



**The  
eLearning  
scenario**

**Technology and  
contemporary  
learning**

LOOKING FOR INTERACTIVE MULTIMEDIA SOFTWARE THAT LEADS TO ENGAGED LEARNING? **GREG BLACKBURN** LOOKS AT SOFTWARE THAT DOES EXACTLY THAT – AND IT BEGAN ITS LIFE AS A CROP DIAGNOSIS PROGRAM 20 YEARS AGO.

Educators are constantly looking for new ways to engage their students in eLearning using information and communication technology (ICT) in ways that develop their students' problem-solving skills and critical thinking. In doing that, they're typically looking for ICT that goes beyond a 'drill and skill' approach, and they're looking for ICT that offers more than an off-the-shelf program, essentially because they want to tailor the ICT to their students' eLearning essentially in a do-it-yourself way.

One multidisciplinary eLearning tool called Scenario Based Learning Interactive (SBLi), developed by the Centre for Biological Information Technology, addresses that by offering a do-it-yourself approach, providing problem-based or enquiry-based learning software so that educators can quickly and easily create their own interactive learning simulations. By creating these online interactive simulations, called scenarios, educators can provide their students with a systematic way to look at issues, collect data, analyse information, draw conclusions and report the results. Working through scenarios requires the student to identify and think through the key issues involved in terms of theoretical and real-world situations.

Students use SBLi to follow a story, learn a process, explore an issue, solve a problem, experience multiple perspectives and fuel discussion. It's a cost-effective and engaging educational tool that can be used independently or collectively in a group or team of students, or with distance education or remote education students.

According to a study by Mia O'Brien and Carl Sherwood, SBLi positively affects students' critical thinking skills and fosters deeper learning through active involvement in class materials rather than in superficial rote learning.

High school educators have used SBLi to create a wide variety of eLearning projects addressing things like a museum virtual field trip, water management, environmental awareness and languages. The Brisbane School of Distance Education started using SBLi in 2008. Corinda State High School with Oxley Creek Catchment Group has recently completed a scenario on water catchment management issues. The Science Teachers Association of New South Wales in partnership with the NSW Department of Education and Training's Centre for Learning Innovation and Sydney Water has created a series of online SBLi scenarios dealing with a range of issues associated with water use and management. Dissemination is expected across all NSW state high schools. The University of Canberra together with the Invasive Animals Cooperative Research Centre has developed a series of scenarios for high schools that deal with issues associated with the ecology and management of vertebrate pests in Australia.

The following case studies demonstrate how SBLi is being used in Australian high schools.

#### **Off-setting school carbon emissions**

The Queensland Department of Environment and Resource Management in conjunction with the Oxley Creek Catchment Association and Corinda State High School has used SBLi to develop a scenario for students investigating off-setting the school's carbon emissions. In this scenario, students investigate planting trees along nearby Oxley Creek as a form of carbon capture. While investigating this possibility, the students are introduced to some of the effects their project may have on local biodiversity and water quality. At various stages students are asked

## HOW IT ALL BEGAN

*The development of SBLi began 20 years ago. Its origin lies in a crop diagnosis program, developed by researchers in Queensland and New Zealand, and released for commercial sale in 1994. This product allowed teachers to develop their own problem simulations and use them as 'virtual case studies' that provided students with the experience of diagnosing a range of crop-related problems, with much of the complexity they would experience in the real-world.*

*Several years ago, the Centre for Biological Information Technology started developing SBLi as a more generic, flexible and web-based product. Then trials were conducted across the University of Queensland and New Zealand polytechnics. The results of those trials and user feedback have been used to fine tune the software as an adaptable multidisciplinary eLearning tool.*

to answer short questions to demonstrate their understanding.

### **Around the world in 20 clicks**

A Brisbane College of Distance Education scenario, 'Around the world in 20 clicks,' enables Year 3 students to take a virtual trip around the world, visiting Indonesia, China, Japan, Ghana, the United States and New Zealand. Students investigate various aspects of life and culture in each country and participate in a craft or game. The unit takes 20 days to complete and students' tutors provide feedback on conclusion.

