

## Proposal ID738

### Development and delivery of E learning materials on two different e-learning platforms

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#### ABSTRACT

The revolutionary development in the field of information technology and communication (ICT) has brought about a fundamental and major shift in the field of education. Conventional education is no longer perceived as the most ideal education system. Distance education, an educational sector which dates long back, is gaining wider recognition, owing to both the flexibility associated to it, and also the growing use of ICT. Distance-learning programmes have become even more popular over the last few years, as the Internet has developed into a reliable channel of tuition. Over the recent years, though we have seen the emergence of many Open Universities, at the same time, there has also been the creation of distance education centres at dual mode institutions. The University of Mauritius (UoM) is one such dual mode institution. UoM started with its first distance education centre in 1993, with an initial task of providing hard copy distance education manuals to support some modules offered in full time and part time programmes at UoM. Later in 2001, a virtual education centre was created to make use of ICT to promote distance education via e-learning platforms. The instructional design pertaining to hard copy manuals and to e-learning platforms differ significantly. While distance educational materials tend to provide the students with detailed information, elearning encourages students to look for additional information. Different e learning platforms provide tutors with different pedagogical frameworks, whose applicability vary from subject to subject. This very aspect of elearning platforms was tested by developing and delivery education materials for a number of engineering modules via two e-learning platforms, Moodle and ILearn. This present study highlights the instructional design approach which has been used in mounting the e learning materials, stressing on the role learning platforms play in the structure of the e learning materials.

#### INTRODUCTION

Distance education as defined by Moore (1996), is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organisational and administrative arrangements. Distance learning, nowadays targets a much wider audience through the use of internet facilities. In addition, distance learning also commonly referred to as open or flexible learning, is a process that is constantly evolving to incorporate emerging technologies. With the advent of information technology, large volumes of educational materials are available on the internet in various fields of study, including engineering. There are many advantages linked to the use of these educational materials. Firstly students get to learn how the same topic is being tackled in other countries which are either highly developed or less developed. Students appreciate better how the financial status of a country influences certain pertinent decisions. Another advantage of using online education materials is the learning environment encourages a student to take initiatives in looking for education materials relevant to the work he has to perform. In addition, there are high quality images and maps which provide lots of help to students while they study engineering subjects. So based upon a number of advantages that online learning offers both to students and to tutors, several engineering modules were developed and offered both online and by the blended mode, at the University of Mauritius (UoM).

UoM has two centres associated with open and distance learning. The Centre for Professional Development and Lifelong Learning (CPDL) was created in 1993 and its aim was amongst others, the development of distance education manuals to support teaching to large cohorts of students. In 2001, a second centre was set up, the Virtual Centre for Innovative Learning Technologies (VCILT), with the

objective of promoting open and distance learning. As such, instructional designers and technical staffs have been trained in the development of distance educational manuals, and the use of elearning platforms to deliver distance mode courses either by correspondence, or by blended mode or totally online. Appropriate training are thus passed on to academics to encourage the development of distance education materials, and in the use of different elearning platforms such as Moodle, ILearn, WikiEducator and eXe. Different elearning platforms provide for different facilities and a tutor needs the freedom to select the one most appropriate to the subject content being developed.

### **Moodle – Online learning platform**

Moodle is a free software e-learning platform (also known as a Course Management System (CMS), or Learning Management Systems (LMS), or Virtual Learning Environment (VLE) (Wikipedia-Moodle web site). Moodle is designed to help educators create online courses with opportunities for rich interaction. Its open source license and modular design means that people can develop additional functionality. Development is undertaken by a globally diffused network of commercial and non-commercial users, spearheaded by the Moodle company based in Perth, Western Australia. UoM is also a user of Moodle. Moodle has many features expected from an e-learning platform including; forums, Content Managing, Quizzes, Blogs, Wikis, Database activities, Surveys, Chat, Glossaries, Peer assessment and multi-language support. At UoM several modules and complete programmes are being offered via the Moodle elearning platform. Modules developed can be classified under the information technology, engineering, science, management and humanities subjects. While some tutors consider the Moodle platform appropriate for their module others find it less attractive.

### **ILearn – online learning platform**

ILearn is also an online learning platform. This particular platform has been developed at VCILT, University of Mauritius. This particular platform provides users with some facilities similar to Moodle, such as, forums, Quizzes, Content Managing, Database activities and chats. Since ILearn has been developed at UoM, technical staff has complete control of the management of the system, unlike the case of Moodle. ILearn has yet to reach the same extent of user friendliness associated with Moodle.

### **WikiEducator**

WikiEducator is an evolving community intended for the collaborative: planning of education projects linked with the development of free content; development of free content on Wikieducator for e-learning, work on building open education resources (OERs) on how to create OERs and networking on funding proposals developed as free content (WikiEducator web site). This platform enables a user to develop educational materials without the need to have specialised training in the creation of web pages. Pedagogical structures are inbuilt to help create a clear educational environment. Discussion forums are available to enable interaction among tutors and students. This forum is ideal for course development and for the offer of courses by the blended mode. Combination of other elearning platforms such as ILearn and Moodle with WikiEducator can provide a very attractive working environment both for tutors and for the students. WikiEducator promotes the sharing of educational resources, and tutors need to take this into account while using this particular platform.

