A Mobile-Based E-Learning System

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ABSTRACT

E-learning is an innovative approach for delivering electronically mediated, well-designed, learner-centred interactive learning environments by utilizing internet and digital technologies with respect to instructional design principles. This paper presents the application of Software Development techniques in the development of a Mobile Based E-learning system that facilitates learning in a University environment. The developed application presents a system where a student after registration, has access to various functions that can improve the process of learning. Web pages were developed to serve as the user interface to the MLS and provide all the services needed for an E-learning portal including assessment and provision of feedback to learners. A portal exists for lecturers to upload learning contents and students’ examination results. The online portal uses Apache HTTP server as its web server, MySQL for relational database management and PHP as the scripting language to serve as a communication gateway between the back end and the users. The system was tested and evaluated with satisfactory results. This work, if adopted in schools to aid conventional learning, is expected to immensely improve the learning process and performance of students.

Keywords: e-Learning, Mobile Devices, Mobile Learning, University, Web Application

1. INTRODUCTION

E-learning involves learning through the use of Information and Communication Technology (ICT) infrastructures. Rosenberg (2001) defines learning as “the process by which people acquire new skills or knowledge for the purpose of enhancing their performance”. He explains that the perceptions of learning in organizations are undergoing a distinct transformation. First, training should no longer only focus on the act of training but must demonstrate a positive impact on performance or outcomes. Also, as the world is changing, the learning scenario is changing with the introduction of information and communication technology, which gives room to the concept called e-learning. Many educational institutions, including schools and

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universities, training departments and institutes for professional development simultaneously struggle for effective method in producing pervasive learning offers. Significant effort thereby is centred on new learning technologies, as they promise to permanently reach learners by their ubiquitous presence of communication devices (Hilderbrand et al., 2007).

Mobile learning can be used in different ways. Live talks and lectures can be broadcasted to students. While the instructor is presenting a talk, students can watch this on their phones, or MP3. Learners can create a digital video library of various clips that they may access or create on their own. They may also choose to exhibit their work online for access by others. Furthermore, archives of talks, lectures, and presentations can be created for students to later watch at their own time either online or via their portable devices.

The promise of e-learning and its enabling technologies is to make learning experiences in all types of setting more effective, efficient, attractive and accessible to all learners (Koper, 2001). Researchers are making concerted efforts to develop systems that can easily deliver contents on mobile phones. In Adagunodo et al. (2009), an SMS user interface result checking system was proposed, the system was developed to allow the use of mobile phones for delivering examination results via short messaging service (SMS) in a university. The system was limited to only delivery of results and nothing else. In Awodele et al. (2009), an improved SMS user interface result checking system was also developed. The system was with improvement on the previously proposed one by Adagunodo et al. (2009). It was concerned with improving the security of the previous proposed system. Similarly, the system was limited to only examination results delivery. Hence, there is a need to maximize the use of mobile technology in delivering contents, thus, bringing up the idea of designing a system that uses mobile technology in delivering e-learning contents and results.

This research work tends to bring efficiency and technology into the higher school of learning by introducing a mobile based E-learning system with which students can quickly call for lecture materials anywhere and can also take an assessment on the learning portal while receiving their results immediately.

## 2. LITERATURE REVIEW

### 2.1. Research Background

Education (training) is the process by which the wisdom, knowledge and skills of one generation are passed on to the next. This education process has been going on since time immemorial. It is the central process in the conservation and development of human culture. It began at the dawn of time and has continued till today. Eventually, the society developed for itself schools as the privileged places where education process takes place (Alonso & Norman, 1996). The move to wireless in telephony and computing is irreversible. There is no doubt that the World Wide Web is the most successful educational tool to have appeared in a long time. It combines and integrates text, audio and video with interaction amongst participants. It can be used on a global scale and is platform independent.

M-learning is a natural extension of E-learning and has the potential to make learning even more widely available and accessible than we are used to in existing e-learning environments. The role that communication and interaction play in the learning process is a critical success factor. It is within this context that m-learning can contribute to the quality of education. It offers opportunities for the optimisation of interaction between lecturers and learners, among learners and among members of COPs (communities of practice) (Georgieva et al., 2004).

The primary differences between the two disciplines is that where learning previously occurred in front of a computer terminal, in the classroom, laboratory, or at home, it is now enabled to occur in the field, or at any location where the mobile device is fully functional (Sharma and Kitchens, 2004). With M-learning, instructors can incorporate multimedia...
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