E-Learning: A Study of Issues and Perspectives

Andrew Finegan

E-Learning: A Study of Issues and Perspectives

Andrew Finegan
School of Business Information Technology
RMIT University
Melbourne Australia
andrew.finegan@rmit.edu.au

Abstract

This study examines some of the issues and perspectives associated with development and delivery of an undergraduate business degree incorporating e-learning. The investigation was undertaken in an Australian University and incorporates the opinions and viewpoints of staff and students - both local and offshore. E-learning is a complex, and often poorly structured knowledge area, with many different issues, influences and agendas. For this reason Soft Systems Methodology (SSM) has been used to develop a model for analysis and for comparison of the issues with the literature.

1. Introduction

Most universities in Australia now offer online courses, and face challenges that include limited budgets, the availability of appropriate content, provision of student support, and the often rigid traditions in education and learning [16]. This is also reported by Cameron [2] who observes that Australian universities are making major investments in information and communication technology (ICT) upgrades. Flexible self-service, both in university administration and course delivery, is becoming increasingly important.

Consider the question posed by Cameron [2, p.42]: "...what has spurred so many Australian universities to invest so heavily in ICT upgrades, particularly in online learning and self-service?" The suggested answer is that this is a response to the increased competition for students and funds. The universities hope that e-learning technology will help them diversify their commercial interests, and enhance the variety and degree of online offerings to students and staff. However, Lee [12] expresses concern that e-learning will remain in the realm of rhetoric as long as it is no more than provision of lecture materials on the Web, with the Internet being used little more than a delivery medium.

This study, conducted in an Australian University, seeks to better understand the issues and challenges associated with e-learning. It adopts a systems approach that incorporates the opinions, concerns, and viewpoints of the staff and students who represent the major stakeholders in applying this technology to teaching and learning.

2. A Systems Approach

E-learning projects typically exist in complex and poorly structured socio-technological environments, with many different issues, influences and agendas. Furthermore, Wilson [24] observes that a number of cultural discontinuities impact upon online learning effectiveness. In particular, the worldview of the learner is a key factor in better understanding how users navigate the teaching and learning interface. Therefore this study utilizes a systems approach that is suited for the analysis of complex situations where the worldview and the transformation at the learner interface is important.

Soft systems thinking seeks to explore the messy problematic situations that arise in human activity. It strives to learn from the different perceptions that exist in the minds of the different people involved in the situation [1]. This interpretive approach is strongly influenced by Vickers' [23, pp.59,176] description of the importance of appreciative systems in dealing with human complexity. Checkland [3], and Checkland and Scholes [4] have transformed these ideas from systems theory into a practical methodology that is called Soft Systems Methodology (SSM). Checkland [3, p.258] applies a core paradigm of learning to problems of complexity with poor structure, and so SSM attempts to understand the fuzzy world of complex organizations.

SSM, in its idealized form, is described as a logical sequence of seven steps [3, pp.162-183]. These are:

