The Development and Evolution of an Information Systems Honours Module in e-Learning

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Abstract

This paper describes the introduction and evolution of an e-Learning module for Information Systems students, from a half-module in 2001 through to its current form as a full module within the Information Systems Honours / Fourth year Programme. The opportunity to use a blended approach to module delivery has afforded a wealth of pedagogical opportunities for the module facilitator, and proved to be an exciting learning environment for the learners, while at the same time taking advantage of the 'medium is the message'. Whilst few problems have been experienced with regard to implementing the desired technologies for the module, it has become evident that the blended or hybrid mode of module delivery is best suited to a more lengthy delivery time span.

1. Introduction

In accordance with international trends, there is an increased emphasis on education and training in commerce and industry in South Africa. It is particularly interesting to note the innovative developments in the use of technology to facilitate teaching and learning. The e-Learning module at the Honours Fourth year level in Information Systems (IS) at Rhodes University (RU) was initiated in 2001 (Information Systems Department, 2001) as a response to this trend, and provides an introduction to and exploration of online learning technologies that would lead to the implementation of a variety of e-Learning systems and environments. The module is designed to equip IS Hon-

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ours graduates with the foundational knowledge, skills and attitudes necessary to participate in the formulation of e-Learning policies, the design and implementation of e-Learning systems, the critical analysis of current e-Learning technologies, methodologies and practise, and to enable the learners to conduct further research within this highly topical and rapidly evolving field.

This elective module has evolved from a half-module in 2001 through to its current form as a full module within the IS Honours / Fourth year Programme (Information Systems Department, 2004). The content of the module has grown from an initial view of Online Educational Systems through to encompassing a wider spectrum of e-Learning Tools and Technologies (Mallinson, 2004). A feature of the module has been the blended or hybrid model that was adopted from the outset, comprising face-to-face meetings, synchronous and asynchronous online conferencing, learner self-study and group project work. However, many of the decisions made concerning the structure and timing of the module have been dictated by constraints within the scheduling and context of a regular on-campus environment.

While few problems have been experienced with regard to implementing the desired technologies for the module due to the high level of technical expertise within the Department together with a well supported software and hardware environment within the Hamilton Building in which the Department is housed, it has become evident that this mode of module delivery is best suited to a more lengthy delivery time. That is, the very nature of asynchronous online communication and a constructivist learning environment dictates that the learning experience should ideally be spread over a longer period than is currently scheduled for a full module offering in the IS Dept Honours programme. The opportunity of the use of a hybrid approach to module delivery has afforded a wealth of pedagogical opportunities for the module facilitator, and proved to be an exciting learning environment for the learners, while at the same time taking advantage of the medium being the message.

Section 2 describes the current University and Departmental environment, Section 3 describes the motivation for mounting an e-Learning module within the IS Department, and Section 4 describes the research design. Section 5 describes the evolution of the module curriculum, Section 6 presents an analysis of learner evaluations and facilitator reflections, and Section 7 concludes the paper.

2. Environment

The University is of a traditional, residential nature and hosts a modern Information and Communication Technology (ICT) infrastructure that is managed through a variety of ICT-based committees. Despite this, the current use of any form of e-Learning on campus is limited, and few, if any, mechanisms exist to promote or support its implementation within the wider academic community. It should be noted that while distance education may have exposed the academic staff to technologies and ideas that could more easily have been ported to an e-Learning environment, RU has firmly maintained its view of an on-campus, highly collegial, traditional environment.

The IS Department is officially situated within the Commerce Faculty of RU, Grahamstown, although academic staff members also sit on the University's Board of the Faculty of Science, due to common interests with the Department of Computer Science (CS) within certain degree programmes, such as the BSc(IS) (Rhodes University, 2004). Reflecting this synergy, the IS Department is housed together with the CS Department within the recently completed Hamilton Building. This building, fully occupied in 2002, is a world-class ICT facility providing cutting-edge technical infrastructure to both the staff and learners of the two departments, with a rich wired and wireless networked environment. Consequently, the staffs of the two departments operate in an extremely well-supported, highly technical and enabling environment for the exploration of e-Learning technologies.

3. Motivation for an e-Learning Module

Teles (1999:3) maintains that technologies have always played an important role in the configuration of the learning environment, from the advent of writing systems and materials, followed by the introduction of formal schools and continuing through to the current potential in the use of current computer-based technological systems.

