Implementing the Instructional Management System 'TopClass'

An Evaluation of Four Pilot Studies

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1 EXECUTIVE SUMMARY

1.1 Overview

During 1999, a Steering Committee was established at Deakin University to investigate the possibility of acquiring a computer-based Instructional Management System (IMS) to facilitate the move towards online teaching and learning. After a selection process, the University acquired TopClass for a three-year period.

As an Instructional Management System (IMS), TopClass provides a range of functions to support the implementation and management of resources within a learning environment, focusing specifically on the integration of internet-based materials. In brief these functions include:

- Creating or authoring of course materials;
- Structuring the delivery of learning resources;
- Implementing internet-based communications between teachers and learners;
- Implementing assessment items; and
- Using management facilities to oversee student progress

To develop a better understanding of the integration of such a system with both the University's teaching and learning activities and its corporate applications, Learning Environments were commissioned to conduct an evaluation of the TopClass pilots, which were initiated to identify roll-out issues prior to the commencement of full-scale mainstreaming of TopClass. The accompanying report details the outcomes of this evaluation, which focused on the feedback obtained from pilot installations of Top Class within four units across different faculties of the university. The evaluation study was conducted during December 2000.

The study focused on a set of objectives to ensure as many of the administrative and educational implications of TopClass were addressed. In addition responses from both academic staff and students highlighted additional issues associated with the implementation of Instructional Management Systems. The outcomes of the evaluation are reported in terms of the following three objectives and implementation issues:

- TopClass Functionality
- Technical Considerations
- Institutional Considerations
- Implementation Issues

This summary details the major findings from the evaluation in terms of these objectives and identifies a set of recommendations for consideration. A comprehensive analysis of the four pilot studies is included in the body of the report.

1.2 TopClass Functionality

1.2.1 Development of Course Materials (A1)

Once understood, the creation of content resources for use within TopClass was completed effectively. Even so, the evaluation indicated that staff continue to require assistance in the overall process of integrating content material within an IM system. In addition, issues with quality control and copyright were also identified with producing course materials.

The pilot highlighted the issue of roles in respect to course development. In particular, the question of what constitutes academic work was raised. While TopClass enables academic staff to become more self sufficient in creating and producing core learning material, the extent to which the University wants this to occur is an unresolved issue.

RECOMMENDATION A1.1

That resources be allocated to ongoing training in the processes associated with the effective integration of course materials into TopClass.

RECOMMENDATION A1.2

That resources be allocated to ensure course materials can be effectively transferred from existing media to TopClass without affecting their future transportability to other corporate applications.

1.2.2 Delivery of Course Materials (A2)

While the delivery of content to learners through TopClass was consistent with its specifications, additional issues arose relating to:

- equity issues between on- and off-campus students;
- appropriateness with respect to alternate learning styles; and
- development of materials to take advantage of the online educational paradigm;

RECOMMENDATION A2.1

That a set of guidelines be produced to provide academic staff and students with information to assist off-campus access to online resources and strategies for students to work with those resources.

RECOMMENDATION A2.3

That a set of guidelines be produced to provide academic staff with strategies for repurposing content for online delivery.

1.2.3 Communication and Collaboration (A3)

The units assessed through the evaluation study provided little information on communication and collaboration due to a range of factors including access difficulties and course delivery methods. However, the evaluation suggested that well managed and integrated learning and collaborative activities are likely to result in positive learning experiences.

RECOMMENDATION A3.1

That ongoing research be undertaken in the benefits of communication and collaboration activities (teacher:teacher, teacher:learner and learner:learner) within the online learning paradigm.

1.2.4 Assessment of Learning (A4)

The study demonstrated that while TopClass provides options for online assessment, the process and time required to implement assessment items in association with understanding the strategies used by TopClass to deliver those items affected their overall success. It was apparent that the application of paper-based assessment to the online environment also caused difficulties with delivery and collation of the test items. These and other issues relating to online assessment and evaluation are discussed in detail in a paper prepared in September 2000 for the IMS Steering Committee.[1]

RECOMMENDATION A4.1

That guidelines be developed and, where requested, training programs be provided to assist academics develop an understanding of effective online assessment strategies.

RECOMMENDATION A4.2

That training programs be provided that focus specifically on applying the assessment functions of TopClass to course delivery.

1.2.5 Class Management (A5)

While TopClass provides a range of management options to provide access to course materials and information on student performance, the presentation of that information may not be consistent with the demands of academic programs. Course management should offer enough flexibility to enable staff to use their desired pedagogical approaches. There was an expectation that TopClass would have superior student tracking/monitoring facilities to FirstClass, and without these benefits, there may be no incentive for staff to switch systems. As the Business and Law pilot indicated, where the system is not flexible from the user's perception, it won't be used extensively.

RECOMMENDATION A5.1

That the management capabilities of TopClass be clearly articulated to staff to ensure their expectations are not inconsistent with the product's functionality.

1.2.6 Design and Interface Factors (A6)

The TopClass interface in itself did not restrict access to content materials and options. However, as would be expected with any new application, there was a wide range of individual responses to the product design in terms of non-intuitive icons and possible improvements. In addition, for marketing and branding purposes, Faculties, Schools and even program areas identified the option to customise the learning environments as a potential advantage.

RECOMMENDATION A6.1

That a log of interface design issues be maintained and forwarded to WBT Systems on a regular basis.

RECOMMENDATION A6.2

That in any future contract an option is included which allows Faculties and Schools to customise the interface for different student cohorts, consistent with Deakin University standards.

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[1] Holt, D.M. (2000). *Online student assessment and evaluation supported by Learning Management System TopClass: Institutional potentials and issues*. Discussion Paper prepared for IMS Steering Committee. Learning Services, Deakin University.

1.3 Technical Considerations

1.3.1 Integration with Corporate Applications (B1)

TopClass is one of a new generation of software applications designed to support the migration of educational administration and course delivery to an online and web-based infrastructure. These applications provide the facility to both import data from and export data to other proprietary software applications; however, the ease by which this is achieved is largely dependant on the maturity of the applications in question. Based on the outcomes of this evaluation, TopClass has the capability to integrate with the corporate applications currently installed at Deakin University. Nevertheless, to achieve this integration required a development effort to ensure communication between the applications was achieved and maintained. Prior to running the pilot studies, TopClass was installed and tested for integration with corporate applications.

To achieve integration, more software development was required than expected. While communication between Callista and TopClass is now automated and works well, more reliable solutions to integration are required for the long term, as direct connectivity and communication is required. TopClass successfully downloaded enrolments from Callista, but was not able to remove automatically students who had withdrawn. However, it is expected that the next version of TopClass will enable this. Integration with Concept was difficult because the University does not maintain a database that links staff to teaching areas. To ensure that testing of new versions of the system does not disrupt users during the semester, three separate environments are needed each with a TopClass server and a database server. A production area is required for the end users, a training and development area is required for those purposes, and a pilot testing area is required. It is unacceptable for testing to be carried out on servers that are in use for other purposes.

RECOMMENDATION B1.1

ITS should ensure sustainable solutions are adopted to integrate TopClass V5 with Callista, Concept, the UMS, and other existing educational technologies.

RECOMMENDATION B1.2

That future proposals for upgrading and/or installing new applications include a development and support component for software communications.

RECOMMENDATION B1.3

That hardware support for TopClass include three servers: one for production, one for training and development and one for compatibility testing.

1.3.2 Integration with Educational Applications (B2)

While the majority of software applications have the ability to communicate through the importing and exporting of data, there is little guarantee that competitive products will provide "seamless integration". Indeed, the very design characteristics of different products may limit the ability to communicate and integrate. Based on the outcomes of this pilot study, it would appear that more detailed specifications of both products require scrutiny to determine the extent to which "seamless integration" can be achieved. Only a 'semi-integration' was achieved with FirstClass whereby users have the ability to move directly from TopClass to FirstClass, but cannot go the other way without having to login again. There were also difficulties integrating other existing technologies (e.g. V-Lab) that were developed to solve particular program needs and make students' learning experiences more interesting. Integration of such value-added resources continues to be an issue.

