

# THE VIRTUAL UNIVERSITY

Models &  
Messages

Lessons from  
Case Studies

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A newly created institution



United Nations  
Educational, Scientific and  
Cultural Organization



International Institute  
for Educational Planning

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## List of abbreviations

BBA	Bachelor of Business Administration
BIT	Bachelor of Information Technology
CRM	Consumer Relations Management
ICT	Information and Communication Technology
MBA	Master of Business Administration
OLT	Online Tutorial
UMM	United Multimedia
UNITAR	Universiti Tun Abdul Razak
VOISS	Virtual Online Instructional Support System

# 1. UNITAR and its context

Distance learning is an old phenomenon in Malaysia. The establishment of Universiti Tun Abdul Razak (UNITAR) in 1998 has enhanced distance learning in the country in two significant ways. Firstly, by leveraging Information and Communication Technology (ICT), UNITAR aims to be an important catalyst for the country's transformation into a knowledge economy, both in terms of technology and human resource development. Secondly, it allows quality education to reach a much wider audience both locally and internationally. UNITAR's presence in the midst of 15 public and 14 private universities and almost 600 private colleges certainly is in line with the mission of the Malaysian Government to turn Malaysia into a centre of educational excellence. Within its limited experience, UNITAR appears to have the potential to pioneer customized education and lifelong learning in the country.

## 1.1 National context

Many individuals, especially those in the workforce who aspired to develop their careers, painstakingly worked for external degrees offered by reputable universities such as the University of London, UK, as early as the 1950s or earlier. Many professional bodies, such as the City and Guild in the UK, also offered various certificates and diplomas in different fields through correspondence programmes. In principle, these programmes supplied their registered students with reading and reference materials and assignments in print form through ordinary mail. Students would then sit for the scheduled examinations at different recognized centres in the country. Regular face-to-face teaching was not common for distance learning programmes, but educational entrepreneurs normally provided some form of tutoring to students to help them prepare for their examinations. However, in certain cases, there was no interaction at all between students and faculty.

The first local university that started distance learning, which was popularly known as 'off-campus programmes', was the Universiti Sains Malaysia in Penang. Universiti Sains Malaysia was established in 1967/68. It started operations in 1969 and initiated the off-campus programmes in the early 1970s. Students received print-based materials in modular form and were required to attend regular face-to-face tutorials at different centres conducted by qualified academics employed by the university on a part-time basis. These students needed to be registered as off-campus students for four years in order to complete the first two years of a three-year undergraduate programme. The final year had to be completed on-campus with the other regular students.

Off-campus or distance learning programmes did not become very popular until the 1990s, when almost all the established local public universities had jumped on the distance learning bandwagon. This proliferation of distance learning programmes is the result of very high demand for higher education combined with a shortage of university places in the country. This trend has also prompted foreign universities to offer academic programmes to Malaysians, for example, Master of Business Administration (MBA) programmes offered by universities from the UK. In these cases, no more than 30 per cent of the teaching is done by faculty from the UK, the rest being done by Malaysians. Compared to the fees charged by local universities, those charged by the foreign universities are very high. In other words, the premium for reputation is rather high.

The advent of the Internet in the early 1980s did not, however, lead to the development of e-learning right away. Both the lack of Internet penetration and its instability hindered the enthusiasm for online learning. Providers of e-learning could not afford to venture into the business in Malaysia because of the difficulty in obtaining the critical mass required for profitability. The second, and more important, reason for the lack of enthusiasm for e-learning was that face-to-face teaching and learning were still preferred. Although distance education where little or no student-faculty interaction takes place has already taken root in the country, there is still much doubt among students and especially their parents that e-learning could be effective. Both society at large and professional educators still strongly believe that the traditional methodology of teaching and learning is the most effective way of imparting knowledge. This belief is so deeply ingrained that forward-looking institutions like UNITAR are finding it difficult to introduce e-learning, which is becoming an important business in countries such as Australia and the USA. UNITAR's experience in introducing e-learning in Malaysia is very significant, in particular for societies of the same background and socio-economic status in other parts of the world.

UNITAR is not the only private higher institute of learning providing tertiary education in Malaysia. There are approximately 600 private colleges and at least 14 fully operating private universities in the country. Only approved private universities are allowed by the authorities to offer undergraduate and higher degree programmes. The private colleges offer various non-degree qualifications leading to certificates, diplomas and advanced diplomas in professional and academic disciplines. They also offer degree programmes by twinning with foreign universities, particularly those in the UK, Australia, the USA and Canada.

The government has also approved a number of foreign universities to establish branch campuses in Malaysia, for example, Monash University (Australia), the University of Nottingham (UK), and Curtin University (Western Australia). These foreign universities offer selected degree programmes in Malaysia that cost slightly less for students who otherwise would have to go abroad to receive the same qualification. All the private institutions adopt the traditional method of face-to-face teaching that requires physical campuses and teaching personnel.

The increasing demand for higher education, especially since the early 1980s after the British Government decided to implement full-cost fees for all foreign students, has resulted in the proliferation of private colleges that provide twinning programmes. The small number of public universities (only six in those days) could not meet the rapidly increasing demand for higher education. Since then, the government has increased the number of public universities to 15 for a population of nearly 23 million. Private education is still considered to be a very lucrative business.

There is the perception that in order to establish a private university of reasonable size and repute, a huge campus is needed to attract students. Creating a campus requires a very large capital investment. Few private enterprises can afford this. Second, the capacity of the university, which is usually burdened by limited allocation of space, has to be expanded at considerable capital cost when the need arises. Third, students have to be on or at least in the vicinity of the campus to be able to attend the university, and this naturally involves incidental costs, such as transport and lodging, in addition to tuition fees and books. As a result, only a limited number of students – in other words, those who are able to pay – can enrol, a situation which exacerbates the socio-economic divide.

KUB Malaysia Berhad, which owns UNITAR and is listed on the main board of the Kuala Lumpur Stock Exchange, believes that most of the problems associated with the face-to-face teaching and learning mode could be lessened by introducing the concept of virtual education. In this case, the main investment is not in physical facilities, but rather in information and communication technology infrastructure, an effective operating and management support system and content development. Students need to have a personal computer or laptop with Internet access in order to be able to 'click with UNITAR'. Compared to a conventional private university, the fees for a virtual university such as UNITAR would be slightly reduced, lodging and transport costs could be minimal, and capacity could be greatly increased without huge additional capital cost. This not only allows more students to register, but also accelerates the rate of computer literacy and Internet penetration in Malaysia, especially since all UNITAR students will have to use the computer and Internet for their studies, regardless of the courses they are pursuing. Moreover, UNITAR students should be better prepared to work in a 'knowledge society' than are graduates of other universities, who may not be as familiar with computers or IT-related subjects. In the national context, developing this type of training is very important; for instance, the government is investing heavily in ICT with the intention of creating a Multimedia Super Corridor, which investors from all over the world can use to conduct business or R&D activities with Malaysia.

When education materials can be accessed through computers and the Internet, the need for students to be on campus is very much reduced, and the university can function with fewer physical facilities. An online education model will encourage more working people to register for higher education programmes, because these are convenient, cheaper and of high quality. Those who have registered as full-time students will find that they have time to earn some income through part-time employment, and those working full time can take courses on a part-time basis. In this way, the university can encourage lifelong learning, and provide an education that is customized according to the students' own pace. Students can opt to take a heavy course load and graduate early, or a light load and graduate a little later.

A virtual university, if properly implemented, does not have constraints of space and can enrol more students than a conventional one. This is another conceptual issue that is very pertinent for the Malaysian context. During UNITAR's planning stage in the late 1990s, there were only eleven public and five private universities in the country. However, there were about 600 private colleges of varying capacities serving the tertiary education needs of the country. The total student enrolment in the universities and colleges was about 180,000, which is far below the almost 300,000 of annual secondary school leavers. The approximate annual intake is only some 90,000 students, or about 30 per cent of the total number of school leavers. It is therefore necessary to provide more opportunities for tertiary education, which need not be at the tertiary level.

One of the initial worries was whether the level of ICT infrastructure in Malaysia would be adequate to support virtual education. For this very reason UNITAR initially decided to develop its multimedia, interactive content on compact disc format. CD-based content would work very well on stand-alone personal computers (PCs). However, within two years, it became evident that the ICT infrastructure was improving rapidly and could easily support the UNITAR system. It was also clear that CD-based content would be more expensive, cumbersome for students and difficult to update. UNITAR immediately improved its capacity to produce web-based or online content instead, which was faster, slightly cheaper, more flexible and easy to update than CD-based courseware. The drawback was that the web-based or online courseware could not replicate the richness of multimedia content on CD.

## 1.2 International context

Although English is not the main medium of instruction in all Malaysian universities, UNITAR has chosen English as the medium of instruction. This approach is not only good for Malaysians studying at UNITAR, but it also allows UNITAR to penetrate the international market with ease. Furthermore, as English is the dominant language of the Internet, it will be much easier for UNITAR students to cope with their studies than in universities using languages other than English.