- Stages 1 and 2 - Expression of the problem
- Stage 3 - Selection of a Root Definition
- Stage 4 - Model Building - the Conceptual Model.
- Stage 5 - Comparison
- Stage 6 and 7 - Recommendations for Change, and Taking Action.
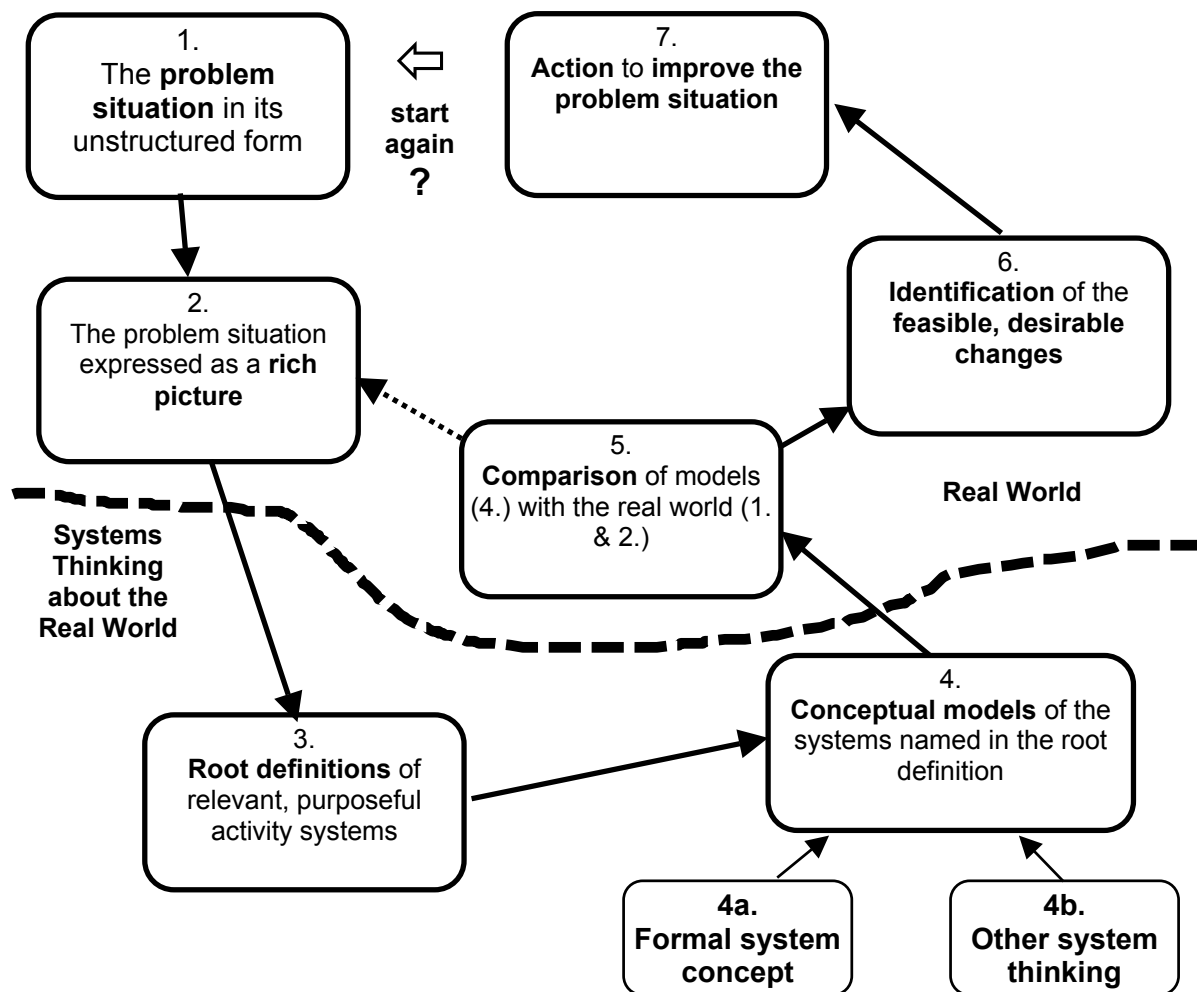
This is illustrated in Figure 1.

Figure 1   Summary of SSM as a seven-stage process
(Adapted from Checkland, [3, p.163] and Checkland & Scholes, [4, p.28])

It is most important to note that the sequence is not imposed upon the practitioner; a study can commence at any stage, with iteration and backtracking as essential components. SSM encourages investigators to view organizations from a cultural perspective.

3. Building a Model of E-Learning

This analysis will be conducted following the steps shown in Figure 1. This will be done rigorously for Step 1 through to Step 4, which produces a conceptual model of feasible and desirable activity. The final three steps of the methodology will be incorporated into the discussion that follows (Part 4 – Analysis of Issues).

3.1   Step 1 - The Problem Situation

This step of the analysis is an unstructured narrative about the situation, and what makes it problematic. ***The narrative begins:***

Within the Faculty of Business there is strong pressure from both the University Chancellery and the Dean's Office to undergo course renewal of all courses. In practical terms this has been translated to mean that all courses are to be repackaged and delivered online over the Internet.

Interested academic staff members have been recruited as Technical Skills Mentors to assist other staff members in this task. Academics are instructed to 'go online' before the next scheduled delivery of their course. This allows most academics between six weeks and seven months to undertake this task for one or more courses, depending on how many courses are available.