RECOMMENDATION B2.1

Future IMS solutions should include demonstrable functionality with a range of existing educational software applications.

RECOMMENDATION B2.2

That ongoing research be conducted into "best practice" for the delivery and maintenance of online educational resources within the university environment.

1.3.3 Authentication and Access (B3)

Access to TopClass was an issue highlighted by three of the pilots. Password problems caused difficulties for staff and students and some did not persevere with the task. While this was not a TopClass issue (but rather an issue relating to refreshing/renewing passwords on a regular basis to maintain access to University services) it highlights the infrastructure issues that can affect the operation of IM systems such as TopClass.

RECOMMENDATION B3.1

That more explicit assessment of communications between TopClass and corporate applications be undertaken to minimize complications such as user-access.

RECOMMENDATION B3.2

That comprehensive testing be undertaken to ensure all content provided through the IMS can be accessed by web-browsers used within the university.

1.4 Institutional Considerations

1.4.1 Value-Added Teaching and Learning (C1)

There was some concern about whether TopClass can satisfy all of the various educational approaches used across Faculties. The pilot has highlighted the need for a system that efficiently facilitates small group work within a class, especially in view of the directions articulated in the University's Teaching and Learning Management Plan. Some staff believed that TopClass is more suited to low-level competency training and is less appropriate for professionals. Products such as TopClass will not, in themselves, improve teaching and learning. Rather, the content supported by such applications must be integrated in such a way that it is consistent with the teaching and learning paradigm adopted by the Faculty. In addition, the pilot study reinforced the role individual differences and learning styles of students play in the educational process and the ongoing need to provide a variety of learning resources.

RECOMMENDATION C1.1

That ongoing research be supported in the area of effective online teaching and learning strategies to ensure the range of educational paradigms and individual learning needs are catered for as effectively as possible.

RECOMMENDATION C1.2

That the University establish a long-term planning and review process to consider its ongoing IMS needs.

1.4.2 Professional Development (C2)

Staff development requirements mean that most academics continually confront competing claims on their time for core academic activities and responsibilities. Extensive staff development is required for both staff and students in respect to TopClass and FirstClass. The focus of the training should be the development and conduct of appropriate online learning environments and the acquisition of the technical expertise required to operate in those environments.

Based on the outcomes of the evaluation study, it was apparent that academic staff require a range of professional development activities to ensure they are familiar with the basic elements of online teaching and learning:

- The features of the software application (in this instance TopClass) and the methods employed to implement teaching strategies
- The underlying philosophy of the application in terms of pedagogy
- The operation of the software, especially in relation to developing course content, using assessment features and accessing student information.

RECOMMENDATION C2.1

That systematic staff development activities be continued. In particular, Faculties, Schools, and Learning Environments should provide opportunities for 'just-in-time', 'on-the-job' learning.

RECOMMENDATION C2.2

That to overcome the problem of competing priorities for academic staff, Faculties and Schools should make funds available for time release of staff to ensure that online developments are properly conceived and brought to fruition.

RECOMMENDATION C2.3

That a range of models for online courseware development be developed and costed both in terms of time and resources, and that this be the responsibility of Learning Environments in conjunction with Faculties.

RECOMMENDATION C2.4

That Learning Environments continue to provide expert advice and support in relation to the effective design, development, implementation and evaluation of on-line teaching and learning resources.

1.4.3 User support (C3)

Based on the evaluation, user support for staff and especially students will be a critical issue, particularly in the early phases of implementation. When Faculties begin to use IM systems more widely, the demand for expertise and support may be overwhelming.

RECOMMENDATION C3.1

That the University develops a comprehensive strategy for providing appropriate levels of user support for all users of TopClass and FirstClass.

2 PROJECT BACKGROUND

2.1 The Selection of TopClass

During 1999, a Steering Committee was established at Deakin University to investigate the possibility of acquiring an Instructional Management System (IMS) to facilitate the move towards online teaching and learning. Two sub-committees were formed to further the deliberations, one to examine the educational needs and the other to consider technical issues. These committees developed a set of educational and technical criteria against which potential systems could be judged. The University then called for tenders based on the criteria. Tender documents were received from six companies, and members from both sub-committees considered these in a joint meeting.

Three of these companies, South Rock, IBM, and WBT Systems were invited to give presentations to committee members who rated each one against the criteria. It was agreed that none of the systems could meet all criteria, but that, in principle, WBT Systems' TopClass was the best of the three. With a number of caveats, and issues raised requiring further consideration and investigation, this recommendation was put to the Steering Committee.

Following this process, the University executive decided to acquire TopClass and entered into a three-year contract with WBT Systems. It was anticipated that the system would:

1. improve the efficiency, effectiveness, attractiveness, and accessibility of mainstream online teaching and learning;
2. extend the University's learner market place;
3. support the range of teaching and delivery methods employed to meet the diverse student body and curricula.

WBT Systems promoted the TopClass system as flexible and scalable (catering for increasing numbers of students) as well as enabling the easy use and exchange of learning resources. TopClass was also designed to provide a standard suite of tools to support the creation and management of the teaching environment and to interface efficiently with existing corporate administrative systems.[2]

Before implementing TopClass, some key institutional objectives had to be achieved. A number of technical tasks were undertaken, a project management framework was established, a staff development program was planned and conducted, and documentation was acquired or developed to facilitate future content creation and migration.

2.2 Implementing TopClass

2.2.1 Project Management

A Steering Committee and an Implementation Committee were established to oversee the TopClass implementation. The Steering Committee had ultimate responsibility for the implementation, while the Implementation Committee dealt with operational aspects and other issues that arose. A specialist IT project manager was assigned to the project.

TopClass had to be integrated with three University systems, Callista (the student database) Concept (the staff database), and the University's User Management System (UMS). Callista is an extremely customisable student database so the task of connecting it directly to TopClass was expected to be reasonably straightforward and involved the setting up of infrastructure and identification of required data. Testing of the technical infrastructure was also required.

2.2.2 Staff Development

A Deakin staff member was selected in late 1999 to receive specialist training in all aspects of TopClass at WBT Sytems Boston site, and subsequently was appointed as the University's TopClass Instructional Design, Training and Support Coordinator (TopClass IDTSC). In the lead up to the pilot

[2] Dickinson, D. (2000). *Deakin University TopClass Implementation Project: Project goals and requirements document*. March 2000, p.4.

studies, he provided extensive presentations and training to a wide number of staff across the University, including Deakin Australia. In addition, the ITS systems coordinator visited WBT Systems Boston site to receive training in respect to technical integration issues and system requirements.

At the stage of conducting the pilot studies, an instructor from WBT Systems visited Deakin and conducted a further series of two-day training workshops for all staff involved in the pilots (academic staff, instructional designers, education designers, and web developers). These workshops introduced the basic functions of TopClass and engaged staff in the practical use of the system and its main utilities, Publisher, Player, Word Assistant, and PowerPoint Assistant.

To encourage ongoing discussion about issues relating to TopClass and online learning in general, an online forum was established on the TopClass development and training server. This forum was open to any staff members in the University who were interested in participating. In addition, staff were able to email or phone the TopClass Instructional Design, Training and Support Coordinator for timely assistance and support.

To support the staff training workshops, comprehensive online training materials were provided by WBT Systems along with a print manual to enable staff to practise using the system. TopClass user manuals were also accessible in pdf format on the University's *Introduction to TopClass* website. Additional documentation developed before and during the pilot in response to FAQs was also posted there.

