

## MANAGING DISTANCE EDUCATION\* DELIVERED VIA THE INTERNET

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### **ABSTRACT**

*The purpose of this paper is to describe the management of a pilot project undertaken by Universiti Pertanian Malaysia to offer a distance education program in Bachelor of Computer Science delivered via Internet. With the cooperation of a cellular communication company, CELCOM, the program was started in December 1995 as a small project involving only 27 students. Today, this program has an enrolment of more than two hundred students. This paper discusses the philosophy underlying the decision of the university to offer distance learning via the Internet, its partnership with CELCOM, and the management of media and technologies for instructional purposes. It concludes with a discussion of related problems and issues, and recommendation for future improvement in the management of distance education via the Internet.*

### **Introduction**

In its quest to become a fully developed nation by the year 2020 Malaysia has set a target of having at least 30 percent of its population enrolled in tertiary education. At present only seven percent of its citizen, age cohort 19-24 years old, are enrolled in institutions of higher learning (Abu Daud, Norhayati and Maimunah, 1995) in the nine universities of the country, formed mainly for teaching undergraduate courses. These universities are limited in their capacity of admitting all qualified applicants. Thus, many are deprived of the chance of pursuing higher education. Higher education should no longer be the domain of the privileged few and obtaining a tertiary degree via alternative modes such as distance education is unavoidable.

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There is no doubt that the alternative modes of teaching and learning worries many people. Many still assert that the best form of higher education occurs when student, teacher and learning resources are in close physical contact. They assume that traditional education is intimate and thus good, while distance education leaves learners isolated and thus is acceptable only for those unfortunate adults who have no other choice (Ehrmann, 1995).

Higher institutions of learning are adopting technology to deliver education. The use of computers, video and teleconferencing are means of freeing universities and colleges from the limitations of the campus and providing in-campus students with more academic resources. They are linking instructors to students outside the campus. Research indicates that physical presence is not necessary when it come to lectures, their range of test scores is the same, whether they have seen a lecturer in person or on videotape (Ehrmann, 1995).

Universiti Pertanian Malaysia (UPM), in its bid transform itself into the ‘University of the Future’ has installed a distributed computer network called UPMNET. The UPMNET effort started way back in 1982 with the installation of the university’s first mainframe. In 1989 the system was upgraded for more integration with applications in finance, human resources and some academic activities. In 1995, UPM laid a high capacity fibre optic network based on ATM (asynchronous transfer mode) technology around its campus. This allowed for global networking through the Internet via Jaring.

In December 1995, UPM through the Institute for Distance Education and Learning (IDEAL) offered its first two distance education programs. One of which, the Bachelor of Computer Science degree, was via the Internet making it the first university in Malaysia to do so. This was a pilot project, with only 27 student, all from Klang Valley.

Universiti Pertanian Malaysia views networking as being crucial to a modern university. The university’s vice-chancellor believes that the university can create a virtual environment and begin to educate people who for whatever reason cannot be on campus. This would also lead to globalization of education, with borderless universities transcending national boundaries

bringing with it knowledge flow and synergy (Syed Jalaluddin, 1995). The vice-chancellor believes that increased networking is the means to achieve this goal. With that, education will eventually become even less elitist as more and more people get access to information, increasing the number of knowledge-based workers in Malaysia.

Together with the Bachelor of Computer Science program UPM started offering the Master of Science, Human Resource Development (MS HRD) program. The latter also started with a small number of students. The MS HRD program, however, it still print-based.

Basically, the Bachelor of Computer Science program is an innovative on-line learning based on the same campus-bound program offered since 1982. The range and type of courses provided, the viability of those courses and the quality of the total student experience are the same as those on campus. Students are required to take a maximum of 120 credits of core and elective courses. During application process, exemption from certain courses are given to those who qualify.

Universiti Pertanian Malaysia chooses self-instructed modules for its distance education programs. In the case of the Bachelor of Computer Science program, these modules can be accessed by students from learning centres set up all over the country or from the comfort of their homes if they have their own Internet accounts. In this way we are enabling and requiring students to take more responsibility for their own learning. Through this innovation and use of technology, UPM is giving a choice between on-line learning in distance education and traditional campus education.

Students from other “networked” institutions of the world use such media as electronic mail, fax machine, voice mail and computer conferencing to reach faculty members to discuss homework. Electronic means are also used for carrying out seminars, tutoring and casual conversation among faculty members and students. Faculty members of these institutions testified that students are expressing themselves more and better when using e-mail. Students who say little in classroom become rich contributors via e-mail, they have more time to digest what has been said and to compose their responses. A recent study of several degree programs for off-campus students, by the Corporation for Public Broadcasting’s Annenberg/CPB Project, reinforced those

judgements (Ehrmann, 1995). Faculty members and students familiar with both traditional and electronic rated e-mail equal to or better than classroom communication, in term of interaction frequency and its overall usefulness.

