Informing Across a Cultural Divide: Delivery of Distance Education

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Abstract

Victoria University offers a Computer Science degree in Hong Kong. The Hong Kong program matches the one in Melbourne, but both the content coverage and the delivery model of the Hong Kong program are affected by expectations and demands of the Hong Kong government and students. The paper outlines challenges, legislative, cultural, quality, time and distance that shaped the program delivery model. It examines the social construction of the program curriculum, and identifies cultural factors that have had most impact in modifying the program. The paper regards distance education as an informing discipline and discusses the program delivery model in terms of the Informing Science Framework. It uses a Project subject to illustrate the model and rationale behind it, and comments on suitability of various multimedia components as program delivery vehicles. The paper concludes by considering the implications of the Hong Kong program experience on future directions in distance education.

Keywords: distance education, informing environment, cultural constraints, project model.

Introduction

Victoria University offers a degree in computer science, both in Australia and in Hong Kong. The degree in Hong Kong is fee paying and provides a modest economic return to the university. For the academics responsible for realizing the program the important concern is the academic quality. Quality has many facets – but in particular both the quality of the curriculum, its delivery, and student learning experiences are of paramount importance. These three facets correspond to the three components of the Informing Science Framework: the informing environment, the delivery system, and the task-completion system (Cohen, 1999). This paper reflects on the challenges that have to be confronted to offer a program in a different locale.

Distance education has its supporters and its critics. The main focus of the research into distance education has been on student achievement and student satisfaction – the task-completion system. Research into the learning outcomes of students has found that they are very similar to those within the traditional classroom (Fox, 1998; Sonner, 1999). Some authors go so far as to suggest that students in distance learning courses earn higher grades and perform better on standardized achievement tests (Gubernick & Ebeling, 1997). Extensive research has been devoted to the delivery system, especially in the Internet and multimedia technologies (Falk & Carlson, 1995). Little attention has been given to informing environment - the pre-existing conditions and values that determine the distance education context (Phipps & Merosotis, 1999).

Our experience would indicate that identifying, understanding and addressing the constraints of the informing environment is critical to the implementation of a successful distance education program. These constraints are not only ones of distance and

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time, but also of legislature, culture, intellect and quality. Distance education is often perceived as education without boundary, thereby suggesting that no constraints exist. In our opinion constraints continue to exist and the real challenge in distance education is to respond to them.

Offshore Program in Hong Kong

The degree in Australia is a three-year full time program, and the majority of students enter the course as school-leavers. The degree in Hong Kong is an articulation program that is offered in part-time mode only, with entry restricted to students who have previous approved tertiary qualifications. All students are normally in full-time employment. The degree offered in Hong Kong is delivered locally and is registered with the Education and Manpower Bureau of Hong Kong in order to satisfy regulatory requirements of the Hong Kong government.

The computer science degree involves a Project, which is considered fundamental to its completion. The aim of the Project is to provide students with an opportunity to work on a real-life software development project; to appreciate the needs of the business for which they are expected to build the software system; to apply software engineering and database design methodologies to the design and implementation of a complete system; to confront issues developers face on a daily basis, e.g. liaison with clients, working in a team, documenting the project, and so on; to gain experience in translating their knowledge into practice, and to obtain feedback concerning their progress from intensive reviews of their work. Project is a core component of our computer science course, since it utilizes the knowledge gained throughout the course to develop a real life working computer system.

Project was included as a mandatory unit in order to provide a means to consolidate the knowledge and skills gained by students throughout the degree; and, as a consequence, an elaborate program of project supervision exists to support Melbourne students. Students are divided into groups; each group is allocated an industry project and an academic supervisor. The project is sourced, by the Project coordinator, from local business and industry, and typically is an application, of interest to the client, which does not require immediate implementation. Although the problem is situated in the ‘real-world’, the pressure on the students for successful completion is minimized. Thus, students are able to concentrate on the problem in hand. They can proceed at a pace that enables them to gain maximum benefit from the experience, and complete work that is of high standard. The groups meet with their supervisor on a regular basis and review progress, but major responsibility for project completion rests with the students. Despite some minor problems, Project has proved a very successful vehicle in bridging the transition from the theoretical or restricted knowledge of the classroom to the broader environment of the workplace (Churcher & Cockburn, 1997). It has also proved very appealing to prospective employers.