Harasim, Hiltz, Teles and Turoff (1998:271) believe that one of the basic requirements for education this century is to prepare learners for participation in a knowledge-based economy in which knowledge will be the most critical resource for social and economic development. They believe that current education models, structures and approaches will prove to be inadequate. What learners now require is an expanded domain encompassing the broader society, other educational institutions, and in short, access to a wider range of expertise and environments than that provided within a local educational institution.

According to Harasim (Chapter 4 in Mason & Kaye 1989), the key attributes characterising this expanded domain are that it is a largely asynchronous, place independent, many-to-many interactive communication medium. Figure 1 illustrates this view, with the intersections of distance, online and face-to-face clearly demarcated.

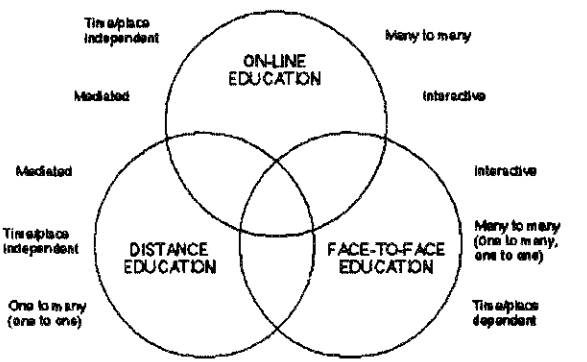

Figure 1 On-line Education as a New Domain (Harasim, 1989: 51)

This view of intersecting relationships within the expanded domain is contrary to the interpretations with respect to distance and on-campus learning provided by the National Working Group on Higher Education (NWGHE) (2001:9-10), in South Africa which prefers to designate higher education institutions in South Africa to be purely distance or purely on-campus, with approval for exceptions to this being considered on application at a programme rather than institutional level. However, although RU has largely abided by the somewhat limited interpretation of the NWGHE, a few individual departments have made some headway in terms of using online education as an adjunct to face-to-face teaching. In terms of being able to initiate, maintain and support independent projects for this purpose, the IS Department has been in a favourable position to adopt an autonomous approach.

Substantiating the shift towards a new educational paradigm that satisfies the learners' needs for new and different information resources, skills, roles and relationships, Harasim *et al.* (1998:27-30) elaborate on what they see to be the characteristics of network learning i.e. expanded educational access, collaborative learning and group work, active learning, learner-centeredness and fluid roles, and online learning communities. This view is supported by Kearsley (2000:4-10), who describes the themes that shape online learning as: collaboration, connectivity, student-centeredness, unboundedness, community, exploration, shared knowledge, multi-sensory experience and authenticity. These online learning themes are integrated with the characteristics identified by Harasim *et al.* (1998:27-30) and are contrasted to traditional classrooms in Table 1.

Theme / Characteristic	Online	Traditional
Collaboration	Promoted by easy online interaction, teamwork and networking are valued	Classroom is a self-contained unit, basis of individualism and competition.
Connectivity and unboundedness / Expanded education access	Fast and unobtrusive contact through email and conferencing – interaction with peers and experts Not place and time dependent.	Larger explicit and implicit barriers between peers and experts. Bounded geographically into "one size fits all" programme.
Student-centeredness	Students largely determine direction through participation. Instructors define goals, then largely facilitate or manage.	More structure provided by instructor, less responsibility for learners.
Community	Virtual communities possible	Community defined by physical location
Exploration	Informal: games Formal: problem based learning Facilitated by access to resources and expertise	Harder to facilitate in the closed environment
Shared knowledge	Via the web – huge resource	Via books, journals – smaller resource: limited by what is at hand locally.
Multi-sensory experience	Interactive media-rich offerings	More static media available
Authenticity	Learning activities can be realistic	Accusation of lack of realism

Table 1: Online learning: Characteristics and Themes.

Simpson (2003) contends that e-Learning that is heavily text based results in poor knowledge retention. She advocates the use of a combination of textual components with pictures, audio and video and interactivity in order to move learners up the Online Learning Contin-

uum as depicted by Van Dam (2003, in Simpson 2003) in Figure 2. Simpson (2003) further states that blending self-paced learning with web-based, instructor-led events promotes interactivity and therefore knowledge retention.