Technology has made redefining teaching and learning possible. Instructors are able to teach in multiple locations without having to leave their classrooms. Students are able to follow courses without having to leave their homes or work place. Teaching and learning can be carried out even the instructors and students are not in the classroom.

This paper is to discuss the pilot project undertaken by UPM related to the management of the degree program and the partnership and cooperation with a cellular communication company, CELCOM in delivering the program. The paper describes the content and curriculum, the media and technology used, the teaching and learning support. The paper will also discuss issues and future improvement for managing distance education delivered via the Internet.

### **Partnership**

Commonly collaboration in distance education connoted inter-institutional collaboration which can be viewed as an active working partnership based on formal agreement between two or more organizations and supported by some kind of institutional commitment.

Partnership in delivering distance education in UPM is a working relationship between IDEAL and the various faculties that agree to offer programs via distance education, and any other parties outside the university. The partnership is viewed as a strategy to increase accessibility or infrastructure in certain areas to deal with or contribute to that component of distance education. IDEAL being the manager of the distance education programs of the university feels that the academic content and learning packages should come from the faculty that is offering the program. In this case, it is the Computer Science Department, Faculty of Science and Environmental Studies of the university. Since they are the experts in their fields they will provide the curriculum, writers of the learning packages and instructors for the various courses. IDEAL views them as “partners” in providing the content for the program. Then comes the other side of distance education. This involves infrastructure for delivery and other learning

support facilities such as establishing learning centres all over the country which can be costly for a university to undertake and beyond its means. Therefore, a partnership or an alliance with those who have such facilities is necessary.

In a seminar paper entitle “Vision for a Super Tech campus, Syed Jalaluddin Syed Salim, Vice Chancellor UPM said that a modern day university should run like a business while maintaining its core function as a learning center (Syed Jalaluddin, 1995). Such alliances and collaboration may it be inter or intra-institutional, is a partnership, in conditions of trust for the mutual benefit of the partners. Konrad and Small(1986) have gone so far as to propose that such an arrangement may become essential to the continued existence of distance education institutions faces with escalating costs. In Malaysia, as in other parts of the world, evidences suggest that universities are changing their views about working with others. Increasingly, they and even their faculties are viewing collaborations as a realistic means of continuing to provide service to growing number of students, who make greater and more varied demands on the institutions (Moran and Mugridge, 1995).

The collaboration with CELCOM started with the signing of a Memorandum of Understanding (MOU), a formal intention of cooperation and partnership but not a binding agreement, for the Bachelor of Computer Science program. It is an understanding based on personal trust and shared values between the two institutions. Under the MOU, UPM through IDEAL, is mainly responsible for the academic matters which include the provision of learning materials, the teaching staff, the quality of academic content, examination, accreditation, promoting and marketing the program and managing the students. CELCOM provides the learning centers, the infrastructure for the delivery of distance education programs and initial financing.

CELCOM is a subsidiary of Technology Resources Industries Sdn. Bhd. that operates a cellular telecommunication company. In 1994 CELCOM was given the approval from the government to operate in all areas of telecommunication. CELCOM Academy Sdn. Bhd., a subsidiary of CELCOM is entrusted with the task of human resource development for the company especially for staff training in telecommunication, computer and management. In view that the country is in need of skilled manpower especially in the field of telecommunication and information

technology, CELCOM Academy decided to move a step further to provide such training not only for CELCOM staff, but for the public. Thus working in partnership with UPM in delivering distance education for the Bachelor of Computer Science program via Internet is a means of achieving this goal and is also viewed as a contribution to the nation.

### **Learning Supports**

Distance education students usually study by using packages of learning materials like the case of our Bachelor of Computer Science students. However, the package by itself is rarely enough. Most distance education students need support from human beings, people who can help them with their learning and respond to them as individuals.

The feeling of isolation has been found to be a major problem among distance education students. Learners without support are most liable to delay their completion of program or to drop out altogether. They simply have no one to turn to when they run into problem (Rowntree, 1992).

Knowing that distance education learners need support, IDEAL provides face-to-face session which are held in the university itself. The face-to-face sessions are held three times in each semester and are conducted by the instructors themselves. In such session the instructors will provide guidance for the students on the use of learning packages, answer question, discuss problems and go through any specific topics as requested by the students. Face-to-face components of open and distance learning as described by Hodgson (1993) are those occasion on which a learner, or group of learners, come together with a teacher or a tutor for a planned learning experience. This may be a tutorial, a residential school or a counselling or guidance session. The phrase 'face-to-face' is sometimes used to denote conventional, on-site teaching or training in contrast to distance education. In the case of UPM, the phrase 'face-to-face' is used for sessions conducted by the instructors themselves and are different from tutorials which are conducted by tutors.

