

**Moving Forward with E-learning:
The Experience of Open University Malaysia**

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Abstract

Higher education institutions are embracing e-learning to enhance their learning environment and to provide a range of benefits associated with e-learning. In institutions that offer open distance learning, e-learning has also become a necessity to enable the institutions to serve a greater number of students and to reach out to those who are spread out geographically over a wide area. In addition, e-learning not only supports learners from the pedagogical point of view but also from the administrative angle.

At the Open University Malaysia, e-learning has played a key role since it opened its doors to its first batch of 753 learners in August 2001. As part of the university's blended learning pedagogies, e-learning has been able to support an enrolment of over 65,000 learners from within and outside the country. OUM, hence, finds it imperative that the quality of the e-learning environment is ensured at all times. How OUM establishes and plans for an effective e-learning environment so as to satisfy the learners and other stakeholders will be described in the paper. The paper also includes a discussion on some of the challenges in providing quality e-learning and how OUM has overcome these challenges.

I. INTRODUCTION

E-learning was once an experiment but has now moved into the mainstream of higher education (Garrison & Anderson, 2003). It has been adopted by many institutions around the world. In open and distance learning (ODL) institutions such as the Open University Malaysia (OUM), e-learning has contributed to the exponential growth of learners enrolled in its programmes. E-learning has been a leveraging tool for OUM to reach students spread over a wide geographical area and even across borders. Hence, it appears that e-learning has enabled the university to live by its motto, "University for All." In many aspects, e-learning can be regarded as a democratizing tool, enabling the university to quickly reach out to more students and at affordable costs, thus contributing to the efficiency and effectiveness of learning and teaching as well as internal administrative processes.

With its vision of being a *leader and innovator in open learning*, OUM provides a learner-centred environment via the use of print and various technology-based media to support the delivery of instruction. At OUM, e-learning is part of the blended learning pedagogies implemented since the university enrolled its first group of 753 students in August 2001. Today, after only seven years, the university's enrolment has surpassed 65,000 students (see Figure 1).

Although the number of students has grown by more than 80 times, the number of full-time faculty grew by less than four times over the same number of years. From less than 20 faculty members in its early years, OUM now has 73 full-time faculty members in spite of the rapid increase in the number of students. To complement this relatively low number of faculty members, OUM however engages about 3,500 part-time tutors at any one time to assist with the face-to-face tutorials. These have been made possible as a result of OUM’s success in leveraging on various learning technologies. We believe that the successful implementation of the blended learning pedagogies, which includes e-learning, has contributed to the provision of an optimal learning and teaching environment.

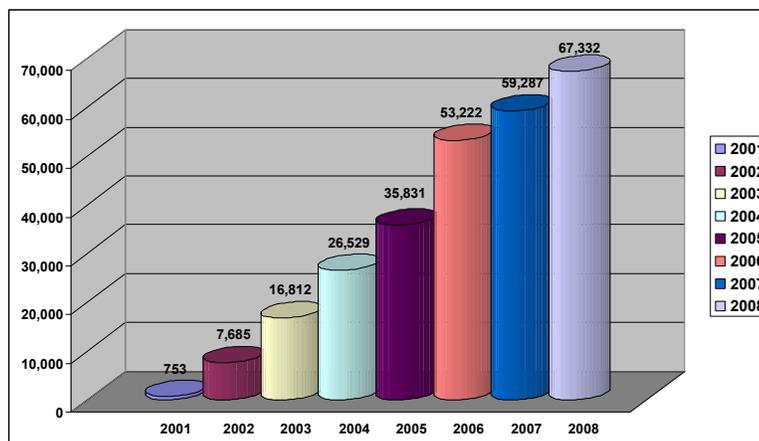


Figure 1. E-Learning Contributing to Exponential Growth in Student Enrolment at OUM

II. E-LEARNING AT THE OPEN UNIVERSITY MALAYSIA

Several factors led to OUM’s e-learning initiatives. OUM was conceptualized around the time when the Malaysian government realised that the use of information and communication technologies will offer a path to a better utilization of the country’s human resources. At the same time, ICT is expected to spearhead Malaysia’s economic development, gradually creating a knowledge-based economy and enabling Malaysia to leapfrog to a developed nation status, thus realizing the objectives of the country’s Vision 2020.

