

Pilot Nationwide eLearning Provision in the Kingdom of Saudi Arabia – Issues and Challenges

Abstract

The Kingdom of Saudi Arabia through the National Center for eLearning and Distance Learning intend to provide nationwide elearning throughout the kingdom in the very near future. There are, however, many issues and challenges that must be addressed before full, nationwide provision can be realized. It is expected that adequacy of human resources, availability of technology and perhaps issues of culture will be the major determining factors to the success this project. In order to understand better the prevailing landscape a one year pilot project was started. This pilot project is targeted primarily at areas near the capital city of Riyadh. Some of the deliverables in this phase of the project are a localized LCMS, provisioning of five well-equipped learning centres, capacity building of human resources and production of courseware. This paper will describe the pilot project as well as the issues and challenges encountered and the lessons learnt from this undertaking.

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Introduction

The Ministry of Higher Education, Kingdom of Saudi Arabia is embarking on a fast-track pilot project to deliver elearning throughout the Kingdom. It is hoped that once deployed successfully this project can help alleviate some pressing problems currently being faced by the local higher educational institutions, such as lack of support for off-campus students and catering to the rapid growth in enrolment. The pilot project consists of several components, namely:

- The establishment of the National Centre for eLearning and Distance Learning (National Center).
- Building up capacity and resources
- Providing Delivery Channels
- Providing the Access Infrastructure.

It is thus a total solution to the provision of elearning. The Multimedia Technology Enhancement Operations Sdn Bhd, Malaysia (Meteor) and the Open University Malaysia (OUM) is working closely with the Ministry of Higher Education (MOHE), Kingdom of Saudi Arabia to implement this fast-track solution. Figure 1 shows diagrammatically the approach.

Building capacity, in terms of skilled human resources, is of utmost importance for the immediate running of the National Center to ensure sustainable development throughout the kingdom. Besides the skilled manpower required for running the National Center, it is also important to build learning contents and to keep on building learning contents, not just at the National Center but throughout the Kingdom. There must be a core group at the National Center who can carry on training and retraining personnel from other institutions to ensure the cascading effect spread throughout the Kingdom. Thus, capacity building involves the following:

- Recruitment
- Training
- Production of learning contents
- Production of learning modules

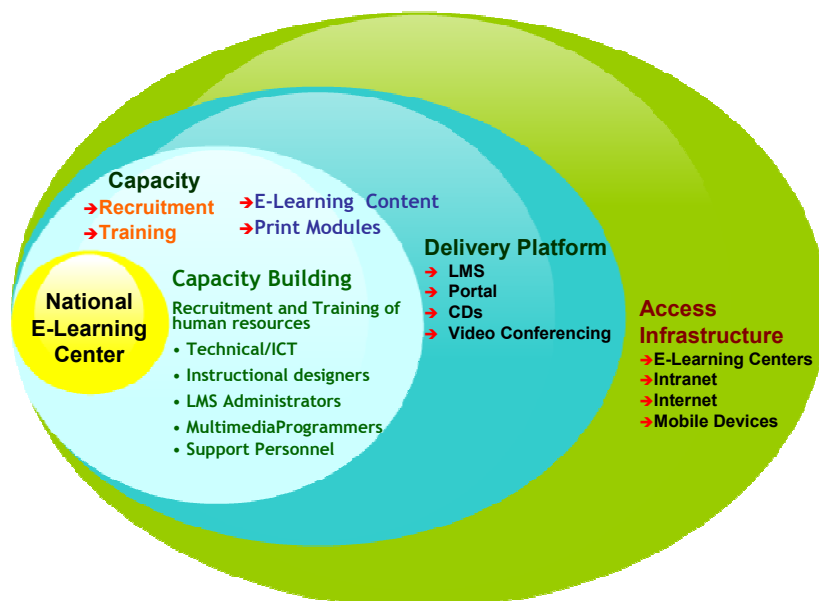


FIGURE 1: The total solution approach to sustainable elearning delivery.

The National Center for eLearning and Distance Learning

At the heart of the elearning initiative is the National Center for eLearning and Distance Learning. This will be the epicenter of the elearning wave that will spread throughout the Kingdom. Core personnel well-trained and capable will be stationed here to help drive elearning initiative. The National Center will house several essential departments, as shown in the organizational chart in Figure 2. It will function as a one-stop center for all matters relating to elearning within the Kingdom. It will also be the showcase for best practices and best technologies. The location for the establishment of the National Center is still under review.