2.3 The Evaluation Project

2.3.1 Strategy

The evaluation project was commissioned to assess the impact of the implementation of an Instructional Management System. To focus on the essential aspects of TopClass from an institutional and educational perspective, the following objectives were defined:

Evaluation Objectives	
A. TopClass Functionality	
A.1 Course Development	Facilities for the production of unit and course materials
A.2 Course Delivery	Facilities for delivering educational content in an online environment
A.3 Communication and Collaboration	Options for teacher:teacher, teacher:learner and learner:learner interactivity and communication
A.4 Assessment of Learning	Options for employing assessment strategies in an online environment
A.5 Course Management	Facilities for accessing student progress information
A.6 Design and Interface	The extent to which the interface influenced the effective deployment of and access to learning resources
B. Technical Considerations	
B.1 Corporate Applications	The extent to which TopClass could communicate with existing corporate applications
B.2 Educational Applications	The extent to which TopClass could communicate with existing educational software
B.3 Authentication and Access	The extent to which TopClass could be accessed using current authentication (password) options
C. Institutional Considerations	
C.1 Value-Added Teaching and Learning	The extent to which online delivery provided value to the teaching and learning process
C.2 Professional Development	The level of initial and ongoing professional development for academic and support staff to maintain system functionality and educational effectiveness
C.3 User Support	The level of initial and support for students and academic staff to maintain system functionality and educational effectiveness

To achieve these objectives three pilot programs were initially identified:

- MEE781: Economics for Managers, Faculty of Business and Law;
  HMS201: Exercise Physiology, Faculty of Health and Behavioural Sciences unit;
  PDM406: Corporate Finance, Deakin Australia APESMA[3] program

As objectives were subsequently modified, it became clear that not all functions of TopClass were being adequately trialed. To ensure this, and to include a cohort of undergraduate on-campus students, a fourth pilot was undertaken just two weeks before TopClass was made available to students:

- SBB315: Comparative Animal Physiology, Faculty of Science and Technology

2.3.2 Data Collection

The following methods were used to gather data for the evaluation.

- Taped interviews were conducted with all staff involved in the pilots. This included the TopClass Instructional Design, Training and Support Co-ordinator, academic staff, instructional designers, web developers, ITS systems developers, and the project manager.
- Students enrolled in three of the units were surveyed about their experiences with, and perceptions of, TopClass. For the fourth unit, Exercise Physiology, which did not have students enrolled, a small group of postgraduate students trialed TopClass and completed an appropriate survey based on their perceptions of it.
- The TopClass learning environments for each unit were examined.
- Documentation relating to the implementation was analysed.

It was intended that student questionnaires would be delivered via TopClass. This did not occur for two reasons. First, there was no one with both the time and expertise available to upload the questionnaires into TopClass and arrange for data collation. Second, very few students were accessing TopClass in October. Given these constraints, print-based questionnaires were handed to on-campus students in class and mailed to Deakin Australia students to ensure a better return rate. Business and Law students accessed the questionnaire online via FirstClass and posted their completed surveys to a conference there. Postgraduate students from the School of Health Sciences accessed the questionnaire online via their website.

2.4 Evaluation Outcomes

In general, the pilot implementation of TopClass served its purpose by identifying a number of technical and educational issues to be addressed. For each of the four units piloted, some initial objectives had to be modified as contingencies arose. Animal Physiology was the most successful pilot due largely to the fact that students had easy access to the Unit Chair who in turn had easy access to expert advice and support. Positive attitudes were also a significant factor in this pilot. However, other participants were less positive about their experience, though this is not unusual in a pilot situation. The Deakin Australia pilot was a disappointment for staff in terms of outcomes, though they learnt a great deal from the experience. The auto-correcting timed testing activity caused much angst for those involved in the Business and Law pilot, so much so that they have decided not to use TopClass next year. It gives them no advantages over FirstClass, their preferred learning system. Although the Exercise Physiology staff could see potential in TopClass for enhancing student learning, they were disappointed that their interactive databases could not be integrated.

Relevant divisions within the University are already addressing some issues raised above. For example AASD has formed its own internal working party to examine technology options for e-assignment submissions. They are also investigating plagiarism detection software. Learning Services is aware of the work that needs to be done in respect to developing and costing program resources design models. It should be recognised that some of the difficulties experienced during the pilot were not related to TopClass. The UMS, user inexperience and lack of time were contributing factors. Nonetheless, there are reservations about the suitability of TopClass for some courses. A list of possible enhancements for the system has been compiled and forwarded to WBT Systems. As issues arose, solutions were found for a number of them. Sometimes the solution was within TopClass, sometimes 'work around' solutions were found. However, such solutions are not sustainable in the long term.

[3] APESMA: Association of Professional Engineers, Scientists, and Managers of Australia.

2.5 Issues Arising

2.5.1 Overview

To cater for the range of web use in Universities 'from place-bound course supplements to fully online courses', some key issues need to be considered. According to McCray et al (2000, p 2.), issues regarded as important when establishing an IMS are scalability, sustainability, flexibility, usability, and utility. [4] Scalability refers to the extent to which the system can be scaled up to cater for large numbers of students, and sustainability to the extent to which the system can be maintained over a reasonable length of time. The system also needs to be flexible both technically and educationally. Usability refers to the ease with which users can access, navigate around and learn from the system. Utility refers to the availability of features or functions to achieve the purpose of the application. Systems may be excellent from a utility point of view, but not so desirable from a usability perspective. In addition, the extent to which academic staff include the design and creation of on-line resources in their workload will be contentious, as the efforts can be substantially greater than current practice, maintaining the current level of support from Learning Environments will continue to be critical to the success of this form of teaching and learning.

2.5.2 System Integration

Systems developers had been informed that TopClass would integrate directly with Callista, but it did not have application program interfaces in respect to the University's preferred platform, Unix Solaris. More work was required than expected to achieve integration because TopClass was a closed system. To enrol students in units for the pilots, an automated interface had to be set up by using the authentication system within TopClass. Scripts had to be written and tested to import text files from the three systems into TopClass. Testing was sometimes difficult because there was no server designated for testing purposes. The development server had to be used. Therefore during testing periods, this server was unavailable for development. While integration is now automated and works well, it is an unacceptable long-term solution. Direct connectivity is still required, otherwise scripts have to be continually checked and rechecked to ensure that they still work.

There were additional problems trying to integrate Concept with TopClass. Being a teledatabase, Concept connects with the telephone system so it has its own set of interface requirements. The fact that staff can belong in two Faculties or Schools simultaneously complicates the process of creating instructor accounts. The University employs many casual and part-time staff and does not maintain a database that links staff to teaching areas. One person was designated as the instructor for each pilot. Additional people had to be assigned manually. TopClass downloaded enrolments from Callista quite well–it created classes and automatically enrolled students in the respective units. While late enrolments could be added, the system was not able to remove automatically students who had withdrawn. It would have been too time-consuming to manually delete withdrawn students, therefore they remained enrolled throughout the semester which caused some confusion and inconvenience for staff. It was not possible to write a script to solve this problem. However, it is expected that the next version of TopClass will have an automated plug-in to delete students who withdraw.

2.5.3 Access and Authentication

At the outset, there were password authentication problems. This was not a TopClass issue; it was a fault with the University Management System (UMS) and applies to any applications that use the system. If students have a password that is older than the application they are trying to access, they have to change their password. The UMS then informs them that they need to wait for 15 minutes before they can successfully log-in with the new password. However, depending on the time of day, it often took up to 24 hours for the new password to be propagated around to all the applications that use it, during which time some students would be trying again to change passwords. A related problem was that not all students knew they had a password, or if they did know it, they didn't know how to change it. A more reliable way of informing students about these matters is needed at the beginning of semester. For the pilot, all students who wanted to log on to TopClass eventually gained access with help from the TopClass Instructional Design, Training and Support Co-ordinator. However, there were many students in the Deakin Australia and Business and Law pilots who chose not to persevere; they decided not to use TopClass at all. For Deakin Australia students, this problem was compounded by

[4] McCray, G., Morrow, C.T., & Wittlich, G. (2000). From place to space: Perspectives on Web course management software support. Panel discussion, EDUCAUSE 2000.

the fact that postcodes were used within the UMS as initial passwords for students, and many of them did not have postcodes.

2.5.4 User Support

Although an online forum was established for support purposes, it was not used extensively. Most pilot participants were busy dealing with issues relating to their own pilots and generally did not engage in discussion of broader issues with other pilot participants. When they needed help, they directly emailed or telephoned the TopClass IDTSC and received an immediate, timely response. Deakin Australia staff reported some problems with support after TopClass was made available to students. They were unable to use the ITS Help Desk without incurring substantial costs. However, as with other pilots, help was always available for them from the TopClass IDTSC.