The UNITAR teaching and learning model was also introduced in Cambodia in 1999, where at least 100 students are now pursuing a Bachelor of Business Administration (BBA) programme offered by UNITAR and, at the time of writing, the model is on the verge of being introduced in Thailand and Indonesia. UNITAR was also invited by UNESCO-Bangkok to demonstrate its teaching and learning model to several universities in China after the Chinese Government gave permission to some of its universities to introduce online teaching and learning. In early 2002, through collaboration with the Malaysian Ministry of Defence UNITAR devised a similar model to offer academic programmes to armed-forces personnel through a higher education unit called the K-Force University Programme.

Because it has to produce its own content, UNITAR has now acquired the capacity to develop interactive, multimedia content, both for CD and the web. To date, UNITAR has initiated collaboration with reputed universities, such as Johns Hopkins University (JHU), to develop special multimedia, interactive content for their selected academic programmes. UNITAR has also embarked on the development of prototype content for the corporate training programmes of SAP AG, a German company.

## 2. UNITAR: its creation, organization and current programme

The creation of UNITAR was due mainly to three factors. First, the very strong concern of KUB Malaysia Berhad, the parent company of UNITAR, about the impending socio-economic and digital divides among Malaysians resulting from the information age. Second was the government's policy shift from manufacturing and services to ICT as a new source of growth for the country. Third, there was a necessity to undertake a rapid transformation from a manufacturing-based economy to a knowledge-based economy, especially in terms of manpower requirements and R&D activities. After official approval for the establishment of UNITAR was granted in late 1997, it took the university only nine months to prepare for its first intake of 162 students in September 1998. It started with two faculties, namely Business Administration and Information Technology, and two undergraduate degree programmes. Within less than a year, UNITAR developed five other programmes, four at the master's level and a fifth (a research programme) at the Ph.D. level.

### 2.1 Creation

#### Rationale

As noted in Section 1 above, one of the perpetual problems faced by Malaysian society, especially in the past two decades, is the shortage of university places in the face of growing demand. This problem is further exacerbated when at least half of the 300,000 annual school leavers can neither find the kind of employment they want nor a place in a university. Moreover, there seems to be a strong positive correlation between lower academic achievement and lower income. Given that universities are normally elitist in approach, the socio-economic divide will tend to deepen rapidly.

The government is also very concerned over the digital divide that will result from its policy to turn to ICT as a source of economic growth. Efforts are being made to reduce the impact of ICT by introducing the 'smart-school' initiative (i.e. e-learning at the primary and secondary educational levels) as one of the seven flagship applications for the Multimedia Super Corridor government project. The government is allocating enormous resources to equip schools with the necessary hardware and software to implement the smart-school concept. This same policy requires sufficient manpower, especially skilled knowledge workers, for a successful implementation of the Corridor project. As there is a shortage of such workers worldwide, increasing their number would be more than welcome.

#### The initiator

Given the above factors, Datuk (Dr) Hassan Harun, the Executive Chairman of KUB Malaysia Berhad, proposed in 1995 the establishment of a private university that could solve most, if not all, of the above problems. As someone who had been directly involved in establishing a number of private colleges since the late 1960s, he saw an opportunity to contribute significantly to nation building by establishing a private university that would be fully supported by a publicly listed company. His success in managing private schools and colleges in the past was based on the philosophy of providing sufficient opportunities for education and on the premise that the demand for education is always in excess. He has proven time and again that there are always those who, for one reason or other, deserve a second chance to prove themselves in life.



Apart from the above factors, as a businessman he needed to examine the cost of establishing and maintaining a private university from a commercial point of view as well. It is evident that a conventional university normally requires a huge capital investment for the physical campus. This will mean a considerable gestation period for a project that may not even be viable, given the limited number of students that can be accepted.

### **The objective**

The mission of UNITAR is to provide ample opportunity for quality education to all at affordable prices. In 1996, the commitment was made to establish a virtual university that would be ICT mediated and provide quality education, without requiring the construction of a physical campus that would limit enrolment and reduce commercial viability. This initiative was also intended to complement the role of other public and private universities, especially in terms of producing the required number of knowledge workers. Apart from pioneering a virtual mode of education that is believed to be the way forward for education, UNITAR also hopes to lead the way in providing customized and lifelong education.

### **The intended audience**

From the beginning the intention was to reach a global audience. This was evident by the choice of English, the commercial and Internet language, as the medium of instruction. However, UNITAR started with a local audience to ensure that the system would be effective and acceptable. Among the local audience, the first target was school leavers, especially those who did not have access to higher education elsewhere. The second target was workers who had not had the opportunity for higher education or who were compelled to work from an early legal age by circumstances. This group comprises those who started working after high school or who had previously completed certificate or diploma programmes at other public or private institutions of higher learning, and then began to work. The latter are people with qualifications beyond high school and who possess work experience. Finally, the third group to be targeted included those who intended to pursue higher education degrees without affecting their work schedule. They needed a flexible programme that would allow them to study at their own pace without frequent classroom attendance.

The plan is to go beyond the local market, specifically to the neighbouring countries in the region, and offer a flexible learning mode that could better meet the demands and pressures of the current work environment. The competition inherent in career progression often necessitates gaining new skills or higher qualifications. We believe that we could capture a small portion of such markets, especially if we could effectively provide higher degree programmes.

### **Partner institutions and their respective roles**

The concept of virtual education promoted by UNITAR requires the establishment of regional or study centres in different cities. These centres are needed to provide a place where face-to-face meetings can be held at regular intervals, for example, between students and their lecturers, or where students can obtain hands-on computer training to enable them to effectively follow their online and offline activities. The centres are also necessary to provide premises for students to get together for recreational or social activities. This concept means that UNITAR needs to collaborate with other private colleges in different cities and towns to provide the physical space for classrooms, recreation, socialization and co-curricular activities. The space is also necessary for keeping information technology (IT) equipment, such as networked computers, servers, software and others that will be frequently used to assist learning and teaching.

Instead of building its own centres in different parts of the country, which would require additional capital investment and time, UNITAR offers to collaborate with other private colleges that are willing to provide UNITAR with physical space and IT facilities, lecturers, and student management for a fee. In this way, UNITAR can almost instantly increase its capacity to enrol a large number of students without additional investment, although this results in a smaller revenue stream. The arrangement works well as long as the private colleges attract enough students to ensure that the UNITAR activity is viable. At present, the collaboration between UNITAR and other colleges does not function on a franchise basis that would require stringent formalities to be followed in accordance with the Franchise Act of Malaysia. However, UNITAR is planning to employ a formal franchise model once the university can fulfil the requirements of the Franchise Act.

### **Lessons learned from the start-up phase and recommendations**

One of the most important lessons we learned from the UNITAR experience was that assumptions that hold true for a public university, are completely different for a private one. The main question for any private learning institution is one of societal acceptability in terms of accreditation and financial support. But for UNITAR, there was another major difficulty, which is the delivery mode itself. Calling itself a virtual university was not helpful because of the perception that students need not come to class at all. Although this perception is only partially true, students (and more so parents) were very concerned about the feasibility of pursuing higher education quite independent of normal lectures and instructors. There was obviously a need for aggressive marketing to explain the virtual university concept and convince students of its validity.

The most important lesson here is that we need to be very meticulous in our planning and implementation and not be overzealous in promoting the concept that we ourselves believe in and admire. We need to have a backup plan to ensure that the investments we make are appropriate and necessary. Investment in IT requires especially careful planning to take into consideration rapid obsolescence, and this is even more the case with respect to available technology for virtual education. The investments in technology could become too expensive for the project to be viable.

## **2.2 Organizational structure**

### **Organization and the decision-making process**

UNITAR is a private enterprise that takes commercial considerations very much into account. When it started, the organizational structure was very simple, and staff was kept to the minimum. The main concern was to set up the physical and technology infrastructure that would support virtual education. Hence, the university employed technical expertise before appointing the faculty. The organizational structure where academics are appointed to most of the positions and lead departments – as in a conventional university – did not come about until a few months before UNITAR went into operation. Instead, a special project team or steering committee, comprising mostly technical and a few academic staff, was set up, presided over by the President and Chief Executive Officer. This committee had to decide on every aspect of UNITAR's establishment, including the physical infrastructure, technological equipment, systems development and integration, courseware development, organization of the virtual library, financial planning and requirements, manpower planning and recruitment, academic programmes and marketing.

The project team was not divided into subcommittees so that decisions could be reached without delay. All the members had to attend the meetings on a weekly basis. An ad hoc subcommittee was formed with the appropriate people for considering issues that were either too technical or specialized. The most important concern at the planning stage was ensuring that every aspect of UNITAR would be ready before the university would begin operation. Unlike a conventional university, where it is not essential to have all courseware or teaching materials completely prepared before a course starts, a virtual university that uses materials on CD or on the web must ensure that all such materials are ready before the first student registers.

It is worth repeating that the project team took only nine months to put everything in order. The first 162 students registered in September 1998. At that time, the university had appointed the Deputy President (of Academic and Student Affairs), who was in charge of the two Deans (of the Faculty of Business Administration and Faculty of Information Technology). This Deputy President was also responsible for the Academic Affairs Department, the Student Affairs Department and the University's first Study Centre that housed the classrooms, workstations, virtual library and academic areas or offices. At the same time, another Deputy President (of Technology and Development) was appointed, who is in charge of all IT and other technical personnel who ensure that the whole system used to support the UNITAR operation works.