### **eXe**

The eLearning HTML editor (eXe) is an authoring environment to assist teachers and academics in the design, development and publishing of web-based learning and teaching materials without the need to become proficient in HTML or complicated web-publishing. The eXe project is developing a freely available Open and eXe can export content as IMS Content Packages, SCORM 1.2 , IMS Common Cartridges or as simple self-contained web pages (eXe web site). eXe is structured almost similar to WikiEducator, specially with respect to well structured pedagogical frameworks. The educational software eXe can best be used eXe jointly with platforms such as ILearn or Moodle.

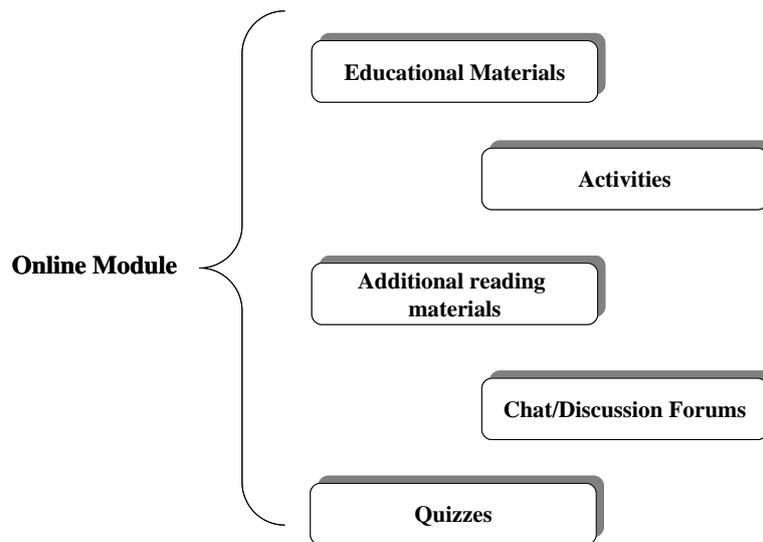
## **ONLINE ENGINEERING MODULES DEVELOPED & DELIVERED**

Education materials and learning instructions were developed for the following engineering modules: Introduction to Autocad, Geographical Information Systems for Beginners, Engineering Geology,

Environmental Management, Applied groundwater modelling and Integrated Water Resources Management.

The modules Introduction to Autocad and Geographical Information Systems for Beginners were basic first level modules which involved the posting of educational materials and activities. Engineering Geology and Environmental Management were a second and a third level module, which required students to become more independent in their learning, by looking for information. Applied groundwater modelling and Integrated Water Resources Management were both postgraduate modules, and these are for mature candidates.

In general the structure of all the online modules developed was made up of the following sections: the educational materials, activities, additional reading materials, chat/discussion forums and quizzes, as illustrated in Figure 1.



**Figure 1: Online module structure**

Education materials are the lecture notes that guide students to understanding the particular topic being presented. Additional reading materials tend to cover a broader aspect of the topic being presented. Though some information are not examinable, it is always important to put a topic in a more general context to get a good understanding of its applicability in real life situation. Online learning structure helps to differentiate between examinable learning materials and general additional information about a given topic.

#### **Basic first level modules: Autocad and GIS for Beginners**

These two modules were offered to first year students. For both these modules, the educational materials given to students were simply stepwise instructions for how to get started with a particular software and how to use the software in engineering drawings and for solving simple engineering problems. The progress of the students was evaluated on the level of the assignment submitted online for simple weekly assignments, and their understanding in problem solving for a main assignment.

The elearning platforms Ilearn and Moodle were both appropriate for these two modules, since they involved giving students access to the educational materials and they also involved the creation of a discussion forum on which students could post their queries. A few links to general information were also included under additional reading materials, but the students being only in level 1, they did not have much experience in appreciating information which were not examinable.

#### **Advanced level modules: Engineering Geology and Environmental Management**

These two modules were offered to level 2 and level 3 students respectively. The development of these modules online consisted of providing the students with educational materials, group activities and a number of additional reading materials. Team work is a must for engineering courses, so activities encouraged this aspect of the course. Besides engineering students have to be trained to find solutions to practical problems. So here again activities are structured in such a way that the students were encouraged to look for more information from the web or from journals or textbooks and then propose solutions. Additional reading materials were considered valuable information by these groups of students, as they used them as a help to look for potential solutions to problems stated in the activities.

For these two courses, Moodle offered a much better environment. Moodle has some inbuilt pedagogical structure that enabled the construction of simple education materials. The organisational structure of the elearning platform Moodle, clearly differentiates between the key educational materials and the additional reading materials. This is an important feature, for when students get too much information, this tends to discourage the students from learning.