The Project is also an integral part of the degree offered in Hong Kong. Most units in that degree are taught with the aid of part-time Hong Kong lecturers. Since Project is regarded as critical to the quality of the degree, it is conducted in distance education mode by Victoria University lecturers. The distance education mode impacted significantly on the conduct of the Project in Hong Kong. A simple transplant of the model used in Melbourne proved impossible given the different constraints within the educational context. A unique model for the delivery of the project had to be developed. Its organization and framework have evolved considerably over recent years. Not only have constraints of the existing context evolved but the emergence of new constraints and advances in technology have compelled us to define an alternative model of distance education and utilize different modes of communication.

Constraints on Informing Environment

The purpose of the informing environment is to provide information to the client in a form, level of detail, and sequence to optimize the client’s ability to benefit from that information. (Cohen, 1999, p. 217).

From a social constructionist perspective, curriculum is a social construction shaped by competing groups as they seek to further their own interests. The goals of a curriculum will thus vary from locale to locale as it is situated in a different social environment (Apple, 1990). Attempts to transfer a degree program into a different environment will inevitably involve value conflicts. Value conflicts are not problems to be solved by the miracles of a 'science of schooling'; they are dilemmas that require political negotiation and compromises among policymakers and interest groups - much like that which occurs in the larger society (Cuban, 1990). In the final analysis, curriculum is a political program and, as such, is subject to political concerns.

In the legislative area there were few constraints when the program was first offered in Hong Kong in 1991. The government allowed a laissez faire environment whereby any organization could provide a course without official authorization. In 1997 the government introduced an ordinance to screen non-local educational providers and their courses. This legislation resulted in only minor modifications to the off-shore degree program, but significantly increased the scope and volume of documentation required by government.

In 2001 the government provided the opportunity for non-local courses to seek official accreditation. In responding to this offer we reviewed our course quality control procedures to ensure that they not only satisfied our university requirements but also met the Hong Kong accreditation criteria. In fulfilling both the legislative and administrative requirements, the accreditation process provided us with the opportunity to review the quality of our course from a different perspective. The need to examine and review issues, such as feedback to students, liaison with local lecturers, maintenance of assessment standards, access to resources and provision of technical support within the context of the Hong Kong environment, confirmed the importance of maintaining and continually evaluating the procedures of quality control that have been put in place.

In other regards, some recommendations of the Hong Kong accreditation committee impacted quite significantly on the academic program. Two instances can be used to illustrate this point. Firstly, the mature-age entry policy of Victoria University for applicants of age twenty one years or above be only applied to applicants in Hong Kong of minimum age twenty three years and be restricted to less than thirty per cent of any intake. Secondly, certain exemptions granted under the Victoria University recognition of prior learning policy would not be acceptable for the degree accredited in Hong Kong, raising the potentially anomalous situation that two students with identical entry qualifications would need to complete a different number of subjects depending only upon the location of their study. Another point of contention involved the Project. The academic members of the committee were concerned that the Hong Kong educational system may not have equipped students with the independent study skills required to complete this subject. The committee stopped short of recommending that Project be restricted to a laboratory exercise although it suggested appointment of a part-time Hong Kong lecturer to assist students on a day-to-day basis was desirable.

In the process of addressing the legislative requirements of course accreditation, we indirectly addressed the status of the degree in Hong Kong. Accreditation will place our degree on an equal footing with the locally awarded degrees. In order to provide our Hong Kong graduates with more than an institutional equivalence, our goal is to give a competitive edge in terms of the quality of the learning experience and acquired knowledge and skills.

To this end, Project is crucial. It is considered important that this subject as offered in Hong Kong should be the complete responsibility of Victoria University lecturers. Thus, how could the Project, which is conducted over a period of five or six months, be supervised, and how could support and assistance be provided to students? While this decision was taken to ensure the quality of the subject and its implementation, it raised other problems, including those of time and space. However, a solution to the time-distance dilemma is an intrinsic aspect of the distance education learning mode (AAC, 1998).