Since then, UNITAR has established three other departments, namely: Corporate Planning and Business Development (CPBD), Finance and Accounts (F&A), and Corporate Services (CS). The officers heading these three departments report directly to the President.

The President's office is also responsible for Public Affairs, Occupational Safety and Health, and Quality.

The Organizational Chart is presented in the *Appendix* to this chapter.

### **Difficulties with the current organization and solutions implemented**

A major problem at UNITAR was the interaction between the technical experts who joined the university at its inception and the academics who came on board much later. As this problem was envisaged from the beginning, the university employed mostly former academics with technical backgrounds who could easily integrate with the academics joining UNITAR much later.

There was another problem that required attention. The academics who joined the UNITAR faculty were mostly from public, conventional universities and were not familiar with commercial, private-sector values, which were very different from what they were used to. Over time, however, they successfully adapted to UNITAR.

A major change in the organizational structure of UNITAR occurred when the university decided to establish a wholly owned subsidiary company – the United Multimedia (UMM) – to handle all the technological needs of the university. It meant that the university could focus on its own core business of conducting academic programmes, while UMM could concentrate on providing the technological support. Moreover, this organizational change fitted in well with the business model of the university.

## Lessons learned and recommendations

First, the right mix of technical and academic staff must be maintained from the beginning to ensure integration of the team.

Second, technical and academic staff should take part in an orientation programme so that they can appreciate the philosophy and mission of a virtual university.

Third, while the organizational structure of an enterprise can easily be changed to suit the demands and needs of the time, it takes much longer to change the attitudes of people. I strongly believe in the philosophy of Matsushita, who once said, 'Matsushita first makes people and then it makes electrical products'. This philosophy is also very pertinent for UNITAR.

## 2.3 Current programme

### Number of programmes and courses offered

UNITAR started with only two undergraduate programmes, namely a BBA and a Bachelor of Information Technology (BIT) programme. Each programme offers a total of 120 credit hours, or about 40 courses, to be completed in 9 semesters or 3 years (the academic year consists of 3 semesters of 12 weeks each; at a later stage, the equal tri-semester system was changed to 2 semesters of 14 weeks and 1 short semester). For students who are admitted with only the O-level or Secondary School Certificate, the undergraduate programmes at UNITAR are preceded by a one-year (or three-semester) Certificate programme in Business Administration or Information Technology, consisting of 40 credit hours or 10–12 courses. By end of year 2002, there were three other approved programmes being offered, which included Foundation of Management and Bachelor of Management (B.Mgt.) from the Faculty of Humanities and Social Sciences and Bachelor of Information Systems from the Faculty of Information Technology.

Within the first year, UNITAR developed and offered four masters programmes and a Ph.D. programme by research, in addition to the two certificate and undergraduate programmes. The four Masters programmes are:

- Master of Business Administration (MBA);
- Master in Information Technology Management;
- Master in Information and Multimedia Technology; and
- Master of Science (by research).

Both the Information Technology Management and the information and Multimedia Technology masters programmes are designed for non-IT graduates or specialists who wish to become IT specialists. These are one-year programmes offering thirty-six credits for ten courses and projects. The MBA requires forty-five credits of course work or fifteen courses of three credits each. The Master of Science and Ph.D. by research require research training, which is provided by the Centre for Graduate Studies that manages the graduate programmes. By end of the year 2002, there were five additional approved programmes being offered: Executive MBA, Master of Science in Information Technology (by research), Master of Science in Business Administration (by research), Ph.D. in Information Technology (by research) and Ph.D. in Business Administration (by research). Through collaboration with the University of Technology Sydney, Australia, UNITAR is also able to offer a unique specialization in Facilities Management for its MBA programme. The

courses offered by the University of Technology Sydney are conducted online from Australia and taken by students opting for this specialization at UNITAR in Malaysia.

#### **Total annual budget**

UNITAR has spent about US\$45 million over the past three years. The annual budgets for 1998, 1999 and 2000 were US\$10 million, US\$15 million and US\$20 million respectively. The budget for 2001 was about US\$23 million, while that for 2002 was about US\$25 million.

#### **Number of active students by programme category, gender and age**

Out of a total number of 6,141 active students, undergraduates represent the vast majority (94 per cent), postgraduates, 4 per cent; and preparatory students 2 per cent. With regard to age, most are young (18–23 years old, 64 per cent; 24–30 years old, 29 per cent; and more than 30 years old, 7 per cent) and there are more female (52 per cent) than male (48 per cent) students.

#### **Average course completion rate**

So far, at UNITAR, twenty-two out of twenty-five of the first group of MBA students have graduated. About 100 students from various programmes will graduate in early January 2003. The first group of undergraduates are expected to graduate alongside this group. Although UNITAR does not receive the best students since they usually prefer going to public universities that are less expensive, it does not have a serious attrition rate.

#### **Number of academic staff by faculty**

Out of a total number of ninety-five academic staff, forty belong to the Faculty of Information Technology; thirty-eight to the Faculty of Business Administration; eight to the Faculty of Humanities and Social Science; and nine to the English Unit.

#### **Number of executive and support staff**

Out of a total of 100, executive and support staff are divided as follows: management, 10; executive positions, 42; and support staff, 48.

#### **Development plans for the next three years**

UNITAR plans to introduce corporate training, especially in the skill sets that it has developed in-house. Its wholly owned subsidiary, UMM, has been registered as a corporate training provider by the government. This status allows it to conduct training programmes that can be funded by the Human Resources Fund of the government. To end of year 2002, UMM carried out a number of specialized ‘immersion’ training sessions in multimedia courseware development and e-learning for participants from the government, especially from the Ministry of Education, and participants from outside Malaysia, including those from Middle Eastern countries. UMM has also acquired a licence to conduct training programmes funded by the Human Resource Fund from the government.

- UNITAR has already started a centre in Cambodia in collaboration with a locally established private college. There are about seventy students pursuing a BBA offered by UNITAR in Cambodia at the moment, and the number is expected to increase. UNITAR plans to soon offer the MBA programme in Cambodia as well, in addition to corporate training. To date, the Cambodia venture still retains a number of students in the BBA programme; the introduction of the MBA programme in Cambodia is subject to measures of further refinement by both parties.

- UNITAR hopes to establish centres in Indonesia through a collaborative effort with partners in that country. In addition, it intends to collaborate with partners in Thailand and Dubai for the possible establishment of centres in those countries. To date, the Thailand venture will certainly involve a reputable partner in Assumption University, Thailand's premier university, which conducts its programmes in English and has been in existence for more than thirty years.
- UNITAR is developing and revising the viability its franchise programme to reach out to other markets in the region.

#### **Lessons learned and recommendations**

- The introduction of academic programmes has to correspond to market needs. It is also very important to plan for resource, infrastructure and manpower requirements; this will make it easier to mitigate obsolescence, unnecessary investment costs, etc.
- The quality of delivery mechanisms is essential for successful implementation of the virtual university. While there are areas that are under UNITAR's control, there are other areas beyond its control, such as the bandwidth problem, the Internet, advancement in technology, and regulatory framework instituted by the authorities.
- The rate of technological change can be too rapid to follow. It is better to choose the technology that is most stable than to opt for the latest technology.
- The need for a physical campus with IT, residential and recreational facilities may arise when Internet access is not available in certain areas. Such facilities will enable students in these areas to receive a virtual education.
- Academics with IT experience are preferred. The ability to emulate the role as a facilitator instead of a conventional lecturer is a must.

### 3. Administrative issues

The administration and management of a virtual university initiative like UNITAR requires the development and implementation of structures and procedures that differ from those of traditional universities. This is not only due to the virtual nature of the university, but also because it encompasses both virtual and private features. For public universities the structures and procedures are quite standard because the funding comes almost totally from the government. Hence, the main parameters, such as the number of faculties, enrolment, and ratio between lecturers and students, are very much determined by the government. On the other hand, a private university does not receive any financial support from the government, even though it may be highly regulated in terms of standards, quality and even programmes.

#### 3.1 Administration

##### **Administration and management of the university**

In order to understand and appreciate the differences in the administration and management of a virtual university environment, we have to first of all understand the manner in which the university delivers its education, the student profiles (including location), the types of support services that are provided and the facilities available.

##### **UNITAR'S hybrid model**

- From the outset, UNITAR adopted a hybrid model of virtual education in which lectures are not delivered in the usual manner but students are expected to access the materials, which are in multimedia format and made available on CD or on the web. However, students are required to attend face-to-face tutorials, which are conducted at the study centres distributed throughout the country. The total number of hours of tutorials per semester for a three-credit-hour course is twenty-one hours. For the Certificate programme, all tutorials are conducted in a face-to-face fashion. For the degree programmes, the twenty-one hours of tutorials are conducted as follows: eight hours face-to-face, four hours online (real-time), and the rest offline.