While the face-to-face session are held in campus, tutorials are held at the various learning centers more frequently and at times and dates negotiated between the students and tutors. At

these sessions tutors discuss with students study topics, assignments, problem associated with their studies, and help student build what they have already learned. Tutors who are given training by IDEAL at the beginning of each semester, are expected to prepare for each session. These tutors are selected by IDEAL and they are graduates of computer science with some working experience. As stated earlier, the program depends on the learners taking responsibility for their own learning with help from a self-instruction package. As such, tutors are not lecturers on content for this will only encourage dependence of learners on the ace-to-face teaching mode.

It is hoped that all the support provided would reduce the drop out rate among students caused by the feeling of isolation. It is in the provision of these supports that IDEAL needs the contribution from its partner. CELCOM provides 10 learning centers all over the country and it is at these learning that tutorials and interaction among peers take place; and reference materials and other resources are placed. Students use the learning centres to get access to the Internet. CELCOM provides all the requirements of the learning centres. The roles of the university and CELCOM and the requirements of the learning centres are summarised in Appendix I.

### **Problems and Issues**

Various problem have been encountered in the management of the distance education program via the Internet. The following is a brief description of the problems, the solutions and related issues.

### **Module**

The modules are self-instruction materials that enable distance learners to learn on their own without the advantage of regular face-to-face instructions enjoyed by on-campus students. One of the main problems is, therefore, how to ensure that the modules are sufficiently “self-instructional”. Most of the computer science lecturers have had no exposure to pedagogy and instructional methods, much less module-writing for distance learning programs. This fact was borne out by the initial drafts of modules submitted to IDEAL’s curriculum and instruction specialist for perusal and evaluation. Most of these drafts were found to be nothing more than lecture notes converted to html format, resulting in webpages which are poorly designed and grossly lacking in sound pedagogical principles.

To overcome this problem related to module quality, IDEAL has organized module-writing workshops for lecturers who are involved in writing modules for the distance learning programs. These workshops go right down to the basics of how to write helpful instructional objectives and how to plan effective learning activities. Also included in the workshops are basic principles of instructional webpage design and various Internet resources for webpage development.

### **Instructions**

A distance learning program, as suggested by its very name, enables learning to take place over a distance, away from the campus. In such a program in the past, due to distance and other communication constraints, there has been little interaction between instructors and learners, much less among the learners themselves. With the advent of various computer-mediated communication techniques, lack of interaction should no longer be the norm or the cause for learner isolation and high attrition in the program. IDEAL sees effective interactions as a key factor in the instruction of distance learning courses and a solution to the problem of learner isolation. To effect interactions, a mailing list is set up for each course to ensure that group discussion is a regular learning activity involving both the instructors and learners.

### **Tutoring**

One of the initial problems in implementing the program is getting suitably qualified tutors to work at learning centers in places where there are a few IT professionals. The other problem is that with the rapid advancement of computer technology, even some of the qualified tutors find that they need to read up and learn new materials to be effective tutors. IDEAL tries to overcome such problem by developing some lecturers who are willing to travel to the centers. At the same time, lecturers are required to prepare well-structured tutorial materials to disseminate to their tutors early so that the latter will have ample time to make the necessary preparation. The lecturers also meet their tutors at the beginning of the semester to brief them about how to conduct the tutorials. In addition, tutors have free access to all the reference books placed at all the learning centers for the use of learners.

## **Technical Problems**

To overcome the initial problem of inaccessibility of learning modules when the main server at the Computer Science Department was down, a mirror site was set up at IDEAL and another one will be set up at CELCOM. Diskettes and hard copies are also sent to all the center as backups. The other problem is the limitations of dial-up lines at some centers. This problem will be resolved once the center get their own leased lines and servers.

## **General Problems**

Module-writers are generally lecturers from the Computer Science Department who have their usual teaching load of on-campus courses. As such, the production of modules makes additional demands on their time and effort. IDEAL appoints one of the lecturers as the program coordinator to keep track of module development and to ensure that modules meet submission deadlines. The coordinator also liaises with IDEAL's curriculum and instruction specialist in matters pertaining to curriculum and instruction. In addition, for quality control, the specialist also evaluates the modules and provides feedback for their improvement.