Another issue related to cultural factors. This was particularly significant with respect to the sourcing of potential projects in Hong Kong. The Project coordinator was not resident in Hong Kong, had no intimate knowledge of the business and industrial environment, and did not possess the language skills to negotiate with prospective clients. It was clear that a model that was different from the home approach would be needed in Hong Kong.

The cultural divide has presented other, more obvious, implications. Although the course is conducted in Hong Kong, the credential is issued by Victoria University. The language of instruction is English since it would be expected in the international marketplace that graduates with a degree from an Australian university would have basic linguistic competency in English. However, the first language of the majority of students is Cantonese. The graduates from this course are Hong Kong residents and most will continue to work in Hong Kong. For the Project this constituted an issue that needed to be addressed.

A Model for Project

In Project, the teacher-student interaction is structured around a task assigned to the students, namely, the development of software to solve an industry problem. Lecturers play a mentoring rather than an instructional role. Thus the teaching of Project requires alternative arrangements to accommodate this different mode of delivery. The barrier of distance mitigated against the adoption in Hong Kong of the model used in Australia. The use of a distance educational model as the basis for the development of an alternative model for Project appealed as an inviting prospect. Distance learning usually follows one of two models: the asynchronous learning network model or the synchronous learning network model (AAC, 1998). For the conduct of Project, each of these models proved inadequate in some regards, as did the use of distance education only. A hybrid solution incorporating both distance and traditional educational models had to be found. This solution makes use of the Internet and electronic communication, but not to the exclusion of the face-to-face contact (Dede, 1996). In addition, the challenge is to deliver to students a program that is truly educational in the broadest sense; one that both increases their knowledge and their expertise in particular areas, and also prepares them for their responsibilities in a post-degree environment. It is important that the solution incorporates criteria to ensure the quality of the desired product.

The Project model architecture is composed of three layers: the organizational layer detailing the administrative structure and communication procedures, the technological layer specifying the media and tools to support the organizational layer, and the quality layer ensuring that the overall Project model meets the accepted standards of quality distance education.

The Organizational Layer

To successfully manage the Project in Hong Kong, it was essential to design comprehensive Project Guidelines for the organization and conduct of projects. The Project Guidelines specify all project requirements, identify milestones and deadlines, and describe assessment. Students are expected to strictly adhere to the Guidelines. Students submit their work in three stages and the associated documentation submitted at each stage is carefully scrutinized and corrected. Each project group meets with the project coordinator three times during the course of the project to first discuss the project proposal, then to discuss project progress, and finally to present the working software solution.

Each group works on a different project. The face-to-face meetings with individual groups are important because many of the problems that confront students are complex and unique to each project and cannot be adequately addressed in a general manner or solely in written mode (Bullock, 1998). One example is the exploration of a graphical model for a database application. Face-to-face meeting including question-answer interaction has proven an effective means of challenging students to explore their model and to guide them to a realization of its inadequacies.

The Project is conducted over a six-month period each year. Project Guidelines are available to students on the Project Web site. The students organize themselves into groups, and each group finds a sponsor from the local industry. Project groups discuss the proposed projects with their sponsors and subsequently write short project proposals, which they submit on-line to the project coordinator.

The project coordinator examines the proposals, annotates them and places them on a secure Web site. Next, the project coordinator meets with students in Hong Kong to discuss project proposal over two sessions. The first session is a lecture on project objectives and requirements. The second session is dedicated to meetings with project groups.

Students then carry out requirements analysis, database, system and interface design and write a Project Progress Report, which they submit on-line. The coordinator assesses the reports and places result feedback on the Web site. A meeting with individual groups to discuss Project progress follows. Students then proceed with implementation and testing of their systems, and compile and submit the Final Project Report. Finally, students meet with the coordinator to demonstrate their project software.

Group Formation and Project Selection

To best imitate the real-life software development environment**,** students work on their projects in groups of three or four students. This not only exposes them to teamwork, but also to projects that are more substantial. Students are expected to form their own project groups. This results in few reports of interaction problems and gives students a chance to effectively pool their expertise. A project is usually of better quality if the project group is composed of a database 'expert', a Graphical User Interface developer, a CASE tool practitioner and a person experienced in software documentation. This differentiation of tasks is better negotiated within compatible groups. All students contribute to each stage of the project and thus gain experience in all aspects of software development, in the process developing interpersonal relationships and collaborative skills.