##### **UNITAR's student profile and locations**

- UNITAR has a mixture of both undergraduate and graduate students, although undergraduate students predominate at the moment. It is interesting to note that almost all the graduate students work and at least 20 per cent of the undergraduate students work.
- About 50 per cent of the students are located in the main study centre near Kuala Lumpur. The remaining 50 per cent are unevenly distributed among the six regional study centres, with the number of students in each centre ranging from 200 to 1,200.

##### **UNITAR's support system**

- The main support system is the Virtual Online Instructional Support System (VOISS), which contains various teaching and learning functions, such as e-mail, forums, bulletin board, announcements, frequently asked questions, schedule, and all the pertinent information about UNITAR, its various departments, faculties, academic programmes, courses and tutorial schedules. VOISS, which is currently on Version 2.0, also acts as a course management system, and handles student records, financial procedures and

information. It is the university's main source of information, interaction and activity, and students (as well as the instructors and administrators) must learn how to use it. If VOISS fails to operate, it is said that UNITAR would no longer exist.

- In addition to VOISS, UNITAR provides continuous support to students and lecturers through its Consumer Relations Management (CRM) service, or call centre, where relevant staff answers queries or comments made via telephone, e-mail or fax within a specified period. The centre now provides an online ticketing service twenty-four hours a day, seven days a week. Call-in services are limited to a daytime-work time-frame.
- UNITAR is proud of its virtual library which contains e-resources that can be accessed by students and lecturers anywhere through the Internet. This service makes it very convenient for students to do research.
- UNITAR has altogether eight study centres throughout the country. The main study centre is near Kuala Lumpur, and houses almost all of UNITAR's full-time lecturers and academic departments.

Given the nature of the virtual environment described above, a number of structures and procedures must be developed that are different from those of traditional universities. First of all, there is a need for a strong technology department in terms of importance, staff size and expertise. Thus, UNITAR has a Deputy President in charge of Technology and Development who is responsible for the planning, development, integration and maintenance of the technology services that support the university. There are four main departments under him, namely: Courseware, Software, Network and CRM. The total number of staff in these four departments is maintained at about 160 to 200, since the first year of operation. The biggest department among them is the Courseware Department, which deals with the development of course materials in multimedia format either for CD or the web. This function is completely new, and its management is totally different from that managing any function of a traditional university.

Second, UNITAR has instituted a Chief Technology Officer, who is currently the Dean of the IT Faculty. He works closely with the Deputy President (Technology and Development) concerning the different technological needs of the university. He chairs the Technical Committee of the Senate which is responsible for monitoring, reviewing and improving the technology of UNITAR's support systems.

Third, UNITAR needs a quality assurance system to monitor student achievement in the different study centres. For this purpose, the university has established a Department of Academic Affiliation and Collaboration which deals with the UNITAR-appointed coordinators located in each study centre.

To date, UNITAR has also embarked on a programme to obtain an ISO9001:2000 certification with a view to standardized teaching and learning processes within UNITAR and to better serve its customers, the bulk of which are students.

### **Problems and solutions**

The problems we faced were mainly administrative, whether these concerned academic matters or technology. The academic administrative problem arose from the need to schedule tutorials during weekends and late evenings so that students working full time could regularly attend. Compensatory time off had to be arranged for lecturers who worked on weekends. As the number of UNITAR students grew, the university had to remain open twenty-four hours a



day, seven days a week. The university also had to provide technical services to students during weekends, and special staffing arrangements had to be made to meet these needs.

The second major problem was the management of technical services. First, there was a shortage of skilled staff at the national level, and this caused a high turnover of skilled staff. Second, there was an increasing need for training because of the rapid emergence of new technologies as well as new needs. Third, the rate of technical failure was high, especially at the beginning. However, the quality of technical services has been improving, and the system is currently more stable than in the beginning of the UNITAR operation.

### **Lessons learned and recommendations**

The most important lesson learned is that UNITAR should have spent more time planning and testing the system before starting to operate. When we started, we had literally no benchmark in terms of the hybrid education model that we were implementing. The building that UNITAR was using had to be renovated to become modern and functional according to our specification. We also had to make a thorough analysis of the types of equipment that we intended to purchase, taking into consideration effectiveness, reliability, optimal cost and obsolescence. At the same time, we were selecting and developing systems, and rushing to develop course contents that took longer than we expected. We were also recruiting staff and employing them for specific periods when we needed them the most, so as to optimize costs.

I would like to reiterate that planning and testing are the most essential steps in setting up a technology-based environment.

## **3.2 Costs and financing**

It is important to list the main activities that were required to set up and operate UNITAR in order to appreciate the costs and financing involved. Briefly, there is the need for a physical space to house staff, classrooms, workstations and other IT equipment, the library and recreational facilities. The cost of the physical space depends on the number of students, which can be calculated based on projections. The UNITAR model means that physical space is needed so that students can participate in tutorials near their own locations.

Second, apart from purchasing the necessary equipment, there is a need to set up the technical infrastructure in terms of network, system and Internet access.

Third, the development of course content in multimedia format is certainly a major cost to the university.

Fourth, there is the cost of human resources, as well as administrative cost.

### **Sources of finance**

UNITAR was unfortunate to have started its planning phase before the Asian financial crisis of 1997–99 and begun operations in September 1998. Fortunately for UNITAR, there were some reserves that could be used and its financial requirements were met by the parent company.

### **Capital and operations expenditures**

Capital expenditure was needed most in the first two years, and operating expenditure became very significant from the second year onwards. This is because UNITAR needed to be

completely ready before it could take in any student. Once it started operating, the right academic staffs had to be recruited so that UNITAR could meet academic standards and later obtain recognition from the government.

Capital expenditure was about US\$8 million in 1998 and US\$10 million in 1999. Thereafter, incremental capital cost was stabilized. Operating expenditure, on the other hand, was very small in the first year of operation, only about US\$2 million. In the second, third and fourth years of operation, however, the corresponding operating expenditures went up significantly to US\$5 million, US\$10 million and US\$15 million respectively.

### **Tuition fees**

In general, tuition fees depend mainly on the discipline, duration and the credentials of the awarding institution. The most expensive tuition fee would be for studies in the fields of medicine, followed by engineering, technology and science, business administration and the liberal arts. Normally, public institutions charge much lower fees than private institutions, generally ranging between 20 to 30 per cent of tuition fees charged by private institutions. Private institutions charge in the range of US\$3,000 to US\$4,000 a year for an undergraduate programme. This fee can be higher if the private institution offers a degree programme that is awarded by a foreign university in, for example, Australia, the UK or the USA. UNITAR charges tuition fees that are higher than those of public institutions but slightly lower than those of private institutions. The tuition fee for a three-year undergraduate degree programme at UNITAR is around USD\$2,000 per year. An MBA is nearly US\$4,000 per year, the lowest tuition fee in the country for such a programme.

For foreign students studying in Malaysia, UNITAR charges the same fee as for Malaysian students. However, UNITAR does vary its fees in other countries, such as Cambodia, according to the market rate.

### **Lessons learned**

The first lesson learned is that there should be sufficient capital available to invest, especially in technology because of its rapid rate of change. Second, although there is clearly no necessity for a large campus, there should be sufficient space to house the academic staff, administration and the IT infrastructure. Third, it is not wise to think that a virtual university can be cheaper than a conventional university.

## **3.3 Technological infrastructure**

UNITAR was advised, by early findings of feasibility studies, to buy off-the-shelf CDs that were already available, and to acquire teaching materials in markets outside of Malaysia. Second, it was also advised that UNITAR should use the Internet infrastructure for student connectivity and interaction. The first recommendation was not adopted because of the high cost.

### **Location of responsibility for UNITAR's technology strategy**

At the beginning, technology requirements were placed under the responsibility of UNITAR management. After one year of implementation, three issues emerged. First, the people who were responsible for technology were different from the people in charge of the academic programmes. Second, the cost of providing technology was escalating, both in terms of manpower and equipment. Third, the level of services provided could not be monitored. There

was a need for arm's-length oversight to ensure that the services rendered by the technology group were at an acceptable level. To overcome these problems, UNITAR decided to establish a separate company, a wholly owned subsidiary, to focus on all the technology requirements.

The company, known as United Multimedia (UMM), was established in 1999 and is now responsible for the production of courseware, planning and implementation of the network, providing systems solutions, customer relations' management, portal management, and overall maintenance of all the technological services. UMM also conducts technology-related R&D activities for technology improvement.

### **Technological infrastructure of UNITAR**

Basically, five critical components of technological infrastructure needed to be built in order for UNITAR to operate: courseware, course management system, network and system structure, virtual library and customer relations management centre.