A major national initiative was the Multimedia Super Corridor (MSC), launched in 1996, to attract world renowned ICT companies to invest in Malaysia and this had necessitated the development of a suitable infrastructure for broadband Internet and wide use of networked technologies. In the 1990s, the Internet was made widely available through dial-up connections via telephone lines. Today, the infrastructure includes mobile and wireless technologies provided by industry players. To ensure that Internet use is widespread in not only the large cities but also the smaller towns, a national broadband plan was formulated and launched by the government. The objective is to reach a critical mass of 1.2 million broadband subscribers. The cost to access the Internet ranges from MYR60 to MYR150 (about USD20 to USD50) for students and home use; rates that are affordable by a large section of the population.

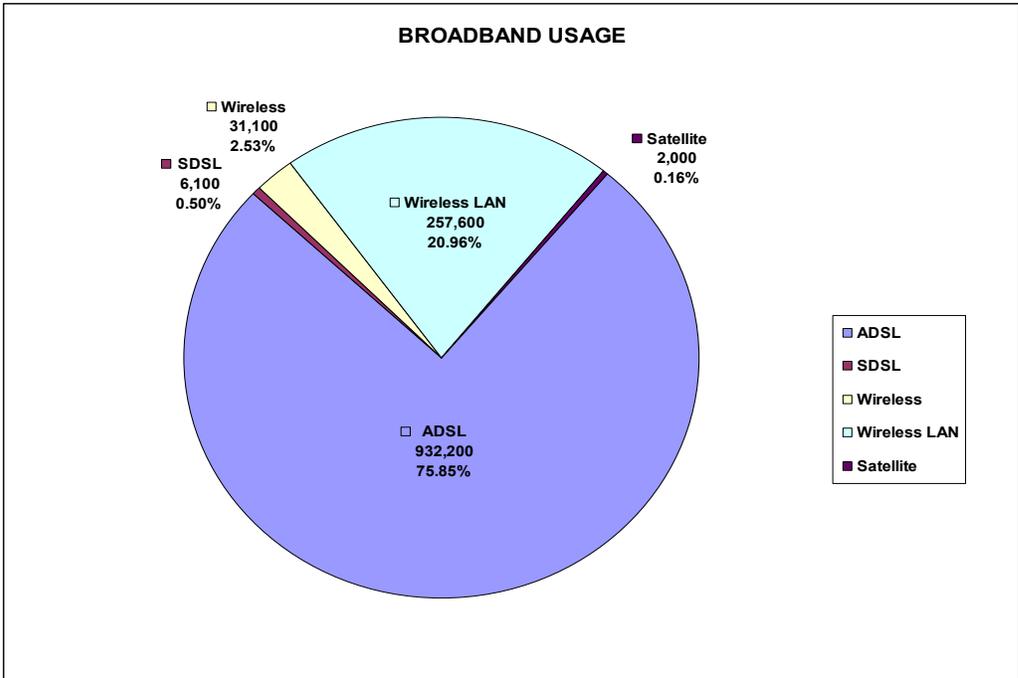


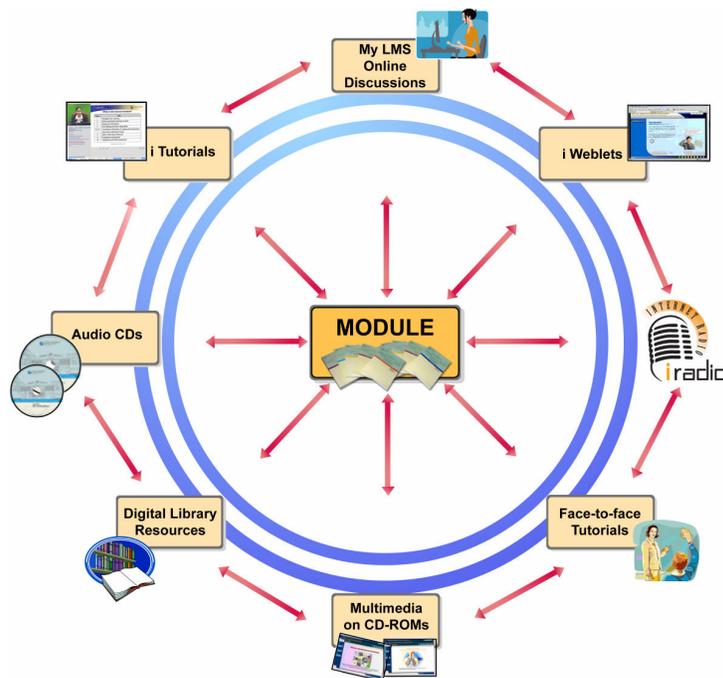
Figure 2. Broadband Usage in Malaysia in 2007

Source: Malaysian Multimedia Communication Commission (2008)

According to the most recent Internet World Statistics, 60 percent of Malaysia’s population is on the Internet. The growth in the number of Internet use among Malaysians between 2000 and 2007 was an astounding 302.8 percent. Based on the statistics from the Malaysian Communication and Multimedia Commission (MCMC), there are 1,229,000 broadband Internet subscriptions using ADSL, SDSL, wireless, wireless LAN and satellite (see Figure 2) technologies. In the region, the Internet usage was reported to be (in 2006) 51.98 per 100 inhabitants in Malaysia compared with 39.21 in Singapore, 13.07 in Thailand and 7.18 in

Indonesia. Officially, there are 1,468 wireless hotspots in places such as cafes, shopping centres, hotels and college campuses. However, it is very likely that many more hotspots have been excluded from this total. In summary, Internet access in Malaysia is relatively high within the region and is quickly growing with more and more going broadband.