The rationale behind the Project is to give students experience in interacting with a real-world client and in solving a real-world 'big' problem. Given the challenges posed by cultural difference and distance, the responsibility of finding a client and a project was delegated to the students. The advantage of this approach is threefold. Firstly, the students gain an experience of 'big' computing. Secondly, they interact with their clients in a similar manner to software developers. Thirdly, the students see their software systems deployed in actual organizations thereby gaining a sense of satisfaction and confidence in their skills. Students usually choose their projects in the area of business or commercial applications although sometimes they develop software for their local church or social club.

Project Schedule and Assessment

Documentation is essential to the success of a software engineering project. The Project Guidelines divide the project into three stages, and each stage involves accompanying documentation. The required documents are: Project Proposal, Project Progress Report and Final Project Report. The project documentation is constructed iteratively whereby each subsequent document includes the preceding one. Thus, the progress report includes all the information contained in the project proposal, as well as all new information required. Similarly, the final project report includes the revised content of the progress report and all new information arising from this stage of the project. The final report completes the documentation of the project.

Each of the required documents has been assessed by, and discussed with, the Project coordinator. At each stage groups can only proceed to the next stage if they have satisfactorily completed the current documentation.

In addition to developing the computer software and written documentation, students give a project software presentation. Each group gives a short overview of their project, usually using a PowerPoint presen-

tation. The presentation of the project software system follows. Students present all the facets of their systems and reply to any questions regarding functionality and implementation. Assessment is used to provide feedback on the progress of the project. Grades are awarded on project reports and software demonstration. Project complexity and quality have a bearing on the assessment.

The Technological Layer

The Project model revolves around self-learning within project groups moderated by regular meetings with the coordinator and sustained by ongoing communications using electronic media.

Not all attempts to introduce electronic media are successful (Woodbury, 1997). Our initial approach was to incorporate video-conferencing into the presentation schedule. The Project involves formal lectures but we felt that greater benefits might be achieved if more staff could share their experiences with the students. This initiative proved disastrous, not so much because of the technology but because of cultural differences. Nothing could be done to overcome the reluctance of the Hong Kong students to express opinions and ask questions in front of hundreds of fellow students. By contrast, the coordinator was inundated with queries after the formal session had concluded. Little benefit derived from the video-conferencing session so it was not attempted again.

On the other hand, the Internet has proved invaluable for the submission of project documentation, and feedback provided by the coordinator. A system, using Java, Web browsers and JavaScript, to facilitate these submissions was developed. The major components of the system involve a Web browser user interface and a client-server application written in Java. In addition, extensive use is made of a Project Web site and electronic mail both for individual and global communication.

Access to the University library is also available over the Internet. Students can communicate with subject librarians and browse on-line databases. No solution has yet been found to the loan of books and journals ‘at a distance’. A separate library has been established on the Hong Kong campus. An ongoing task involves the compilation of an index to available Web resources. This index catalogues public domain and free software, Standards groups Web sites, as well as research and Publisher material.

The Quality Layer

The organization and logistics of Project lie at the core of its delivery as a hybrid distance education model. Quality issues lie at the heart of its educational validity. The quality mechanism to ensure that the offshore program is equivalent to the home program, both in terms of learning experiences and outcomes, has two perspectives – an institutional one and an educational one.

From an institutional perspective the University has developed regulations and guidelines to which any offshore program must adhere. Both the University Council and the Academic Board review and approve all offshore programs. Their remit is to ensure that the offshore program is viable and consistent with the University mission. Attention is paid to such matters as fee payment, enrolment procedures, library facilities, student counseling, and the induction of students into the life of the University community. Academic Board is particularly concerned with academic matters, including teaching arrangements, resources and assessment.

From an educational perspective, the quality of the program must be guaranteed by the academics responsible for its delivery. To ensure the educational quality of the Project model, it has been developed to support the universal seven principles for good practice in undergraduate education, including technology driven and distance education (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996).

