A Design of Integrated Framework for Mobile Learning System

Jung-Sook Kim*, Hee-Young Lee**
*Sahmyook University, Korea, **Dongguk University Computer Science Institute, Korea
E-mail : kimjs@syu.ac.kr, hylee222@hanmail.net

1. Introduction

The 21st century is declared to be the age of information and communication technology. This signifies the time when more people are involved in acquiring new knowledge and skills. The world is undergoing transformations due to rapid development of information and communication technology. Advances in wireless networks, sensor technology, and mobile devices have contributed to the development of this innovative teaching model. On-line technology is indispensable to social life, and its usage had been increased in the education sector. Ubiquitous learning is broadly defined as "anytime, anywhere learning"[1][4]. U&E- and M-learning have become extremely important buzz words of the educational technological revolution[2]. Therefore, devising an integrated framework for LMS realization is crucial. Requirements of all stake holder groups are a user-centric, customized, content rich and ubiquitous learning environment, and we can reach our goal through such elements. The target LMS must ensure a leaning environment that characterizes a consolidated system with many tangible features, such as reduced cost and time consumption, reduced workload, enhanced educational quality, enhanced system accessibility, and enhanced usability[3].

This paper elaborates the integral components of multimedia integrated framework for M-learning, namely: input integration, content generation, and access integration scenarios used to accomplish this task.

2. Related Works

2.1. E-learning and M-learning Comparative

E-learning is a subset of Distance Learning. Mobile Learning is a subset of E-learning. Ubiquitous Learning is a subset of Mobile Learning. The conceptual shifts from E-learning to M-learning then to u-learning are illustrated in Figure 1.

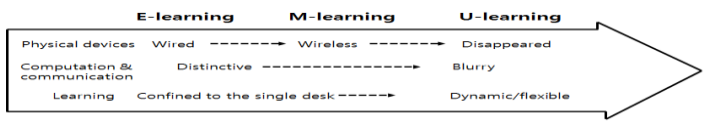

Figure 1. Comparisons and flow of e-learning, m-learning, and u-learning

Comparison between advantage and disadvantage of E-learning and M-learning is illustrated in Table 1.

[Table 1] Advantage & Disadvantage of E-learning & M-learning

E-learning		M-learning	
Advantage	**Disadvantage**	**Advantage**	**Disadvantage**
Individualized instructions	Requires knowledge and skills	Increased mobility	Storage capacities of PDA are limited
Easy access	Lack of equipment	Time-saving	Device may become outdated quickly
Disadvantageous children	Costly	Environmental-friendly	Too small display
Qualitative&Evaluation and feedback	Feeling of isolation and missing social contact	Interactive	Usable with some models only
Effective media	Lack of provision for teacher training program	Good support for preferred mode of interaction	Network connectivity limitations
Flexibility	Negative attitude	Turning geographically dispersed learners	Expenses/costs
Play-way spirit and learning by doing	Adverse effect on health	Revitalizing the curriculum	The button on the keypad or styles pens are small and can be trickily for some people to manipulate.
Interesting and motivating	Lack of co-curricular activities	Learning material is colorful and inviting	
On-line, off-line, and live interaction	Technical defect	Learner gets stimulated in learning	
Self-learning and self-improvement	Stressful and consumed more time	Convenient & Interesting	

2.2. LMS for E- and M-learning

This chapter elaborates the integral components of multimedia integrated framework, namely: input integration, content generation, and access integration scenarios used to accomplish this task.

The concept of LMS in today's context ─ range from simple systems to manage lecture notes to complex systems that provide an array of functionalities such as content authoring, course building, online examination, student evaluation, grade book, and collaborative learning ─ illustrated in Figure 2.

Some system modules, which are generally considered as complementary such as video conferencing, distance collaboration, and smart classrooms, are also included in the latest versions of LMS. However, not every LMS has all

of above listed features ─ depending on scale and needs, organizations can choose a suitable LMS for their operation. According to a survey conducted by Learning Circuits, the most valuable features of an LMS are shown in Figure 3.