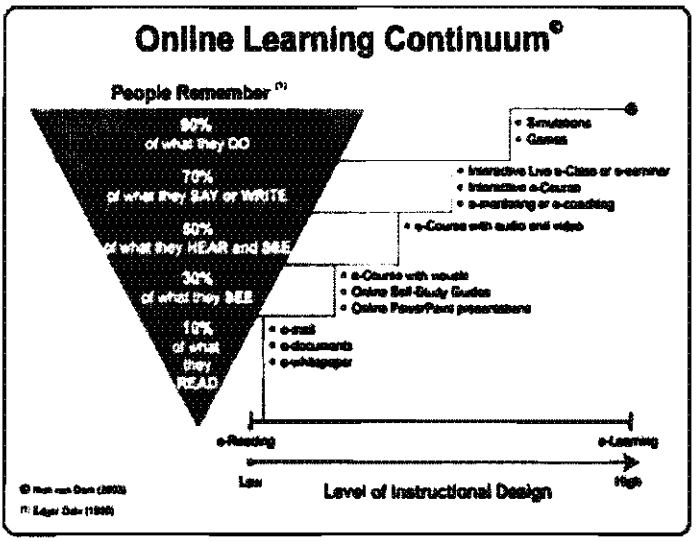

Figure 2: The Online Learning Continuum, Van Dam (2003, in Simpson 2003).

The case for introducing an online component as a teaching and learning mode within the IS Department, despite the University's purely on-campus status, is made both in terms of pedagogical soundness and technological expertise and relevance within the discipline. Given that the current status of the overall environment is unlikely to change, the question is *how* to select and design a hybrid or blend of electronic and traditional methods for module implementation. The feeling of isolation reported by Czerniewicz (2001:17-18), together with a lack of sense of audience, and the challenges of creating an online persona will not play a role in such a blended environment.

Mantyla (2001:3) states that engaging in blended learning means taking two or more presentation and distribution methods, and combining them to enhance both the content and the learning experience. This involves using different types of technologies and software applications, and the resulting blend is a carefully selected and designed mix of electronic and traditional methods. Brodsky (2003) describes proactive blended learning as a well-thought out combination of e-Learning and other training methods, and points out that while the notion of blended learning is not new, its value in the current climate is significant. This view is endorsed by Gery (in Brodsky 2003), who emphasizes that the future trend is to use the concept of blended learning more effectively. Finally, Flanagan (in Brodsky 2003) cautions that reactive blending may be used as a crutch for a poorly designed e-Learning solution, without due regard for consideration of the strengths and weaknesses of technology-mediated learning.

The discipline of Information Systems is described in the IS Department Handbook (2004: 2) as 'the effective analysis, design, construction, delivery, management and use of information and information technology in organisations and society'. Within this framework, e-Learning can be viewed simply as a particular application area for an information system, and may be encompassed by an academic IS Department in the same way that e-Business or e-Commerce have recently been included in many IS curricula. Indeed, the underlying technologies for e-Learning and e-Commerce are not dissimilar.

4. Research Design

Throughout the period of this study, the curriculum development of the e-Learning module within the IS Department was guided by the research literature available in the evolving field of e-Learning tools, technologies and methodologies, and their relevance and application to the teaching and learning environment. In addition to this, each of the subsequent iterations was informed by learner evaluations, facilitator reflection and interviews with the participant observer, all pertaining to the previous iteration.

Baskerville (1999:10) categorised the characteristics of IS Action Research by the process model, the structure, the typical involvement and the primary goals. In this study, a reflective process model was used which was iterative in nature. The structure of the research was fluid, in that activities were defined loosely and in collaboration with the learner group, as well as the same participant observer who was constant throughout the four years of study. Although the author as researcher was involved in determining the interventions, a facilitative rather than expert involvement was aimed for as defined by Baskerville and Wood-Harper (1998: 94-95). The primary goal was the continuous improvement of the e-Learning module curriculum, as well as the goal of individual learning for all participants including the learners, the observers and the facilitator. The outcome of the research cannot necessarily be generalized.