## **Conclusion and Recommendations**

Most of the problem described above, especially those pertaining to the centers, the infrastructures and the technical aspects will ease out in due course. As infrastructure in some of the centers gets upgraded overtime, computer-mediated communication techniques will be used more efficiently and effectively for distance learning. Distance learning via the Internet should not and will not be confined to delivery of modules over the Internet. It will evolve into a highly interactive teaching-learning experience that parallels the face-to-face encounters on campus. In order to achieve that the following recommendations need to be considered: -

- Lecturers will have to learn new pedagogic techniques and to become technology managers.
- Production and design of course materials will have to be given more weightage.
- Lecturers will need to increase their instructional skills.
- Managers and providers of distance education should prepare learner learners, give them the assessment of workload involved and the scenario of self-directed learning.
- Managers and providers of distance education should initiate collaboration where a group of people, each with particular skills and competencies, develop a course as a team. The above

The above recommendations should be given consideration in the management of any distance education program.

## References

- Abu Daud Silong, Norhayati Abdul Mukhti and Maimunah Ismail (1996, June) Challenges in Developing and Effective Distance Education Delivery System in Malaysia. Paper presented at World Conference on Educational Multimedia and Hypermedia & World Conference on Education Telecommunication, Boston, Mass., USA.
- Ehrmann, Stephen, C (1995). Moving Beyond campus-Bound Education. The Chronicle of Higher Education, June 1995.
- Syed Jalaluddin Syed Salim (1995). Reengineering the University: Strategic Changes to Meet Challenges in 21<sup>st</sup> century. Paper presented at Seminar on Administration Institutions of Higher Learning, Universiti Pertanian Malaysia.
- Rowntree, Derick (1992). Exploring Open and Distance Learning. London: Kogan Page Ltd.
- Syed Jalaluddin Syed Salim (1995). Vision for a super Tech Campus: With reference to Universiti Pertanian Malaysia. Paper presented at Seminar on R & D in Telecommunication Technology, Kuala Lumpur.
- Moral I & Mugridge ,I. 1995). Collaboration in Distance Education: International Case studies, London and New York: Rutledge.
- Hodgson, Barbara (1993). Key terms and issues in Open Distance Learning. London and Philadelphia : Kogan Page and Institute of Educational Technology, Open University.

## PROGRAM : BACHELOR OF SCIENCE COMPUTER

Roles of UPM	Roles of CELCOM
<ul style="list-style-type: none"> <li>• Provide the curriculum, lecturers and writers for the learning packages of the program.</li> <li>• Train the writers for the learning packages.</li> <li>• Provide instructional designers for the improvement of learning packages.</li> <li>• Work out incentives and payment schemes for writers and instructors.</li> <li>• Identify tutors for the program, train them and work out a payment scheme for them.</li> <li>• Identify students reference materials.</li> <li>• Monitor the program, its quality and the quality of the support services.</li> <li>• Provide examinations for the students.</li> <li>• Grade the students.</li> <li>• Keep students records.</li> <li>• Mark student assignments.</li> <li>• Register the students with UPM and issue a metric card with access to all university facilities.</li> <li>• Prepare the prospectus for the program.</li> <li>• Promote the program.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare the prospectus for the program.</li> <li>• Promote the program.</li> <li>• Provide the learning centres at major towns with the following facilities :               <ul style="list-style-type: none"> <li>- A computer lab equipped with a minimum of 10 personal computer (minimum 486 or higher, B to 16 MB RAM standard, at least 540 Megabyte Hard Disk Drive, Windows 3.1 or Windows 95) connected to JARING, Mimos either by modern or leased lines connections.</li> </ul> </li> </ul> <p style="margin-left: 40px;">Note : Each students be allowed 4 hours access to the Internet per week.</p> <p>Minimum Netscape 2.0 Internet browser and E-Mail facilities for 20 students.</p> <ul style="list-style-type: none"> <li>- Minimum of 2 printers for the students to print out modules for 20 students.</li> <li>- A tutorial classroom for minimum 20 students equipped with OHP, VCR player, white/blackboard and stationers.</li> <li>- A qualified tutor to facilitate scheduled tutorials at a maximum of 5 times a semester. Each tutorial will run for 2 hours. Qualified tutors will be required to attend briefing sessions at UPM, Serdang at the beginning and end of every semester.</li> </ul>

- A Resource Room for learning and support materials.
- An administrator to facilitate usage of computer lab and to assist in exams conducted at the centres.
- At least one PC with capabilities of audio conferencing, desktop conferencing and chat conferencing.
- Student will utilise the centre after office hour i.e 5.00 p.m till 9.0 p.m. on weekdays and no weekend Saturday : 1.00 p.m. till 5.00 p.m. and Sunday 10.00 p.m till 5.00 p.m.

- Administer the examination at the different learning centres.