1. Good distance learning encourages and maximizes contacts between learners and instructors.

Project coordinator-student contact is a key component in the teaching and learning process of the Project. Content is conveyed by a lecture and Web based documents, but it is the coordinator who conveys the

relevance of the information and makes it come alive in a dynamic interaction with students. A large lecture format is not the best way to accomplish this dynamic interaction. Face-to-face meetings preceding crucial project decisions and individual email contact throughout the duration of the project contribute to the learning process and enhance student motivation and involvement.

2. Good distance learning develops relationships and promotes collaboration among students.

The Project, as a group effort, fosters cooperative work practices and collaboration between group members. The documentation and presentations required in project help students develop their written and oral communication skills.

3. Good distance learning incorporates active learning.

The Project provides an opportunity for students to apply the knowledge and skills learnt throughout their degree course to a real-world application. It is a perfect realization of active learning as it includes problem solving, research, and implementation.

4. Good distance learning gives rich and rapid feedback to students.

Feedback is provided to Project students in three different ways. Firstly, the Project Web page provides all students with answers to queries of a general nature. Secondly, specific feedback on analysis, design, documentation and project progress is given by the coordinator to individual project groups during face-to-face meetings. Thirdly, email is used to support person-to-person feedback.

5. Good distance learning stresses time-on-task.

Project is a task-oriented activity. A schedule is provided to assist students in allocating and managing their time. The Project Web site enables quick access to most relevant resources to reduce the search time.

6. Good distance learning sets high standards for student performance.

“Significant real-life problems, conflicting perspectives, or paradoxical data sets can set powerful learning challenges that drive students to not only acquire information but sharpen their cognitive skills of analysis, synthesis, application, and evaluation” (Chickering & Ehrmann, 1996). The Project involves providing a complete software solution to a ‘real-life’ problem. It is challenging, in that the software system must satisfy the academic requirements as well as meet the expectations of the sponsor. The Project presents numerous opportunities for interaction, collaboration, and hands-on experience. Project expectations, milestones and assessment criteria are clearly communicated in the Project Guidelines setting the standards for judging excellence.

7. Good distance learning respects individual differences and allows students opportunities for learning that acknowledge those differences.

The Project model reflects the varied social and cultural backgrounds and diverse experiences of the Hong Kong students. Students form their own groups, find their own project, allocate roles and responsibilities within the group based on individual talents, and create their own group meeting schedules.

Conclusions

Distance education, constructed to acknowledge constraints, is dynamic. Existing constraints evolve and new constraints emerge. Thus, the development of the Project model is an ongoing activity. Each year changes have been made in order to improve its educational value. New technologies will continue to be incorporated in the technological model of the Project. However, face-to-face interaction between the students and the coordinator will not be eliminated. The balance that has been struck at present seems satisfactory. It allows the coordinator to get to know the students, and their projects, and provides opportunity for the students to relate professionally with the coordinator, and to identify with their university.

Project provides an interesting study of the issues confronted in the delivery of an offshore Computer Science degree. The experience in Hong Kong has shown that the benefits of project can be realized in a distance education mode. Critical to the successful design and implementation of the Project model was careful examination of the pre-existing informing environment. Identifying and understanding various constraints pertinent to the region enabled the development of suitable responses in terms of the delivery and task-completion systems. Not only were the obvious distance education constraints of space and time addressed, but also the less prominent legislative, quality and cultural divides were acknowledged. Nonetheless, pressure from interested participants in the Hong Kong milieu has helped to shape the final structure of our degree program.

The delivery of our program required collaboration and negotiation between many involved parties from the point of its inception through to successful execution. We envisage further avenues for collaborative effort in terms of cooperation with other educational institutions in the provision of our program. Collaboration and negotiation are also essential in interactions with students. We have examined distance education as an informing science from the perspective of the student as client to be informed. Education, however, has a dual nature – could the lecturer be regarded as the client? This is an area that we hope to explore further.

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Biography

Iwona Miliszewska and John Horwood are both senior lecturers in computer science at Victoria University. They have been involved in the administration and teaching of the offshore program in Hong Kong. They have cooperated in research programs involving distance education, lifelong learning and women in computer science, and have published extensively in these areas.