3 PILOT STUDY 1: COMPARATIVE ANIMAL PHYSIOLOGY (SBB315)

3.1 The Learning Environment

Comparative Animal Physiology is a third year, second semester, unit offered by the Faculty of Science and Technology. In 2000, 78 students studied the unit, 23 of whom were on-campus at Geelong. The remaining 55 were enrolled as on-campus students at Burwood and studied in off-campus mode. Of the 78 students, 46 responded to the survey; 22 were on-campus and 24 off-campus.

Within TopClass, the *Coursework* section contained course outlines, the study guide, assignments and a practice electronic test submission. There was also a section on research tools with links to the library, biological search guides, databases, journals and relevant professional associations. In the *View Test* function there was a practice electronic submission for Assignment 2. During the semester, five messages were posted to the class announcements area. These were used principally to inform students about the assignment topics, an extension date, processes about electronic submission of the assignment, and updates on work requirements. In the discussion list area, messages about the assignment topic were posted.

In terms of the evaluation study, the objectives of this pilot specifically examined:

- the undergraduate students who were studying both on- and off-campus in order to increase parity of course delivery; and
- techniques to communicate more effectively with off-campus students and encourage them to interact with each other.

3.2 TopClass Functionality

3.2.1 Development of course materials (A1)

The Unit Chair developed the content, which was then converted to HTML and uploaded into TopClass by the TopClass IDTSC. The Unit Chair found TopClass very easy to use. In the course materials area of the learning environment, only text and images were used. She noted that more work would be required in the future to make the materials more visually interesting.

Implication

- Academic staff have the potential to design and develop on-line content for TopClass but may require assistance when the technical requirements for delivery become complex.

3.2.2 Delivery of course materials (A2)

Despite the use of TopClass, on-campus students were perceived to be more advantaged than off-campus students, as they had better access to online resources and the Unit Chair. Consequently, they learned to use TopClass more quickly. Most respondents agreed the information about the unit was comprehensive (64%) and learning material was presented in useable chunks (59%). However, there was ambivalence about the adequacy of learning materials that facilitated the study of the unit.

One student remarked that '*TopClass was useful because I was able to access it in my own time and get in contact with the lecturer easily*'. Of the respondents 43% agreed TopClass made it easier to access study materials and 70% thought TopClass allowed information to be accessed at more flexible hours. Course content, class announcement, and email facilities were the most useful features because it was easier to contact the lecturer and keep up to date with assignments, messages and subject materials.

Only 27% of respondents thought the use of TopClass enhanced the quality of their learning experience. Over three-quarters were neutral or disagreed that the use of TopClass increased their motivation to learn. There was ambivalence about whether TopClass improved the quality of program delivery, as it was useful in increasing access to the teacher, but didn't necessarily increase the interaction between classmates in this unit.

Implications

- Consideration is required of equity issues between on- and off-campus students
- The ability to access content as required is perceived as advantageous
- Content delivered by an IMS will not necessarily suit all learning styles

3.2.3 Communication and collaboration (A3)

Although the Unit Chair emailed students directly from an email list, many of them emailed her through TopClass because they found it convenient when they were already working in this application. The Unit Chair used TopClass for posting announcements but also mailed letters to students because the unit was migrated into TopClass fairly late. While there was some use made of the discussion features, ongoing collaborative activities were not generated as much as anticipated. The main limitation was having the time to develop the area. It was recognised that strategies need to be implemented early in the semester to encourage both on- and off-campus students to use TopClass.

The Unit Chair is happy to continue to work in TopClass and has identified areas where the system and her own use of it could be improved. She believes TopClass is potentially a very useful system for communicating with students in the future. It should be useful in terms of parity of communication and course offering for on- and off-campus students.

Respondents were generally very positive about the TopClass interface and system design and most described the use of TopClass as valuable. Although the course content provided on TopClass was available elsewhere, the communication features were seen to enhance the learning experience. One student noted that '*the ability to communicate with the teacher easily'* was the most useful feature of TopClass.

Implication

- Well managed and integrated learning and collaborative activities are likely to result in positive learning experiences.

3.2.4 Assessment of learning (A4)

The Unit Chair wished to trial online assignment submission and students were asked to submit a 'dummy' assignment as a 'practice run'. Although students could download the documents sent to them, once they saved their work in it and submitted it, the Unit Chair experienced problems downloading the files. The exact nature of the problem was not identified but it was thought to be due to the format in which students had saved their work. In each case, the documents were eventually accessed. The issue of who will print and bear the printing costs of electronically submitted assignments was also identified.

Implication

- The effective use of online assessment submission, especially those integrated within IMS, requires ongoing professional development and support.

3.2.5 Class management (A5)

Several problems relating to the student management aspects of TopClass were identified. The class lists generated from TopClass were not in alphabetical order by surname; they were in alphabetical order in each chronological batch based on username. This meant they could not be manipulated into a useful form, for example by campus, mode of delivery and so on.

Implication

- If the default functionality of third-party IMS are not consistent with the information requirements of the teaching programs, investment will be required to obtain that functionality.

3.2.6 Design and interface factors (A6)

The Unit Chair thought the navigation through student records was not teacher friendly. There is no back button, so staff had to go back through the home page and navigate to the page required. This was very pedestrian and time consuming.

The majority of respondents thought there were sufficient navigation prompts, the toolbar icons were easy to understand, and it was easy to move from page to page and between levels. Some navigation problems were reported in respect to using the back button and posting assignments. Most found that the screen background colour was appropriate (87%), the font easy to read (85%), the information provided per screen was the right amount (75%) and the layout well organised (67%). Suggestions for improvement from a few students included more intuitive navigation icons, adding an assignment submission button, and regular updates of materials and announcements.

Of the respondents 78% thought it took only a short time to learn how to use TopClass. More than half found that the information provided about TopClass was helpful. However more than half also thought '*a training session on how to use TopClass would have been helpful to answer my questions'*.

Implications

- Developing familiarity is a necessary component of acquiring IMS systems, beyond that of a pilot study.
- There is potentially a usability gap between academic staff and students.
- An easy-to-use interface may be a key indicator of IMS usage.

3.3 Technical Considerations

3.3.1 Integration with corporate applications (B1)

The data from students who withdrew from the course was not automatically removed from the TopClass enrolment list. In some units large numbers withdrew and the retention of their data within TopClass complicated student record keeping. The only way of dealing with this problem was for the Unit Chair to organise to have them deleted manually. It remains unclear whose responsibility this should be.

Implication

- With applications such as TopClass, a comprehensive testing process is required prior to acquisition to. identify inconsistencies and/or resolutions

3.3.2 Integration with educational applications (B2)

This was not examined within this pilot study.

3.3.3 Authentication and access (B3)

Some students encountered problems accessing TopClass because of password difficulties. Many students in this unit were not aware that they had a Deakin password and needed to be educated in how to access and change their password. Password problems caused a great deal of confusion and indeed some students gave up trying to access TopClass as a result.

46% of respondents accessed TopClass via a modem and 42% through the Deakin Intranet. 63% of them used Internet Explorer. Despite the password difficulties experienced by 20% of respondents, most (59%) had no problems logging into TopClass and found that the network performed reliably (66%) and the TopClass server performed reliably (64%). In addition, 64% found that the pages downloaded efficiently.

Implications

- Exact specifications of the interface between TopClass and corporate applications is required to minimize complications such as user-access.
- Once access and authentication issues have been resolved, TopCass functions satisfactorily.

3.4 Institutional Considerations

3.4.1 Value-added teaching and learning (C1)

38% believed the use of TopClass improved their study, 34% felt that it didn't and the rest were neutral. Responses varied widely about whether studying online via TopClass was an enjoyable experience or whether they would like other units to use TopClass. 23% of respondents believed TopClass to be very valuable, 60% thought it was moderately valuable and 17% described it as not valuable.

Implication

- Reinforces the individual differences and learning styles of students and the ongoing need to provide a variety of learning resources.

3.4.2 Professional development (C2)

The Unit Chair received some informal training from the TopClass Instructional Design, Training and Support Coordinator. She is undecided about whether academics will need to learn how to upload their course materials into TopClass in future, or whether they will need to put the material into an appropriate form and hand them over to Learning Services. Training will be required in respect to the appropriate format for hand-over. In order to add visually exciting graphics, multimedia and interactive components, it was noted that expert educational design, Web/Multimedia development and production input would be required.