Generally, according to a national e-readiness study, Malaysians were moderately ready for E-learning (Abas, Kuldip and Harun, 2004). However, among the students who responded, 31.1 percent expressed that they were very ready for e-learning and another 59 percent felt they were moderately ready. Only 9.9 percent of those who responded said they were not ready for e-learning. The study surveyed eight areas of readiness: learner, management, personnel, content, technical, environment, cultural and financial. Of those surveyed 4,625 were students, 977 were university faculty members, 102 were policy-makers and 75 came from the industry. More than 50 educational institutions of higher learning were represented in the survey conducted in mid-2004.



Creating a Rich Learning Environment at OUM to Produce Significant Learning

Figure 3. The Range of Print and Electronic Media at OUM

Source: Abas (2006a) **(NEED REFINING)**

The e-learning technologies that have been incorporated as part of the blended learning delivery system at OUM include multimedia courseware (on compact discs), iTutorials (audio and video streaming), iRadio (audio streaming), web-based modules and iWeblets (web-based multimedia). These are in addition to print modules, face-to-face tutorials and online forums via the myLMS (OUM's learning management system). As Figure 3 illustrates, at OUM, the print module is the core learning material and is supported by other modes of learning.

OUM was thus able to leverage on the Internet to reach out to students over a wide geographical area, within and outside the country. In short, OUM has successfully connected thousands of students, faculty members, subject matter experts and staff via the Internet using a common platform referred to the myLMS, the university's learning management system. Through the myLMS, various learning resources produced in-house are made available and timely announcements, administrative forms and others are available for learners to view or download. In addition, the OUM community has access to the library digital collection comprising more than 17 online databases. Through these databases, more than 1.3 million titles are available in the form of books, theses, articles, reports, encyclopedias, dictionaries and others.

At OUM, the objectives of its e-learning initiatives are:

- To enhance learner access to learning materials;
- To improve education efficiency by increasing opportunities for collaborative learning and by making available course materials in a timely manner, available 24 hours a day, seven days a week; and
- To improve learning effectiveness by encouraging learner interaction with tutors and course mates to support and promote collaborative learning.

