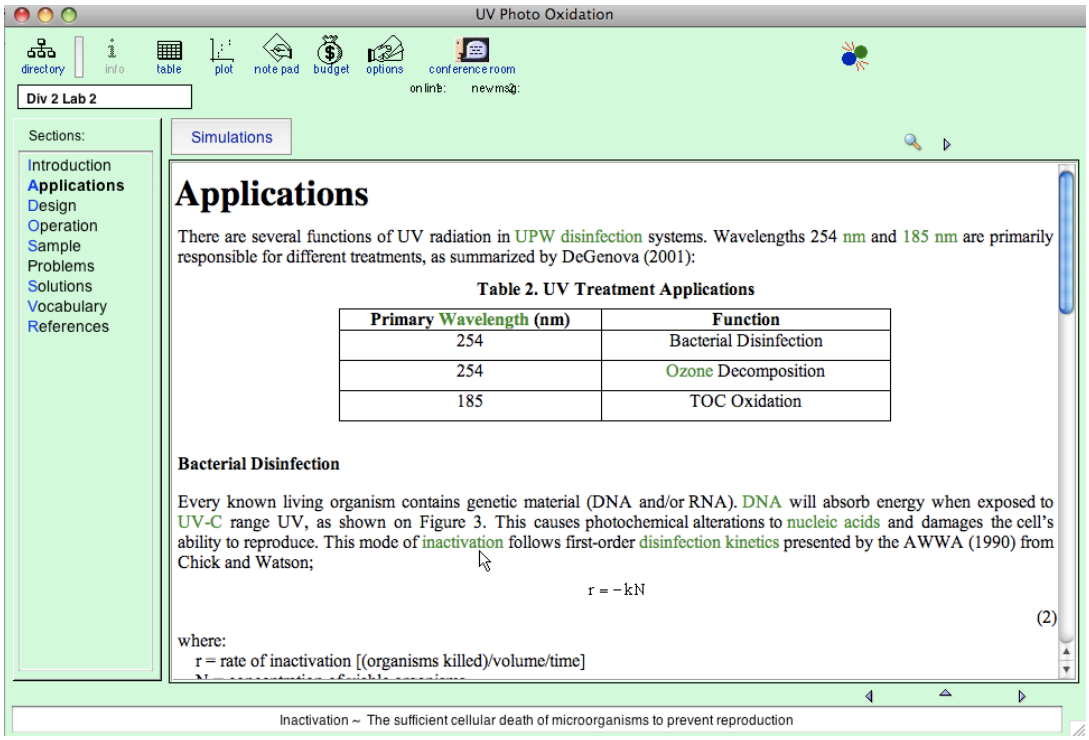
The advantage of using these web pages in PWL, as compared with a standard web browser, is that many other features are additional available in PWL, such as the interactive simulations. A simulation in the UV Photo Oxidation module is shown here.



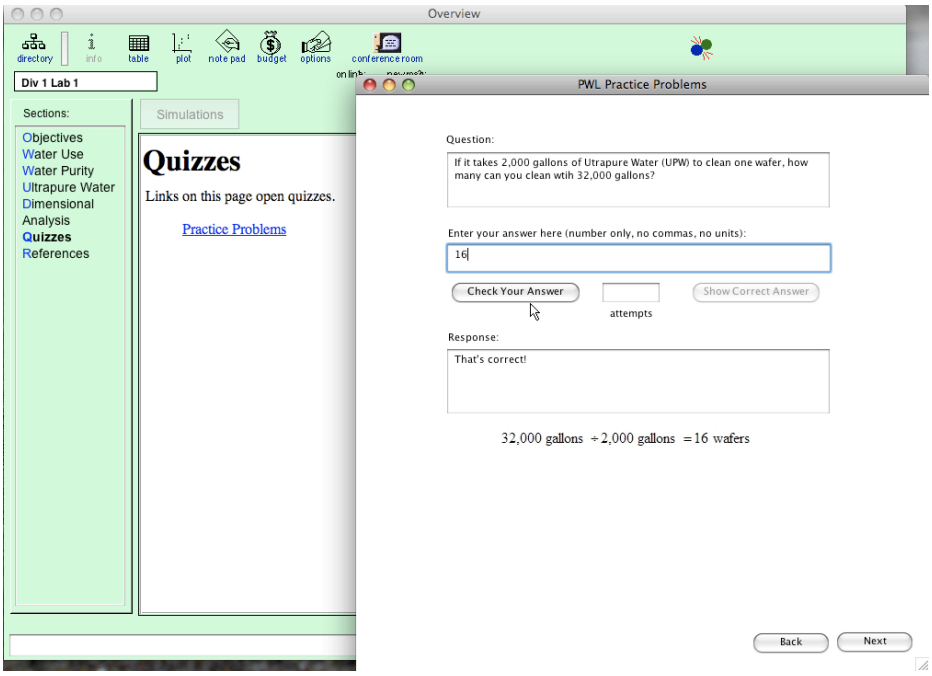
Several ways were developed to help students search text and understand vocabulary. A result of a search for a word is shown here.