#### **Courseware**

Courseware development was the first critical component of e-learning technology for UNITAR. The major premise of courseware development for UNITAR in the beginning was that it must replace lectures. Therefore, a suitable methodology was chosen, and the university decided to develop compact-disk multimedia-enriched courseware. The choice of CD-based courseware at UNITAR's inception reflected managerial awareness of low Internet penetration per capita in Malaysia and the concern that this would be an initial barrier to e-learning adoption. With CDs, courseware can be viewed offline anywhere with multimedia PCs. The second major premise was that of technology transfer. Courseware development in Malaysia was still new and expertise was lacking. In the feasibility studies done by two reputable US-based companies, UNITAR was advised to buy off-the-shelf courseware. This meant copyright control over content, expensive intellectual property right arrangements and localization. The university chose to engage foreign specialists to assist with the initial authoring engine and development of expertise. UNITAR selected NIIT in India as a partner, which cost about US\$1 million for the first four courses. The development of this courseware allowed UNITAR to gain sufficient expertise from NIIT to produce on its own more advanced tertiary-level courseware for internal use. With the ubiquity of online connections – and to address market acceptability and change – UNITAR is moving from CD-based courseware to a web-based courseware methodology. Even though CD-based courseware is superior in multimedia content and delivery, it is costly to produce per semester, and cumbersome to store and move for both students and the university – students cannot carry the bulk of CDs back and forth to academic meetings or use them to study at any available public PCs. Web-based courseware is popular among students, but the multimedia elements in the courseware have been drastically reduced due to bandwidth adaptation and last mile problems (i.e. connection of customer's home to a cable or telephone company). The pedagogy chosen for the web-based courseware has also been changed from a 'story-based' content to a strong resource-based learning approach, which resembles online multimedia 'textbooks'.

#### **Course Management System (CMS)**

The second critical component of UNITAR's technological infrastructure is the course management system (CMS) that incorporates the main engine of course delivery, web-based front-end functions, online content, course reporting, and service and support elements. The CMS at UNITAR is better known as the Virtual Online Instructional Support System (VOISS), as mentioned previously. While the main motivation of early CMS development

was also building local expertise and localization of content, it was different from early courseware development in that it did not focus on technology transfer. Nonetheless, building local expertise was important and finding adequate personnel with sufficient competences has been a challenge thus far. Another aspect of the early development of UNITAR's CMS was meeting the requirements of the system. As the CMS development time-frame was very short (about six months), 'technology' input was given priority over 'academic' input, and customer requirements were minimized. After the CMS system was implemented, the 'academic' input became more important. UNITAR's course management system in VOISS is now under Version 2.0 of its development, and has yet to reach maturity in terms of functionalities even though it is now the most stable. Version 2.0 also distinguishes itself from Version 1.0 as it includes more 'academic' input and the integration of other important aspects of student management, such as a student administration system that existed separately from VOISS in Version 1.0.

### **Network and system structure**

Another critical aspect of UNITAR's e-learning infrastructure is the network and system structure, which is the backbone of IT delivery. In non-technical terms, the main overriding issue during the early development of UNITAR's network was the stability of e-learning delivery, which consisted of the VOISS as the main web system and the virtual library as the reference support. To a certain extent, UNITAR was fortunate that only 162 students were using UNITAR's early network and they were accessing the system from one location – the main study centre near Kuala Lumpur. The current number has grown to more than 8,500 users from multiple locations nationwide, and it is only now that UNITAR needs to face the issue of how a large user population will affect system stability. The challenge or concern was not the number of students, but the multiple locations of UNITAR's delivery mode. Technically speaking, a robust UNITAR network and system should be able to provide access to a large number of students at multiple locations, including those in low-bandwidth rural areas. A disadvantage was that the external phone line was not controlled by UNITAR, but by the telecommunication carrier and the Internet service provider. Only when the national conditions of IT and telecommunications improve will UNITAR be able to meet the challenge of delivery at multiple locations. A unique experience in the early development of the network infrastructure was delivering a synchronous online tutorial system to students and lecturers. UNITAR is probably the only virtual university in the world that implemented online tutorial meetings (OLT) right from the beginning. To meet UNITAR requirements for courses, students (regardless of location) need to participate in OLT sessions, which correspond to face-to-face lectures in a traditional classroom but are delivered online in real time. In the early stage of development, the network system had to cater to a small number of OLT sessions at multiple-access locations. However, the OLT sessions faced major problems, such as students not gaining access or being cut off from the OLT class, or hitches in the delivery of online chats and presentations. As the last-mile technology improved, there have been fewer and fewer problems. A significant turnaround was upgrading the network structure with powerful servers and using new communication software to support the delivery of an increasing number of OLTs.

### **Virtual library**

The virtual library plays a critical role as an online, round-the-clock reference service for UNITAR students. The early development of the virtual library focused on implementing an integrated library management system, setting up a homepage and CD-ROM network for the library. Initially, access to commercial databases was provided to students and staff. As UNITAR progressed, the virtual library undertook the in-house database and digitization

project with a view to building library resources with in-house content and making them accessible anywhere anytime. A major hurdle to overcome in setting up the virtual library was the issue of IP authentication for all commercial databases that UNITAR subscribed to. Patrons outside the UNITAR network could not access and use the commercial databases how and when they needed to. The simple solution to this problem was setting up a proxy server. Another hurdle was that the CD-Net offered by the virtual library could not be accessed online because of bandwidth limitation.

### **The Call Centre or Customer Relations Management**

The Call Centre is the final critical aspect of UNITAR's e-learning technological infrastructure. Under the assumption that online or distance learners are always alone, the Call Centre was developed early to support e-learners at UNITAR. The *modus operandi* of the Centre is that UNITAR students anywhere can contact its staff via the hotline for whatever problems they face. Call Centre staff log in or enter a ticket number into the system and then pass the inquiry on to relevant lecturers or other personnel. A tracking utility has also been implemented to monitor each ticket or inquiry. So far, there has been no major problem with this service and, contrary to call centres in conventional universities in Malaysia, the UNITAR centre has been available to students and is a real advantage.

As noted elsewhere in the report, future enhancement of the technological infrastructure depends on the maximization of resources among and within all five critical components. Although stability of integration is a natural objective, other elements, such as data mining and warehousing within one or more of the components, could be a factor of enhancement. The issue of artificial intelligence technology could also be explored in order to enhance teaching and learning among lecturers and students, especially in the area of system tracking, monitoring and validating e-learning.

## **3.4 Intellectual property ownership and copyright**

### **Policies and procedures related to IP ownership and copyright**

IP ownership and copyright applies mostly to the content of CD-based and web-based courseware. The general principle is that rights are assigned solely to UNITAR in all courseware under development. The contractual arrangement is based on non-royalty arrangements for all IP contributions. Due to the nature of multiple authorship assigned to portions of courseware content, it is difficult for UNITAR to retain royalty arrangements for course authors or subject-matter experts involved in each course. Nonetheless, UNITAR makes an effort to either acknowledge copyright owners for normal resource or citation usage, or pay royalty fees to owners or institutions demanding payment of royalties. Other than courseware, all course contents, including contents developed and used in the assigned educational delivery mode by lecturers, are covered by UNITAR rights, as is stipulated in UNITAR employment contracts.

## 4. Academic issues

As a private university, UNITAR initially focused mainly on academic activities that were viable and less demanding, particularly in terms of financial requirements. In a virtual university, the activities need to be focused on providing the most effective mode of delivery that is both efficient and convenient for students. This is the market niche that needs to be strongly developed so that UNITAR can be truly different from conventional universities. State-of-the-art technology, flexibility of learning and the convenience this provides are some of the other benefits that student can enjoy in a virtual education environment.

### 4.1 Programme development

#### **Main curriculum areas**

The three most important considerations in selecting the main curriculum areas are market demands, technological availability and their suitability for a virtual university. It is obvious that at the time of UNITAR's inception the two most popular programmes were Information Technology and Business Administration. While both programmes have strong market demands, they are also more technologically feasible than heavier curriculum areas, such as engineering or medicine. The latter two are also much in demand, but these studies require hands-on experimentation that cannot be easily grasped in a simulated environment. Moreover, such courses would mean higher investment in equipment, especially at the initial stages. It is clear that information technology studies were perfectly in line with the nature of a virtual university.

#### **Programmes offered**

UNITAR started with only two undergraduate degree programmes, namely Bachelor of Information Technology and Bachelor of Business Administration. Both of these programmes are preceded by a one-year Certificate course that constitutes the foundation year for students who have completed eleven years of education at primary and secondary levels. This is equivalent to the old 'Ordinary' (or O) level school certificate of the British system. Those who have attained the Higher School Certificate, or the equivalent of the 'Advanced' (or A) level Certificate of the British system may join these programmes at the second year. The Higher School Certificate can be obtained only with two years of study after completing the O-level School Certificate. Since both of the above UNITAR degree programmes are for four years, those who leave school after eleven years would tend to gain one year by joining UNITAR. Moreover, after the foundation year, students can be awarded the Certificate in Business Administration or the Certificate in Information Technology.

#### **Determination of the curriculum and programmes**

When creating its curriculum, UNITAR not only takes into account feedback from industry and experienced academics from other universities, but also undergoes a rigorous process of approval by the Department of Private Education of the Ministry of Education and the National Accreditation Board, which is necessary before any educational programme can be introduced. This process entails proper and elaborate documentation and an independent panel of academics, mostly from public universities, which is appointed by the National Accreditation Board (locally known as LAN). This panel evaluates the programmes based on

documentation, visitation, and interviews of students and lecturers. While approval is necessary to introduce the programmes, accreditation is optional, but would be an additional benefit to degree holders. Hence, the UNITAR curriculum and programmes have to be relevant, current, and meet the expectations of the independent panel of evaluators.