### **Postgraduates modules: Applied groundwater modelling and Integrated Water Resources Management**

The modules applied groundwater modelling and integrated water resources management are offered to students reading for postgraduate courses. These students already have prior knowledge on the basic concepts of the subject, so these courses are at a much higher level. The modules need to be structured in such a way that the students are guided progressively through the course.

Moodle offers the tutor the choice of offering the course on a weekly basis or a topic basis, while switching off unwanted information, while in Ilearn the student will still be able to view past topics. Here again, too much information of high pedagogical content can be confusing to students, so some tutors prefer the choice of switching off part of the information. At a later stage the students can get access to the whole set of information.

So in such cases, once again the elearning platform Moodle provided the tutor with more control on the course, and at the same time this helped the student in going through the course smoothly.

### **DISCUSSION**

Elearning platforms will gradually form an integral part of many educational systems. Various elearning platform or virtual learning environments provide users with different tools to enhance the open and online learning. The higher the level of a course, the higher the need for a well structured elearning platform.

Discussion forums and chat forums are important working tool for online or blended learning. They help to promote student centered learning environments. Pedagogical templates are also key features of an elearning environment, but both ILearn and Moodle do not provide for these features. However, eXe and WikiEducator do provide for the pedagogical templates and in addition they can be used in combination with either ILearn or Moodle to improve the course development.

Activities, quizzes and assignment boxes are features which are also of high importance for both course development and delivery. Moodle has well developed facilities to cater for these features. Moodle offers many simple features which do help tutors to get students to participate in the online learning process. Moodle has been adopted by a very wide community because of the many facilities it offers. This study has found that eXe and WikiEducator can further enhance the learning environment within Moodle.

### **CONCLUSION**

Elearning platforms such as Ilearn, Moodle, eXe or WikiEducator are very helpful tools that help tutors develop and deliver online courses. As expected different elearning platforms are characterised by different working tools, which can be very appropriate in the development of some types of modules but do not apply for other types. The findings of this present study indicate that for more advanced courses, there is a need for a well structured elearning platform. A tutor should be able to have control on the educational materials provided to the students so as to guide the students in a stepwise manner.

Postgraduate courses are relatively more demanding and require students to work a lot on their own. Tutors have to structure their course materials to enable this learning process to happen.

Elearning platforms are not to be used only to provide access to softcopies of educational materials, but also to guide students who are not able to meet their tutors, being far from the latter. A particular elearning platform also influence the way an online course is developed. So, eventually the choice of a particular elearning platform has to be dictated by the purpose of the course, its target audience, the way the tutor plans to conduct the course and of course the possibility of selecting from different elearning platforms.

The use of virtual learning environments (VLEs) as a learning platform is increasing in colleges, and those that use VLEs find them easier to use than other learning platforms. However, in most colleges VLEs and electronic learning materials are not extensively used. There is some evidence of the use of ICT in traditional teaching, and some blended learning is taking place. However, ICT and e-learning are still largely peripheral to classroom teaching and are most widely used for additional support activities to extend independent learning. Colleges are able to identify their ability to adopt innovation with regard to ICT and e-learning, and, over time, innovations have spread effectively throughout the sector. The current level of investment in additional and replacement computers appears to be at sustainable levels. However, additional increases in investment must be considered if numbers of students increase further.

Taking the case of Imperial College of Science, Technology and Medicine, University of London, a report (Imperial college web site) noted that like most research oriented Universities, Imperial College is increasingly relying on Virtual Learning Environments (VLEs) and associated Web and Web 2 technologies to deliver world Class exciting and innovative teaching and services. Currently 50% of the College's 10,000 taught students have exposure to some aspect of the College supported VLE, WebCT, during their time in College. Whilst the current width and depth of exposure varies from Department to Department, this is expected to grow dramatically over the next 3 years, making this a very critical service.

To conclude, it can be said that there is a growing trend in the use of elearning platforms or virtual learning environments to improve teaching and to cater for increases in the number of students attending tertiary education. Many facilities are available to help educators in moving towards this trend. The present study has noted that elearning platforms that allow the educators good interaction with the course content and the students, need to be promoted. Though Ilearn and Moodle only were tested and evaluated for course delivery, eXe and WikiEducator offer a well structure pedagogical framework to enable educators to develop clear and well plan educational content for their course and if used in collaboration with other e learning platforms this will further enhance the course delivery.

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#### **LIST OF WEB SITES:**

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Wikipedia Moodle:  
<http://en.wikipedia.org/wiki/Moodle>

WikiEducator:  
[http://www.wikieducator.org/Main\\_Page](http://www.wikieducator.org/Main_Page)

FrontPage eXe  
<http://exelearning.org/>

Imperial College of Science, Technology and Medicine, Case study:  
<http://www3.imperial.ac.uk/portal/pls/portallive/docs/1/20919696.DOC>