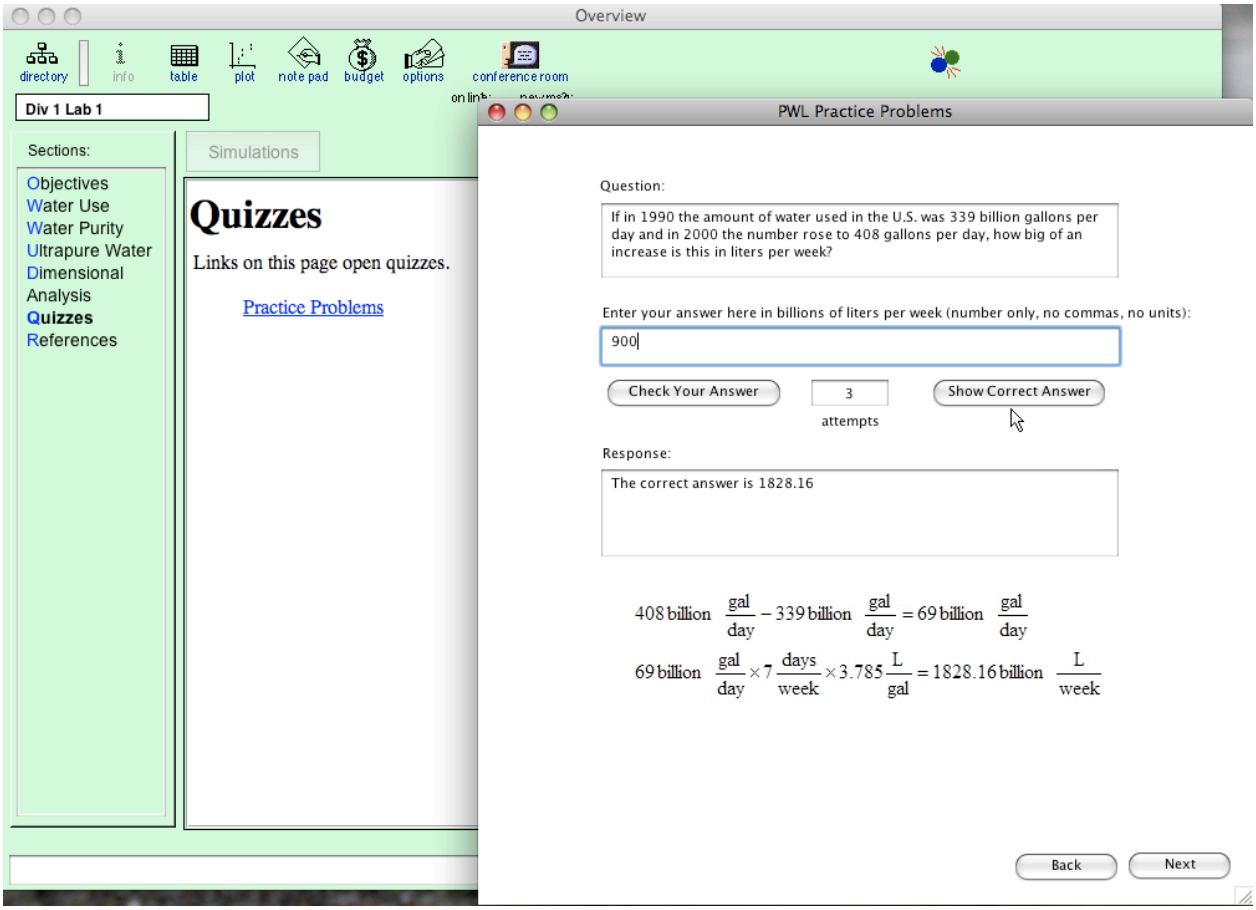
One special feature provided by the PWL software is automatic scanning of text for words listed in the vocabulary section. Other than preparing the vocabulary section, the content authors do not have to do anything else. The PWL software highlights vocabulary words automatically, and the definition is shown at the bottom of the window when the student passes the cursor over a highlighted word, as shown below.



Another new feature being added are quizzes to assess student learning. Several different types of questions are available, and the software automatically scores the answers and provides feedback, as shown here.



If a student enters incorrect answers several times, they are allowed to view the correct answer.



Quiz development will continue to provide for instructor and student registration and reporting of student progress through the modules and quiz score reporting.

Progress is continuing to be made on the plant simulator to allow for inter-campus collaboration on simulations of water purification plants.

The software is being used in classes by the developers, and is distributed on the web to other instructors.

We are requesting a no-cost extension of the project. This is a complex project and work still needs to be done to ensure smooth content creation, distribution, and use by students. The PI will take a sabbatical in Fall 2008 in order to devote full time to completion of this phase of the project development.