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Socrates delivers fully typeset multiple choice mathematical quizzes over the World Wide Web. The student interface offers interactive, unit specific quizzes and a choice of 'tutorial' or 'test' mode. (Tutorial mode gives diagnostic responses to incorrect answers.) The lecturer interface currently provides for the preparation and editing of quizzes. A student record keeping system is still to be fully developed. Both interfaces incorporate a collation and printing facility.

Socrates uses the free IBM plug-in, *Techexplorer,* to display LaTeX-typeset documents, and can be viewed using a number of different platforms, including PC's and UNIX boxes.

Student response to *Socrates* has so far been positive, particularly with respect to the diagnostic responses.

WebLearn: The Experience of Two Years

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WebLearn represents an effort to improve the mode of subject delivery by implementing a student-centred strategy in a World Wide Web environment. *WebLearn* presents problems and questions (multiple choice, multiple answer, short text, etc.) to students and gives them prompt feedback, allowing them to monitor their own progress. It provides lecturers with tools to track and manage a large group of students. Results of, and feedback from, over 3000 students were presented.

Formative Self-Assessment Modules on the Web: Increasing Flexibility for Delivery

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The increasing use of the web for the delivery of teaching and learning materials has led to an increase in flexibility of access for students. A student with access to the Internet is thus able, in a user-friendly non-confrontational way, to access these materials at any time. In First Year Biology the web is being used for many purposes including the delivery of self-assessment materials. One set of materials, known as Self-Assessment Modules (SAMs), consists of a series of formative tests and exercises aimed at helping students monitor their level of understanding of major biological concepts (Franklin, Peat and Mackay-Wood, 1997; Peat, Franklin and Mackay-Wood, 1997). The SAMs draw together related parts of the subject and so help the students to make connections between seemingly unrelated topics in biology while providing an enjoyable feedback and reinforcement

session. A number of different learning modes are utilised by the SAMs so that, by catering for different learning styles, the module encourages students to take responsibility for their own learning, and promotes the development of deeper learning strategies by the students.

Each SAM is designed as a series of mini-topics, with each mini-topic having an entry level which acts as a barrier to progression if the student is unable to complete it successfully. Unsuccessful entrants are advised to revise the topic before trying again. Once past the entry barrier, there are several levels of questions, identified in Bloom's Taxonomy as being of different cognitive complexities (Bloom, 1956). Each level offers an increased level of difficulty and contains a variety of question formats, based on simple computer skills such as drag and drop and text entry. The student can choose to do the levels in any order. Level 1 is the easiest level, with all the answers given, although the student may be presented with a variety of options from which to make a choice. Formats include multiple choice questions (MCQs), dragging correct or incorrect words into or out of sentences, labelling diagrams, completing flow charts and matching words with definitions. Level 2 has question formats similar to those introduced in Level 1, but requiring the student to either type in the answers rather than selecting them, or sort relevant material from irrelevant material. Level 3 questions are more complex, often having more than one part, or requiring the completion of more complex diagrams and tables, while the top level includes summarising information from a number of sources into tables or concept maps and writing short answers to questions.

All questions are marked and summative and formative feedback is provided. The students have control at all times of where they are and where they want to go in the module. They can access information on what levels they have attempted, how much of the topic they have done and how well they have done.

Students have evaluated the SAMs using self administered, web-based, qualitative and quantitative questionnaires. At the end of each SAM is a request for the student to fill in the questionnaire. The results indicated that students thought the modules were user-friendly, study was encouraged by their use, and concepts were more easily understood. They liked the variety of questions and different levels and the facility to work at their own pace.

Delivering the SAMs on the web was a response to increasing student demands for increased flexibility and greater access to teaching and learning materials. Visit the SAMs at http://fybio.bio.usyd.edu.au/sobsfyb/fyb_stud_access/SAMs/SAMs.html

References

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