III. PREPARING FOR SUCCESSFUL IMPLEMENTATION OF E-LEARNING

It is noted that acquiring technology is only just the beginning and to be used as a means to an end. It does not automatically deliver the solution. When planning for the integration of e-learning in OUM's blended learning pedagogies, we identify a number of important prerequisites which have to be considered to ensure their successful implementation. These include the following:-

1. Pedagogical Model
2. Policies
3. Funding
4. Humanware
5. Infrastructure
6. Infostructure

Each of the above is briefly described next.

3.1 Pedagogical Model

As suggested by Bates and Poole (2003), technology has an important place in university teaching, but it needs to be utilised with care and discrimination. It is no longer a question of whether we should use technology but in what contexts and for what purposes is technology appropriate for learning and teaching. At OUM, the blended learning pedagogies were formulated right at the start to cater to various learning styles and to optimize a variety of media to provide a conducive learning environment. While the core learning material is the print module, other methods or media are used to support it (see Figure 4). Different courses will use different combinations depending on the needs.

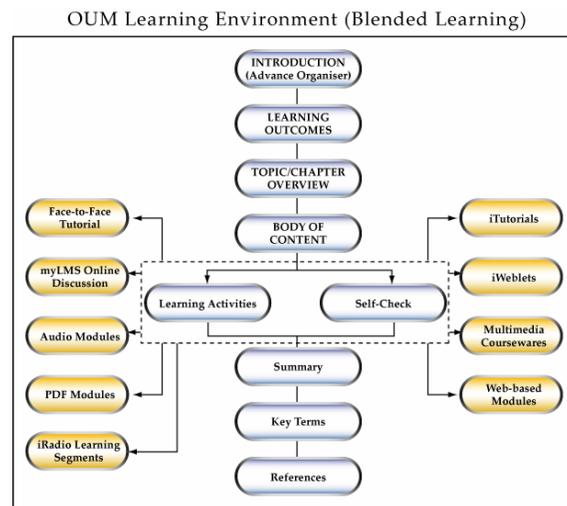


Figure 4. Relationship between the Print Module and Various e-Learning Materials

3.2 Effective Policies

It is important for policies to support decisions made for e-learning. Investments in e-learning are substantial and the lack of policies to support its successful implementation will spell failure. Policies are required not only to help with the enculturation of e-learning, but also to ensure that there are adequate facilities and resources to provide a positive e-learning environment. For example, to ensure that all faculty members and staff become acquainted with e-learning and its requirements, they are provided with the necessary ICT facilities, as well as e-mail addresses. Today, although resistant initially, tutors and learners are actively posting messages, opinions and responses to questions and issues posted online. To indicate its seriousness, OUM decided from the beginning that five percent of the course marks would be allocated to participation in online forums. Recently, the OUM Academic Board has agreed to allocate up to ten percent of the course marks for online participation for selected courses. The latter indicates widespread acceptance of the value of online forums.

3.3 Funding (Budget)

To implement these policies effectively, it is imperative that sufficient funding is provided to support the necessary purchases for hardware, software, services and employ the relevant staff. The annual ICT budget allocated by the university comes to a significantly large amount, easily exceeding those in traditional universities in terms of percentage of the total capital and operating expenses.

3.4 Humanware

Having the right type of talent in adequate numbers is critical to ensure the general support of ICT infrastructure and development of e-learning solutions (materials, pedagogies, etc). Staffing includes not only technical staff to maintain equipment and systems but programmers, graphic designers, animators, instructional designers and web developers to design and develop learning materials. Various teams have been established within OUM and each are accountable for the

design, development and maintenance of various e-systems such as the OUM web portal, learning management system, online marks entry system, multimedia courseware, i-Radio, web-based modules, and so on.

3.5 Infrastructure

It is necessary to ensure that facilities to support e-learning environments are available to students. This includes computer laboratories and hotspots for wireless Internet access not only in the main campus but also in all the learning centres throughout the country.

3.6 Infostructure

Defined as the organisation's information asset comprising hardware, software, networks, infrastructure, information and applications, how these are organized, managed and maintained are of utmost importance. At OUM, all online systems, content, hardware, software and access to the Internet need to be fully-accessible at all times. The main platform used by students is the learning management system, myLMS. It is important that the platform support all learning needs.