5. The e-Learning Module Curriculum

5.1 Assumptions of Prior Knowledge

The curriculum should be viewed in the context of the assumptions concerning the learners' prior knowledge. The IS students have all had a thorough undergraduate grounding in Information Technology (IT) Project Management, Corporate Communications, and the Systems Development Life Cycle incorporating Planning, Analysis, Design, Implementation, and Support. A systems development project undertaken within their practical groups has afforded the learners some real project development experience. The timing of the e-Learning module at honours level is also such that the post-graduate learners have already been exposed to specialist honours modules in Requirements Elicitation (RE), Human Computer Interaction (HCI), and more recently, Knowledge Management (KM) (Information Systems Department, 2004). From the 2003 iteration of the module, basic HTML (Hyper Text Markup Language) or knowledge of another web development tool such as Microsoft's FrontPage was also assumed, as these had been introduced in an undergraduate e-Business module. In short,

these students are ideally prepared to enter, and make a significant contribution to the area of e-Learning.

5.2 The Evolving Curriculum

Due to the blended nature of the module delivery mode, a highly detailed schedule is drawn up well ahead of time for each year of implementation. A sample schedule from 2003 (Mallinson, 2003) provides an illustration of the planning involved and is illustrated in Appendix A. This schedule depicts the mode of each learning intervention, the topic, the presenter or facilitator, a description of each activity (individual or group), the assigned follow up task, and finally the suggested reading or practical work as appropriate. A pack of selected readings is given to the learners at the start of the module. Participants include post-graduate students of the IS and CS departments of RU and the University of Fort Hare (UFH), and guests drawn from the wider academic staff at Rhodes.

5.2.1 First Iteration, 2001

The module was initiated as a short (half module) offering within the Honours course in 2001 (Information Systems Department, 2001), and made available to both IS and CS students. At this stage the module was entitled 'Online Education Systems' (OLES), and included the following topics: Introduction to Online Instructional Technology and Networked Learning, Implementation Platforms, Cost Effectiveness, the Changed Role of the Instructor and Learner, Online Assessment and Evaluation, Technical Considerations, the Design of Instructional Systems, Multimedia and Interactivity, Challenges to the Adoption of Online Learning, and Future Trends.

Software used included WebCT as the base Virtual Learning Environment (VLE), while other VLEs analysed and evaluated during the course included Virtual-U and Blackboard. e-Learning portals of the time that were investigated included eDegree and Educor, both South African based online learning providers.

The initial OLES module had six face-to-face contact sessions scheduled, with the remaining interactions taking place asynchronously online. Learner activities included seminars and discussion, research and presentation via individual and group work, a group Learning Management Systems (LMS) report, and individual essay. The components and features used in WebCT included the email, discussion forums, chat, content and resource management, and course administration. Attempted use of the assignment upload feature was unsuccessful. The module evaluation was implemented as a Small Group Interaction Diagnosis (SGID) via a synchronous chat function, and was conducted by a participant observer (not a student).

5.2.2 Second Iteration, 2002

The second iteration of the module in 2002 saw the inclusion of a further topic of relevance, namely Learning Objects (Information Systems Department, 2002). The functionality, components & features of Integrated Distributed Learning Environments (IDLEs) were discussed in detail. The module was implemented using PowerTutor, a locally developed commercial learning management system (LMS), which was kindly made available to the Department on a trial basis by e-technik, Port Elizabeth. The learners were also introduced to a Computer Assisted Assessment (CAA) tool, Perception, although they were not required to undertake formal practical work using the software. The number of face-to-face contacts remained constant at six, although the module's overall duration (elapsed time) was extended by 50% despite retaining its half-module status. This was due to feedback obtained from the learners in the initial iteration where concern was expressed about the blended nature of the learner interactions taking longer to implement satisfactorily than traditional module delivery.

5.2.3 Third Iteration, 2003

In 2003, the third iteration of the newly extended (full) and renamed e-Learning module took place within the relatively constrained time frame of four weeks (Information Systems Department, 2003). This was due to scheduling constraints within the overall Honours / Fourth

year programme. This year also saw the first learner from the UFH CS Honours class participating in the module. A decision was made to physically locate this learner together with the IS Honours group in the Hamilton Building during the period of the module implementation in order to avoid any feeling of isolation or segregation being developed by the learner.

The module topics remained largely the same as before with the inclusion of new issues concerning a valid theoretical foundation for e-Learning, Blended e-Learning, Streaming Media via the WWW, and the Educational applications of Mobile or Wireless computing. All topics covered in 2003 are depicted within the schedule presented in Appendix A. The module was implemented using KEWL (Knowledge Environment for Web-Based Learning), a locally developed open source VLE, which was piloted at Rhodes by the Educational Technology Coordinator of the Academic Development Centre (ADC) in 2003.