So far UNITAR has developed and obtained approval for the introduction of eighteen academic programmes, ranging from the first-year Certificate programme to Masters programmes in Business Administration and Information Technology and a Ph.D. in Education (by research). UNITAR has also received approval to introduce a Foundation in Management and Bachelor of Management programme, offered by the new Faculty of Humanities and Social Science. The list of eighteen approved programmes as of end of year 2002 are as follows:

- Preparatory Studies (Pre-University Programme)
- Certificate in Business Administration\* (CBA)
- Certificate in Information Technology\* (CIT)
- Foundation in Management\*
- Bachelor of Business Administration\* (BBA) (Hons)
- Bachelor of Information Technology\* (BIT) (Hons)
- Bachelor of Information Systems\* (Hons)
- Bachelor of Management\* (Hons)
- Master of Business Administration\* (MBA)
- Master of Business Administration Online\* (Online MBA)
- Master of Information Technology Management\*
- Master of Information and Multimedia Technology\*
- Master of Science (Education) (by research)
- Master of Science (Information Technology) (by research)
- Master of Science (Business Administration) (by research)
- Ph.D. (Education) (by research)
- Ph.D. (Information Technology) (by research)
- Ph.D. (Business Administration) (by research).

Out of the above eighteen programmes, eleven (with \*) have been given accreditation by the National Accreditation Board and are recognized by the Government of Malaysia.

### **Intended students and learners**

UNITAR literally opens its doors to all interested and qualified students. Although its model is expected to attract mostly working individuals, a considerable proportion of school leavers have come to UNITAR after completing their O levels to take advantage of graduating one year earlier. This is definitely true for the university's undergraduate programmes. Of course there are also some students who have attained their A levels, and others who have obtained diplomas from other higher institutions of learning. However, in the case of UNITAR's postgraduate programmes, almost all the students are working individuals.

### **Language of instruction**

Although the national policy is to use the Malay language as the medium of instruction, UNITAR has obtained special permission from the Minister of Education to use English. This choice was made to enable students to access materials from the Internet and elsewhere that are overwhelmingly in English. The need to use a pervasive language such as English was too obvious to refute. There was some criticism from some quarters, but UNITAR persisted as it

saw this choice to be logical, not only for providing students with an advantage, but also for making it possible for UNITAR to expand globally.

### **Programme evaluation and accreditation**

Programme evaluation is done at various stages of planning and implementation. At the planning stage, apart from the academics within, industry specialists and other academics evaluate UNITAR proposals and provide extra inputs to enrich the programmes. Before implementation, the National Accreditation Board evaluates the programmes to ensure that they have sufficient scope, depth and quality to award degrees.

About six months after the implementation of a UNITAR programme, an independent panel of evaluators was appointed by the National Accreditation Board to evaluate how the programme was being conducted. Before they recommend awarding what is called ‘Minimum Standards’ to the programme, they evaluate the quality of teachers and facilities, and even the quality and appropriate level of examination questions set by examiners and the answers given by students. This means that UNITAR programmes are not only approved by the Ministry of Education, but they also meet the minimum standards required for awarding degrees. Six months before the first group of students graduates from a UNITAR programme, the independent panel is invited to make another evaluation so that the programme can receive accreditation for a period of five years.

The National Accreditation Board is an independent body that was instituted under the Private Education Act to assist the Ministry of Education in evaluating programmes conducted by private institutions of higher learning. This evaluation is used to grant approval for introducing the programmes, ascertain whether they meet required minimum standards, and grant accreditation if they do. Moreover, an encouraging recent development is that all accredited programmes are automatically recognized by the Government of Malaysia, which implies that their graduates are eligible to join the public service at levels corresponding to their qualifications (which are now equivalent to degrees from public or state universities).

### **Admission requirements and registration procedures**

UNITAR has specified admission requirements, based mainly on academic achievements. In principle, students must have attained at least four, if not five, credits at O level to be admitted into the first-year bachelor degree programmes or the certificate programmes. This requirement also includes a credit with good grades in English and mathematics. For the master’s level, the minimum requirement is a bachelor’s degree, whether it is by research or course work. For the Ph.D. programme, the requirement is a very good honours degree at the bachelor level or a master’s degree.

Registration is normally done at the beginning of every semester, although students can join any time during any semester. Most of the registration procedures are done online.

### **Credentials awarded**

All the credentials are awarded by UNITAR. Although UNITAR’s name is not as well known as that of some Western universities, it is slowly building a reputation in the region, particularly in Indonesia, Cambodia and Thailand. Lately, UNITAR has also been recognized by the governments of the United Arab Emirates and the State of Oman.



## **General quality assurance and control measures**

Academic quality is of utmost importance to UNITAR. Hence, all examinations are conducted in the usual manner, with candidates taking examinations in examination halls. Second, UNITAR academics mark all final examinations submitted by students from all over the country and Cambodia. Strict disciplinary action is taken against any student guilty of cheating, and special care is taken to ensure that examination questions remain strictly confidential, especially at the regional centres.

Academics employed by UNITAR as well as by UNITAR's collaborating partners receive special training to facilitate their work in a virtual environment.

## **Lessons learned and recommendations**

Although some might think that a virtual university is a cheaper alternative to conventional universities because the investment in bricks and mortar will be less, the investment in technology may actually be more, especially when there is the need to keep up with the latest developments in technology. Technological obsolescence in itself is a cost to be considered.

Second, because of the misgivings that potential students and their parents have about e-learning, there is the need to emulate a conventional university in terms of the teaching and learning model. This makes it more difficult to move forward, and involves some sacrifices with regard to the virtual teaching and learning model in order to accommodate the cynics and the 'unbelievers'. For instance, giving in to the demand for face-to-face teaching requires more physical space than teaching solely in a virtual environment.

Third, the quality of the academic programmes and the graduates has not yet been appraised. This means that every effort must be made to ensure quality and hence increase the number of believers in e-education in the future.

Fourth, although e-learning is expected to be the way of the future, it must be immediately pointed out that the billions of dollars dedicated to e-learning that have been cited in various literatures are essentially to develop e-training or short courses, rather than degree programmes.

The authors certainly feel that before embarking on a virtual or e-learning venture, one must study very carefully all the implications, particularly in relation to cost-effectiveness.

## **4.2 Teaching**

When the idea of a virtual university was put forward, the first thing to be determined was the right e-learning model. This is indeed crucial because of rapidly changing ICT, which makes most of the equipment obsolete in a very short time, requiring high capital cost to update. UNITAR had to decide on a technology strategy that would not only reduce obsolescence costs but also provide an effective means for the faculty to transfer knowledge to students in a friendly and accommodating fashion. The following issues were considered in determining what kind of e-learning and teaching model UNITAR would adopt.

### **Designing instruction**

The following components, which have been discussed repeatedly above and in different lights, have been identified as very pertinent for effective teaching in an e-learning environment.

## Courseware

At the beginning, UNITAR decided that the most important component of its academic model would be CD-based, offline courseware. Because of the narrow bandwidth predicament, it was not possible to deliver lectures online at that time. The level of current technology, however, allows for lectures to be replaced by quality, interactive, multimedia-enriched courseware or content. Courseware in CD format can be sent to remote areas, and shared over a compatible PC. Moreover, one can review CD-based courseware any number of times to enhance understanding and reinforce learning; content can be repeatedly communicated to students, with 100 per cent uniformity, which is impossible in a conventional setting.

The downside of CD-based courseware is that it is expensive to produce initially. It also takes much longer to produce compared to preparing a conventional lecture or other means of educational delivery. To counteract this shortcoming, UNITAR has developed web-based courseware, which can be viewed both online and offline using any popular browser. Web-based courseware is also faster, cheaper, easier to modify and update and more flexible than its CD-based predecessor. Over the past 4 years, UNITAR has developed more than 300 titles of courseware in CD format (21 CDs in all) and more than 30 titles of web-based courseware for university-level courses both in-house and locally.

## Course management system

Our Virtual Online Instructional Support System (VOISS) is the main course management system for students and instructors. The system contains more than ten different modules or functions, such as the online tutorial (OLT), forum, frequently asked questions (FAQs), e-mail, bulletin board, announcements, assignments, quizzes and examinations. All modules, except for the online tutorial (OLT) fall under the category of asynchronous communication. Even though most people tend to associate real-time, multimedia student-instructor interaction as defining the e-learning academic model, the synchronous online tutorial was implemented cautiously due to network instability and narrow bandwidth problems. The VOISS is currently on Version 2.0, which is a considerable improvement over its predecessor Version 1.0. UNITAR's own software engineers have developed both versions.

## Virtual library

UNITAR's main library, which was created to support the reference needs of students, holds more electronic, online resources than physical resources. Students can gain access to the library anywhere, any time from any computer. This makes it possible for any registered student in any region to use a single source for library materials. The strength of the virtual library rests on its online database subscriptions such as Pro-Quest, ERIC, Euro Monitor and ABI/INFORM Global, providing more than 1,000 titles accessible to all students in real time.