Implication

- There is the potential of an ability differential between academic staff, requiring a range or professional development services.

3.4.3 User support (C3)

The majority of respondents were either neutral or agreed that the level of user support was adequate, the online help page was useful, and assistance from faculty staff was readily available and useful. Most were neutral about whether assistance was readily available and useful from ITS support staff, indicating that they did not access this. Generally, '*If you needed help it was there'*

Implication

- Applications such as TopClass provide a range of support and help facilities for the different user groups.

3.5 Summary

While TopClass provides a wide range of options to support teaching and learning in an online environment, institutional support remains critical in terms of ensuring sufficient resources are provided to both maintain the technical infrastructure and provide professional development.

4 PILOT STUDY 2: ECONOMICS FOR MANAGERS (MEE781)

4.1 The Learning Environment

Economics for Managers is a unit in the Masters of Business Administration offered in second semester by the Faculty of Business and Law. In 2000, 180 students studied the unit in off-campus mode. Of the 180 off-campus students, 34 (19%) responded to the survey. In this pilot, staff decided not to use any of the communication functions in TopClass because their perception was that the system did not adequately meet the pedagogical needs of the unit that centred on small group conferencing. FirstClass was seen to be far superior for that, so it continued to be used as the central learning environment. However it was felt that TopClass had the potential to add value through its online testing, publishing functions, class management tools, and its integration with Callista. Therefore the pilot objectives for the unit were to:

- Integrate TopClass with FirstClass to enable students to move seamlessly between the two
- Use TopClass to deliver the Study Guide in Portable Document Format (pdf) form
- Construct test items in TopClass and trial auto-correcting timed testing, where students have a certain period of time to complete the test, and where their responses are automatically corrected by the system and results provided.

Students received a print Study Guide and Reader for this unit and were required to use FirstClass as their main learning environment. Therefore there was virtually no communication or unique subject matter material in TopClass that students had to access. The unit was administered in FirstClass, important announcements were posted there, and all communication occurred there. TopClass contained the Study Guides in pdf format, links to the library, a sample test, and the auto-correcting test became available when required.

4.2 TopClass Functionality

4.2.1 Development of Course Materials (A1)

TopClass is seen to be quite a flexible environment for presenting course material and making changes to the material. However, the material for this unit was not changed in any way. The perception was that developing courses in TopClass requires a fair degree of technical expertise and time that academic staff do not have. An intensive, time-consuming program of staff development would be required and staff would have to be willing to undertake such a program when there are many competing priorities for their time.

Implication

- Despite the perceived advantages of IMS, their full functionality may only be realized with significant support in the design and development of appropriate content.

4.2.2 Delivery of Course Materials (A2)

Faculty staff did not develop Study Guide material in TopClass. For quality control and copyright reasons, the Faculty of Business and Law have a policy of handing over unit resources to Learning Services to be published, so they continued with this practice for the TopClass pilot. After initial problems with importing graphics, TopClass efficiently delivered the Study Guide in pdf format. However, this did not add value for students because they already had the print materials.

Implication

- To fully take advantage of new applications, academic programs may have to undergo significant revision in terms of their educational framework.

4.2.3 Communication and collaboration (A3)

This component was not addressed in the pilot study.

4.2.4 Assessment of learning (A4)

For this unit, a timed, auto-correcting test was evaluated, which was made available for two days and students were required to complete it within 30 minutes. The development of test items by Faculty staff proved to be less straightforward than expected. It was not possible to import a pre-existing file of questions, therefore staff were advised to 'cut and paste' each question and the associated diagrams onto a separate page in case students were timed out before completing the test. This became a pedestrian and time-consuming process. There were also a range of issues associated with the delivery of the test, with staff having to respond frequently to student messages sent to the FirstClass conference 'Test feedback'.

According to staff, the major issues associated with delivery and access of the test were:

- When students tried to review their test, going back page by page was time consuming and resulted in less time for the actual test as all activities had to be completed in the thirty minutes allocated.
- The 'Submit' button was beside the 'Next' button, which meant that students could accidentally submit when intending to move to the next question.
- After clicking on the 'Submit' button, students did not know whether their test had been successfully submitted because the system did not acknowledge receipt.
- Students were automatically timed out after 30 minutes, so if they didn't finish the test and submit it in this time, they received zero points even though they may have completed most of the test items.
- The management of test lists was also inconsistent with staff requirements – they are on separate web pages and couldn't be sorted. They appeared in chronological order by Christian name rather than surname.
- In the middle of the first day, there was a power outage, so an extension had to be given.

As a valid measurement, staff believed timed online tests do not work because they have no way of knowing whether students are receiving assistance, or indeed whether someone is completing the test on their behalf. Pedagogically, staff would prefer to use multiple choice questions under regular examination conditions where student authentication can occur. In particular, many students did not know whether their test had submitted successfully and did not receive results immediately. They were withheld for a week until everyone had completed it. One very frustrated student commented, '*The multiple choice test used in Economics was a disaster. I hope I will not have to experience that again'*. These experiences contributed to the negative response to the use of TopClass in this unit. '*I don't see that it has enhanced functionality over the existing system'* (FirstClass)

Implication

- These issues highlight that limitations in the functionality of assessment options provided by the IMS can affect optimal usage by both staff and students.

4.2.5 Class management (A5)

The classroom for this unit was managed through FirstClass, though staff had expected that TopClass as a specialist IMS would have advantages in class management. Instead they found it did not work consistently with the system they were experienced with. For example, staff believed there was an issue with respect to the levels of rights and privileges in TopClass, which has three basic levels. In comparison, FirstClass has twenty sub-levels within the instructor's level, so if staff require extra privileges, they can be enrolled as instructors rather than administrators. Staff had difficulty getting a basic report with student details listed in alphabetical order.

Implication

- This component of the evaluation highlighted the extent to which familiarity with software applications can affect perception of educational value, specifically with respect to

teaching staff. This response would suggest a more comprehensive program in communicating product functionality is required.

4.2.6 Design and interface factors (A6)

53% of respondents could move easily from page to page, level to level and link to link, and half thought the navigation prompts were sufficient. However, others thought the navigational problems made it time consuming to use. 62% of respondents believed the toolbar icons were easy to understand and the information on each screen was the right amount. 59% of respondents thought the text layout was well organised. However, these respondents were not favourable in their opinions of TopClass. They were familiar with FirstClass and seldom had technical problems that disrupted their learning. They found that using TopClass as well did not add enough value to their learning experience to justify the log on difficulties and extra navigation between the two systems.

Implication

- This component of the evaluation highlighted the extent to which familiarity with software applications can affect perception of educational value, specifically with respect to students. This response would suggest a more comprehensive program in communicating product functionality is required.

4.3 Technical Considerations

4.3.1 Integration with corporate applications (B1)

This objective was not addressed specifically in the pilot study.

4.3.2 Integration with educational applications (B2)

Seamless integration of TopClass with FirstClass was not achieved to the satisfaction of staff, because TopClass can only be entered at the top level, the Home page. Users then have to click back to the list of units, and so on. Links that enabled movement between particular online group activities in FirstClass and the relevant Study Guide topic or section in TopClass were not possible, though it was this type of seamless movement between systems that staff wanted.

While one of the objectives of this pilot was to integrate TopClass with FirstClass, from the respondents' perspective, this was not achieved. Just over a quarter of the respondents could move easily from First Class to TopClass and 35% could move easily from TopClass to First Class. 59% felt that TopClass and First Class were not used in complimentary ways. Indeed, it appears that, '*having the two systems was a less than useful way to study*'. '*My preference would be to have one system*'. Further to that, '*If TopClass and First Class are meant to be linked why are there no shortcuts or hyperlinks"*?

Implication

- While the majority of software applications have the ability to communicate through the importing and exporting of data, there is little guarantee that competitive products will provide "seamless integration". Indeed, the very design characteristics of different products may limit the ability to communicate and integrate. Based on the outcomes of this pilot study, it would appear that more detailed specifications of both products require scrutiny to determine the extent to which "seamless integration" can be achieved.