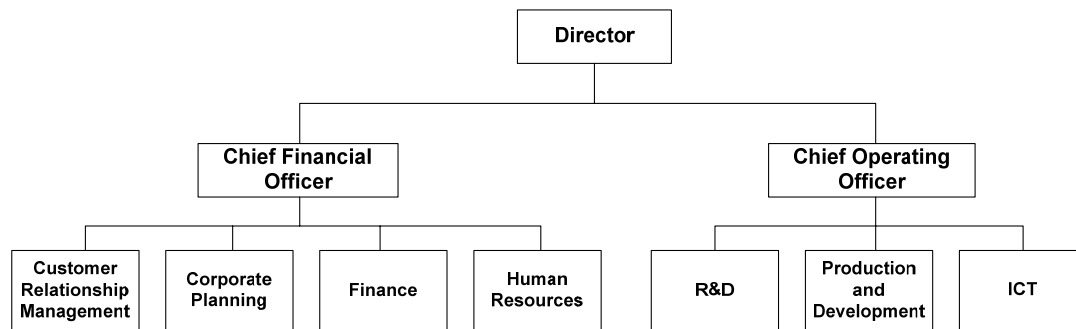


FIGURE 2: The Organizational Chart for the National Center

The Project Office

A project office was set up in Riyadh, Kingdom of Saudi Arabia, manned by staff from Meteor-OUM and from MOHE to carry out the implementations. The main function of this office was to serve as the project management office. Here, staff involved in the project will plan and execute the various stages of the project. However, to avoid delay in delivery, while the location for setting up the National Center is still being identified, the project office was used as the National Center, albeit with scaled down facilities and resources. Most training and development work were carried out at the project office. The uncertain delineation between project office functions and National Center functions do cause moments of anxiety and stress. However, in the spirit of collaboration and partnership all issues that arose were quickly resolved.

From the outset, one of the major challenges was getting suitable human resources to participate in the project. This was probably due to the newness of elearning in the Kingdom and hence the lack of human resources with the required skill sets is only to be expected. Thus, only a few subject matter experts, instructional designers and other technical resources were able to be hired. The numbers were certainly less than required for effective operations. However, in spite of this the core staff proved themselves up to the challenge. Most of the deliverables were delivered on schedule and most implementations targets were met.

The Knowledge Management Portal and Learning Management System

The National Centre has developed a Knowledge Management Portal (KMP) that is also the gateway to elearning services managed by the Learning Management System (LMS). The KMP is a repository of contents on all aspects eLearning. It also has a forum where registered members can interact. It is hoped that the KMP will be the foremost resource center for elearning information in the Arab speaking world. To be useful to the majority of users in the region the contents must be in Arabic. The challenge faced by the National Center is getting good contents in Arabic to populate the KMP. This may be because elearning is still relatively new in Saudi Arabia (and most of the Middle-East). Thus, in order to grow its collection the National Center is adopting several approaches, such as:

- Identifying good contents from local universities and seeking permission for inclusion in the KMP.
- Identifying good sources of contents from international providers and forming alliances on sharing, or subscription or purchase.

Those contents that are not in Arabic will be translated into Arabic.

There is an urgent need for information on all aspects of elearning to create awareness among the general population as well as practitioners and policy makers. Saudi Arabia has its own cultural norms that may differ from international best practices. Thus, international elearning best practices may have to be tempered to suit the cultural situation prevailing in Saudi Arabia. It is thus important for the National Center to become a one-stop center for all aspects of elearning.

The LMS is customized from a system already in use at the Open University Malaysia. This system has been in constant use by about 40,000 students and has proven to be very stable. Customization involves adapting the functionalities to suit local requirements. All menu items are translated from the English to Arabic. This process was made simple because the menu items and other fixed texts are dictionary-based. As long as each entry in English can be matched to a corresponding entry in Arabic (or any other language) then translation consists of downloading an excel file of English entries, entering the corresponding entries in Arabic and uploading the file. However, because of the differences in font size and font arrangement that make up the new item, each page must be checked manually and adjustments to the layout made.

A series of training were conducted for the trainers, systems administrators and users once the customization and Arabization of some major phase of the LMS was completed. These training sessions were also used as usability testing sessions. Substantial feedback were obtained in regard to flow and interface design. It is apparent that program flow and interface design are heavily influenced by the present cultural context. For example, the screen layout requires substantial changes because the Arabic text is from right to left. This in turn determines the arrangements of menu items, button and other control items. It was thus not simply translation; major redesigns were often required.