### **Feral peril**

The University of Canberra, with assistance from the NSW National Parks and Wildlife Service South Coast Shorebird Recovery Program, developed a scenario that requires individual students, ideally in Years 8, 9 or 10, to take on the role of a senior national parks and wildlife officer who has received funding to address serious environmental problems caused by feral animals on Peril Island. This scenario can be used to review student learning outcomes at the end of a teaching unit dedicated to feral animals, pest animal management and environmental studies.

### **Benefits**

One of the strengths of SBLi is the do-it-yourself aspect of creating scenarios, without needing a specialist programmer. Creating scenarios is quick and easy. Documents, spread sheets, media and multimedia, and icons from a media library that offers more than 800 options can be inserted simply.

Teachers can easily create classroom content incorporating existing electronic course content, internet resources and images, audio, video, tests, and other multimedia into the learning experience. This rapid scenario building process means teachers can focus on the conceptual design of their scenario and on gathering and entering content; the software does the rest.

Teachers can monitor student progress and their understanding of subject matter, quickly identifying students' learning strengths and weaknesses through instant online feedback.

Students' interest and engagement with the subject matter is enhanced through learning technologies that incorporate multimedia. A New Zealand study by Peter Gossman, Terry Stewart, Marlene Jaspers and Bruce Chapman on the use of problem-based-learning scenarios found that scenarios delivered using SBLi, 'engender positive student attitudes and promote 'greater engagement with the subject' compared with other learning approaches.

SBLi enables students to engage in scenarios that are dynamic, in that the form of the scenario changes depending on what students do, what they investigate and what actions they take.

### **Research on problem-based learning**

SBLi has its pedagogical origins in problem-based learning and situated-learning theory. As Tony Herrington, Ron Oliver and Tom Reeves have variously shown, problem-based learning and situated-learning approaches to online learning do much more than deliver information because they foster synergies between the learner, the task and the technology. Immersive, authentic, problem-based learning environments enable students to complete realistic tasks, by taking on realistic roles and engaging in realistic behaviours.

Since reflection, as Jennifer Moon explains in *Reflections in Learning and Professional Development*, contributes significantly to learning, SBLi scenarios have been designed to give students mastery over key concepts and to enable them to reflect on what they're learning.

### **The case for problem solving**

As Paul Ramsden observed as long ago as 1992, teachers are under increasing pressure to use educational technologies in ways that place less emphasis on surface and rote learning, memorisation and cramming for examinations, and more emphasis on the

development of real-world, transferable skills such as critical thinking and understanding collaborative problem solving in authentic real-world contexts.

Such an emphasis, argues Linda Harasim, takes advantage of contemporary learning theories espoused by David Jonassen and by Ramsden, and moves away from the more common approach of replicating traditional teacher-led delivery of information within a digital environment.

Reeves, Herrington and Oliver, in their 2004 article, 'A development research agenda for online collaborative learning,' argue that deeper learning will be achieved with online simulations in which authentic tasks or problems become the focus of the learning environment. Authentic tasks, based on real-

istic simulations and cases where students become immersed in problem solving, have been shown to have many benefits for learners, not least of which is the applicability of knowledge and skills in workplace contexts, and the development of student learning skills. For more on this, see Herrington and colleagues' 'Authentic tasks online.'

### Flexibility

SBLi has been developed as a cognitive tool for the design of problem-based simulations. It's a step above conventional online scenario presentations because it combines problem-based learning with the flexibility and engagement of interactive multimedia.

Many educational courses and materials, both traditional and online, provide stu-

dents with basic knowledge and principles about a specific discipline. SBLinteractive provides a flexible and cost-effective way for educators to create simulations, or scenarios, to provide contextualised and interactive learning experiences.

The process of working through a scenario encourages students to take responsibility for their learning and facilitates the real-world understanding of specific learning outcomes. It encourages student-centred learning rather than teacher-directed instruction.