4.3.3 Authentication and access (B3)

65% of respondents accessed TopClass via a modem and 80% used Internet Explorer as their Web browser. One-third of these students experienced problems logging into TopClass. The respondents had quite varied experiences with the download speed, the reliability of the network and the reliability of the services available through TopClass.

Implication

- The use of web-based applications will continue to be compromised by limitations or reliability of the technical infrastructure that supports them.

4.4 Institutional Considerations

4.4.1 Value-added teaching and learning (C1)

Respondents were mostly ambivalent or negative in their perception of the value of TopClass in supporting their study as this comment illustrates, '*TopClass did not support my study at all – it actually degraded it, wasting time trying to access information'*. Only 15 % agreed TopClass enhanced the quality of their learning. Indeed, almost 60% disagreed that the use of TopClass increased their motivation to learn. Respondents were generally undecided about whether TopClass made it easy to access study materials or allowed information to be accessed at more flexible hours. These features are available to them in FirstClass. Only 17% of respondents agreed that the use of TopClass improved their study of the unit; 47% believed it did not add value to their study, a further 47% found it to be moderately valuable and only 6% found TopClass to be very valuable.

Implication

- Products such as TopClass will not, in themselves, improve teaching and learning. Rather, the content supported by such applications must be integrated in such a way that it is consistent with the teaching and learning paradigm adopted by the Faculty. In this case it would appear that a range of technical and implementation issues affected the quality of delivery that TopClass has the potential to provide.

4.4.2 Professional development (C2)

Staff were disappointed that TopClass could not meet their needs and was not as good a system as they expected. They believe FirstClass is not only far superior for communicating with students, but is also easier for publishing materials. It is very fast because it is not web-based. Indeed, there was a belief that:

> *Using TopClass has made FirstClass look even better.*

Implication

- If new applications such as TopClass are introduced to the university, comprehensive staff development programs are required to ensure that they are used effectively with exisiting paradigms and other support tools such as FirstClass.

4.4.3 User support (C3)

Respondents were generally positive about the level and quality of user support for TopClass. In particular, they found that useful assistance was readily available from faculty support staff through the FirstClass conferences. Those who used the ITS Help Desk also found assistance to be readily available and useful. Respondents were undecided about whether the TopClass Help page was easily located and whether the information provided was helpful. Three-quarters of the students agreed it took a short time to learn how to use TopClass, and 82% found that the information provided about using TopClass was helpful. Most found TopClass easy to use and did not see the need for training. However it was noted that '*too little information about TopClass's purpose and future was given before it was thrust upon us'*.

Implication

- As a software application, TopClass is functional after a combination of use and technical support. Continuing this level of support as use of IMS systems increases is critical to their ongoing success as support tools for educational initiatives.

4.5 Summary

There is an ongoing need to monitor developments in IM systems to ensure the overall teaching and learning experience is maximized by the applications employed to support the design and delivery of online materials.

5 PILOT STUDY 3: EXERCISE PHYSIOLOGY (HMS201)

5.1 The Learning Environment

Exercise Physiology is a 2nd year unit offered in first semester by the School of Health Sciences, Faculty of Health and Behavioural Sciences. This unit was piloted with a small group of nine postgraduate students who viewed the unit material in TopClass and provided feedback. The Faculty IT Manager also contributed feedback. It was anticipated that TopClass could do everything the existing websites do, and add value through the testing and communication functions. Therefore the specific focus of the pilot was to:

- transfer the existing web-based unit resources into TopClass
- integrate the existing databases supporting V-Labs and the Faculty website
- trial the TopClass testing facilities for formative self-assessment purposes.

The course materials provided through TopClass included a comprehensive introduction to the unit, (welcome, aims, commitment), a table of lectures with course content, revision tests, a lecture schedule and a laboratory and tutorial schedule. The lectures were based on topics, each of which included lecture outlines, aims, objectives, review questions, a tutorial, a questions test and a randomised test, which enables test items to be randomly selected from a test item bank. Lecture content included PowerPoint slides, links to websites and terminology definitions, a list of references, and the HTML-based information about V-Lab – Muscle Strength and Fatigue.[5] The revision tests were replicated in the TopClass *View tests* area.

5.2 TopClass Functionality

5.2.1 Development of course materials (A1)

The objective of transferring existing HTML-based unit material from the Faculty server into TopClass was achieved. The ability of TopClass to convert from Word into the plug file to create a web environment was thought to be a very useful feature of the System. It was felt that Faculty staff should quickly be able to import existing materials into TopClass. The Unit Chair had previously developed the unit content and oversaw the conversion of these materials into TopClass. The technical manager advised the Unit Chair about how to use various TopClass functions to enhance current delivery.

Implication

- Where academic staff have the content and resources to support their activities, the creation of course content within TopClass is a relatively procedural function.

5.2.2 Delivery of course materials (A2)

The students were very positive about the potential of TopClass to provide a quality learning environment. Seven of them thought that information about the unit was comprehensive, the lecture outlines would help with the learning of unit content, and the review questions would be beneficial. They further believed that externally linked websites and PowerPoint presentations would effectively enhance the learning of the unit. One student commented:

> *I thought the site was great especially the test questions and discussion aspects. Everything provided seemed relevant and informative.*

The most useful features were the links to related websites and the review questions with automatic feedback. However, there were some problems. Students found it difficult to return to TopClass after accessing the externally linked V-lab and other websites, and the PowerPoint slides took an extremely long time to download. Six respondents anticipated that the discussion list would potentially provide an effective cyberspace for groups to discuss tutorial questions assigned by the tutor.

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[5] V-Lab is a virtual laboratory developed for Human Movement students to address specific educational and administrative problems experienced in HMS201 – Exercise Physiology.

All respondents agreed it would be easy to access study materials through TopClass and thought the use of TopClass would allow students to access information at more flexible hours, making program delivery more convenient. Seven students thought TopClass could potentially improve the quality of the learning experience and should improve the quality of program delivery. All anticipated that access to the teacher could be enhanced through TopClass, but were undecided about whether TopClass could expand interaction with fellow classmates. All respondents believed the use of TopClass would assist their study of the unit. Seven anticipated that studying online using TopClass would be enjoyable, while 8 felt that it would be valuable to deliver the unit through TopClass. The question of equity of access to computers was raised and the suggestion made that TopClass should be simplified to allow for faster downloading to cater for students with slower computers.

Implication

- When the content material is well structured and students briefed on their on-line use, the underlying management system provides an operational framework.

5.2.3 Communication and collaboration (A3)

The Unit Chair intends to use the communication features of TopClass in the future. He expects that the email function within TopClass will be useful for off campus students. He plans to use the announcement area when appropriate and the discussion area to encourage collaboration between students.

Implication

- The advantages of online learning and collaboration will not be realised unless staff have an open mind to the potential provided in IM systems.

5.2.4 Assessment of learning (A4)

The testing functionality was identified as a strength of TopClass, and the revision tests worked well for this pilot. There was some development work required to create the online tests, although there were difficulties uploading test content into the system, as the process required manual entry of questions. If academic staff find this process too time consuming, they may not use this function even though it potentially adds value to the students' learning experience.

Implication

- The implementation of online learning, specifically new assessment strategies, may require additional support for academics to ensure the materials are made available to students in a timely fashion.

5.2.5 Class management (A5)

The Unit Chair anticipates that the reporting features of TopClass will help with class management.

Implication

- Facilities provided by IM systems are perceived to be beneficial.

5.2.6 Design and interface factors (A6)

Various design interface issues were identified, such as the icons not being intuitive, clumsy navigation, too much wasted screen space with the three frames, and not very exciting graphics. It was thought that '*if we can improve the look and feel of TopClass so that it is a bit more user friendly, it would be good*. Currently, in the TopClass environment, there is one look for all of Deakin. It was suggested that each school or faculty have a customised screen because '*students are attracted by Schools within Deakin, not so much by Deakin itself*'.

Seven respondents found they could move easily from page to page and between levels. They thought the navigation prompts were sufficient, and the text layout was well organised. Five thought the toolbar icons were easy to understand, while 6 found the font size easy to read and thought the amount of information per screen was appropriate. It was suggested that it would be advantageous to maximise the frame with the learning materials as the index font is very small and it was sometimes hard to get an overview of the graphs.