Academics are offered a choice of approved software tools to use, including Dreamweaver, WebObjects and Frontpage. Adoption of a particular tool is often either a personal preference, or the recommendation of the Technical Skills Mentor. There is no attempt to standardize to a specific tool with any study program.

Table 1: Feedback from students - delivery of courses online

Melbourne Students (15)		Hong Kong Students (32)	
Best	**Worst**	**Best**	**Worst**
Flexibility in when a student can study - time (9)	Less interaction with class members and lecturer (8)	Flexibility in when a student can study - time (21)	Cannot get a face-to-face answer from a lecturer (16)
Flexibility in where a student can study - place (5)	Dependence on IT that often has problems and can be slow (5)	Flexibility in where a student can study - place (19)	Less interaction with class members, teams and the lecturer (16)
Can get access to notes whenever they are needed without travelling to the uni (4)	Online communication and discussion is slow and limited compared to face-to-face interaction (4)	A less expensive way to study (9)	Need access to an up-to-date computer, the Internet and have good knowledge of computers (8)
Online forum and chat provide a good way of discussing issues with a wider variety of people (3)	Delays in getting email feedback from lecturers (4)	Access to a bigger choice of courses and courses in different countries (7)	Dependence on IT that often has problems and can be slow (7)
Can avoid using slow and unreliable university computer laboratories (1)	Reference material listed online may not be available (1)	Online forum and chat provide a good way of discussing issues with a wider variety of people (5)	Requires discipline (7)
Access to a bigger choice of courses and programs (1)	Prefer to read on paper to using a screen (2)	Attractive interface - prefer to read material off a computer (4)	Prefer to read on paper to using a screen. May be harmful to eyes (6)
		Environmentally friendly way to study (3)	Need more time to read and understand the online material (2)
		Fast way to learn (1)	Boring (2)
			Delays in getting email feedback from lecturers (1)

From the start of Semester 2 (July 2000) courses taught in the faculty of Business began to become available online. However, not all courses have a web-presence, and there are different styles of presentation and web page design. The approach ranges from single web page sites consisting of a table of hyperlinks to course resources (usually PowerPoint slides and Word documents), to complex hierarchies of pages that provide information pages and links covering all parts of a course.

The response by students is enthusiastic, but varied and often conditional. Table 1 is a summary of feedback from two groups of the investigator's students, studying the same courses in Melbourne and in Hong Kong. These are the responses to the question - what are the best and worst features of having material provided online?

In June 2001 the University entered into an alliance with an offshore education broker. The immediate effect was that a number of popular business degree programs were targeted to be offered completely online as 'international programs". The Dean has announced that a 'flag-ship' degree - Bachelor of Commerce (known as the Generic Degree) - is to commence next semester. The main market identified for the online Generic Degree is China. Content for courses to be offered in the Generic Degree must be finalized and available by Monday 3 December, 2001. Furthermore, the Generic Degree is standardized to Dreamweaver, and all materials must be compatible with this tool. Many academic staff are dismayed by the pressure placed upon them. They are concerned not only with the workload, but they also fear losing ownership of the material, and are concerned that assessment will be 'dumbed-down' to fit into the online environment. ***This concludes the narrative and Step 1.***

3.2 Step 2 - The Rich Picture

A key goal of this stage is to achieve a structured representation of the problematic situation in as neutral a way as possible. This is achieved by building a Rich Picture. This is a pictorial representation of the structures, processes, situation, relationships and issues. It is not, however, a system diagram!