Participation in an Online Desktop Lecture Series run by HorizonLive.com was included in the module activities. These 'webinars' stream live e-Learning lectures of interest by experts in the field, free of charge to remote participants using video, audio, slide presentations, application sharing and interactive audio and chat facilities.

The most significant extension within the 2003 curriculum involved a new emphasis on the practical component of the module. Learners were required to undertake group software mini-projects with the aim of producing an e-Learning web presence on a relevant theme. The themes chosen were Online Simulations and Intelligent Tutoring Systems; a screen shot of the resulting web site for the Intelligent Tutoring Systems group mini-project is illustrated in Figure 3.

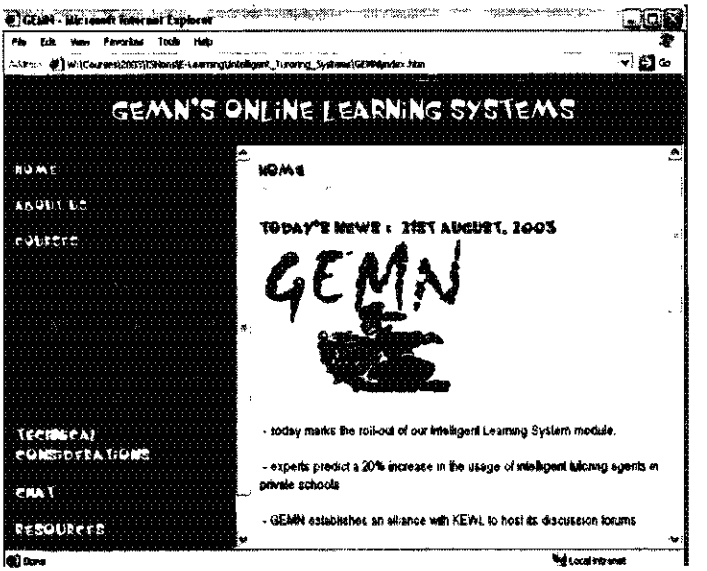

Figure 3: The Intelligent Tutoring Systems Mini-Project Web Site.

In order to facilitate the mini-projects, a variety of software was included in the 2003 module curriculum, including: Perception (CAA tool from QuestionMark), Authorware (a media rich authoring tool from Macromedia), Viewlet Builder (an animated screen capture tool from Qarbon) and Windows Media for streaming via the web. Basic HTML or other web development tools such as Microsoft's FrontPage were not included in the curriculum, although they were available to the learners, and knowledge of such a tool was required for mounting the mini-project.

As the mini-project was a new innovation, the project requirements specifications as well as the assessment criteria were negotiated with the learners with due regard to the restricted timeframe of the activity and the module in general. The project assessment took the place of

50% of the examination mark, thus reducing the summative assessment considerably.

5.2.4 Fourth Iteration, 2004

The fourth iteration of the e-Learning module took place in August 2004 (Information Systems Department, 2004). New additions to topics include blogs (web logs) within the e-Learning context; e-Learning standards; open content and its relationship to open source, intellectual property and copyright; the relationship between Knowledge Management and Enterprise e-Learning; and to include more explicitly, the principles of Instructional Design. The full module was again delivered within a constrained time frame of four weeks.

Feedback from the 2003 learners concerning the practical mini-project informed the 2004 projects in that the project themes drew from the theoretical topics already covered in the module, so as to allow the learners to build on existing knowledge and concentrate on the practical aspect of the project, rather than the content. Selected high quality projects may be used as learning objects for future iterations of the module.

With the increased number of UFH learners participating in 2004, the face-to-face synchronous contact sessions were video-conferenced between the two campuses, rather than brining the learners to Grahamstown for the duration of the module. The online portion of the module was not affected, other than to be enhanced by the presence of genuine distance learners. The direction of the video-conference stream varied with the facilitator moving between Grahamstown and Alice, a distance of approximately 100 km. The Grahamstown learners obtained the experience of being at the remote end of the video-conference for the first time, and *vice versa*, which informed both groups' perceptions of video-conferencing as a suitable tool for education. This involved four visits to the remote campus by the facilitator, and was easily implemented. During these visits, the module facilitator took the opportunity to spend some time assisting the UFH learners with practical work pertaining to the module, and generally providing

guidance and support to the remote learners. On one occasion, the module facilitator was accompanied by a teaching assistant and on another occasion by two RU learners, which promoted increased interaction between the geographically dispersed module participants.