IV. KEY SUCCESS FACTORS FOR E-LEARNING AT OUM

With any successful implementation of policies, products or more specifically, an e-learning initiative, some key factors are responsible for the success. There are seven key success factors contributing to OUM's success with e-learning, namely:

4.1 Introduction of a course on Learning Skills for Open and Distance Learners.

Introduced since January 2004, the course is made compulsory for every new learner enrolled in the first semester. It is a capacity building course to help learners develop basic technological skills, such as using the university's myLMS and creating effective electronic presentations using Microsoft PowerPoint. The course also addresses learning styles, time management, stress management and information literacy, particularly in using the university's digital library collection.

4.2 Uploading of assignment questions online.

Learners are required to obtain their assignment questions from the myLMS as they are enrolled from the first semester. This is to create the right habit of logging into the myLMS from day one.

4.3 Making available the students' profile (biodata), financial records and academic records online.

To further acculturate the online habit, learners are forced to view and update their particulars as well as obtain information pertaining to their fee payments and their academic progress online.

4.4 Establishing a good, reliable and learner-friendly learning management system.

OUM's myLMS is the university's pride. It has been acknowledged as one of the most learner-friendly systems that support the learning needs of the students. In addition, tutors and administrators utilise myLMS to support both their academic and administrative functions.

4.5 Making sure that OUM's tutors are online to support and monitor forum discussions.

All tutors are given incentives for their active roles in supporting and monitoring their learners' discussions online. The tutors are, in turn, monitored for their involvement and payment is based on their effective involvement roles based on a set of rubrics.

4.6 Ensuring constant Internet availability.

To ensure a 24/7 availability of Internet connection, OUM seeks the services of two Internet Service Providers. Learners are assured of almost no downtime thus allowing constant accessibility to the university's information systems at all times.

4.7 Having a competent technical team.

To manage OUM's infrastructure and infostructure, various technical teams are established to ensure that all systems function at all times of the day, user-friendly and contain the most up-to-date and useful information.

V. ENSURING THE QUALITY OF E-LEARNING AT OUM

In the context of quality and e-learning, and as advocated by Dawson and Palmer (1995), OUM emphasizes on continuous improvement within a dynamic environment. OUM continuously develops new administrative applications and e-learning solutions and always strive to provide and enhance e-learning opportunities. These moves are particularly important given the rapidly changing learning environment arising from new developments and innovations in technology.

Continuously assessing the needs of the OUM community for various learning, teaching, administrative and management purposes is indeed a critical component of our day-to-day work. Timely development of solutions and ensuring availability of all online facilities and tools for e-mail, announcements, tutor management, online marks entry, library databases and the learning management system for example, are most important to support e-learning. While it is understandable that systems may be down at times, OUM targets for 100 percent uptime. Hence, mirror servers and back-ups are in place.

In the development of e-learning materials, we believe in the importance of integrating Quality Assurance procedures. The learners' expectations with regard to the learning materials should be considered as the starting point for assuring their quality. Typically, the learners' requirements will include the following criteria:

- a. relevant to the topic being studied;
- b. user friendly;
- c. easy to understand, whether due to better use of language, ample use of diagrams and examples or ample use of animation through accompanying CD ROMs and the like;
- d. balanced in the use of media (language, pictures, animation) to facilitate understanding of the topics covered;
- e. well researched;
- f. the latest available information on the subject;
- g. adding to the students' knowledge and skills;
- h. able to engage the learners; and
- i. meeting the objectives of the academic program (CQMRI, 2005, p.13).

We generally emphasise the importance of meeting learners' needs and employs sound instructional design models and processes (see Figure 5) in the development of our multimedia courseware. In addition, OUM continuously improves its processes for development based on learner feedback to its various e-learning materials.