Figure 2 is a Rich Picture of the elearning - Generic Degree situation. It aims to show the elements of a slow-to-change structure, and the elements of a constantly changing process within the situation described in the above narrative.
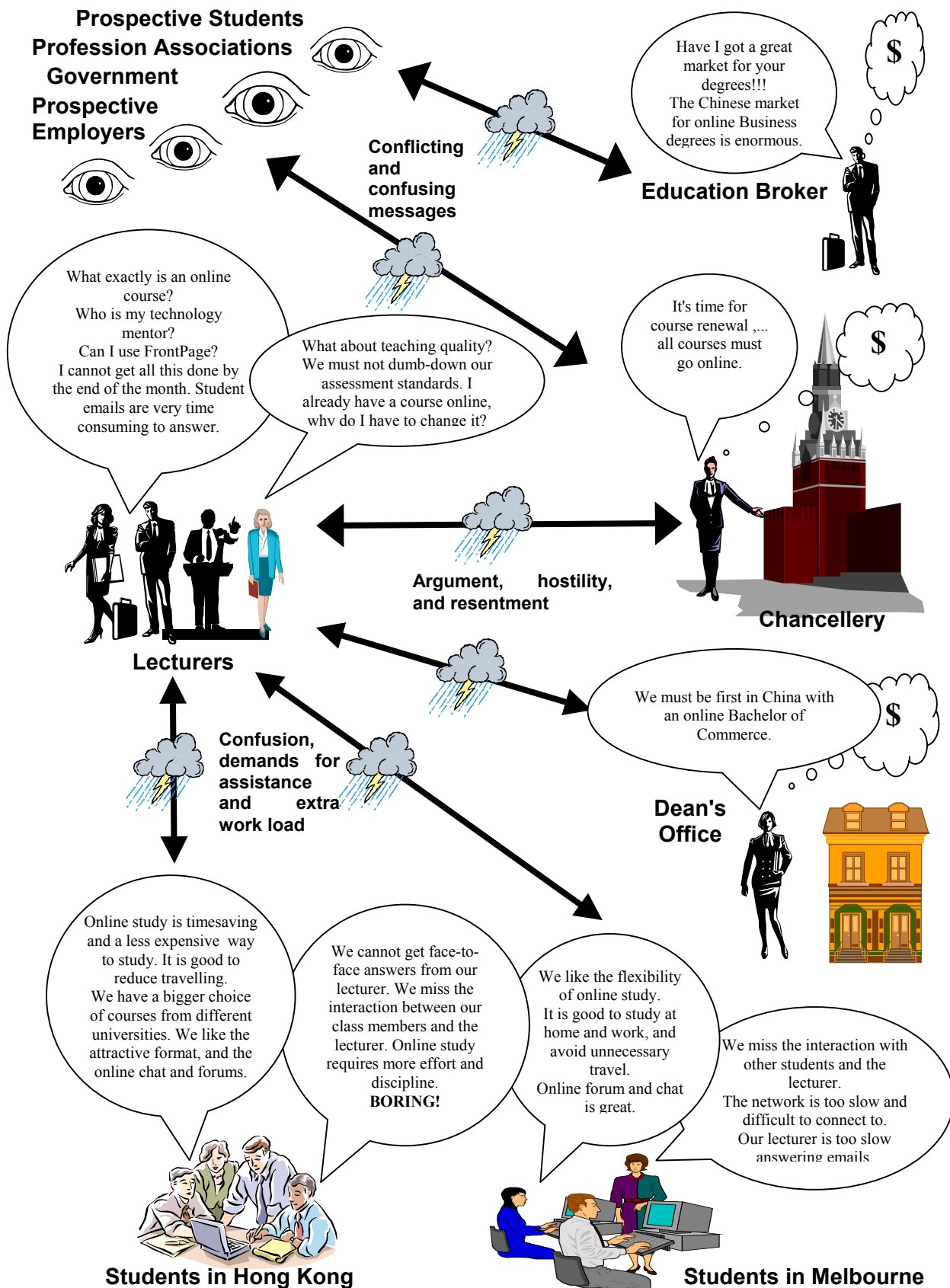
Prospective Students
Profession Associations
Government
Prospective Employers

Have I got a great market for your degrees!!!
The Chinese market for online Business degrees is enormous.

$

Education Broker

Conflicting and confusing messages

What exactly is an online course?
Who is my technology mentor?
Can I use FrontPage?
I cannot get all this done by the end of the month. Student emails are very time consuming to answer.

What about teaching quality? We must not dumb-down our assessment standards. I already have a course online, why do I have to change it?

It's time for course renewal ,... all courses must go online.

$

Lecturers

Argument, hostility, and resentment

Chancellery

Confusion, demands for assistance and extra work load

We must be first in China with an online Bachelor of Commerce.