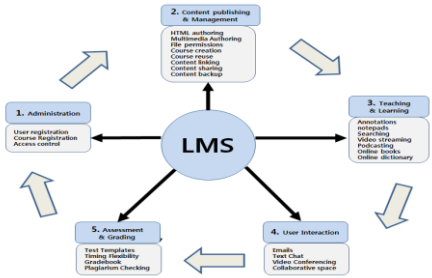

Figure 2. General LMS functions categorized according to usage purpose

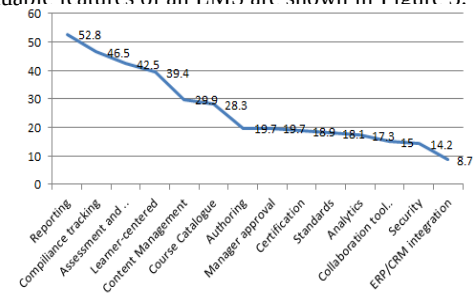

Figure 3. Most valuable features of an LMS(%)

3. Framework design methodology and System features

In this paper, we propose a mobile learning framework that is shown in Figure 4. Figure 4 illustrates multimodal sources of content originated by both teachers and learners, devices involved, and various access scenarios of the proposed mobile centric learning (m-learning) framework.

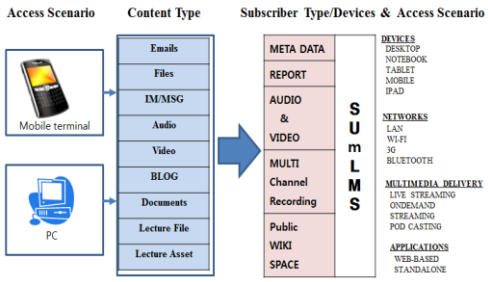

Figure 4. Content, devices, access scenario in m-Learning Framework

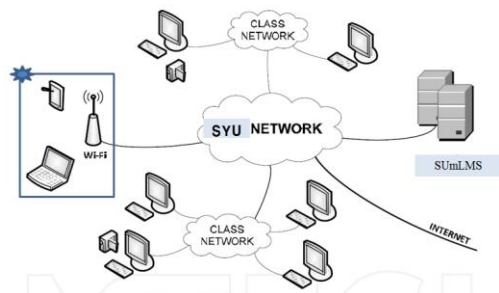

Figure 5. Network environment in SYU

SUmLMS's features is to provide learners with a friendly, interactive interface and rich, engaging media to stimulate intrinsic motivation and learning performance. The main advantages of the proposed system include helps stimulate learning intention through pursuing outdoor learning objectives. And it provides learners with contextual information related to the outdoor learning environment, and it enhances learner retention of teaching contents easily with the situated learning strategy. Also it does not require any complicated installation in order to perform new recording, editing, and playback. For example, the only requirement to perform a new class record session is a camera connected to a certain computer that can access such as the SYU network in Figure 5. The recording process is mangled through a web interface on the PC with camera connections.

4. Conclusion

In this paper, we presented a framework for implementing a content integrated learning management system with specific focus on mobile multimedia enrichment in learning content. To implement the system, we propose a Sharable content model that enables content sharing and in the LMS. Also, we adopt this model, similar to SCORM, to facilitate a well-defined content structure while keeping the content development burden as low as possible to the teachers. In this framework, sharable content model based and a flash based multimedia framework, with which content captured from various sources is integrated. This framework was simulated by implementing mobile multimedia learning enhancement management system in our class.

5. References

[1] G. J. Hwang, C. C. Tsai, H. C. Chu, Kinshuk, and C. Y. Chen, "A context-aware ubiquitous learning approach to conducting scientific inquiry activities in a science park", Australasian Journal of Educational Technology, Vol. 28, no. 5, pp.931-947, 2012.

[2] Santosh Kumar BEHERA, "E- AND M-LEARNING: A COMPARATIVE STUDY", International Journal on New Trends in Education and Their Implications", Vol.4, Issue 3, Article:08, pp.65-78, 2013.

[3] Nishantha Giguruwa, Danh Hoang Ahn and Davar Pishva, "A Multimedia Integrated Framework for Learning Management Systems", eLearning-Theories, Design, Software and Applications, INTECH, Japan, pp.153-172, 2012.

[4] Da-Ren Chen, Mu-Yen Chen, Tien-Chi Huang, and Wen-Pao Hsu, "Developing a Mobile Learning System in Augmented Reality Context", International Journal of Distriuted Sensor Networks, Vol.2013, Article ID 594627, pp.1-7, 2013.