There are other multimedia products that do this, but they're generally expensive, customised products that lack SBLi's flexibility, including the ease with which scenarios can be developed. That flexibility

## When quality matters, choose Davell for Australian made lockers



### Heavy Duty Lockers

- Available in 1, 2, 3 & 4 tiers.
- Fully welded frame
- Reinforced door
- Three point security locking
- Key operated or provision for padlock



### Standard Lockers

- Available in tiers of 1, 2, 3, 4, 6, 8, 12 (4 tier shown).
- Key operated or provision for padlock.
- Ventilation louvres.
- Various heights.



### Multistore Locker

- The ideal student locker.
- Two adjustable recessed shelves
- Personal compartment
- Three point security locking
- Key operated or provision for padlock.



### Special School Locker

- Specially designed for school backpacks and laptops.
- Three point security locking
- Key operated or provision for padlock.
- Ventilation louvres.
- Adjustable shelf.

### Laptop Lockers

- Secure individual compartments.
- Perforated backpanel for charging access and ventilation.
- Key locking or provision for padlock.

**We can also custom make lockers to suit your particular requirements.**

**Call us today on FREECALL 1800 199 136 to order lockers or discuss your needs!!!**

Davell Products Pty Limited  
13-15 Monro Avenue Kirrawee NSW 2232  
Ph: 02 9521 4333 Fax: 02 9521 6191

**DAVELL**  
www.davell.com.au





also means that educators can develop more basic or more sophisticated scenarios, depending on the resources and time available to them. They can also set students exercises in creating scenarios as a valuable learning exercise.

### Sharing resources

While still in its infancy, the sharing of scenarios by educational institutions in Australia and overseas has already begun. The numbers make sense: 10 participating schools that each create 10 scenarios have a bank of 100 scenarios to share, and those scenarios may need little or no minor modification. SBLi scenarios can be used in their current form, modified to fit different teaching goals and disciplines, or personalised for different cohorts of students.

### Assessment and feedback

SBLi scenarios also support testing at any stage. Educators can set a scenario to allow

a student only 'one attempt' as a test that the student needs to pass before moving on. Questions or reports can also be set for students to complete during a simulation to provide educators with further information. SBLi tracks all of the online movements and actions, and any tests taken by the student. SBLinteractive currently allows for the following assessment types:

- check choice – where the student selects a suitable response from an available list
- multiple choice – selecting A, B, C or D, or selecting one option out of a given set
- short-answer questions
- long-answer questions, and
- fill-in-the-blank questions.

Educators can provide immediate feedback to students after a test, or later by email.

### Visual layout

Many existing problem-based learning simulations use either slides containing cues, or

as a vast amount of written text describing a case study and providing questions to answer. Neither of these is visually appealing, and typically there's only one path to follow since most scenarios have a linear structure.

The problem-based learning simulations produced using SBLi can present information and objects within visual concept maps, providing a neutral indication of which object to explore next. This encourages the user to explore the simulation rather than just follow a list of tasks to do. This method of presentation also allows users to choose from multiple paths through the same simulation, as there can be more than one way to solve a problem.

Students can click through a simulation to see different facets of a case, follow a timeline and make choices about exactly what they want to do. At various times they may be asked to answer questions or comment by way of dialogue boxes, multiple-choice questions or check-box forms, depending on what the educator wants them to do. Learning simulations can have a gaming element which can aid engagement, as Terry Stewart observes in 'Developing interactive scenarios: The value of good planning, whiteboards and table-based schemas.' Used properly, educational games can be beneficial for learning. For more on this, see the work of Kristian Kiili, Clark Quinn or Alan Amory. **1**

*Greg Blackburn is the business manager of the Centre for Biological Information Technology in the Faculty of Science at the University of Queensland. Email [g.blackburn@cbit.uq.edu.au](mailto:g.blackburn@cbit.uq.edu.au)*

*Pictured this page, screenshot of an SBLi scenario.*

### LINKS:

*For more information, visit [www.sblinteractive.org](http://www.sblinteractive.org)*

*For references, visit <http://research.acer.edu.au/teacher>*