Courseware

Three types of courseware were produced: print module, html version of the print module and web-based tutorials. The print modules form the basis of all the other versions of the courseware. Thus, of necessity these went through rigorous development procedures. Subject matter experts wrote the print modules, reviewed and approved the contents. These were then edited and reformatted by instructional designers. Then, sent through the whole reviewing and correction process again and finally, to the printer.

The finished print modules were then used to produce the html version (called the iBook) and the tutorial (called the iTutorial). The iTutorial consists of a combination of talking head and PowerPoint slides. A lecturer (or an actor) lectures from the PowerPoint slides and the session recorded. After editing and final processing the iTutorial is produced by running the video and PowerPoint slides through a special software (Microsoft Producer is one example). Many trial sessions were required to get the lecturers to become comfortable with "lecturing" on camera to an invisible audience. However, the necessary skills were picked-up rather quickly by watching and improving on the previously recorded sessions.

All the courseware are uploaded into servers to be accessible via the LMS. The size of the iTutorial files can be quite substantial, typically between 50 MB to 80 MB. Thus, to cater to the spread in accessibility of the students, four options were provided:

1. High Bandwidth
2. Low Bandwidth
3. Audio only
4. Download

Students with high bandwidth can opt for the high bandwidth option, where the video and graphics are high resolution. Dialup users can choose low bandwidth where video and graphics are compressed to a lower resolution. And for those with really low bandwidth audio only is another option. Also, the audio files can be downloaded as MP3 files and played on the ubiquitous MP3 players.

All the courseware were uploaded to the local media server at each Learning Center, as well as the central server hosting the LMS. Large contents are streamed out or they can be downloaded. Also, to cater to those students that does not have any access to the Internet, all the courseware are also provided on DVDs.

Learning Centers

Learning Centers (LCs) are facilities at selected locations that will provide easy access to digitized learning material via the Learning Management System (LMS). At each location (usually Girls' Colleges), two rooms with capacity for 20 students each are refurbished, furnished and equipped with computers. The computers are networked and connected to the Internet. Teachers can use these centers to augment their teaching using the blended learning approach. The centers are also for use by students to access learning contents recommended by teachers and lessons that have been developed by the teachers using the Learning Content Management System that is part of the LMS.

Access at the LCs are designed to ensure satisfactory access to media-rich content even if the connections to the Internet is via dialup. Thus, at each LC all courseware are uploaded into local servers. The LMS will search for contents at the local servers before searching the central servers. Low bandwidth tasks such as emails and forums are managed by the LMS hosted at the National Centre. This also ensures seamlessness when students access from multiple sites (the LCs as well as from home or cybercafé).

For this pilot phase ten LCs were supposed to be set up. However, because of certain considerations it was decided that five LCs with at least Digital Subscriber Line (DSL) connectivity to the Internet be set up initially. The five centers are spread throughout the Kingdom, from about 80 km from the National Center to about 800 km. The locations of these centers also span the geography of the Kingdom – from urban to the very rural. The selections thus offer a good test for exploring accessibility options.

Technology – Hosting and Access Considerations

Students will access courseware and interact with their peers and their tutors via the LMS. It was decided from the beginning that there will be many media-rich courseware accessible via the LMS. In this pilot phase, 5 girls' colleges have been

equipped with networked computer labs where students can access the LMS. Connections to the Internet from these labs are via DSL at 512 Mbps. This bandwidth certainly places a severe restriction on access to media-rich content. To alleviate unsatisfactory learner experience the LMS is hosted centrally but media-rich contents are hosted locally. This means that a user accesses the central LMS for all functionalities such as forums, emails, announcements, etc; except media-rich courseware. Media-rich courseware will be accessed within the Local Area Network. Thus, users in these labs will have almost instant access to media-rich courseware from their local servers. Figure 3 below shows the hosting arrangement at a typical LC.