$

Dean's Office

Online study is timesaving and a less expensive way to study. It is good to reduce travelling.
We have a bigger choice of courses from different universities. We like the attractive format, and the online chat and forums.

We cannot get face-to-face answers from our lecturer. We miss the interaction between our class members and the lecturer. Online study requires more effort and discipline.
BORING!

We like the flexibility of online study.
It is good to study at home and work, and avoid unnecessary travel.
Online forum and chat is great.

We miss the interaction with other students and the lecturer.
The network is too slow and difficult to connect to.
Our lecturer is too slow answering emails

Students in Hong Kong

Students in Melbourne

Figure 2   Rich Picture of e-Learning - Generic Degree

3.3 Steps 3 and 4 - The Root Definition and Model

Before creating a model, Step 3 seeks to define an appropriate system to improve the situation in a way that is desirable and feasible. This is achieved by constructing a root definition. The mnemonic CATWOE is used to check that all the components are in the root definition.

C Clients, customers (or victims) of the system.

A Actors who carry out activity in the system.

T Transformation - being the conversion of the inputs into a changed form.

W Weltanschauung (or constraining worldview) that makes this definition meaningful.

O Owner, the person with the power to start or stop the system.

E Environment - world surrounding the system, that provides the external constraints.

It is important to appreciate that the CATWOE is only a component checklist. The appropriateness of a root definition can only be evaluated through the dialectic process of examination, debate and argument and modification.

It is important also to examine the conceptual model derived from the root definition. Therefore, Steps 3 and 4 are presented together in this study (Figure 3).

Based on the root definition, a model is drawn of the theoretical or conceptual construction. This model will show the minimum necessary activities that exist in the system to achieve the transformation described in the root definition.

The conceptual model should only include activities that can be directly carried out. There should never be the expectation that a root definition or conceptual model cannot be improved upon.
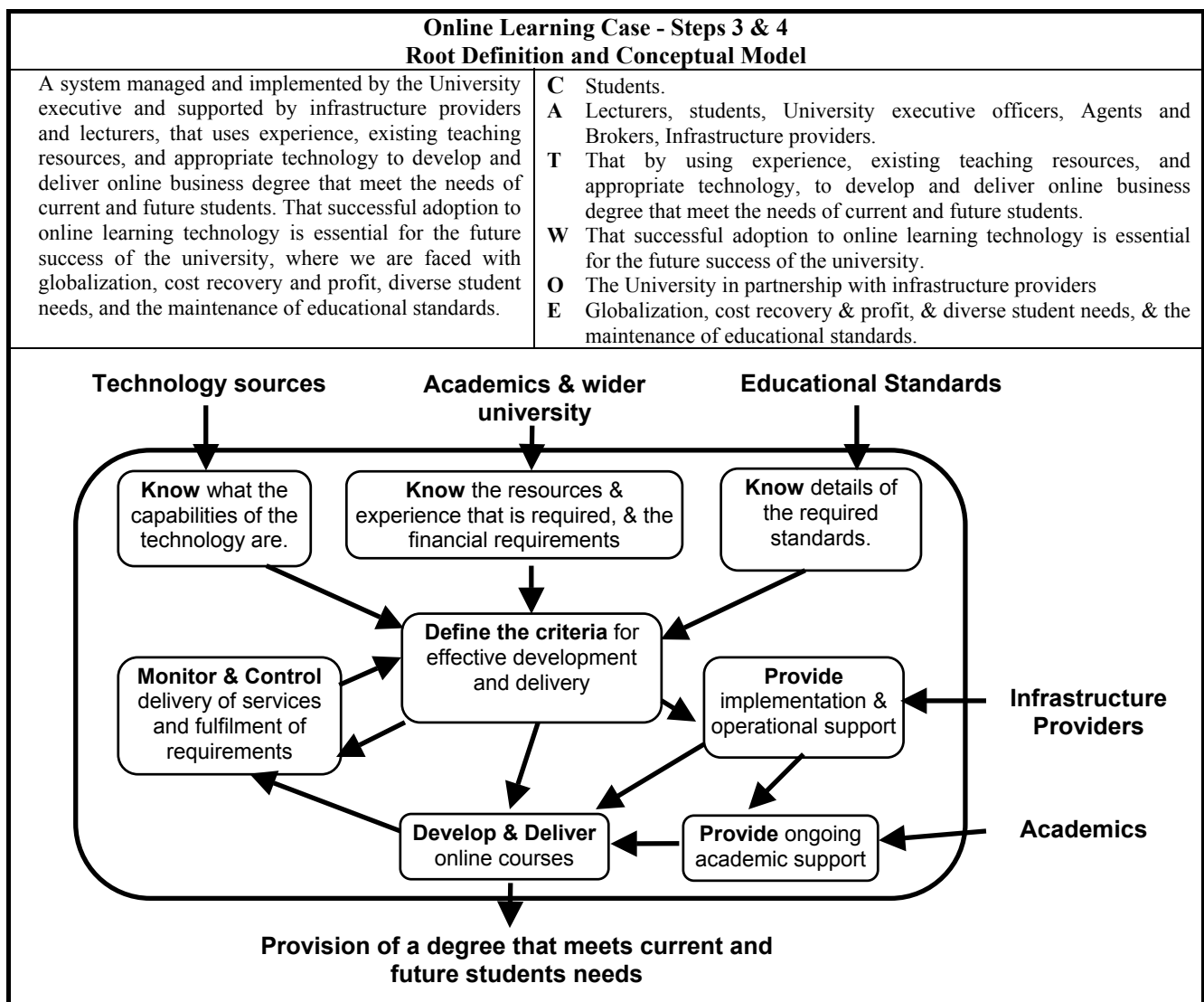