Implication

- Some aspects of the "look and feel" of IM systems will always cause issues with inexperienced users. Providing appropriate and ongoing support will minimize this aspect of the application.

5.3 Technical Considerations

5.3.1 Integration with corporate applications (B1)

The pilot did not consider this objective.

5.3.2 Integration with educational applications (B2)

The problem of integrating the Faculty's databases seamlessly into TopClass from the local servers has not been fully resolved as far as faculty staff are aware. Staff found it particularly disappointing that the database supporting the interactive V-Lab was not integrated. Learning Services (LS) was unable to transfer the database to find out whether it would operate in TopClass running on an Oracle database solution. It appears that while it may have been technically possible to do so, LS did not have the technical expertise to undertake this task. In order to continue using V-Labs, the faculty will need to run a duplicate system on their own server, which will require added logins for students to link to this server. Because the database integration was not achieved, there is a sense that TopClass cannot meet the varied needs of the Faculty. They are undecided about whether students should login as they do now and link to TopClass, or login to TopClass and link to existing systems.

Implication

- Significant research is required to determine the extent to which products such as TopClass will effectively integrate with other educational resources. Given that there will always be incompatible resources, resources will continue to be required to resolve such issues.

5.3.3 Authentication and access (B3)

Technical problems identified included excessive download times when running off a modem and problems getting the interactive components working in TopClass. Concern was expressed about the reliability of the server located at the Waterfront campus and the network at the Burwood campus, were TopClass to become the main online teaching and learning environment. Server failure and network problems between Geelong and Burwood could severely disrupt online teaching and learning activities.Seven students accessed TopClass on-campus via the Deakin Intranet and two accessed via a modem. Only one had problems logging into TopClass, while 7 found that the network and TopClass server performed reliably.

Implication

- While the underlying infrastructure can affect the performance of an IM system, the application itself will perform reliably.

5.4 Institutional Considerations

5.4.1 Value-added teaching and learning (C1)

This objective was not addressed within this pilot study.

5.4.2 Professional development (C2)

The Unit Chair does not see the need for a high degree of technical expertise in publishing in TopClass so has had very little training. However the technical manager anticipates the need for further training because he expects that staff within the faculty will need TopClass technical support from him regardless of other arrangements.

Although staff expected to do the technical conversion of unit material, the TopClass IDTSC completed the task. Staff stressed their need for a TopClass help desk in some form and for a specialist Faculty-based IMS developer to train staff. They believe this developer should know the content and teaching approaches used in the Faculty, so that the courses developed meet specific Faculty needs. To enhance the desired interactivity in the TopClass environment, centrally located IT staff will be needed to develop V-labs and other interesting multimedia objects rather than merely putting text on screen. To make the best use of the TopClass system, Faculty staff will require staff development in teaching and learning in online environments.

Implication

- While there will always be varying skill levels in the use of IM systems, it is important to provide ongoing support for those staff who neither have the skills nor the time to undertake the course development activities required with such applications.

5.4.3 User support (C3)

User support was not an issue in this pilot because students were not studying the unit. However, all respondents found that the TopClass Help page was easily located. Five thought the information provided by the help page was useful and relevant and the other 4 were neutral in their response. Eight respondents found that it took only a short time to learn how to use TopClass. There was varied opinion about whether there needs to be a training session on how to use the system. One student suggested that a tutorial on using TopClass would be useful to gain the most out of the system, particularly with regard to using discussion groups and dealing with technical problems.

Implication

- Ongoing user support will be important given the different levels of background experience.

5.5 Summary

Staff in this pilot were concerned to ensure that the development work already undertaken for the unit was preserved and enhanced in TopClass. They wanted the environment to be more than a content repository–they specifically wanted the interactive V-Lab to be incorporated fully within the TopClass database system and believed the system would offer added benefits through its testing, class management and communications facilities. However, only the testing functions were trialed in the pilot. The Unit Chair feels '*reasonably positive'* about TopClass and expects it to add value to what is already done, but comments that '*the real issues will come next semester when it goes live to students'*.

From the technical manager's perspective, TopClass replicates what has already been done in the Faculty. He does see some advantages with the testing functions and advantages in helping academics in the administration of their units by report generation and the batch registration of students into classes. '*It has been a bit awkward integrating TopClass into the systems already in place within the faculty'*. He still has some concerns about the '*look and feel'* of TopClass.

Staff were disappointed that one of the main objectives of this pilot – the integration of the interactive V-Lab – was not achieved. Other course materials and online tests were successfully migrated into TopClass. The postgraduate students' response to the learning environment was very positive. Communication and student management functions of TopClass were not tested but faculty staff are optimistic about their potential to add value to the students' learning experience.

6 PILOT STUDY 4: CORPORATE FINANCE (PDM406)

6.1 The Learning Environment

Corporate Finance is an APESMA MBA unit offered in second semester by Deakin Australia. In 2000, 73 students studied the unit in off-campus mode–according to the Unit Chair, they are busy professionals who use high-powered computers very capably. Many of them are located remotely in Australia and in overseas countries. The unit was chosen for the pilot because it was deemed to be suitable for an online environment. The course content was supported by textbooks, excellent websites and a CD-ROM, which it was hoped could be integrated in TopClass. The specific focus of the pilot was to:

- Develop and deliver a new online product incorporating interactive multimedia
- Test the functionality of TopClass, especially that related to collaborative facilities
- Develop an internal instructional design model that could be replicated in other areas

There were 73 students studying this unit off-campus, only 15 (21%) of whom responded to the survey. Of these 15 students, only 7 (10%) actually logged on to TopClass. Hence, the perceptions raised in this section may not be representative of the total cohort. The use of TopClass in this pilot became superfluous for three main reasons. Students experienced problems logging into TopClass, the course materials were available to students elsewhere, and the students used an internal Deakin Australia email system for communication. The Coursework section in TopClass contained a course outline at the beginning of second semester, supplemented by URL links and a discussion forum in TopClass. One online module was subsequently developed. However, students did not need to access it because they had received the regular paper-based distance learning materials.

6.2 TopClass Functionality

6.2.1 Development of course materials (A1)

A development team was established to develop the content for the unit. It included the Unit Chair, an instructional designer, multimedia developer and online developer. Another instructional designer was designated as project manager. The team found that developing a unit in TopClass was more complex, more difficult and more time-consuming than they thought it would be. Although the Unit Chair initially had ambitions of developing the unit in TopClass himself, he decided '*the most efficient solution was to develop the content and let others work on the way it will look in TopClass*. He developed his material in WORD, Excel or PowerPoint and passed it to the online developer to do the technical conversion into TopClass. They found that URL-based content was easy to integrate into TopClass, but they were unable to integrate PowerPoint animations because they had problems creating plug-ins. Staff were disappointed that '*the things that really add value for students were not so easily integrated*'.

For these developments, staff found it easier to create pages in Dreamweaver rather than developing them directly in TopClass. Effectively this meant that students would log on, then immediately leave TopClass to access content on another server so that the whole screen could be used without the encumbrance of frames. It was thought that these sorts of 'work arounds' '*circumvent the purpose for having TopClass in the first place'*. The multimedia developer assigned to the project left Deakin Australia and hasn't been replaced. While other staff took up some aspects of his work, the full multimedia development did not proceed. Only a course outline was produced for TopClass in time for second semester. Paper-based distance learning materials were mailed to students, supplemented by URL links and a discussion forum in TopClass.

One instructional designer noted:

> *From a development perspective, it seemed fine at the start because our knowledge was so low. As our knowledge has increased, and we have developed expertise in multimedia, we have realised the limitations of both the TopClass product and the documentation that supports it.*

The development of an instructional design model was partially achieved–staff found that it required more collaborative, iterative ways of working than the model used for print materials development. They

also found that online development required more 'hands on' project management and more synergistic team processes.

Implication

- Products such as TopClass provide a certain level of educational functionality. The implementation process must ensure that all staff have a full briefing on the product's capabilities to ensure expectations are not misrepresented.