The virtual library concept is very much in line with the idea of developing a virtual university environment to pioneer e-learning in the country.

## Study centre

The study centre or regional centre is the place where students and instructors can congregate for their academic meetings and extra-curricular activities. Like a campus, the study centre also houses the basic facilities of UNITAR, such as classrooms, workstations, administrative offices, gymnasium, network operations centre, server farms, IT shop, cyber café, library and basic recreation facilities. UNITAR has currently established eight such centres throughout Malaysia, only one of which is developed and owned by UNITAR. The remaining study

centres were developed in collaboration with other private educational institutions, thus reducing capital investment. UNITAR study centres are located in major towns to reduce the travelling and accommodation needs of students. A regional study centre need not have all the facilities of the main study centre, which provides most of the ICT facilities. UNITAR has also established a study centre in Cambodia in collaboration with a local partner. The study centre in Cambodia has successfully conducted UNITAR's BBA programme for the last two years. Soon it will also introduce the UNITAR MBA programme.

### **Customer Relations Management (CRM)**

The round-the-clock call centre that provides customer relations management services was established to support students facing academic, technical and personal problems. All enquiries made by telephone, fax or e-mail will be answered by CRM personnel or directed to the relevant lecturers or administrative officers. All enquiries are recorded and checked for the appropriateness of the response and future follow-up.

### **Delivery of instruction – philosophical basis**

UNITAR strongly believes in the philosophy that learning should be a continuous, lifelong process, motivated by the desire to seek knowledge, competency or specific skill either for the sake of such knowledge, competency or skill or for socio-economic or political purposes. The knowledge era is certainly coming and will surely change not only the way we value knowledge but, more important, the way we organize our lives. Our workplace may change in form and substance, and our schools will have to change in order to enable future generations to manage their lives. Hence, the way we teach and learn today cannot be based on a method that does not change.

We should provide a learning environment that takes into consideration the anticipated changes that are coming our way. Students should be allowed to choose the most suitable mode of learning, and be able to learn in a creative, innovative but effective manner. Flexibility should be the rule rather than the exception. Regimentation and a rigid way of imparting knowledge may not be appropriate and acceptable to students who have been exposed to a considerable amount of experimentation and independence from a very early age. They grow up in an environment that is computerized, automated and electronically driven, and that is enhanced by access to multimedia technology and Internet-based information and knowledge.

Keeping the above in mind, UNITAR provides students with a flexible and customized, quality education at an affordable price. UNITAR no longer delivers lectures in the traditional way since all the learning materials have already been digitized and put in a multimedia format, either on CD or on the web. Students are expected to go through these materials on their own and try to absorb as much as they can.

### **Tutorials to enhance learning and understanding**

The approach of letting students go through the course material and learn by themselves no doubt requires them to be independent, resourceful and disciplined. However, there is no guarantee that all students can actually learn by themselves. Hence, UNITAR has intensified the use of tutorials to help those who are not used to disciplining themselves, and made tutorials compulsory for all students.

For every three-credit-hour course, the university provides from twenty-one to twenty-four hours of tutorials to enhance student understanding of the materials. There are three types of tutorial: face-to-face, online and forum.

The face-to-face tutorial is conducted in a traditional classroom setting. This is where students meet the lecturers and classmates. During these tutorial sessions, students are encouraged to ask questions for clarification of materials that they have studied on their own. They are also encouraged to raise various issues around topics of discussion that are based on whatever they are learning. The total number of face-to-face tutorials required for first-year students covers between twenty-one and twenty-four hours, and for other students it is eight hours. UNITAR has decided that all tutorials for first-year students are to be conducted on a face-to-face basis to allow them to get used to the new system gradually and build their confidence.

The online tutorial (OLT) is a synchronous (or real-time) tutorial conducted at the main study centre by course coordinators who are full-time (or part-time) faculty members. Both the course coordinator and his/her students must log in at the same time as scheduled. While the course coordinator is stationed at the main study centre, the students work from their homes. These students may be from all over the country. Once they have logged in, they will see a three-segment screen on their monitors. The main segment is used as a white board where the course coordinator can write, erase or paste PowerPoint slides, pictures, images, etc. for the students. The second segment shows pictures of the students who have logged in, and tells the course coordinator whether all his/her students have attended the OLT or not. The third segment is the space where students type questions or provide ideas and views via e-mail. The OLT that UNITAR is currently using allows the course coordinator to speak to his/her students. For instance, the course coordinator may paste PowerPoint slides on the screen to represent the main points of discussion and talk to the students to explain those points. The students then participate through e-mail. In this way, there is a two-way interaction between the course coordinator and the students.

Only four OLT sessions are scheduled for a course per semester. Each session runs for two hours. The total number of hours of OLT per course per semester is eight. Students and lecturers much prefer the OLT because it offers a very convenient platform for participating in tutorials. Only UNITAR students who have passed their first year of study are offered eight hours of OLT per course per semester.

The third type of tutorial is what is called a forum. It is an asynchronous tutorial, where the course coordinator puts a topic up for discussion for about two weeks. All students taking the course will have to participate in the discussion at least twice during the two weeks. Their views will be graded by the course coordinator. There are four or more forums in a semester, which are counted as equivalent to eight hours of tutorial.

The number of tutorial hours that students will have to take in a semester is a good indication of the workload they will have. For example, first-year students register on average for four to six courses in a semester. If they take 5 courses, they will have  $5 \times 24$  hours of face-to-face tutorials in a semester of 14 weeks, in other words, a total of 120 hours. This means that they have fewer than nine hours of tutorials per week. The rest of the time the students can conduct research, do assignments, or prepare for examinations.

For all other students, who are required to take only eight hours of face-to-face tutorials per course per semester, class presence can be reduced to only one day per week, even with a full course load. They can meet their remaining tutorial requirements by participating in online

tutorials (OLT and forum) from home. Hence, this structure allows a degree of convenience and students can work while studying full time.

### **Course plan**

After students have registered at UNITAR, they will be given an e-mail account, the CDs, or a password for the university system to access the web-based course materials. They will also receive some orientation and training on how to use the computer and the university system. They are then expected to browse through the university website for all the essential information or announcements on all the courses for which they have registered. For example, they will have to consult the course plan for every course they will be taking. In the course plan, they will find the name of the lecturer, the materials to be covered on a weekly basis, the schedules of face-to-face tutorials, online tutorials, forums, assignment due dates, the quizzes and examination dates and locations. UNITAR students thus know ahead of time how the courses will be conducted from the first day of every semester onward.

Theoretically, students can choose to work hard on a particular course and finish it in less than a semester. Once they are prepared to be tested, they can go to their course coordinator and ask to be examined. Students do not need to wait until the end of a semester to finish a course. They may take four or five courses in a semester, and plan it so that they finish their courses one by one instead of all at the same time. The time students take to finish their courses depends essentially on their interests and capability. This is the kind of flexibility and smart, or customized, learning – instead of mass learning – that UNITAR can provide. This educational approach is also more attuned to lifelong learning.

The course plan itself is a tool that will help students develop positive habits and discipline. It shows how demanding a course will be in terms of the number and level of assignments, quizzes, examinations, etc. It is up to students to determine whether they should register for the course in that semester or leave it for a later semester. What is most important, however, is that students know from day one what to expect from any course, when and how much of the materials they should cover every week, the assignments they have to complete, etc. If students strictly follow the course plan, they should have no problem completing the course with a good grade.

### **Modes of evaluation**

Most of UNITAR's final examinations are conducted in the traditional way, which requires every student to be physically present for his or her examinations. Only very short quizzes are given online, and their contribution to the final grade is minimal.

### **Roles and responsibilities of academic staff**

UNITAR requires its academic staff to be experienced in IT so that they will be able to perform their tasks. Apart from preparing the course plan, which is the most demanding task in terms of preparation, they are also expected to help develop course materials in multimedia format as subject-matter experts, conduct face-to-face, OLT and forum tutorials, prepare examination questions, correct the answers, coordinate with tutors at the various centres, etc. Above all, they are also expected to guide students and help them conduct research. Moreover, UNITAR expects its academic staff to conduct research in e-learning, especially in innovating more effective modes of delivery, etc. So far, academic staff members have been very excited and positive about their UNITAR experience. They also realize that this experience will be very useful in the future. However, for UNITAR, recruiting and retaining

adequate academic staff has meant paying slightly higher salaries than most other universities in Malaysia.

### **Lessons learned and recommendations**

First, we learned that students need time to adjust to the new system. Once they have adjusted, they are able to effectively learn in our way. This is borne out by the fact that while the attrition (including failure) rate was very high at the beginning (around 20 per cent), there was much improvement and the rate has dropped to only about 4–5 per cent.

Second, we found that the course plan is a very important vehicle for integrating all the components of the UNITAR e-learning model. It not only guides students in their learning, but also makes learning much easier and more structured.

## **4.3 Learning**

When UNITAR first enrolled 162 students in September 1998, it was difficult convincing them that they could effectively learn on their own with the various support services that the university offered. At that time, the excessively high failure rate (around 20 per cent) caused disappointment and worry. Three years later, the failure rate had significantly declined, indicating that the students were successfully learning.