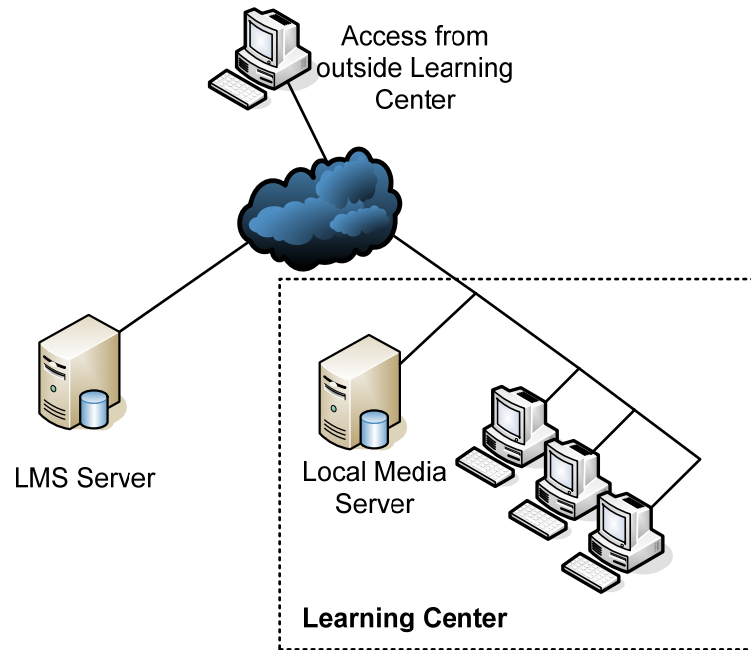


FIGURE 3: Hosting arrangement at a typical Learning Center

Users accessing outside of the LCs will access material directly from the centrally hosted servers. Their experience will depend largely on their own bandwidth. The majority of users rely on dial-up connection (on average about 40 kbps) to the Internet. They may therefore not have very good access to the courseware. However choosing the lower bandwidth courseware option or audio only can provide suitable alternatives. There will also be many students without any access to the Internet. To cater to these groups, all courseware are supplied to students as complete standalone versions also, on DVDs.

Support services such as forum and email are essential for self-managed learners. Students do not feel isolated when discussions with their peers or tutors can be carried out with ease. Homepage download times do play an important role (although often overlooked). Small page sizes, without too much fancy graphics, will ensure very fast access to services even over dialup connection. Care was taken in the design of the portal homepage and various optimizations were carried out to ensure very short download times. Figure 4 show download times for several universities.

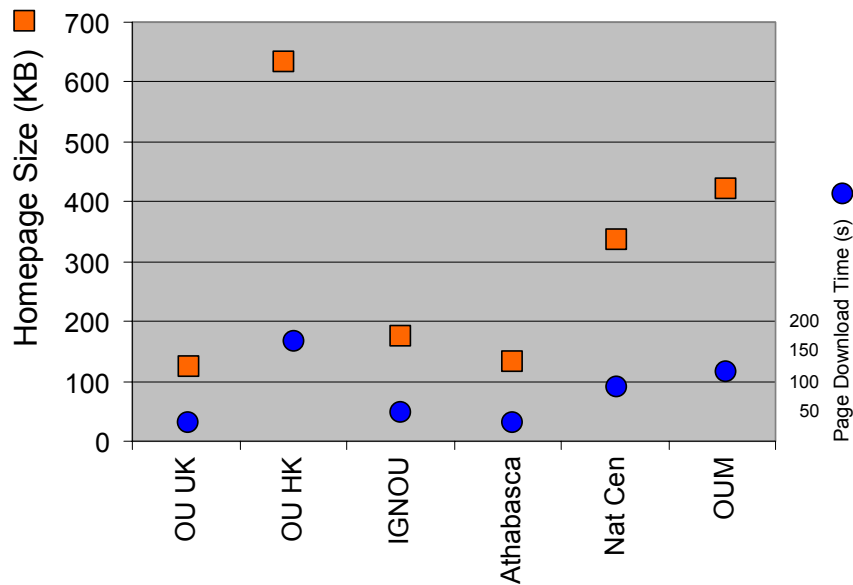


FIGURE 4: Homepage download times for several universities.

In the early stages the portal services were hosted at a premier hosting service in Malaysia, with very big bandwidth. The time to download the homepage (www.elc.edu.sa) was about 100 sec over 28 kbps dialup. This was considered much too slow. Various optimizations to the homepage were carried out but these did not result in significant reduction in the page download time. Studies of routing from Malaysia to Saudi Arabia show that there were too many hops from Malaysia to Saudi Arabia. A trial hosting was carried out at a hosting centre in Saudi Arabia. It was found that when hosted in Saudi Arabia the download times were reduced drastically, to about 3 sec! (but, over 1 Mbps line) The website is now hosted in Saudi Arabia. All these considerations show the importance that was placed on trying to provide the best experience to learners.

Conclusions

The total elearning solution is an all encompassing initiative that can help to move elearning to the mainstream of education in the Kingdom of Saudi Arabia. It is hoped that elearning can help to overcome the various challenges that are being faced by the traditional education providers. The National Center for eLearning and Distance Learning is at the heart of this initiative. It has laid down many of the required foundation and infrastructure and provided the resources to help kick start the process. Through the practice of prudent management of resources the National Center hope to provide the best elearning experience to the very diverse groups of students.