Online Learning Case - Steps 3 & 4
Root Definition and Conceptual Model

A system managed and implemented by the University executive and supported by infrastructure providers and lecturers, that uses experience, existing teaching resources, and appropriate technology to develop and deliver online business degree that meet the needs of current and future students. That successful adoption to online learning technology is essential for the future success of the university, where we are faced with globalization, cost recovery and profit, diverse student needs, and the maintenance of educational standards.

C Students.
A Lecturers, students, University executive officers, Agents and Brokers, Infrastructure providers.
T That by using experience, existing teaching resources, and appropriate technology, to develop and deliver online business degree that meet the needs of current and future students.
W That successful adoption to online learning technology is essential for the future success of the university.
O The University in partnership with infrastructure providers
E Globalization, cost recovery & profit, & diverse student needs, & the maintenance of educational standards.

Figure 3   Root Definition and Conceptual Model

4. Analysis of Issues

The conceptual model illustrated in Figure 3 provides a set of activities that can be used to learn more about the situation, and in this case study it provides a framework for undertaking an issues analysis.

4.1 Activity 1 - Know what the capabilities of the technology are.

The first activity is concerned with acquiring knowledge of technology capabilities. As the case study shows with reference to web page creation tools, there are always choices with technology, and better choices can be made if relevant knowledge is acquired. Torrisi-Steele and Davis [22] comment on the importance of selecting web-authoring technology. In particular, skill development in web authoring and online course design can be both demanding and difficult. However, these skills are essential to realize the full potential of e-learning.

4.2 Activity 2 - Know the resources and experience that is required, and the financial requirements

The second knowledge activity appears to be problematic in the case study as it obviously requires collaboration between the academics - with some resources and the experience - and the university executive, who have more resources and the knowledge of the financial requirements. However, this knowledge must be integrated into the total process. As Galagan [6] observes, universities need to ensure that online learning is part of a training strategy that links to business goals.

Where there is a cross-cultural component to an e-learning initiative, Sakurai [15] and Gunawardena, Nolla, Wilson, Lopez-Islas, Ramirez-Angel and Megchu-Alpizar [10] emphasizes the need for a major commitment in time and resources. In particular, Goodfellow, Lea, Gonzalez and Mason [9] argue the need to study cross-cultural interactions within the e-learning environment with attention to the implications for learning and teaching.