5.2.5 Overall Curriculum View

In the American Society for Training and Development's (ASTD) Learning Circuit Glossary (2001), e-Learning is defined as 'covering a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, CD-ROM, and more'. Allen (2003:27) uses the all-inclusive definition of 'a structured, purposeful use of electronic systems or computers in support of the learning process'.

The IS Department's e-Learning module may now be considered to very nearly encompass a full spectrum of e-Learning tools and technologies as described in the previous sections and shown in Appendix A. It should be noted that in this module, the context is important. The fact that the learners are IS or CS graduates rather than Education students, informs the curriculum and focus of the module. The important contributions that education issues make in the e-Learning discipline are not ignored; they are simply not the focus of the module within the presented context. Table 2 illustrates the evolution of the e-Learning module curriculum.

Year	2001	2002	2003	2004
Extent	Half Module	Half Module	Full Module	Full Module
Time Period	2 weeks	3 weeks	4 weeks	4 weeks
Activities	Lectures: 3 Learner research & presentation: 2 Online discussion; Reading;	Lectures: 3 Learner research & presentation: 2 Online discussion; Reading;	Lectures: 4 Learner research & presentation: 1 Online discussion; Reading; Practicals: 4 Project: 1 mini-project	Lectures: 4 Learner research & presentation: 1 Online discussion; Reading; Practicals: 4 Project: 1 mini-project
Assessment: Formative	* Individual researched presentation; * Group Report & presentation; * Individual Essay; * Individual Online Contribu-	* Group researched presentation; * Group Report & presentation; * Individual Essay; * Individual Online Contribu-	* Group researched presentation; * Individual Essay; * Individual Online Contribution to Discussion Forums; * Group Prac-	* Group researched presentation; * Individual Essay; * Individual Online Contribution to Discussion Forums; * Group Prac-

	Contribution to Discussion Forums;	Contribution to Discussion Forums;	* Group Practical Project * Individual Proj. Reflect.	* Group Practical Project * Individual Proj. Reflect.
Summative	* Written Examination.	* Written Examination.	* Written Examination.	* Written Examination
Presentation style / mode	Blended: 6 contact sessions; the remaining interactions online.	Blended: 7 contact sessions; the remaining interactions online.	Blended: 10 contact sessions; the remaining interactions online.	Blended: 10 contact sessions; the remaining interactions online.
Software Tools	WebCT; HTML	PowerTutor; HTML; Perception.	KEWL; HTML; Authorware; Perception; Viewlet Builder; Windows Media; HorizonLive.	Moodle; HTML; Authorware; Perception; Viewlet Builder; Windows Media; HorizonLive.

Table 2: The Evolution of the E-Learning module curriculum

6. Analysis

6.1 Learner Evaluation

Learner evaluations of the module highlighted the following issues:

- Time period over which the module was delivered. The learners reported problems in terms of accomplishing the required activities and tasks within the prescribed time frame. They believed that this was due to the blended mode of the module. For example, discussion threads within an online forum take some time to develop and involve reading and reflection by the learner prior to making their own contribution.
- Information Systems Context. The learners believed that the module was relevant to the discipline of IS. In fact, they felt that as IS students they should have been exposed earlier to the new mode of online teaching and learning.
- Areas of specific enjoyment of the course include the online interaction, and the blend of mode and media which affords the learners added flexibility of their engagement with the module.
- Drawing on their prior knowledge of HCI and systems design, learners were critical of the VLEs used for the module. This occurred in each year, even though a different software solution was used for each of the four module iterations.
- In the 2003 evaluation, dissatisfaction was expressed in terms of the time pressure for the extended practical work, even though the learners expressed enjoyment when undertaking the mini-projects. The learners did not whole-heartedly engage with the negotiated specifications and assessment exercise for the project. The time constraints within which they were working meant that they did not have time to undertake this exercise in as considered and reflective manner as was desired. The learners also suggested that an integrated approach to the theory and practical components would be more conducive to efficient time management and retained learning.

