Chapter 19
Scenario-Based Learning:
Experiences in the Development
and Application of a Generic
Teaching Software Tool

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ABSTRACT

The aim of this chapter is to share experiences involved in designing, developing, and implementing e-simulation software for achieving scenario-based learning objectives. It does this by focusing on our work with Scenario Based Learning-Interactive (SBLi), a software tool developed at The University of Queensland, Australia to provide lecturers and teachers with an easy-to-use tool for creating and deploying interactive multi-media scenarios on the Web or CD. While a number of authoring tools are capable of creating simple, interactive scenarios, SBLi has been developed to provide a tool with the functionality and transparency that allows scenario authors to easily create and modify complex and realistic scenarios that engage learners in acquiring specific knowledge and skills. This chapter describes the main features of this e-simulation tool, what is involved in creating SBLi scenarios, and how scenarios have been developed and used in Australia and overseas to provide problem-based and enquiry-based learning experiences. Examples are listed to show the range of learning objectives and the diverse and novel ways in which SBLi is being used to improve critical thinking, problem-solving skills, and other learning attributes across a range of disciplines in secondary and tertiary institutions and in continuing professional development. Important lessons concerning the development and sustainable application of this specific e-simulation tool are also discussed.

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INTRODUCTION

Following an account of the background history of SBLi, which indicates some of the factors that have influenced the design, development, and application of this specific e-simulation tool, the chapter then addresses the following questions:

- What are the critical features of a generic e-simulation scenario?
- How does SBLi capture these features?
- What functionality has been included to enhance scenario development and authenticity?
- What is involved in developing a scenario?
- How are scenarios being used?
- What lessons have been learned from the SBLi experience that might have implications for e-simulation software generally?

BACKGROUND

In recent years, problem-based and enquiry-based learning (PBL and EBL) has become an important approach in many university courses, ranging from immersive PBL approaches (Barrows & Wee, 2007), to the use of PBL and EBL modules as specific exercises in existing courses (Barrett, MacLabhrainn, & Fallon, 2005). As well as differences in pedagogical approach within and between disciplines, there are also considerable differences in the ways in which problem-based scenarios are presented to students and how they engage with these scenarios. Scenarios can be presented orally, as text-based case studies, or as computer-based interactive scenarios; and students can engage with these scenarios in a group or as individuals, either in class or online.

While “eLearning Technology” has been developing steadily for some years (Alessi & Trollip, 1985), computer-assisted “Scenario Based Learning” has only been developed in recent years. The greatest obstacle to computer-based scenario-based learning has been the inability of early authoring tools to meet the needs of scenario authors. Scenario-based learning has a fluid nature and requires decision paths or branching capabilities. It was for this reason that tools such as Scenario Based Learning (SBLi) and Adobe’s Captivate have been developed.

The involvement of some of the current authors in developing and utilising computer-based interactive scenarios began more than 15 years ago. The origins of SBLi began when a team at The University of Queensland (UQ) collaborated with Terry Stewart at Massey University to develop, distribute, and support a computer-based learning tool, “Diagnosis of Crop Problems” (Stewart et al., 1995). The University of Queensland is a major research intensive, on-campus based university in the Australian state of Queensland. Massey University is known for its distinctive mix of campus-based, distance, and international teaching, and has campuses located in the north island of New Zealand.

Diagnosis of Crop Problems was a Windows-based software program deployed via CD and focused on a specific PBL activity within a single discipline: the diagnosis of crop disorders. Based on this experience, this group continued collaboration in specifying and developing a more generic software product that would enable scenarios to be developed for any discipline and which could be delivered online. This Scenario Based Learning software (SBLi) consists of two desktop applications: a builder and player, for creating and exploring scenarios respectively; and a server-based player and scenario management tool, for deploying scenarios online.

Since the UQ SBLi development team is employed in a not-for-profit Centre, cost effectiveness has been a critical consideration in designing and developing the software. We have aimed to design and develop an easy to use, generic and flexible e-simulation tool that maximises the potential breadth of use of SBLi and enables teachers to design and create scenarios across a range of...