4.3 Activity 3 - Know details of the required standards

The third knowledge activity moves the focus beyond the university into the wider community. In many cases appropriate standards have not been formalized for e-learning. A particular area of concern of many lecturers is the "dumbing-down" of assessment tasks and the preference for "soft-assessment" that occurs in particular circumstances. These issues are also of concern to the wider community, and especially prospective employers. Therefore appropriate standard should be developed in consultation with key stakeholders. Youngblood, Trede and Di Corpo [25] recommend that rules of participation should be formalized as the framework for monitoring participation. However, this will become more complex with international program delivery and globalization.

4.4 Activity 4 - Define the criteria for effective development and delivery

Schelin and Smarte [18] warn that developers must assess the needs of the student population and clearly target skills and knowledge gaps before developing online courses. A set of guidelines to assist in this activity, in the form of five questions, is provided by Sheely, Veness, and Rankine [19, p.80]:

How do we do it? How do we use these packages most effectively?
How do we integrate them into existing systems?
How do we support academics to make most effective use of the tools that are available?

A particular concern in this activity is setting the criteria for development of interactive online learning. This is a major anxiety of many of the students in the case study. Sims [20] also identifies interactivity as one of the major challenges faced by designers of e-learning resources. In particular it is observed that complexity of learner-computer interactivity has yet to be fully unraveled. Swan [21] addresses this issue of design and identifies three important factors that influence student satisfaction:

1. The clarity of the design of the online course.
2. The ability to interact with instructors.
3. The support of active discussion among the students.

4.5 Activity 5 - Provide implementation and operational support

This activity will be directly driven by the choices made in the definition and selection of criteria for development and delivery of the system. As seen in the case study, this activity is important in terms of student satisfaction, especially with regard to the speed and reliability of Internet access. Sakurai [15] states the need to develop a network infrastructure capable of supporting rich media content, and warns that without this an online program will be just like reading text.

4.6 Activity 6 - Provide ongoing academic support

Within universities that are developing e-learning for the first time, the critical success factor is internal marketing. Promotion of a new way of teaching is essential, with Roberts [14, p.106] observing that "takes a lot of effort to get the old guys who are now in leadership roles to support these efforts."

However, there are attractive aspects to this activity. E-learning has the potential to bring together the best teachers, with the best learning plans and enthusiasm for learning, to the students who want it, anywhere in the world [7]. This is particularly attractive to organizations who desire flexibility in the delivery of teaching programs [26]. Schelim and Smarte [18] observe that

while you cannot compel academics to participate in e-learning, the success of these programs depends upon a large commitment from teaching staff.

4.7 Activity 7 - Develop and deliver online courses

This is the activity that delivers the outcome - provision of a degree program that meets current and future students needs. This is the "operational core" upon which all the other activities focus and provide inputs. This activity is a system in its own right, and can be modelled in greater detail.

4.8 Activity 8 - Monitor and control delivery of services and fulfilment of requirements

This final activity provides the monitoring and control loop that observes the performance of the system, and provides feedback to control via the criteria setting activity as necessary. This is consistent with the need identified by Herberger [11] to define and redefine the educational product outcome of an e-learning system. More specifically Leonard and Guha [13] and Chen, Lou and Luo [5] observe that the motivation for using e-learning is the promise of improved competence in completing course work. This is an example of an important performance measure to be monitored.

5. Conclusion

In this study a systems model has been developed to provide a framework for examination of the issues and perspectives of the stakeholders associated with this investigation of e-learning. Overall, the attitude of the students is generally positive, moderated with a concern for opportunities to interact with other students and academic staff. This is consistent with the findings of Youngblood *et al.* [25] and Gallini and Barron [8], that students need specific guidelines and structures for interacting over the Internet. Without these formal frameworks for collaboration, students may fail to become engaged in coherent group work that is based upon meaningful interactions.

In support of the positive responses, Sanders and Morrison-Shetlar [17] report that students have a highly positive attitude towards the addition of web-enhanced components to traditional course material. This, together with the case study, suggests that e-learning is successful when integrated into other learning delivery modes. However, more research is required in this area, especially from the viewpoints and perceptions of staff involved in the delivery of innovative "multi-mode" learning programs.

References

[1] Andrews, C.L. "Restoring legitimacy to the systems approach". *IEEE Technology and Society,* 2000, 19 (4), 38-44.