6.2 Facilitator Reflections

- The facilitator's journal and observations over this period have highlighted the following:
- Technical matters. A problem concerning power cuts which coincided with the start of the first iteration of the module in 2001. The Information Systems Department were not yet situated in the Hamilton Building for this iteration, and were subject to the general problems relating to external lecture venues that were not necessarily within the Department's control. At that stage, the Honours' laboratory was also physically external to the IS Department. The move to the Hamilton building in 2002 proved to be of immense value to the network stability and security of the technology supporting the module.
- Assumptions of prior knowledge. The e-Learning module is also open to CS graduates who have not necessarily co-majored in IS. Although these students were found to be lacking in some of the areas mentioned in Section 4.1, they were not excluded from any aspect of the module. However, no special accommodation was made for these learners, and they were expected to acquire skills as and when needed within the e-Learning module. The intrinsic collaborative and supportive environment within the e-Learning module is of assistance to these learners.
- The learners were intrigued by the online interaction, and the notion of synchronous *versus* asynchronous communication is hotly debated each year. The variety of media continues to be extended in order to explore the full range of potential technologies available within the e-Learning spectrum.
- The issue of the extended time period over which the module should be held is highly important. While this concern was acted upon when planning the 2002 iteration of the module, a shift which was appreciated by the learners, the module reverted to a regular time 4-week frame in 2003 and 2004 which is far from ideal. Renewed effort was made by the facilitator to insist that the module is sched-

uled over a longer period of time in order to do justice to the e-Learning module, resulting in a scheduled 5-week period for the 2005 module. Harasim *et al.* (1998:223) report that the amount of time spent in online classes exceed equivalent face-to-face classes. They attribute this partially to the fact that the depth as well as scope of online discussion far exceeds what is possible in face-to-face classroom situations.

- The initial theoretical topics were sound, and a good start was made in terms of initiating learners' awareness of the issues concerning OLES. Additions to the evolving e-Learning module curriculum have reflected trends in the discipline.
- The introduction of extended practical work in 2003 required careful revision. In 2004, a framework for the mini-project specification was provided to the learners early on in the module, for revision if they so wished. Clear boundaries on the nature and extent of the practical work should be set by the learners in collaboration with the facilitator, in order to contain the volume of the project work.
- The VLE used for the 2004 iteration is Moodle, an open source learning environment. Potential exists for the customisation of the software by the learners and post-graduate researchers, with funds for a development server having been secured for 2005. The existing stable version housed within the IT Division at Rhodes will host the module. This software was piloted by the facilitator in an undergraduate IT Project Management module early in 2004 (Mallinson, 2004b), and many of the prospective participants in the e-Learning module have now used Moodle as learners or tutors within the INF301 course.
- Learner interactions have been good in terms of asynchronous discussion, with almost all of the learners contributing satisfactorily, and indeed exceeding the requested output in terms of quality and quantity. The high level of peer activity and the de-centralizing of the facilitator's role for the discussion forums were similar to that described by Harasim *et al.* (1998: 74). This interaction was ob-

served to have been carried over to the Honours laboratory. Learners assisted each other with mini-project and other work, and the environment was generally reported to supportive, irrespective of the facilitator's presence, on- or off-line.

- The module has been enhanced each year by the presence of guests who are Rhodes academic staff members from outside the Department, and who have requested to attend the entire module as participant observers. These observers have added value to the module, and acted as role models in terms of academic staff keen to implement e-Learning within their own disciplines.
- The e-Learning research group, established in 2002, and coordinated by the e-Learning module facilitator, has supported the module via invited guest presentations where appropriate. These postgraduate researchers have motivated the learners and acted as role models for further research and interest in the discipline of e-Learning.

7. Concluding Remarks

The e-Learning module has been an exciting venture for the facilitator concerned. The prior knowledge of the learners has played an important role in the feasibility of mounting such a densely packed learning experience within a restricted time frame as part of the IS Honours / Fourth year programme. The skills, knowledge and expertise of an IS graduate leads one to suggest that they uniquely poised to provide the link or interface between the Educational Specialist and the Computer Programmer in an e-Learning development team.

e-Learning technologies have been established within the IS Department as an application area worthy of enquiry and examination. Ideally, the module should take place over an extended period of time in order to accommodate the blended nature of the module implementation.

The introduction of new technologies and their relevance with the pedagogical framework of the module has added to the enjoyment of

the module for both facilitator and learners alike. Technical support has been vital to the success of the module implementation; and the high level of expertise and support available within the Hamilton Building has been much appreciated.

Further iterations of the e-Learning module will continue to be informed by the technological and pedagogical trends in this rapidly evolving discipline, while a concerned eye will be focussed on the developing theoretical foundations underpinning e-Learning methodologies and practise.

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