6.2.2 Delivery of course materials (A2)

As this unit was not fully developed, all students noted the module activities did not effectively enhance their study of the unit. There was widely varying opinion as to whether externally linked web sites effectively enhanced their learning of the unit. One student stated that '*it obviously needs extensive development before it becomes useful'.* No respondents believed the use of TopClass enhanced the quality of their learning, expanded their access to the teacher, or expanded interaction with their fellow classmates. As noted:

> *There was not enough content to make it worthwhile.*
>
> *The time spent getting limited information was not worth the effort.*

However several students recognised its potential.

> *Because it was a trial, not a lot of people used it and this is really where it did not deliver its potential.*

6.2.3 Communication and collaboration (A3)

Traditionally in this unit, only about 20% of students have actively participated in online discussions. To increase the level of participation, staff were intending to use the communication functions to generate collaborative discussion about case studies which were linked to their assessment. However, this aspect of the trial was unsuccessful. Only 8 of the 73 students could log on because of the difficulties with passwords. Some students didn't try–many that did gave up very quickly and continued to use WebBoard, the email discussion tool used in all other Deakin Australia units. Although they were encouraged to use TopClass, students were not prepared to have their study disrupted by technology that didn't work immediately for them. It was noted that one of the disadvantages of the TopClass email system is that students cannot see who else is in their class, and cannot obtain a list of their fellow students, so they cannot communicate directly with other students on a one-to-one basis.

Implication

- While the application itself provides the functionality required for collaboration, if the infrastructure cannot provide the necessary reliability, then that functionality is nullified.

6.2.4 Assessment of learning (A4)

This objective was not considered in this pilot study.

6.2.5 Class management (A5)

This objective was not considered in this pilot study.

6.2.6 Design and interface factors (A6)

Staff believed the interface design of TopClass needs some improvement. In their view, it is inferior to that of other systems. They find the frames 'annoying' because very little screen space is available for content. Similarly, the size of the buttons in the bottom frame wastes screen space. On the login page, they find it annoying to have to scroll down to the login button. The hierarchy of folders was seen to be tedious because students have to click three times before they reach the first page. Comments were also made about the navigation buttons that appear and disappear and change order depending on where the user is in the system. The fact that the regular Internet buttons cannot be used is confusing for students. Overall the perception is that the coursework interface would be preferable without the left-hand frame and with more flexible navigation tools. Staff made the observation that the screen visuals (for example, a girl lying on her stomach in front of the television as an icon) are more pertinent for undergraduate students rather than for a corporate environment. Overall the students were happy with, or ambivalent about, the screen background colours, font size, text colour, the information per screen

and the text layout. Opinions varied widely about the navigation prompts, the use of frames and the ease of movement between pages and levels. Given the very small number of respondents, idiosyncratic preferences could explain this variation.

Implication

- It is unrealistic to expect a third-party product to satisfy all users in terms of interface. To support the in-built help options, a comprehensive training program is required to ensure users understand its effective operation.

6.3 Technical Considerations

6.3.1 Integration with corporate applications (B1)

This objective was not assessed in this pilot study.

6.3.2 Integration with educational applications (B2)

This objective was not assessed in this pilot study.

6.3.3 Authentication and access (B3)

As with the Business and Law pilot, password problems caused a great deal of frustration for staff and students. Deakin Australia and Deakin University have different systems and protocols, which further complicated matters for staff and students. In particular, the use of postcodes for passwords was a problem as noted earlier, because some Deakin Australia students do not have postcodes. They had to be logged on manually one by one. This situation is clearly unsustainable. As mentioned, the majority of students were unable to log on to TopClass. '*Initial access was very difficult and I gave up for most of the study period*'. All of the respondents used Internet Explorer. Once students gained access, most agreed that the pages downloaded efficiently, the network performed reliably, and the services available through TopClass were reliable.

Implication

- While the underlying infrastructure can affect the performance of an IM system, once resolved the application itself will perform reliably.

6.4 Institutional Considerations

6.4.1 Value-added teaching and learning (C1)

This component was not assessed in the pilot study.

6.4.2 Professional development (C2)

All Deakin Australia staff involved in the pilot attended the two-day training workshop, which they believed was very valuable as a first step. They were also appreciative of the fact that the workshop material could be reviewed online. However, some have not had time to do this comprehensively. At their request, further workshops were held specifically for them, and they established their own online discussion forum for self-help purposes. Staff would like to see more detailed documentation on procedures and protocols for uploading plugs. They also require more training on the use of testing facilities and on general problem solving strategies to use when technical difficulties arise. Staff underestimated the breadth of the development task and the time required for its completion. As the pilot progressed, the learning curve for staff was very steep. They had to learn not only how to use the system and its course development tools, but also learn how to develop appropriate online content as this comment testifies:

> *It is hard to separate out the use of TopClass from the conceptual idea of putting a unit online. We are learning as much about developing an online course as we are about TopClass.*

Students were very aware that this was only a pilot. Several of them commented that a significant problem of the pilot was the lack of participation by both the students and the Unit Chair. The login

difficulties experienced by most students were a serious deterrent to the success of this pilot. Less than intuitive navigation when using the TopClass system also hindered the pilot. However one student remarked that '*familiarity would probably overcome this problem*'.

Several participants proposed that '*online learning is the way of the future*.' Others thought TopClass *'could be a useful tool and is worth continuing with'*. Conversely, one student stated '*I am still happier with the printed version'* and another stated '*as an aid to learning it may be useful, but as the primary tool I don't believe that Internet access is sufficiently reliable, accessible, convenient, cost effective and portable'*.

Implication

- The provision of appropriate professional development is essential for both teaching staff and students.

6.4.3 User support (C3)

Support for staff and students has been an issue for this pilot and will be ongoing. Because Deakin Australia and Deakin University are two separate entities, the usual University support structures are not necessarily available to Deakin Australia. From the time TopClass was available to students, there was a breakdown in communication between Deakin Australia staff and ITS. On the one hand, Deakin Australia staff were having problems with the system and finding them difficult to solve; on the other hand, the ITS project manager was not aware of the problems. The initial costs quoted for use of the ITS Help desk were prohibitive at $160 per call. This was subsequently lowered to $30-40 for the pilot. As with all off-campus students, Deakin Australia students require support that can be accessed 24 hours a day, seven days a week. Internal costings have indicated that $100 per call will be required just for TopClass and IT support. This will not be affordable.

Most students found that the TopClass help page was easily located and that the information provided by the help page was useful. Students either didn't access user support or were neutral in their response as to whether it was helpful. All except one student found that learning to use TopClass took a short time and most found that the information provided about using TopClass was helpful. Opinions varied about whether training should be available on how to use TopClass.

Implication

- Ongoing support for users will be essential for the success of IM systems such as TopClass.

6.5 Summary

Deakin Australia staff were initially keen about using TopClass to develop online materials in ways they hadn't done previously. In particular, they were interested in developing multimedia to add value to the students' learning experience. They welcomed the opportunity to provide more interesting interactive content and encourage more collaboration within the one system. While the Unit Chair and online developer believed TopClass has potential, the instructional designers were more critical of its overall design. Being familiar with other systems such as WebCT and Blackboard and being aware that recent developments have resulted in superior products, their view is that TopClass is more suited to low level corporate training with straightforward multiple choice assessment. Online testing and submission of assignments were not trialed in this unit. There is a perception that notwithstanding concerns about viruses, it may only be realistic with small numbers of students.

Despite some concerns with the system, Deakin Australia intend to continue using TopClass because they need an IMS for online course delivery and management. However, they will also use their own servers for developments that cannot be integrated into TopClass, and as a backup when the TopClass server goes down. Staff were disappointed with the outcomes of the pilot. They were excited about the possibilities offered, but due to technical problems, staff inexperience and lack of time; they were unable to realise the potential. Although much of the functionality was trialed, and staff learnt a great deal about the system and online development processes, the objective of developing the online unit in TopClass was not achieved. It proved to be a much more difficult process than anticipated. In terms of student involvement, the trial was not satisfactory because most students chose not to participate after initial login problems. Staff noted that busy professionals do not have patience with technology that doesn't work for them.