[2] Cameron, F. "Beyond the Blackboard". *MIS Australia,* August 2002, 36-38, 40, 42.

[3] Checkland, P.B. *Systems Thinking, Systems Practice.* John Wiley & Sons, 1981.

[4] Checkland, P.B. & Scholes, J. *Soft Systems Methodology in Action.* John Wiley & Sons, 1990.

[5] Chen, Y., Lou, H. & Luo, W. "Distance Learning Technology Adoption: A motivational perspective". *Journal of Computer Information Systems,* 2002, 42(2), 38-43.

[6] Galagan, P.A. "Getting started with E-learning". *Training & Development,* 2000, 54(4), 62-64.

[7] Galagan, P.A. "Mission E-possible". *Training & Development,* 2001, 55(2), 46-56.

[8] Gallini, J.K. & Barron, D. "Participants' perceptions of Web-infused environments: A survey of teaching beliefs, learning approaches, and communication". *Journal of Research on Computing in Education,* 2001, 34(2), 139-156.

[9] Goodfellow, R., Lea, M., Gonzalez F. & Mason R. "Opportunity and e-quality: Intercultural and linguistic issues in global online learning". *Distance Education,* 2001, 22(1), 65-84.

[10] Gunawardena, C.N., Nolla, A.C., Wilson, P.L., Lopez-Islas, J.R., Ramirez-Angel N. & Megchu-Alpizar R.M. "A cross cultural study". *Distance Education,* 2001, 33(3), 85-121.

[11] Herberger, R.A. "The Future of E-learning". *Selections,* 2001, 1(1), 28.

[12] Lee, G.S. "The rhetoric and the reality of e-learning". *Computimes Malaysia,* Aug 27, 2001, 7.

[13] Leonard, J. & Guha, S. "Education at the Crossroads: Online teaching and students' perspectives on distance learning". *Journal of Research on Technology in Education,* 2001, 34(1) 51-57.

[14] Roberts, B. "E-learning: new twist on CBT". *HR Magazine,* 2001, 46(4), 99, 101, 103-104, 106.

[15] Sakurai, J.M. "Foreign Faux Pas: Culture - the final barrier to going global". *E-Learning,* 2002, 3(7), 26-30.

[16] Samuels, D. "On learning online". *Risk Management,* 2001, 48(2), 8-9.

[17] Sanders, D.W. & Morrison-Shetlar, A.I. "Student attitudes towards Web-enhanced instruction in an introductory biology course". *Journal of Research on Computing in Education,* 2001, 33(3), 251-263.

[18] Schelin, E. & Smarte, G. "Recognizing the Champions". *E-Learning,* 2002, 3(4), 12-19.

[19] Sheely, S., Veness, D. & Rankine, L. "Building the Web Interactive Study Environment: mainstreaming online teaching and learning at the University of Western Sydney". *Australian Journal of Educational Technology,* 2001, 17(1), 80-95. [Electronic Journal]. URL http://cleo.murdoch.edu.au/ajet/ajet17/sheely.html

[20] Sims, R. "Interactivity on stage: strategies for learner-designer communication". *Australian Journal of Educational Technology,* 1999, 15(3), 257-272. [Electronic Journal]. URL http://cleo.murdoch.edu.au/ajet/ajet15/sims.html

[21] Swan, K. "Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses". *Distance Education,* 2001, 22(2), 306-331.

[22] Torrisi-Steele, G. & Davis, G. "'A website for my subject': The experiences of some academics' engagement with educational designers in a team based approach to developing online learning materials". *Australian Journal of Educational Technology,* 2000, 16(3), 283-301, [Electronic Journal]. URL http://cleo.murdoch.edu.au/ajet/ajet16/torrisi-steele.html

[23] Vickers, G. *Value Systems and Social Process.* Penguin Books, 1968.

[24] Wilson, M.S. "Cultural considerations in online instruction and learning". *Distance Education*, 2001, 22(1), 52-64.

[25] Youngblood, P., Trede, F. & Di Corpo, S. "Facilitating online learning: A descriptive study". *Distance Education,* 2001, 22(2), 264-284.

[26] Zurawski, L. "Train in your own time". *Control engineering,* 2000, 47(3), 66.