UNITAR places much emphasis on disseminating information on its programmes by various print and electronic media. It has also organized events in various towns and cities, schools, colleges, and hotels. Preview sessions are also regularly conducted at UNITAR's main study centre. UNITAR also provides academic counselling, both by its own senior academics and professional counsellors. Moreover, what is important is that most UNITAR programmes are recognized by the government, and hence UNITAR students are eligible for financial assistance in the form of government study loans. Because of UNITAR's mode of learning, its students can also receive special computer loans from the government. Furthermore, every year the university provides ten scholarships, based on excellent academic achievements, to UNITAR students.

### **Hardware, software and Internet/web access required of students**

Ideally, every UNITAR student should have a computer (desk or laptop PC) with Internet access that allows him or her to retrieve multimedia, interactive materials from the UNITAR system. Students who do not have the means to be adequately equipped can apply for a special computer loan from the government. Otherwise, the university provides computer facilities at the study centres, although students may have to take turns using them.

### **Technical support provided to students**

UNITAR does provide some technical support services for students, but these are usually required more at the initial stages. After a while students show resourcefulness and seek help from other sources.

### **Laboratory work**

Laboratory work is only conducted for students who take programming or some other software or systems-related subjects. For such courses, where special software is used for teaching, students use the special IT laboratory.

## **Library access**

UNITAR provides both physical and virtual library services. The physical library is necessary so that students can use books that are not accessible in digital form. The university also encourages students to visit the library when they are at the study centre. In addition, all UNITAR students can use the virtual library, which they can easily access from home.

## **Course completion**

In August 2001 the first – and so far only – group of students graduated from UNITAR. There were twenty-eight graduates in all, twenty with an MBA, four with a masters in Information Technology Management and four with a masters in Information and Multimedia Technology. The first group of students to receive BBA and BIT degrees are expected to graduate in early 2003. This group will not be very representative of general UNITAR student performance because their rate of failure was very high. On the whole, UNITAR students were expected to perform not very differently from students of conventional universities, but it should be noted that so far the university has not been able to enrol the best students.

Student reaction to the e-learning mode has been very encouraging. They have demonstrated their willingness to learn, to be disciplined and resourceful. They realize that they must learn on their own, and that they have a lot more to learn, especially through using the web.

## **Lessons learned and recommendations**

First, we have learned that it took some time for students to become confident. They came to UNITAR with both hope and fear, but eventually began to learn and appreciate the e-learning model. They subsequently became more responsible and mature, and were able to take up the challenge of studying at the first virtual university in Malaysia.

Second, we found that the number of students who are working full time is increasing. Also, students who had completed their first or second year began looking for temporary jobs to earn some income, instead of concentrating on their studies.

Third, students seem to have no inhibition at all when expressing themselves to the highest authority of the university because they can remain anonymous. We have received a considerable number of complaints, views and criticisms from students who were very concerned about their situation.

## 5. Cooperation

From the very beginning, institutional cooperation was an important strategy for e-learning delivery. As part of a cost-control strategy, UNITAR needs local partner institutions to assist in delivering its courses. Basically, UNITAR needs a few partner colleges to house its regional study centres or satellite study centres. Originally, UNITAR planned to have twelve study centres within Malaysia by the year 2000 — one in each state. However, due to cost and other barriers, UNITAR has found only seven local colleges since 1998 to become partners and act as recognized UNITAR regional study centres. Together, they now house about 50 per cent of UNITAR's current student population, with Kuching, Sarawak, being the biggest non-UNITAR-owned regional study centre. They are:

- Institut Teknologi Tun Abdul Razak (ITTAR) in Kota Bahru, Kelantan;
- Dynamic Seminar in Kuching, Sarawak;
- Kolej Ibukota (KIK) in Kota Kinabalu, Sabah;
- Kolej Shahputra at Pekan, Pahang;
- Kolej TAJ in Trolak, Perak;
- Kolej Islam Johor in Johor Bahru, Johor;
- Institut Profesional Bumiputera (IPB) in Kuala Lumpur.

The colleges are recognized private institutions of higher learning within Malaysia and they are governed by the Private Education Act and the Education Act. Like UNITAR, they are registered under the Department of Higher Education of the Ministry of Education, and before being recognized as UNITAR regional study centres they had to seek approval from the Ministry.

In addition to adhering to this regulatory framework, the partner colleges have a working agreement with UNITAR. This agreement stipulates the roles, functions and responsibilities of the participating colleges vis-à-vis UNITAR e-learning delivery. These include:

- a fixed profit-sharing ratio governing the business-model arrangement;
- provision of teaching delivery according to UNITAR's Standard Operating Procedure (SOP) and course syllabi;
- tutorial facilities provided to matriculated UNITAR students, including classrooms and qualified tutors;
- provision of relevant access to computers with Internet connection and resource centre;
- provision of other relevant educational facilities, such as facilities for extra-curricular activities and student clubs and societies; and
- adherence to UNITAR's existing quality assurance standard.

In contrast to its great efforts to build local institutional cooperation, UNITAR has hardly embarked on developing international institutional cooperation, except for two projects, which are at a very early stage. UNITAR maintains a good relationship with Regent College in Phnom Penh, Cambodia, where UNITAR's Bachelor of Business Administration Degree is offered. UNITAR also has an agreement with Indonesia Bangkit, which is aiming to develop e-learning courses in Indonesia. So far the initial arrangement with UNITAR concerns only intellectual property issues.



## 6. Future developments and institutional change

UNITAR's future will be to promote lifelong education in Malaysia. This will be characterized by customized education for those who need to master certain types of knowledge or skills either for self-development or for career improvement. The model that UNITAR has developed so far will certainly be fine tuned to better meet future needs. The fact that UNITAR students have already started to gather work experience before graduating or are actually in the workforce and gaining knowledge to better themselves demonstrates the flexibility and convenience UNITAR provides to both full-time students and full-time working individuals.

The uniformity of content makes it possible to transmit the same quality education globally. This is an advantage that is likely to be fully developed and deployed to globalize education without jeopardizing quality. The aim is to educate a large number of students who nevertheless feel that they are getting the special attention they need. In other words, we see UNITAR as providing customized education to a very large number of students.

Once the UNITAR name is well established, we see the university going global, particularly in Asia and the Middle East. This is possible because English is its language of instruction, and also because conventional universities are becoming more expensive to establish, while technology is becoming less expensive, and its possibilities are continuously increasing.

We also foresee steep competition along the way. However, we strongly believe that our policy of smart partnership from the beginning will pay off at the end.

## 7. Policy development, planning and management in the virtual university: lessons learned and recommendations

After an accumulated experience of almost four years – since the first enrolment in September 1998 – the following lessons are particularly pertinent:

- Conceptualization should not stop with the teaching and learning model. On the contrary, one should also look at the support facilities in detail, particularly the technological infrastructure and the physical ‘campus,’ which should be linked to the symbol of an established institution. It is also very important to submit a detailed plan of the technology infrastructure and physical support facilities to a cost-and-benefit analysis. Our assumptions and perceptions regarding the university may not be in line with what people who seek a virtual education want or need. When this occurs, we will definitely face problems to make things happen. We will then have to make alternative plans to accommodate the demands that are not being met.
- The most difficult part is keeping the technology infrastructure current, as there are rapid changes in capability and price. We should try to mitigate the inevitable risk of obsolescence, especially if we are trying to keep up with the latest technological developments.
- Training of the academic, technical, managerial and support staff should not be taken lightly. There is a definite need for a shift in the thinking of everyone involved so that the whole UNITAR concept can be perceived as something completely new. Otherwise there will be considerable delays and impediments that will keep UNITAR from moving forward.
- The teaching and learning model has to be one that can accommodate various types of potential students. Do not forget that parents are more conservative than the students themselves.
- The choice of academic programmes has to be made carefully so that they can easily be mediated by technology and yet generate demand. We could introduce new programmes that are usually not offered by other institutions and make them attractive by designing them to meet specific industry needs.
- Whatever teaching and learning model has been chosen, the most important success factor is the stability of the system. As long as we have an unstable system, we will be bogged down with unnecessary maintenance problems.
- A virtual university need not be without a ‘campus’. Social interaction is necessary for students to develop their personalities. There is clearly no substitute for traditional teaching in this case. Providing some form of physical campus, where students can converge to interact and learn, can help to convince potential students and their parents to try UNITAR.
- There should be sufficient financial resources to support a virtual university. To assume that a virtual university without a campus will require little resources can be grossly wrong. The price of leading technology is very high, and the risk of obsolescence is also very high.

## Further links

UNITAR website: <http://www.unitar.edu.my/>

UNITAR eLearning academic model: <http://www.unitar.edu.my/elearning/child.html>

Web courseware examples: <http://www.umm.com.my/popupprod.htm>

Virtual Online Instructional Support System (Flash slides):  
<http://www.unitar.edu.my/demo/voiss/voiss.html>

Virtual library: <http://vlib.unitarklj1.edu.my/>

# Appendix: UNITAR organizational chart