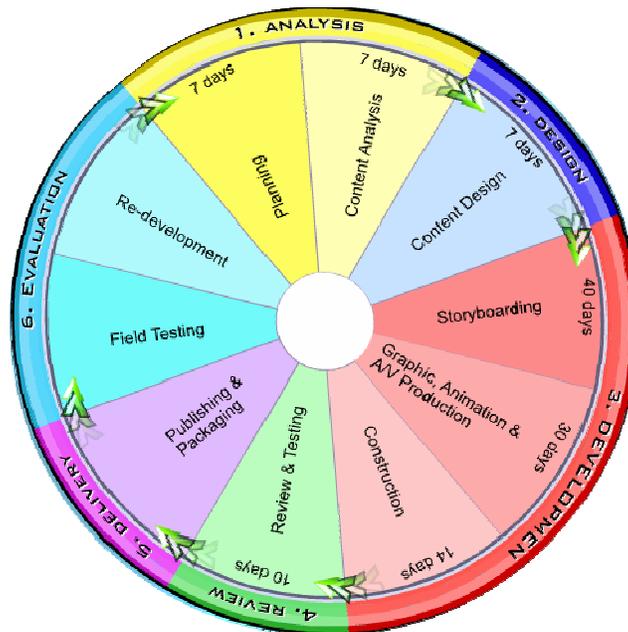


Figure 5. Instructional Design Model Employed

Source: Centre for Instructional Design & Technology (2004)

As part of our quality assurance processes, OUM engages in three types of review; namely, for content, language and instructional design. This includes review of the content by the subject-matter expert, moderator, instructional designer and learners. A language editor is engaged to ensure that the learning material is free from grammatical, spelling and punctuation errors. The instructional design is carefully looked into to ensure that the sound application of learning theories and instructional strategies has been applied. In addition, the checklist in the appendix illustrates how quality assurance of design and production functions is employed. The checklist was formulated by OUM's Centre for Quality Management and Research & Innovation (CQMRI, 2005).

The underlying challenge with the availability and increasingly affordable learning technologies is ensuring their effectiveness in the learning and teaching environment. Learners' expectations and needs must always be satisfied in terms of the learning solutions provided.

During the formative years of OUM, the management was convinced that the community was ready for e-learning and that with e-learning as part of the blended learning pedagogies, all stakeholders were expected to benefit in the end. Policies were established and the implementation of the blended learning pedagogical model was made compulsory for all courses. It was to be adopted by all faculty members and tutors even though they were not all computer literate or used to using computers in the classroom. All mid-level managers and administrators were required to support the implementation of the model.

Priority was given to establish the necessary infrastructure, ensure that the necessary infostructure was in place and that the development of e-learning material was carried out for the right reasons. Several e-learning experts were employed; qualified technical staff as well as experienced instructional designers was brought in to ensure that OUM succeeds with its e-learning initiatives. Today, OUM is regarded as an institution with a well-established e-learning development team that has developed effective learning solutions. OUM has been visited by many local and foreign universities wishing to learn about e-learning. In addition, students perceive that e-learning at OUM is at an advanced stage compared to other local universities. **(to add: OUM's success regarding retention rate of learners)**

V. CONCLUDING REMARKS

The paper examines the contribution made by e-learning to the relatively rapid growth of a relatively new university. OUM is now benchmarked by other similar institutions, as indicated by the number of visitors from around the world. We believe that e-learning at OUM will continue to evolve as new products and solutions are introduced amidst rapid technological developments. The image and prestige of OUM has been enhanced by its success with its blended learning pedagogical model. E-learning has ensured the connectivity and timeliness of delivery of information and course materials among its students.

The myLMS has ensured that delivery of e-learning is effective and that communication channels between the administrative, teaching and learning communities are kept open all the time. In addition to the print modules, web-based modules are being developed. These are expected to give added value to the student's learning experience. They will include graphics, animations and interactivity to aid the student's understanding of the subject matter. All these activities give credence to OUM's vision of becoming a leader and innovator in ODL. By giving focus to the needs and meeting the expectations of its learners, we believe that OUM will be at the forefront in making "quality education" as the prime mover in human capital development in the country.

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Biodata

Professor Anuwar Ali currently holds the post of President/Vice Chancellor of Open University Malaysia. He is also the Chief Executive Officer of Multimedia Technology Enhancement Operations Sdn. Bhd. (METEOR) which is the holding company of Open University Malaysia. Prior to this, he was the Director of Higher Education at the Ministry of Education Malaysia as well as the Vice Chancellor of Universiti Kebangsaan Malaysia (UKM).

Checklist to quality assure the Design and Production functions

NO.	ITEMS	√?	NOTES
1	Does the department have a well thought out and researched Selection Criteria for its personnel?		This is especially important when selecting new employees, although the criteria should be useful nevertheless in consolidating ideas about what sorts of staff are needed to do the jobs in hand.
2	Are personnel employed for these functions qualified and experienced to provide the effective and efficient services required?		In the case of existing department, the head of the department may wish to survey his/her staff to find out the current status of qualifications and experience available in the department. This should also lead to a determination about appropriate training needed for the various staff
3	Are facilities appropriate and up to date to carry out the functions in order to produce the most appropriate design and learning materials?		There is no point having the best people when the equipment needed are not available or that they are not functioning to expected reliability and standard
4	Are facilities of outsourced functions appropriate, capable and up to date to carry out the functions in order to produce the most appropriate design and learning materials?		It is most likely that there are functions within this requirement that cannot be met by a single department, or that the costs would be prohibitive. Some of the functions may indeed be outsourced. It is the responsibility of this department to ensure that the outsourced facilities are up to the required departmental standard and quality so that the overall quality outputs are not compromised
5	Is the physical environment in the department conducive to carry out creative work that is required in order to produce required design and learning materials?		In any work for that matter, the most appropriate environment is needed. An appropriate survey or research may need to be done in order to find out what the most appropriate work environment is.
6	Is the mental environment in the department conducive to carry out		The head of the department will need to observe and if required do a survey on the

NO.	ITEMS	√?	NOTES
	creative work that is required in order to produce required design and learning materials?		person-to-person relationships within the department in order to prevent compromising staff creative abilities in doing their jobs
7	Is proper planning of jobs being done?		It is the case that departments such as this would be under <i>production</i> pressures that are found in manufacturing generally. Proper planning of production jobs and meeting deadlines by everybody not just this department's must be ensured
8	Are subject matter contents received on time as planned? If not is there a contingency plan to ensure that this happens?		Subject matter contents are the raw material to the learning materials production. If these are not received on time, all the down line processes will be affected as well. In turn the quality of the final products will be compromised.
9	Is there an effective communication procedure between the subject matter contents providers (in this case the faculties) and the producer (in this case CIDT)?		Note the word <i>effective</i> . A weekly meeting that does not solve the problems at the roots is not an effective communication procedure. Such meetings should identify the roots of the problems and resolve them at that point. These meetings should also track the progress of incoming <i>raw material</i> so that potential problems are <i>nipped in the bud</i> . As a rule in a production environment, lateness is not tolerated as it compromises quality of the final product or service.
10	Having fulfilled item (4) above, is there an effective communication procedure between the producer (i.e. CIDT) and the outsource providers?		Similar comments to (9) above. Again early tracking of potential problems will help avoid quality problems. Penalties for lateness need to be imposed and enforced.
11	Do all functions, including the outsourced ones, have a QA procedure?		QA procedure is one where the processes involved are continually monitored so that the products do not go out of control. It is not QC because the intention here is to continually improve the processes rather

NO.	ITEMS	√?	NOTES
			than just separating the good from the bad products. If such procedures do not exist then the department and the outsource providers must develop these together
12	Is there well-developed feedback systems that inform everyone involved on their contribution to the quality products and the opportunity for improvement?		Feedbacks should be instituted as a matter of course. Feedbacks do not need to happen only at the end of the total process.
13	Is there a review system at the end of production cycles in order to improve the systems so that the next cycle will be better than the existing or past ones?		It is important that the production system as a whole is reviewed regularly with the intention of implementing any improvements that are identified.

Source: CQMRI (2005)